Cognitive Linguistics

COGNITIVE LINGUISTICS
A COMPLETE GUIDE

Vyvyan Evans

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Preface

This book represents a complete guide to the school of linguistics known as 'cognitive linguistics'. Cognitive linguistics represents a broad theoretical, descriptive and empirical enterprise, rather than a single theory, or even a coherent set of theories or approaches. As I argue in this book, a cognitive linguistic theory, approach or perspective can be characterised by a number of core commitments, and guiding principles. The two key commitments widely shared by cognitive linguists are the Generalisation Commitment, a commitment to the characterisation of general principles that are responsible for all aspects of human language; and the Cognitive Commitment, a commitment to providing a characterisation of general principles for language that accords with what is known about the mind and brain from other disciplines. These two commitments underlie the orientation and approach adopted by practising cognitive linguists, and the assumptions and methodologies employed in the three main branches of the cognitive linguistics enterprise: cognitive approaches to conceptual structure, to semantics and to grammar. They are also central to applications of cognitive linguistics to other arenas of human behaviour and language use, including social behaviour and linguistic variation within and across populations, literature, and gesture and sign language research, among others. These key commitments give rise to specific guiding principles for the core areas of language – semantics, pragmatics, phonology and morphosyntax – that is distinctive vis-à-vis other approaches to the study of language, and indeed compared to other approaches to the study of the mind, as I show in this book.

About this book

This book is conceived as a comprehensive overview – a complete guide – to the cognitive linguistics enterprise, albeit one that nevertheless retains accessibility. The central premise is that the two key commitments entail specific guiding principles, which are exemplified in the study of particular areas of language, mind and human (social) behaviour. Hence, these key commitments, and the resulting guiding principles for specific areas of enquiry (e.g. conceptual structure, semantics and grammar) serve as a reference point for the material reviewed in the book, and for the way in which the material is organised. For instance, each part of the book is thematically grouped, using key commitments and/or guiding principles as a way of contextualising the various perspectives, approaches and descriptive accounts presented. And in this way, my aim is to provide a coherent and novel overview of the cognitive linguistics enterprise.

Part I provides an introduction to the two key commitments – the Generalisation and Cognitive Commitments, respectively – and the chapters therein serve to illustrate these by considering cognitive linguistics approaches to method, description, theory and practice; they also serve to contrast the enterprise, predicated on these two key commitments, with antithetical positions and perspectives, notably what I identify as formal linguistics.

In Part II, I turn to the cognitive linguistics approach to conceptual structure – the study of the substrate that is stored in the human conceptual system, namely concepts – which subserves both language and thought. While cognitive linguists study language for its own sake, they also do so because language reflects patterns of thought: it offers a window into cognitive function, providing insights into the nature, structure and organisation of thoughts and ideas. This is one of the most salient ways in which cognitive linguistics differs from other approaches to the study of language: language is assumed to reflect certain fundamental properties and design features of the human mind and embodied experience. The two key commitments of cognitive linguistics entail two guiding principles, which facilitate the study of conceptual structure. These are: the principle that conceptual structure is embodied (the 'embodied cognition thesis', also known as the thesis of the embodied mind) and the principle that semantic structure – the meanings encoded by language – reflects conceptual structure. I illustrate with chapters focusing on a range of phenomena, including image schemas, conceptual metaphors, categorisation and metonymy.

In Part III, I consider the nature of semantic structure. The two guiding principles of cognitive linguistics approaches to semantics assert that semantic structure is encyclopaedic (the 'encyclopaedic' view of meaning), and that linguistically mediated meaning construction facilitates 'simulations' – general-purpose computations performed by the brain that provide reactivations of multimodal embodied experience. In this part of the book, I exemplify this approach by considering phenomena ranging from encyclopaedic semantics to meaning construction, mental spaces construction to the formation of complex conceptual blends, and issues relating to lexical and compositional semantics.

Part IV addresses the nature of grammar from the perspective of cognitive linguistics – namely, form (traditionally separated into phonology, morphology and syntax), and its relationship with meaning. The two guiding principles, entailed by the two key commitments of the enterprise, which give rise to a cognitive linguistics approach to grammar are the symbolic thesis – the claim that the fundamental unit of grammar is a form–meaning pairing or symbolic unit – and the usage-based thesis – the claim that the mental grammar of the speaker (his or her knowledge of language) is formed by the abstraction of symbolic units from situated instances of language use. These guiding principles I exemplify with fairly detailed forays into the study of the cognitive principles that undergird grammar, the nature of symbolic units, also known as constructions, and the way in which grammar evolves over time.

Finally, in Part V, I address the way in which the cognitive linguistics enterprise, with its two key commitments – and subsequent six guiding principles – has been applied and extended to the nature of language and behaviour in a range of other domains and functions, including social behaviour and socially mediated language variation, social realities, including discourse, literature and the arts more generally, as well as multimodal communication, including gesture and non-spoken language, such as sign language systems.

While the premise of the book is underpinned by the two key commitments (Chapter 2) and the six more specific guiding principles entailed (in Chapters 8, 14 and 21), the content is structured in terms of presentation of theory and empirical description. Some chapters focus on specific theories developed to account for linguistic, conceptual and behavioural phenomena, which are predicated on key commitments and guiding principles of cognitive linguistics. And in these chapters, empirical phenomena is presented in order to exemplify how the given theories account for these. Other chapters focus on the phenomena themselves, with specific cognitive linguistic theories being introduced in order to show how they are supported by, and in turn explain, the phenomena. Hence, I have attempted to strike a balance between theory and phenomena.

Finally, I have attempted to balance representativeness, with my own perspective as a practicing cognitive linguist, in both my selection of issues and topics to cover, and the way in which I approach this coverage. Consequently, my emphasis and presentation is inevitably unique and personal. For instance, I have included coverage of topics and issues that have been a major feature of my own research over the last twenty-plus years. These include contributions to the nature of both space and time, as foundational domains of human experience (e.g. Chapters 3 and 4), and my contribution to developing a cognitive linguistics approach to lexical semantics (e.g. Chapter 17), and compositional semantics (e.g. Chapter 18). Hence, this book represents very much an overview of cognitive linguistics as I see it.

Who is this book for?

There are three main constituencies of reader for this book. First and foremost, the book is intended as a detailed overview of the cognitive linguistics enterprise, for (cognitive) linguists as well as researchers in neighbouring disciplines. In this, the book is intended as a comprehensive work of reference, that provides, in reasonably accessible terms, the nature, scope, methods, theories and descriptive practice of cognitive linguists, as well as its scope for application and extension.

Second, the book can also be used as textbook for advanced university students, or those seeking to learn about the enterprise through self-study. To that end, there are discussion questions featured at the end of each chapter, to provide a basis for individual and group reflection on the issues covered in each chapter. Also included at the end of each chapter, and in order to support university-level teaching, there is an on-line companion website that can be found here: edinburghuniversitypress.com/cognitivelinguistics. On this platform there are detailed data exercises that can be downloaded, and used to support the book as a teaching resource. Also included on the companion website is a 'menu' of chapters, providing different pathways for using the book in classroom and course settings and contexts. Given the size and scope of the book, not all chapters will be relevant for a given academic course. Hence, the suggested pathways provide some top-line guidance on how the material might best be engaged with given the potential range of courses the book can be used to support, either as a primary text, or in terms of supplementary reading. In addition, the book, as teaching resource, can be used in conjunction with the Glossary of Cognitive Linguistics (Evans 2007). This provides an alphabetic glossary of key terms used in cognitive linguistics.

Finally, the book can be used by educated, lay-readers who wish to gain a better understanding of one of the most exciting avenues in contemporary linguistics and cognitive science. The book does assume a basic familiarity with core ideas in linguistics, equivalent to at least an introductory course in language/linguistics. But equipped with such knowledge, the book is sufficiently accessible to provide a guide to the field.

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Abbreviations

A	agent
AdvP	adverb phrase
ANOVA	Analysis of Variance
AP	adjective phrase
ASL	American Sign Language
B	base space (in mental spaces theory)
B	beginning (in SER system)
BSL	British Sign Language
C	contact
CDA	critical discourse analysis
CR	cognitive representation
DP	determiner phrase
E	endpoint (focus)
E	event (in SER system)
ECG	Embodied Construction Grammar
ERP	event-related potential
F	figure
F	finish (in SER system)
F	focus space (in mental spaces theory)
G	ground
HPSG	Head-driven Phrase Structure Grammar
ICM	idealised cognitive model
IPA	International Phonetic Alphabet
L1	first language
LCCM	(theory of) lexical concepts and cognitive models
LF	logical form
LFG	Lexical Functional Grammar
LM	landmark
N	noun
NC	no contact

NP	noun phrase
NTL	neural theory of language
O	object
O	origo
P	patient
PF	phonological form
PIBU	primary information bearing unit
PP	prepositional phrase
R	reference time (in SER system)
RCG	Radical Construction Grammar
RP	reference point
S	moment of speaking (in SER system)
S	subject
SER	Speech-Event-Reference (system)
s-FoR	spatial frame of reference
SLI	specific language impairment
SOV	subject, object, verb
SVO	subject, verb, object
t-FoR	temporal frame of reference
TAM	tense, aspect and modality
TE	target event
TMS	transcranial magnetic stimulation
TP	tense phrase
TR	trajector
UG	Universal Grammar
V	verb
V	vertical
V	viewpoint space (in mental spaces theory)
VP	verb phrase
VPC	verb particle construction
VX	vertical and horizontally extended
WXDY	What's X Doing Y? (construction)
X	(horizontally) eXtended
XP	X phrase (where X is a word class in X-bar theory)

Part I: The cognitive linguistics enterprise

Cognitive linguistics is a modern school of linguistic thought that originally began to emerge in the 1970s due to dissatisfaction with formal approaches to language. Cognitive linguistics is also firmly rooted in the emergence of modern cognitive science in the 1960s and 1970s, particularly in work relating to human categorisation, and in earlier traditions such as Gestalt psychology. Early research was spearheaded during the second half of the 1970s by the so-called 'founding fathers' of cognitive linguistics: Ronald Langacker, George Lakoff and Leonard Talmy. Langacker, during this period, began work on his theory of Cognitive Grammar, then dubbed 'space grammar'. Lakoff was working on a related approach to grammar that came to be dubbed Construction Grammar, as well as a semantic basis for grammar, termed 'linguistic gestalts'; this notion later evolved into his theory of conceptual metaphor theory, developed with philosopher Mark Johnson. During the 1980s, Lakoff, influenced by his colleagues Charles Fillmore and Eleanor Rosch at University California, Berkeley, began applying new approaches to categorisation, in particular Prototype Theory to modelling linguistic representation in the minds of language users. This gave rise, among other things, to a new 'cognitive' approach to semantics, especially lexical semantics. Meanwhile, Talmy was engaged in developing a theory which he termed Cognitive Semantics.

By the mid to late 1980s these approaches, together with research from other leading researchers, most notably Gilles Fauconnier, had coalesced into a broad research programme that adopted a broadly empiricist and non-modular approach to language and mind, which came to be called 'cognitive linguistics'; in essence, the various theories shared a common impulse to model language and human communication in ways that were cognitively realistic, rather than adopting the modular, computational view of mind inherited from early research in cognitive science. And by the early 1990s, there was a growing proliferation of research in this area, and of researchers who identified themselves as 'cognitive linguists'. In 1989/90, the International Cognitive Linguistics Society was established, together with the journal *Cognitive Linguistics*. In the words of the eminent cognitive linguist Ronald Langacker (2002: xv), this 'marked the birth of cognitive linguistics as a broadly grounded, self conscious intellectual movement'.

Cognitive linguistics is described as a 'movement' or an 'enterprise' because it is not a specific theory. Rather, it is an approach that has adopted a common set of guiding principles, assumptions and perspectives which have led to a diverse range of complementary, overlapping (and sometimes competing) theories. For this reason, Part I of this book is concerned with providing a 'character sketch' of the most fundamental assumptions and commitments that characterise the enterprise as I see them.

In order to accomplish this, I map out the cognitive linguistics enterprise from a number of perspectives, beginning with the most general perspective and gradually focusing in on more specific issues and areas. The aim of Part I is to provide a number of distinct but complementary angles from which the nature and character of cognitive linguistics can be understood, as well as considering the stance it takes on the 'big' theoretical and empirical questions that are central to the study of language and the mind. And in so doing, I draw comparisons with formal approaches to language, such as Generative Grammar, in order to set the cognitive linguistics approach within the broader Anglo-American context out of which it emerged, and to identify how it departs from this other well-known model of language. This part of the book also addresses how to conduct research within the cognitive linguistics enterprise.

In Chapter 1, I begin by examining what cognitive linguists study. I do so by considering how practising cognitive linguists view the nature of language in general, and in particular the scientific study of language, namely linguistics. I address the question: *What do cognitive linguists study?* I thereby provide an introductory insight into the enterprise.

The second chapter is more specific and explicitly examines the two commitments that guide research in cognitive linguistics: the **Generalisation Commitment** and the **Cognitive Commitment**. I also introduce the three main theoretical approaches to the study of language and the mind adopted by cognitive linguists, which focus on **conceptual structure**, **semantic structure** and **grammar** respectively, which serve as the focus for Parts II, III and IV of the book, respectively. This chapter also addresses the prevalent **research methods** deployed within cognitive linguistics.

Chapters 3 and 4 address two important arenas of investigation within cognitive linguistics: the domains of SPACE (Chapter 3) and TIME (Chapter 4). Not only are space and time the foundational domains of human experience, they are also central to the **embodiment** of cognition – the idea that conceptual structure is constrained by the nature of the bodies humans possess (introduced in detail in Part II of the book) – and to theories of language organisation that take embodiment seriously, notably Langacker's Cognitive Grammar, Talmy's theory of Cognitive Semantics, and Lakoff and Johnson's conceptual metaphor theory. A significant amount of research, from different perspectives within cognitive linguistics, has focused on SPACE and TIME. Hence, surveying these two domains of experience provides a thematically oriented overview of some of the key themes, and theoretical concerns and perspectives of the cognitive linguistics enterprise.

In Chapters 5 and 6, I focus on the **usage-based approach** adopted by cognitive linguistic theories. In particular, I examine how representative usage-based theories attempt to explain knowledge of language (Chapter 5), and language change and child language acquisition (Chapter 6).

In Chapter 7, I explore some of the burning questions that have preoccupied linguists in the dominant Anglo-American tradition within which cognitive linguistics was incubated and developed. These questions have been central to the study of language and mind for the last fifty years or so. In particular, I focus on the cognitive linguistics perspective, and contrast this perspective with formal approaches to linguistics, most notably exemplified by the Generative Grammar tradition, and other theoretical and philosophical perspectives consonant with that tradition. The purpose of the chapter is not to provide an exhaustive exposition of arguments for or against, which is available in other publications, but rather to introduce and frame the debate, in each case, and present the representative positions, and some of the reasons for adopting these positions.

1

What do cognitive linguists study?

Cognitive linguists, like other linguists, study language for its own sake; they attempt to describe and account for its **systematicity**, its **structure**, the **functions** it serves and how these functions are realised by the language system. But cognitive linguists also study language because language reflects patterns of thought. Language offers a window into cognitive function, providing insights into the nature, structure and organisation of thoughts and ideas. The most important way in which cognitive linguistics differs from other approaches to the study of language, then, is that language is assumed to reflect certain fundamental properties and design features of the human mind. As such, language provides a window, albeit a partial one, on the mind (Evans 2015a). And as we shall see throughout this book, this assumption has far-reaching implications for the scope, methodology and models developed within the cognitive linguistic enterprise. Not least, an important criterion for judging a model of language is whether the model is psychologically plausible.

Cognitive linguistics is one of the most innovative and exciting approaches to the study of language and thought that has emerged within the modern field of interdisciplinary study known as cognitive science. In this chapter we will begin to get a feel for the issues and concerns of practising cognitive linguists. I will do so by attempting to answer the following question from the perspective of cognitive linguistics: what does it mean to know a language? The way cognitive linguists approach the question, and the answers that arise, reveals a lot about the approach, perspective and assumptions of cognitive linguists. Moreover, the view of language that we will end up with is quite different from the view suggested by other linguistic frameworks. Indeed, as we shall see at various points throughout the book, particularly in the comparative chapters when I compare and contrast cognitive linguistic theories and perspectives with other paradigms within the Anglo-American tradition (for instance, in Chapters 7, 8, 14 and 21), cognitive linguistics provides a significant challenge to some of these approaches. The cognitive linguistics enterprise also offers exciting glimpses into hitherto hidden aspects of the human mind, human experience and, consequently, what it is to be human.

1 What is language for?

We all take language for granted, yet we rely upon it throughout our lives in order to perform a range of functions. Imagine how you would accomplish all the things you might do, even in a single day, without language: buying an item in a shop, providing or requesting information, passing the time of day, expressing an opinion, declaring undying love, agreeing or disagreeing, signalling displeasure or happiness, arguing, insulting someone, and so on. Imagine how other forms of behaviour would be accomplished in the absence of language: rituals like marriage, business meetings, using the Internet, the telephone, and so forth. While we could conceivably accomplish some of these things without language (a marriage ceremony, perhaps), it is less clear how, in the absence of telepathy, making a telephone call or sending an email could be achieved.

In almost all the situations in which we find ourselves, language allows quick and effective expression, and provides a well-developed means of **encoding** and **transmitting** complex and subtle ideas. In fact, these notions of encoding and transmitting turn out to be important, as they relate to two key functions associated with language, the **symbolic function** and the **interactive function**.

1.1 The symbolic function of language

One crucial function of language is to express thoughts and ideas: language encodes and externalises our thoughts. The way language does this is by using **symbols**. Symbols are 'bits of language'. These might be meaningful subparts of words (for example, *dis-* as in *distaste*), whole words (for example, *cat*, *sprint*, *tomorrow*), or 'strings' of words (for example, *He couldn't write a pop jingle let alone a whole musical*). These symbols consist of **forms**, which may be spoken, written or signed, and **meanings** with which the forms are conventionally paired. In fact, a symbol is better referred to as a **symbolic assembly**, as it consists of two parts that are conventionally associated (Langacker 1987). In short, this symbolic assembly is a form–meaning pairing.

A form can be a sound, as in [kæt] – here, I am representing speech sounds using symbols from the International Phonetic Alphabet. A form might be the orthographic representation that we see on the written page: *cat*, or a signed gesture in a sign language. A meaning is the conventional ideational or semantic content associated with the symbol. A symbolic assembly of form and meaning is represented in Figure 1.1.

It is important to be clear, however, that the image of the cat in Figure 1.1 is intended to represent not a particular referent in the world, but the idea of a cat. The image represents the meaning conventionally paired with the form pronounced in English as [kæt]. The meaning associated with a linguistic

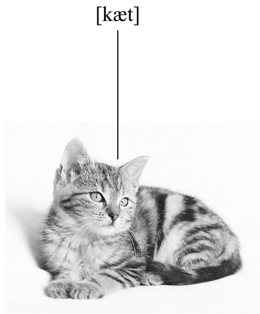


Figure 1.1 A symbolic assembly of form and meaning

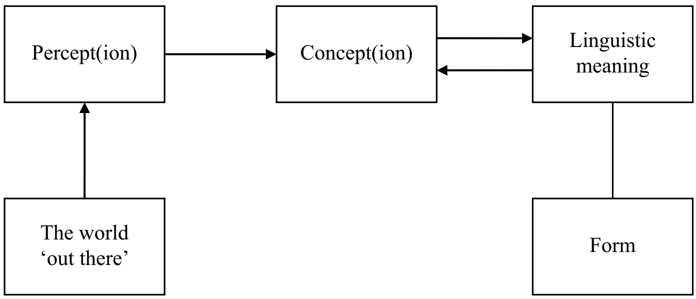


Figure 1.2 Levels of representation

symbol is linked to a particular mental representation termed a **concept**. Concepts, in turn, derive from **percepts** (see Chapter 3). For instance, consider a piece of fruit such as a pear. Different parts of the brain perceive its shape, colour, texture, taste, smell and so on. This diverse range of perceptual information deriving from the world 'out there' is integrated into a single mental image – a representation available to consciousness – which gives rise to the concept of Pear. When we use language and utter the form *pear*, this symbol corresponds to a conventional meaning, and therefore 'connects' to a concept rather than directly to a physical object in the external world (see Figure 1.2).

Our cognitive abilities integrate raw perceptual information into a coherent and well defined percept. The meanings encoded by linguistic symbols then, refer to our **projected reality** (Jackendoff 1983): a mental representation of reality, as construed by the human mind, mediated by our unique perceptual and conceptual systems.

I observed above that the symbolic function of language serves to encode and externalise our thoughts. We are now in a position to qualify this view. While our **conceptualisations** – the ways in which we construe or 'see' the range of sensations, experiences, reflections and so on, that make up our mental life – are seemingly unlimited in scope, language represents a limited and indeed limiting system for the expression of thought; we've all experienced the frustration of being unable to 'put an idea into words'. After all, there are a finite number of words, each with a delimited set of conventional meanings.

From this perspective, then, language merely provides prompts for the construction of a conceptualisation which is far richer and more elaborate than the minimal meanings provided by language (Fauconnier 1997; Turner 1991). Accordingly, what language encodes is not thought in its complex entirety, but instead rudimentary instructions to the **conceptual system** – our repository of concepts – to access or create rich and elaborate ideas, known technically as **simulations** (see Chapters 8 and 14, for detailed discussion). To illustrate this point, consider the following example from Tyler and Evans (2003):

(1) The cat jumped over the wall.

This sentence describes a jump undertaken by a cat. Before reading on, select the diagram in Figure 1.3 that best captures, in your view, the trajectory of the jump.

I anticipate that you selected the fourth diagram, Figure 1.3(d). After all, the conventional interpretation of the sentence is that the cat begins the jump on one side of the wall, moves through an arc-like trajectory, and lands on the other side of the wall. Figure 1.3(d) best captures this interpretation. On first inspection, this exercise seems straightforward. However, even a simple sentence like (1) raises a number of puzzling issues. After all, how do we know that the trajectory of the cat's jump is of the kind represented in Figure 1.3(d)? What information is there in the sentence that provides this interpretation and excludes the trajectories represented in Figures 1.3(a–c)?

Even though the sentence in (1) would typically be judged as unambiguous, it contains a number of words that have a range of interpretations. The behaviour described by *jump* has the potential to involve a variety of trajectory shapes. For instance, jumping from the ground to the table involves the trajectory represented in Figure 1.3(a). Jumping on a trampoline relates to the trajectory represented in 1.3(b). Bungee jumping involves the trajectory represented in 1.3(c), in which the bungee jumper stops just prior to contact with the surface. Finally, jumping over a puddle, hurdle, wall and so on involves an arc-like trajectory as in 1.3(d).

If the lexical item *jump* does not in itself specify an arc-like trajectory, but is vague with respect to the shape of the trajectory, then perhaps the preposition *over* is responsible. However, *over* can also have a range of possible interpretations. For instance, it might mean 'across', when we walk over a

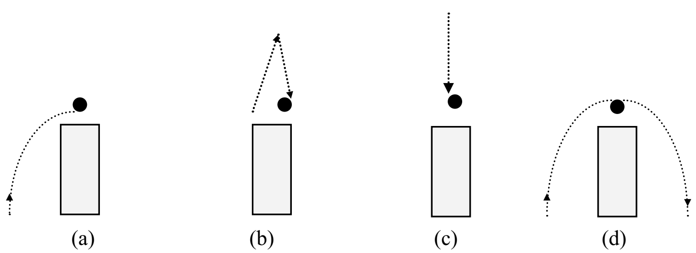


Figure 1.3 Possible trajectories for *The cat jumped over the wall*

bridge (a horizontal trajectory). It might mean 'above', when an entity like a hummingbird is over a flower (higher than but in close proximity to). Equally, *over* could mean 'above' when a plane flies over a city (much higher and lacking close proximity). These are just a few of the possibilities. The point to emerge from this brief discussion is that *over* can be used when different kinds or amounts of space are involved, and with a number of different trajectories or paths of motion.

Consider a further complication. Figure 1.3(d) crucially represents the cat's motion ending at a point on the opposite side of the wall relative to the starting position of the jump. Yet, no linguistic element in the sentence explicitly provides us with this information.

Example (1) therefore illustrates the following point: even in a mundane sentence, the words themselves, while providing meanings, are only partially responsible for the conceptualisation (or simulation) that these meanings give rise to. Thought relies on a rich array of encyclopaedic knowledge (e.g. Croft and Cruse 2004; Evans 2009; Langacker 1987). For example, when constructing an interpretation based on the sentence in (1), this involves at the very least the following knowledge: i) that the kind of jumping cats perform involves traversing obstacles rather than bungee jumping; ii) that if a cat begins a jump at a point on one side of an obstacle, and passes through a point above that obstacle, then gravity will ensure that the cat comes to rest on the other side of the obstacle; iii) that walls are impenetrable barriers to forward motion; iv) that cats know this, and therefore attempt to circumnavigate the obstacle by going over it. We use all this information (and much more), in constructing the rich conceptualisation – the simulation – associated with the sentence in (1). The words themselves are merely prompts for the simulation construction process.

So far, then, we have established that one of the functions of language is to represent or symbolise concepts. Linguistic symbols, or more precisely symbolic assemblies, enable this by serving as prompts for the construction of much richer simulations. Now let's turn to the second function of language.

1.2 The interactive function of language

In our everyday social encounters, language serves an **interactive function**. It is not sufficient that language merely pairs forms and meanings. These form–meaning pairings must be recognised by, and be accessible to, others in our community. After all, we use language in order to 'get our ideas across': to **communicate**. This involves a process of transmission by the speaker, and decoding and interpretation by the hearer, processes that involve the construction of simulations (see Figure 1.4).

The messages we choose to communicate can perform various interactive and **social functions**. For example, we can use language to change the way the world is, or to make things happen:

(2) a. I now pronounce you husband and wife.
    b. Shut the door on your way out!

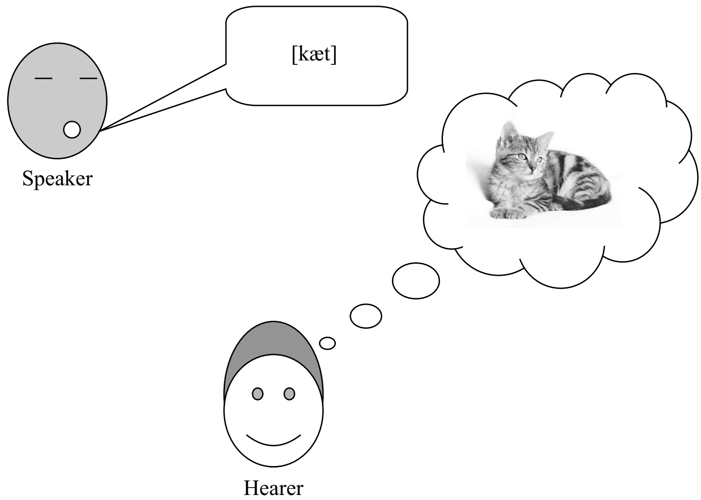


Figure 1.4 The interactive function

The utterance in (2a), spoken by a suitably qualified person – such as a member of the clergy licensed to perform marriages – in an appropriate setting – like a church – in the presence of two unmarried adults who consent to be joined in matrimony, has the effect of irrevocably altering the social, legal and even moral/spiritual relationship between the two people. That is, language itself can serve as a **speech act** that forever alters an aspect of our reality (Searle 1969).

Similarly, in the example in (2b), the utterance represents a command, which is also a type of speech act. Language provides a means of communication, allowing us to share our wishes and desires. Moreover, the way in which these wishes and desires are expressed signals who we are, and what kind of relationship we have with our addressee. We would be unlikely to issue a command like (2b) to the Queen of the United Kingdom, for example.

Another way in which language fulfils the interactive function relates to the notion of **expressivity**. Language is 'loaded', allowing us to express our thoughts and feelings about the world; consider the quite different ideas evoked by the following expressions, which might be used by different speakers to refer to the same individual:

(3) a. the eminent actor
    b. the dashing lady's man

While the example in (3a) focuses on the profession of the individual and the individual's relative standing in that profession, the example in (3b) focuses on aspects of their appearance, personality, behaviour and the company the individual keeps. Moreover, although both these sentences relate to a male actor, the person's gender cannot be inferred from the sentence in (3a) – in today's parlance, the designation *actor* can refer to either a male or female – it can be so inferred from the second sentence due to normative patterns of linguistic behaviour and social stereotypes. We typically use the expression *dashing* to describe the physical attributes and personality of men, rather than women, while *lady's man* can only refer to a man.

Language also plays a role in how we affect other people in the world, and how we make others feel by our choice of words. In short, language can provide information about **affect** (emotional response):

(4) a. Shut up!
    b. I'm terribly sorry to interrupt you, but . . .

These examples also illustrate the way in which we present our public selves through language. The language we choose to use conveys information about our attitudes concerning others, ourselves and the situations in which we find ourselves.

Language can also be used to create scenes or **frames** of experience, indexing and even constructing a particular context (Fillmore 1982). Language use can invoke frames that summon rich knowledge structures, which call up and fill in background knowledge:

(5) a. How do you do?
    b. Once upon a time . . .

The example in (5a) creates a greeting frame, signalling an acknowledgement of another person and a recognition that this is the first time they have met. It also signals a degree of formality, which expressions like *hey*, *what's up?* or *hi* would not. Analogously, the utterance in (5b) signals the beginning of a fairytale. Just by hearing or reading the expression in (5b) an entire frame is invoked, which guides how we respond to what follows, what our expectations are and so forth.

In short, we've seen that not only does language encode particular meanings, but also by virtue of these meanings and the forms employed to symbolise these meanings which constitute part of shared knowledge in a particular speech community, language can serve an interactive function. And in so doing, it both facilitates and enriches communication in a number of ways.

2 The systematic structure of language

Having seen some examples of what language is used for, let's now consider how language is structured. Language is a system for the expression of meaning and for carrying out its symbolic and interactive functions. So, what evidence is there for the systematicity of language?

2.1 Evidence for a system

Language consists of symbolic assemblies that are combined in various ways to perform the functions I described in section 1.1. A **symbolic assembly** is a conventional **linguistic unit**: an aspect of language that speakers recognise and 'agree' upon what it means and how it is used. As we will see later in the book, particularly in Part IV, one of the prominent concerns in cognitive approaches to grammar is how to model the inventory of linguistic units that make up a language. For example, speakers of Modern English 'agree' that the form *cat* is used to refer to a certain kind of meaning which I illustrated in Figure 1.1. A conventional unit can be a meaningful subpart of a word, which linguists call a **morpheme** (*anti-dis-establish* . . .), a whole word, a string of words that 'belong' together (a **phrase**) or a whole **sentence**. Now let's consider another example:

(6) He kicked the bucket.

This utterance consists of a sentence that has an idiomatic meaning in English. That is, its meaning is not predictable from the integrated meanings of the individual words. A non-native speaker of English who has not learnt the 'special' idiomatic meaning will only be able to interpret example (6) literally. Native speakers of English, on the other hand, while also being able to interpret the sentence literally, often cannot avoid the idiomatic meaning 'he died'. Of course, whether a **literal** versus an **idiomatic interpretation** is accessed depends on the situation or context in which the utterance occurs.

Focusing for now on the idiomatic interpretation, we can view this utterance as a unit that has a particular meaning associated with it. Therefore, it counts as a symbolic assembly. Another term for symbolic assembly that is employed by some cognitive linguists is **construction** (e.g. Goldberg 1995, 2006; Michaelis and Lambrecht 1996; see Hilpert 2014). We shall return, in detail, to the notion of symbolic assemblies and constructions in Part IV of the book.

When we change certain aspects of the sentence in (6), the meaning is affected. For example, if we change the object (the thing being kicked), as in (7), we lose the idiomatic meaning and are left with a literal utterance:

(7) He kicked the mop.

For many cognitive linguists, what makes example (7) 'literal' is that this sentence 'as a whole' does not represent a construction. Instead, the meaning of (7) is interpreted by unifying the smaller units, the words. In contrast, example (6) is interpreted as a whole single unit: a construction. One way of expressing this idea in more intuitive terms is to use the metaphor of 'storage': suppose we store our knowledge of words, phrases and complex constructions in a mental 'box'. The behaviour of larger constructions, like *kick the bucket*, suggests that these are stored as 'chunks' or single units, just like words. The meanings of sentences like (7), on the other hand, are 'built' by unifying the individual words that make them up.

Now consider another example. If we change the structure of example (6) in the following way, we also lose the idiomatic meaning:

(8) The bucket was kicked by him.

This example shows that, in addition to meaning, constructions (form–meaning pairings) have particular formal grammatical patterns associated with them. In other words, the properties of the construction relate not only to the individual words that make it up, as in (6), but also to the grammatical form, or word order. The passive construction in (8), in which the bucket is placed in subject position, fails to provide the idiomatic meaning associated with the sentence in (6). We can conclude from this that the linear arrangement of the words in the sentence constitutes part of an individual's knowledge of idiomatic constructions such as (6).

This point is also illustrated by an **ungrammatical** sentence: a sentence that does not correspond to any of the formal patterns associated with the constructions of English, as in (9), and consequently does not have a conventional meaning associated with it. Linguists use an asterisk preceding a sentence to indicate its ungrammaticality:

(9) *Bucket kicked he the.

As I noted above, the sentence in (6) qualifies as a construction because it consists of particular words arranged in a particular order; moreover, these words are conventionally associated with a particular (idiomatic) meaning. That said, constructions can also give rise to 'literal' meanings. To illustrate this, let's examine another sentence that has both idiomatic and literal meanings. For instance, consider the following, celebrated, linguistic joke:

(10) Diner: Waiter, what is this fly doing in my soup?
Waiter: It looks like the breaststroke, to me, sir!

This joke turns on the ambiguity between the regular interrogative construction, in which a diner is enquiring after the intention or purpose of something or someone (What's that dog doing behind the sofa? What's that couple doing in the darkened corner?), and the 'what's X doing Y construction'. The latter has been studied in detail by cognitive linguists Paul Kay and Charles Fillmore (1999). It's used by the speaker to indicate that a particular situation is incongruous or unacceptable (What are you doing wearing those bunny ears? What are those clothes doing on the floor?). Notice that each of these interpretations requires a different kind of response. For the regular interrogative construction, the response should consist minimally of a piece of information corresponding to the question word (chewing a bone; making out). For the 'what's X doing Y' construction, on the other hand, the expected response is typically an explanation, excuse or apology (I'm going to a fancy-dress party; I've been busy).

Crucially, for example (10), these two very different meanings are conventionally associated with exactly the same words arranged in the same sequence. The humorous effect of the waiter's reply rests on the fact that he has chosen to respond to the 'wrong' interpretation. While the diner is employing the 'what's X doing Y' construction, the waiter prefers to respond to the interrogative construction.

The examples in this section reveal that there is a systematic relationship between words, their meanings and how they are arranged in conventional patterns. In short, language has a systematic structure.

2.2 The systematic structure of thought

Does the systematic structure found in language reflect a systematic structure within our conceptual system? Cognitive linguists certainly think so. Cognitive linguists explore the hypothesis that certain kinds of linguistic expressions provide evidence that the structure of our conceptual systems is reflected in the patterns of language. Moreover, as we shall see throughout this book, the way the mind is structured can be seen as a reflection, in part, of the way the world (including our sociocultural experience) is structured and organised. Consider the examples in (11).

(11) a. Christmas is fast approaching.
  b. The number of shares we own has gone up.
  c. Those two have a very close friendship.

These examples relate to the abstract **conceptual domains** of TIME (11a), QUANTITY (11b) and AFFECTION (11c). A conceptual domain is a body of knowledge within our conceptual system that contains and organises related ideas and experiences. For example, the conceptual domain of TIME might relate to a range of temporal concepts including Christmas, which is a temporal event.

Notice that in each sentence in (11) the more abstract concepts – Christmas, number (of shares) and friendship – are understood in terms of conceptual domains relating to concrete physical experience. For instance, Christmas is conceptualised in terms of the domain of physical MOTION, which is evident in the use of the word *approaching* in (11a). Clearly Christmas (and other temporal concepts) cannot literally be said to undergo motion. Similarly, the notion of number of shares is conceptualised in terms of VERTICAL ELEVATION, which is clear from the use of the phrase *gone up* in (11b). Finally, friendship is conceptualised in terms of PHYSICAL PROXIMITY in (11c), which is shown by the use of the word *close*.

One of the major findings to have emerged from studies into the human conceptual system is that abstract concepts are systematically structured in terms of conceptual domains deriving from our experience of the behaviour of physical objects, involving properties like motion, vertical elevation and physical proximity (Lakoff and Johnson 1980, 1999). It seems that the language we use to talk about temporal ideas such as Christmas provides powerful evidence that our conceptual system 'organises' abstract concepts in terms of more concrete kinds of experiences, which helps to make the abstract concepts more readily accessible.

3 What do cognitive linguists do?

As we have begun to see, cognitive linguists form hypotheses about the nature of language, and about the conceptual system that it is thought to reflect. These hypotheses are based on observing patterns in the way language is structured and organised. It follows that a theory of language and mind based on linguistic observation must first describe the linguistic facts in a systematic and rigorous manner, and in such a way that the description provides a plausible basis for a speaker's tacit or **implicit knowledge** of language. This foundation for theorising is termed **descriptive adequacy** (Chomsky 1965; Langacker 1987, 1999a, 2008). This concern is one that cognitive linguists share with linguists working in other traditions. Below, I provide an outline of what it is that linguists do and how they go about it.

3.1 What?

Linguists in general attempt to uncover the systems behind language, to describe these systems and to model them. Linguistic models consist of theories about language. Linguists can approach the study of language from various perspectives. Linguists may choose to concentrate on exploring the systems within and between sound, meaning and grammar, or to focus on more applied areas, such as the evolution of language, the acquisition of language by children, language disorders, the questions of how and why language changes over time, or the relationship between language, culture and society.

For cognitive linguists, much of the impetus for the development of the enterprise arose from attempts to relate the systematicity exhibited by language directly to the way the mind is patterned and structured; in particular, cognitive linguistics emerged from theoretical accounts of **conceptual structure** – the nature of concepts, and the way they are organised and deployed in giving rise to meaning. For cognitive linguists, language cannot be studied independently of conceptual structure, as language reflects fundamental principles of mind design. Hence, models of language must of necessity take account of the mind's internal organisation, as language both reflects the way the mind is organised, and can serve as a window for indirectly studying the mind's organisation. It follows, from this, that there is a close relationship between cognitive linguistics and aspects of cognitive psychology. In addition to this, applied linguistics also informs and is informed by the cognitive linguistics research agenda in various ways. I consider some of the recent applications and extensions of cognitive linguistics in Part V of the book. (see Chapters 3 and 4 for further discussion of this point).

3.2 Why?

Language is a uniquely human capacity, an outcome of cognitively modern human smarts. Indeed, with the advent of the interdisciplinary project, known as **cognitive science**, from the middle of the twentieth century onwards, part of the motivation, for many linguists, in studying language, is because this unique behaviour offers one of the clearest and most compelling ways of directly investigating human **cognition**, or how the mind works. Accordingly, in this endeavour, linguistics sits alongside the other cognitive sciences – philosophy, psychology, neuroscience and artificial intelligence. Each of these disciplines seeks to explain different (and frequently overlapping) aspects of human cognition. In particular, as we have begun to see, cognitive linguists view language as a system that directly reflects conceptual organisation.

3.3 How?

As linguists, we rely upon what language tells us about itself. In other words, it is ordinary language, spoken every day by ordinary people, that makes up the 'raw data' that linguists use to build their theories. Linguists describe language, and on the basis of its properties, formulate hypotheses about how language is represented in the mind. These hypotheses can be tested in a number of ways.

3.4 Speaker intuitions

Native speakers of any given human language will have strong **intuitions** about what combinations of sounds or words are possible in their language, and which interpretations can be paired with which combinations. For example, native speakers of English will agree that example (6), reproduced below, is a grammatically well-formed sentence, and that it may have two possible meanings:

(6) He kicked the bucket.

They will also agree that (7) and (8), also reproduced here, are both well-formed sentences, but that each has only one possible meaning:

(7) He kicked the mop.

(8) The bucket was kicked by him.

Finally, and perhaps most strikingly, speakers will agree that all of the following examples are impossible in English:

(12) a. *bucket kicked he the.
b. *kicked bucket the he.
c. *bucket the kicked he.
d. *kicked he bucket the.

Facts like these show that language, and speakers' intuitions about language, can be seen as a 'window' on the underlying system. On the basis of the patterns that emerge from the description of language, cognitive linguists are able to build theoretical 'models' of language. A model of language is a set of statements that is designed to capture everything we know about this hidden cognitive system in a way that is principled, based on empirical evidence and psychologically plausible.

3.5 Converging evidence

How do cognitive linguists evaluate the adequacy of their models? One way is to consider converging evidence (Langacker 1999a). This means that a model must not only account for the observed linguistic facts; in addition, it must also be consistent with what cognitive scientists know about other areas of cognition. This follows as cognitive linguists posit that linguistic structure reflects cognitive structure and organisation, albeit relatively imprecisely. By way of illustration, consider the scene in Figure 1.5.

How might we deploy language to describe a scene like this? Most English speakers would agree that (13a) is an appropriate description but that (13b) is 'odd', as signalled by the preceding hash symbol (I will use this symbol throughout the book to show that something is potentially semantically anomalous):

(13) a. The cat is on the chair.
     b. #The chair is under the cat.

Why should (13b) be 'odd'? It's a perfectly grammatical English sentence. Given what researchers know about how the human mind works, given findings from psychology, as well as the other cognitive sciences, we know that we have a tendency to focus our **attention** on certain aspects of a visual scene, rather than others. And the aspect of the scene in focus is something we can

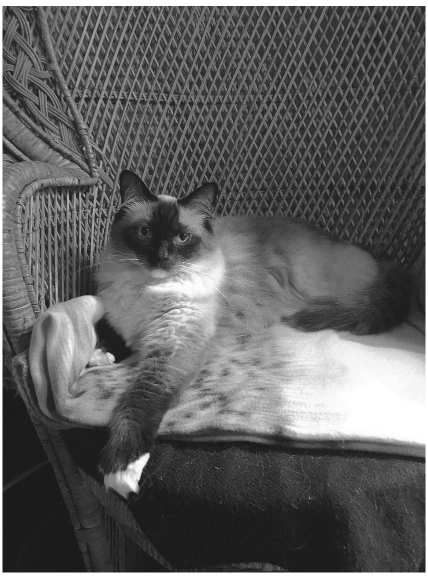


Figure 1.5 *The cat is on the chair*

subsequently make certain predictions about. For example, in Figure 1.5 we have a tendency to focus on the cat rather than the chair, because our knowledge of the world tells us that the cat is more likely than the chair to move, to make a noise or to perform some other act. We call this prominent entity the **figure** and the remainder of the scene the **ground**, which is another way of saying 'background' (see Chapter 3).

Importantly, this fact about human psychology provides us with an explanation for why language 'packages' information in certain ways. In (13a) the cat has a prominent position in the sentence; any theory of language will tell you that **sentence initial position** is a 'special' position in many of the world's languages. This accords with the prominence of the corresponding entity in the visual scene. This explanation, based on the **figure–ground distinction**, also provides us with an explanation for why (13b) is 'odd'. This is an example of how converging evidence works to strengthen or confirm theories of language. Can you think of a situation in which (13b) would not be odd?

4 What it means to know a language (from the perspective of cognitive linguistics)

In this section, I now begin to look more closely at some of the claims made by cognitive linguists concerning how language is represented in the mind. We have established that the linguist's task is to uncover the systematicity behind and within language. So, what kinds of systems might there be within language?

I will begin to answer this question by introducing a fundamental distinction based on the foundational work of pioneering cognitive linguist Leonard Talmy. Talmy suggests that the **cognitive representation** provided by language – the idea, sensation or scene that an utterance is used to convey, ranging from a declaration of undying love to a comment on the weather – is constituted of two component subsystems: the **lexical subsystem** and the **grammatical subsystem**. Consider the following example:

(14) **The** hunter track**ed** **the** tiger**s**.

Notice that certain parts of the sentence in (14) – either whole words (free morphemes, like *the*), or meaningful subparts of words (bound morphemes, like *-ed* and *-s*) – have been marked in boldface. What happens when we alter those parts of the sentence?

(15) a. **Which** hunter track**ed** **the** tiger**s**?
b. **The** hunter track**s** **the** tiger**s**.
c. **Those** hunter**s** track **a** tiger.

All the sentences in (15) are still about some kind of tracking event involving one or more hunter(s) and one or more tiger(s). But, by virtue of altering the 'little' words from (14), with the corresponding, boldfaced elements in (15), including free morphemes like *a*, *the* and *those* and the bound morphemes like -*ed* or -*s*, the event is interpreted in different ways. In particular, these little words convey information about number (how many hunters or tigers are/were there?), tense (did this event happen before now or is it happening now?), old/new information (does the hearer know which hunters or tigers we're talking about?) and whether the sentence should be interpreted as a statement or a question.

The words and morphemes I've marked in boldface in (14) and (15) are known as **closed-class elements**. Moreover, they relate to the grammatical subsystem. The term 'closed-class' refers to the fact that it is typically more difficult for a language to add new members to this set of elements. This contrasts with the non-boldtype 'lexical' words which are referred to as **open-class elements**. These relate to the lexical subsystem. The term 'open-class' refers to the fact that languages typically find it much easier to add new elements to this subsystem and do so on a regular basis.

In terms of the meaning contributed by each of these two subsystems, while 'lexical' words provide 'rich' meaning and thus have a **content function**, 'grammatical' elements perform a **structuring function** in the sentence. They contribute to the interpretation in important but rather more subtle ways, providing a kind of 'scaffolding' which supports and structures the rich content provided by open-class elements. In other words, the elements associated with the grammatical subsystem are constructions that contribute **schematic meaning** rather than rich **contentful meaning**. This becomes clearer when we alter the other parts of the sentence. Compare (14) with (16):

(16) a. The movie star kissed the directors.
b. The sunbeam illuminated the rooftops.
c. The textbook delighted the students.

What all the sentences in (16) have in common with (14) is the 'grammatical' elements. The grammatical structure of all the sentences in (16) is identical to that of (14). We know that both participants in the event can easily be identified by the hearer. We know that the event took place before now. We know that there's only one movie star/sunbeam/textbook, but more than one director/rooftop/student. Notice that the sentences differ in rather a dramatic way, though. They no longer describe the same kind of event at all. This is because the 'lexical' elements prompt for certain kinds of concepts that are richer and less schematic in nature than those prompted for by 'grammatical' elements. The lexical subsystem relates to things, people, places, events, properties of things and so on. The grammatical subsystem, on the other hand, relates to concepts having to do with number, time reference, whether a piece of information is old or new, whether the speaker is providing information or requesting information and so on.

A further important distinction between these two subsystems concerns the way that language changes over time. The elements that comprise the lexical (open-class) subsystem make up a large and constantly changing set

Table 1.1 Properties of the lexical and grammatical subsystems

Lexical subsystem	Grammatical subsystem
Open-class words/morphemes	Closed-class words/morphemes
Content function	Structuring function
Larger set; constantly changing	Smaller set; more resistant to change
Prompts for 'rich' concepts, e.g. people, things, places, properties, etc.	Prompts for schematic concepts, e.g. number, time reference, old vs new, statement vs question, etc.

in any given human language; over a period of time, words that are no longer 'needed' disappear and new ones appear. The 'grammatical' (closed-class) elements that make up the grammatical subsystem, on the other hand, constitute a smaller set, relatively speaking, and are much more stable. Consequently, they tend to be more resistant to change. However, even 'grammatical' elements do change over time. This is a subject we'll come back to in more detail later in the book when I discuss the process known as **grammaticalisation** (see Chapter 27).

Table 1.1 provides a summary of these important differences between the lexical and grammatical subsystems. Together, these two subsystems allow language to present a cognitive representation, encoding and externalising thoughts and ideas.

Having provided a sketch of what it means to know a language from the perspective of cognitive linguistics, I will now begin to examine the cognitive linguistics enterprise in more detail. To do so, we must consider the assumptions and commitments that underlie the cognitive linguistics enterprise, and begin to examine this approach to language in terms of its perspective, assumptions, the cognitive and linguistic phenomena it considers, its research methods and its approach to theory construction. These are issues to which I turn in the next chapter.

SUMMARY

I began this chapter by stating that cognitive linguists, like other linguists, attempt to describe and account for linguistic **systematicity**, **structure** and **function**. However, for cognitive linguists, language reflects patterns of thought; therefore, to study language is to study aspects of **conceptual structure**. In order to explore these ideas in more detail, I looked first at the functions of language. Language provides a means of **encoding** and **transmitting** ideas: it has a **symbolic function** and an **interactive function**. Language encodes and externalises our thoughts by using **symbols**. Linguistic symbols consist of form–meaning pairings termed **symbolic assemblies**. The meaning associated with a linguistic symbol relates to a mental representation termed a **concept**. Concepts derive, in part, from **percepts** – the output of processing, by the brain, across the stimuli harvested from the external world of sense-perception. The meanings encoded by linguistic symbols refer to our **projected reality**: a mental representation of reality as construed by the human mind. While our **conceptualisations** are unlimited in scope, language merely provides prompts for the construction of conceptualisations, also known as **simulations**. Language also serves an **interactive function**; we use it to communicate. Language allows us to perform **speech acts**, or to exhibit **expressivity** and **affect**. Language can also be used to create scenes or contexts; hence, language has the ability to invoke experiential **frames**. In addition, I examined the evidence for a linguistic system, introducing the notion of a conventional **linguistic unit**, which may be a **morpheme**, a **word**, a string of words – such as a **clause** – or a **sentence**. I introduced the notion of **idiomatic meaning** which is available in certain **contexts** and which can be associated with **constructions**. This contrasts with **literal meaning**, which may be derived by unifying smaller constructions such as individual words. Word order constitutes part of an individual's knowledge of particular constructions, a point illustrated by **ungrammatical sentences**. I also related linguistic structure to the systematic structure of thought. Conceptual **domains**, reflected in language, contain and organise related ideas and experiences. Next, I outlined the task of the cognitive linguist: to form hypotheses about the nature of language and about the conceptual system that it reflects. These hypotheses must achieve **descriptive adequacy** by describing linguistic facts in a systematic and rigorous manner. Linguists try to uncover, describe and model linguistic systems, motivated by the drive to understand human **cognition**. Linguistics is therefore one of the **cognitive sciences**. Cognitive linguists carry out this task by examining linguistic data and by relying on native speaker intuitions and converging evidence from empirical methods. As an example of converging evidence, I explored the linguistic reflex of the distinction made in psychology between **figure** and **ground**. Finally, I looked at what it means to know a language, and introduced an important distinction between kinds of linguistic knowledge: the **cognitive representation** provided by language can be divided into **lexical** and **grammatical subsystems**. The lexical subsystem contains **open-class elements** which fulfil a **content function**. The grammatical subsystem contains **closed-class elements**, which fulfil a **structuring function** providing **schematic meaning**.

FURTHER READING

General introductions

- **Croft and Cruse (2004)**. The most advanced general introduction to cognitive linguistics, with especially good coverage of grammatical approaches.

- **Dirven and Verspoor (2004)**. An introductory textbook of general linguistics that takes a cognitive linguistics approach.
- **Lee (2002)**. There are a number of introductory textbooks that provide overviews of cognitive linguistics. This is the most concise, but lacks depth.
- **Ungerer and Schmid (2006)**. The first general cognitive linguistic introduction to be published, now in its second edition. It is accessible and offers especially good coverage of semantic dimensions of cognitive linguistics.

Readers

There are a number of excellent cognitive linguistics ‘readers’: volumes that have selected seminal ‘primary’ research papers, in order to introduce aspects of the cognitive linguistics enterprise.

- **Evans et al. (2007a)**. This is a larger collection, with twenty-seven representative papers organised into seven thematic sections, each with a sectional introduction.
- **Geeraerts (2006a)**. Contains twelve papers by leading figures in the field that each represent a trajectory of research within cognitive linguistics.
- **Goldberg (2011)**. A five volume set containing over seventy-five book excerpts and papers by a wide range of cognitive scientists, which covers territory that includes, as well as extending beyond, cognitive linguistics.

Handbooks

There are four highly recommended handbooks available that specifically focus on cognitive linguistics. A ‘handbook’ consists of overview articles, specifically commissioned to provide objective and representative coverage, and written by leading experts.

- **Dąbrowska and Divjak (2015)**. This volume provides fewer, but slightly more in-depth chapters (thirty-four in total), than the Geeraerts and Cuyckens volume. In addition to overview chapters, an especially invaluable feature of this volume is a section with detailed chapters addressing ‘central topics’ in cognitive linguistics including coverage of space, time, motion, polysemy, typology and argument structure constructions.
- **Dancygier (2017)**. The most recent of the handbooks published by major academic presses. This volume approaches the cognitive linguistics enterprise by examining it from the perspective of major themes. The volume’s forty-one chapters are divided into six themes, focusing on: language in culture and cognition; language, body and multimodal communication; linguistic analysis; conceptual mappings; methodology; and finally coverage of concepts and theories.

- **Geeraerts and Cuyckens (2007)**. This provides the most comprehensive overview of the cognitive linguistics enterprise of the major handbooks. It consists of forty-nine chapters including coverage of basic concepts, models of grammar, language variation, change and use, and applied and interdisciplinary perspectives.
- **Littlemore and Taylor (2015)**. Rather than attempting comprehensive coverage of the enterprise, the editors have invited contributions from leading experts that often approach the same range of topics from distinct and complementary perspectives, for instance chapters on different aspects of conceptual metaphor theory, from different perspectives. This provides an interesting and focused survey of some of the core topics in cognitive linguistics, rather than the breadth afforded by the other handbooks listed here.

Chapter-length introductions

- **Evans et al. (2007b); Geeraerts (2006b)**. These are both useful, single chapter introductions to cognitive linguistics, published, respectively, as the introductory chapters in the first two 'Readers' mentioned above.

Glossary

- **Evans (2007)**. An alphabetic glossary of many of the key terms in cognitive linguistics, featuring cross-referenced explanations, and with examples of the terms.

Texts that relate to the issues dealt with in this chapter

- **Fillmore et al. (1988)**. Seminal article on the relation between idiomaticity and constructions.
- **Lakoff and Johnson (1980)**. An early but hugely influential study which first proposed that language reflects systematic 'mappings' (conceptual metaphors) between abstract and concrete conceptual domains.
- **Langacker (1999a)**. A survey article which deals with the notions of the symbolic (in Langacker's terms 'semiotic') and interactive functions associated with language, the notion of converging evidence, and how cognitive linguistics differs from formal and functional approaches to language.
- **Nuyts and Pederson (1997)**. The first chapter provides a good general discussion of the nature of the relationship between language and thought.
- **Talmy (2000a)**. Chapter 1 deals with the notion of the cognitive representation and the distinction between the lexical (open-class) and grammatical (closed-class) subsystems.
- **Tyler and Evans (2003)**. The first chapter addresses the idea that words are merely impoverished 'prompts' for rich conceptualisation. Includes a detailed discussion and illustration of *The cat jumped over the wall* example.

DISCUSSION QUESTIONS

1. What are the main functions of language? And how does it achieve these functions?
2. How is language organised? And what are the lines of evidence for this?
3. Based on this chapter, what do you consider to be the main avenues of investigation pursued by cognitive linguists?
4. What makes cognitive linguistics distinctive, compared to other approaches to language and mind?

2

Key commitments and research methods

This chapter introduces the assumptions and commitments that make cognitive linguistics a distinctive enterprise. I begin by outlining two key commitments widely shared by cognitive linguists. These are the **Generalisation Commitment** and the **Cognitive Commitment**. These two commitments underlie the orientation and approach adopted by practising cognitive linguists, and the assumptions and methodologies employed in the three main branches of the cognitive linguistics enterprise: cognitive approaches to **conceptual structure**, to **semantics** and to **grammar**. Once I've outlined these two commitments, I then provide an overview of the nature of the research phenomena and research methods deployed in cognitive linguistics. Finally, I provide an overview of the field, with a brief introduction to cognitive linguistics approaches to conceptual structure, semantics and grammar, which are addressed in detail in Parts II, III and IV of the book, respectively.

1 Two key commitments

In an important 1990 paper, George Lakoff, one of the founding 'fathers' of cognitive linguistics, argued that the cognitive linguistics enterprise is characterised by two key commitments. These are:

i) the Generalisation Commitment: a commitment to the characterisation of general principles that are responsible for all aspects of human language, and
ii) the Cognitive Commitment: a commitment to providing a characterisation of general principles for language that accords with what is known about the mind and brain from other disciplines.

These commitments are what imbue cognitive linguistics with its distinctive character, and differentiate it from **formal linguistics** (see Chapter 7). In the following sections I discuss these two commitments and their implications.

2 The Generalisation Commitment

Cognitive linguists make the assumption that there are common structuring principles that hold across different aspects of language; moreover, they further assume that an important function of language science is to identify these common principles. In modern linguistics, the study of language is often separated into distinct areas such as **phonetics** (sound production and reception), **phonology** (sound patterns), **semantics** (word and sentence meaning), **pragmatics** (meaning in discourse context), **morphology** (word structure), **syntax** (sentence structure) and so on. This is particularly true of formal linguistics: a set of approaches to modelling language that posit explicit mechanical devices or procedures operating on theoretical **primitives** in order to produce the complete set of linguistic possibilities in a given language (Evans 2014). Within formal linguistics (such as the Generative Grammar approach developed by Noam Chomsky, e.g. 1965, 2012), it is usually argued that areas such as phonology, semantics and syntax concern significantly different kinds of structuring principles operating over different kinds of primitives. For instance, a syntax **module** is an area – a neurological system – in the mind/brain specialised for structuring words into sentences. In contrast, a phonology component of the mind would be concerned with structuring sounds into patterns permitted by the rules of any given language, and by human language in general. This **modular view of mind** (Fodor 1983) reinforces the idea that modern linguistics is justified in separating the study of language into distinct sub-disciplines, not only on grounds of practicality but because the components of language are wholly distinct and, in terms of organisation, incommensurable.

Cognitive linguists typically acknowledge that it may often be useful, for practical purposes, to treat areas such as syntax, semantics and phonology as being notionally distinct. The study of syntactic organisation involves, at least in part, the study of slightly different kinds of cognitive and linguistic phenomena from the study of phonological organisation. However, given the Generalisation Commitment, cognitive linguists disagree that the modules or subsystems of language are organised in significantly divergent ways, or indeed that distinct modules or subsystems even exist in the mind/brain. Below I briefly consider the properties of three areas of language in order to provide an idea of how apparently distinct language components can be seen to share fundamental organisational features. The three areas I will look at are i) **categorisation**, ii) **polysemy** and iii) **metaphor**.

2.1 Categorisation

An important finding in cognitive psychology is that categorisation is not criterial. This means that it is not an 'all-or-nothing' affair. Instead, human categories often appear to be fuzzy in nature, with some members of a category appearing to be more central and others more peripheral. Moreover, degree of

Figure 2.1 Some members of the category CUP

centrality is often a function of the way we interact with a particular category at any given time.

By way of illustration, consider the images in Figure 2.1. It is likely that speakers of English would select the first image Figure 2.1(a) as being more representative of the category CUP, than image Figure 2.1(e). However, when drinking from the container in Figure 2.1(e), a speaker might refer to it as *a cup*. On another occasion, perhaps when using a spoon to eat soup from the same container, the same speaker might describe it as *a bowl*. This illustrates that not only is categorisation **fuzzy** (for example, when does a cup become a bowl?), but also our interaction with a particular entity can influence how we categorise it.

Although the category members in Figure 2.1 may be rated as being more or less **representative** of the category CUP, each of the members appears to resemble others in a variety of ways, despite the fact that there may not be a single way in which all the members resemble each other. For instance, while the cup in Figure 2.1(a) has a handle and a saucer and is used for drinking beverages such as tea or coffee, the 'cup' in Figure 2.1(d) does not have a handle, nor is it likely to be used for hot beverages such as tea or coffee; instead, this cup is more likely to contain drinks such as wine. Similarly, while the 'cup' in Figure 2.1(e) might be categorised as a 'bowl' when we use a spoon to 'eat' from it, when we hold the 'bowl' to our lips and drink soup from it, we might be more inclined to think of it as a 'cup'. Hence, although the 'cups' in Figure 2.1 vary in terms of how representative they are, they are clearly related to one another. Categories that exhibit degrees of **centrality**, with some members being more or less like other members of a category, rather than sharing a single defining trait, are said to exhibit **family resemblance**, an idea first developed by philosopher Ludwig Wittgenstein (1953).

However, fuzziness and family resemblance are not just features that apply to physical objects like cups; these features apply to linguistic categories such as morphemes and words too. Moreover, **category-structuring principles** of this kind are not restricted to specific kinds of linguistic knowledge but apply across the board. In short, linguistic categories – whether they relate to phonology, syntax or morphology – all appear to exhibit these phenomena.

Formal approaches to linguistics have tended towards the view that a particular category exhibits uniform behaviour which characterises the category. As we shall see, however, linguistic categories, despite being related, often do not behave in a uniform way. Instead, they reveal themselves to contain members which exhibit quite divergent behaviour. In this sense, linguistic categories exhibit fuzziness and family resemblance. I'll illustrate this below – based on discussion in Taylor (2003) – with one example from each of the following areas: morphology, syntax and phonology.

2.1.1 Categorisation in morphology: the diminutive in Italian

In linguistics, the term **diminutive** refers to an affix added to a word to convey the meaning 'small', and is also used to refer to a word formed by the addition of this affix. In Italian the diminutive suffix has a number of forms such as *-ino*, *-etto*, and *-ello*:

(1) paese → paesino
'village' 'small village'

While a common meaning associated with this form is 'physically small', as in (1), this is not the only meaning. In the following example the diminutive signals affection rather than small size:

(2) mamma → mammina
'mum/mom' 'mummy/mommy'

When applied to abstract nouns, the diminutive acquires a meaning of short temporal duration, reduced strength or reduced scale:

(3) sinfonia → sinfonietta
'symphony' 'sinfonietta' (a shorter symphony, often with fewer instruments)

(4) cena → cenetta
'supper' 'light supper'

(5) pioggia → 'pioggerella
'rain' 'drizzle'

When the diminutive is suffixed to adjectives or adverbs, it serves to reduce intensity or extent:

(6) bello → bellino
'beautiful' 'pretty/cute'

(7) bene → benino
'well' 'quite well'

When the diminutive is added to verbs (the verbal diminutive suffixes are *-icchiare* and *-ucchiare*), a process of intermittent or poor quality is signalled:

(8) dormire → dormicchiare
'sleep' 'snooze'

(9) lavorare → lavoricciare
'work' 'work half-heartedly'

(10) parlare → parlucchiare
'speak' 'speak badly' [e.g. a foreign language]

What these examples illustrate is that the diminutive in Italian doesn't have a single meaning associated with it. Instead, it constitutes a category of meanings which behave in a variety of distinct ways; nevertheless, each of the distinct meanings does appear to be related to the others. The category shares a related form and a related set of meanings: a reduction in size, quantity or quality. Hence, the category exhibits family resemblance.

2.1.2 Categorisation in syntax: 'parts of speech'

The received view in linguistics is that words can be classified into **lexical classes** such as 'noun' 'verb', 'adjective' and 'adverb', traditionally referred to as **parts of speech**. According to this view, words can be classified according to their morphological and distributional behaviour. For example, a word formed by the addition of a suffix like *-ness* (for example, *happiness*) is a noun; a word that can take the plural suffix *-s* (for example, *cat-s*) is a noun; and a word that can fill the gap following a sequence of definite article *the* plus adjective *funny* (for example, *the funny <u>clown</u>*) is a noun. In modern linguistics, the existence of word classes is posited not only for practical purposes – to provide us with a tool for descriptive purposes – but also in an attempt to explain how it is that speakers 'know' how to build new words and how to combine words into grammatical sentences. In short, many linguists think that these word classes have psychological reality.

However, when we examine the grammatical behaviour of nouns and verbs, there is often significant variation in the nature of the grammatical 'rules' they observe. This suggests that the categories 'noun' and 'verb' are not homogenous. Rather, certain nouns and verbs are 'nounier' or 'verbier' – and hence more (or less) representative – than others. In this sense, parts of speech constitute **fuzzy categories**.

By way of illustration, consider first the **agentive nominalisation** of **transitive verbs**. A transitive verb is a verb that can take an object, such as *import* (e.g. rugs) and *know* (e.g. a fact). But, while transitive verbs can often be **nominalised** – that is, made into 'agentive' nouns like *driver, singer* and *helper* – some verbs, such as *know*, cannot be:

(11) a. John imports rugs → John is an importer of rugs
b. John knew that fact → *John was the knower of that fact

Now consider a second example. While verbs can often be substituted by the 'be V-able' construction, this does not always give rise to a well-formed sentence:

(12) a. His handwriting can be read → His handwriting is readable
b. The lighthouse can be spotted → *The lighthouse is spottable

Finally, while most transitive verbs undergo **passivisation**, not all do (note: I am using the convention in linguistics of a question mark preceding a sentence to indicate that its grammaticality is marginal; when I use this together with an asterisk, this conveys that for some speakers the sentence is clearly ungrammatical, while for others it may be more marginal):

(13) a. John kicked the ball → The ball was kicked by John
b. John owes five euros → *?Five euros are owed by John

Despite these differences, these verbs do share some common 'verbish' behaviour. For example, they can all take the third person present tense suffix *-s* (*s/he import-s/know-s/read-s/spot-s/kick-s/owe-s* and so on). Thus, while certain verbs fail to display some aspects of 'typical' verb behaviour, this does not mean that these are not part of the category VERB. Rather, this variation shows us that there is not a fixed set of criteria that serves to define what it means to be a verb. The linguistic category VERB contains members that are broadly similar yet exhibit variable behaviour, rather like the physical artefact category CUP.

Now let's consider the linguistic category NOUN. While nouns can be broadly classified according to the morphological and distributional criteria outlined above, they also show considerable variation. For example, only some nouns can undergo what formal linguists call **double raising**. This term applies to a process whereby a **noun phrase** 'moves' from an **embedded clause** to the **subject position** of the **main clause** via the subject position of another embedded clause.

If you are not familiar with the grammatical terms 'noun phrase', 'subject' or '(embedded) clause', the schematic representation in (14) should help. Noun phrases, which are units built around nouns but sometimes consist only of nouns (e.g. in the case of pronouns such as *me* or proper names such as *James Bond*), are shown in boldtype. Square brackets represent the embedded clauses (sentences inside sentences) and the arrows show the 'movement'. Subject positions are underlined:

(14) a. It is likely [__ to be shown [that James has cheated]] →
b. James is likely [__to be shown [__ to have cheated]]

As these examples show, the noun phrase (NP) *James* can only occupy the subject position of a **finite** or **tensed clause**: when the verb appears in its '*to* infinitive' form (for example, *to be/to have*), the NP *James*, which we interpret as the 'doer' of the cheating regardless of its position within the sentence, has to 'move up' the sentence until it finds a finite verb such as *is*. However, some nouns, such as *headway*, do not exhibit the same grammatical behaviour:

(15) a. It is likely [__ to be shown [that no headway has been made]] →
b. *No headway is likely [__ to be shown [__ to have been made]]

My next example of variation in the behaviour of nouns concerns **question tag formation**. This is a process whereby a tag question such as *isn't it?*, *don' t you?*, or *mustn't he?* can be tagged onto a sentence, so that it picks up the reference of some previously mentioned unit. For example, in the sentence: *Bond loves blondes, doesn't he?*, the pronoun *he* refers back to the subject noun phrase, *Bond*. Despite the fact that this grammatical process can apply more or less freely to any subject noun phrase, Taylor (2003: 214) argues that there are nevertheless some dubious cases. For example, the use of a question tag with the noun *heed* is at best marginal:

(16) a. Some headway has been made → Some headway has been made, hasn't it?
b. Little heed was paid to her → ?*Little heed was paid to her, was it?

As we saw with verbs, examples can always be found that illustrate behaviour that is at odds with the 'typical' behaviour of this category. Although most linguists would not consider this variation sufficient grounds for abandoning the notion of word classes altogether, this variation nevertheless illustrates that categories like NOUN and VERB are not uniform in nature, but are **graded** in the sense that members of these categories exhibit variable behaviour.

2.1.3 Categorisation in phonology: distinctive features

One of the fundamental concepts in phonology is the **distinctive feature**: an articulatory feature that serves to distinguish speech sounds. For example, the mental units of sound, known as **phonemes**, /b/ and /p/ are identical in terms of **place** and **manner of articulation**: both are **bilabial** sounds, produced by bringing the two lips together, and both are **plosives**, produced by momentary interruption of the airflow followed by sudden release. That said, the two sounds are distinguished by the single feature **voice**: the phenomenon whereby the vocal folds in the larynx are drawn tightly together and vibrate as air passes through them, which affects the quality of the sound. The speech sound /b/ is **voiced**, whereas /p/ is produced with the vocal folds drawn apart, and is therefore **unvoiced**. This articulatory feature distinguishes many pairs of **consonant sounds** that otherwise have a similar manner and place of articulation, for example: /t/ and /d/, as in *tug* versus *dug*; /k/ and /g/, as in *curl* versus *girl*; and /s/ and /z/, as in *Sue* versus *zoo*.

In phonology, these distinctive features are traditionally viewed as **binary features**: a speech sound can be described in terms of whether it has a positive or a negative value for a certain feature. Binary features are popular in formal linguistics, because they enable linguists to describe units of language by means of a set of properties known as a **feature matrix**. This approach has proven particularly successful in phonology. For example, the sounds /p/ and /b/ can be characterised as follows:

(17)

$$\begin{array}{cc} /\mathrm{p}/ & /\mathrm{b}/ \\ \begin{pmatrix} +\text{ bilabial} \\ +\text{ plosive} \\ -\text{ voice} \end{pmatrix} & \begin{pmatrix} +\text{ bilabial} \\ +\text{ plosive} \\ +\text{ voice} \end{pmatrix} \end{array}$$

However, Jaeger and Ohala (1984) presented research that questions this assumption: that distinctive features are binary in nature. In fact, Jaeger and Ohala found that features like voice are judged by actual users of language as graded or fuzzy categories. Jaeger and Ohala trained naïve speakers of English (that is, non-linguists), so that they could identify sounds according to whether they were [+ voice] or [-voice]. They then asked subjects to rate the English plosives, fricatives, **nasals** and **semi-vowels** in terms of the voice feature. While plosives involve a sudden release of air from the mouth, fricatives are produced by the gradual release of airflow in the mouth: these are sounds like /f/, /v/, /s/, /z/ and so on. Nasals like /m/ and /n/ involve continuous (uninterrupted) airflow through the nose, and semi-vowels like /w/ and /j/ (which is the **International Phonetic Alphabet** – IPA for short – symbol for the sound at the start of *yellow*) involve continuous airflow through the mouth.

The researchers found that these sounds were not consistently judged as either voiced or unvoiced. Instead, some sounds were judged as 'more' or 'less' voiced than others. The 'voice continuum' that resulted from Jaeger and Ohala's study is shown in (18a):

(18) a. ← most voiced   least voiced →
/r,m,n/ /v,ð,z/ /w,j/ /b,d,g/ /f,θ,s,h,ʃ/ /p,t,k/
b. /r,m,n/ /v,ð,z/ /w,j/ /b,d,g/ /f,θ,s,h,ʃ/ /p,t,k/
← voiced →   ← voiceless →

The sounds were rated accurately by Jaeger and Ohala's subjects in the sense that voiced and voiceless sounds do not overlap but can be partitioned at a single point on this continuum, as shown in (18b). However, what is striking is that the subjects judged some voiced sounds (like /m/) as 'more voiced' than others (like /z/). These findings suggest that the phonological category VOICED SOUNDS also behaves like a fuzzy category.

Taken together, the examples I've discussed from the three 'core' structural areas of human language – morphology, syntax and phonology – suggest that the nature of the linguistic categories we find in each can be described in rather similar terms. In terms of categorisation, we can generalise across what are often thought of as wholly distinct kinds of linguistic phenomena.

It is, nevertheless, useful to note that cognitive linguistics is not unique in seeking to generalise across these 'distinct' areas of human language. Indeed, the quest for binary features in formal linguistics is one example of such an attempt. Encouraged by the relative usefulness of this approach in the area of phonology, formal linguists have, with varying degrees of success, also attempted to characterise word meaning and word classes in terms of binary features. This approach reflects an attempt to capture what are, according to many linguists, the fundamental properties of human language: the 'design features' **discreteness** and **duality of patterning** (Hockett 1960; see Evans 2014: Chapter 2, for a discussion of language design features). Broadly, these features refer to the fact that human language is made up of smaller discrete units (such as speech sounds, morphemes and words) that can be combined into larger units (such as morphemes, words and sentences), and that the capacity for varying the patterns of combination is part of what gives human language its infinite creativity (compare *bin* with *nib*, or *Bond loves blondes* with *blondes love Bond*, for example). Thus, different theories of human language are often united in pursuing the same ultimate objectives – here, generalisation – but differ in terms of where and how they seek to reach these objectives.

2.2 Polysemy

Polysemy is the phenomenon whereby a single linguistic unit exhibits multiple distinct, yet related, meanings. Traditionally, this term is restricted to the area of word meaning (**lexical semantics**), where it is used to describe words like *body* which has a range of distinct meanings that are nevertheless related (for example, the human body; a corpse; the trunk of the human body; the main or central part of something). Polysemy is contrasted with **homonymy**, where two words are pronounced and/or spelt the same way, but have distinct meanings (compare *sole* with *soul*, for example, which are pronounced the same way but which no speaker of English would be likely to judge as having related meanings).

Cognitive linguists argue that polysemy is not restricted to word meaning but is a fundamental feature of human language. According to this view, the 'distinct' areas of language all exhibit polysemy. Cognitive linguists therefore view polysemy as a key to generalisation across a range of ostensibly different phenomena, and argue that polysemy reveals important, and fundamental commonalities between lexical, morphological and syntactic organisation.

2.2.1 Polysemy in the lexicon: over

I begin by considering evidence for polysemy at the level of lexical organisation. To do so, I examine the much-studied English preposition *over*. Consider the following examples:

(19) a. The picture is over the sofa. ABOVE
b. The picture is over the hole. COVERING
c. The ball is over the wall. ON-THE-OTHER-SIDE-OF
d. The government handed over power. TRANSFER
e. She has a strange power over me. CONTROL

These sentences illustrate various senses of *over*, which are listed to the right. While each **sense** is distinct, they can all be related to one another; they all derive from a central 'above' meaning. I will explore this point in more detail later in the book (see Chapter 17).

2.2.2 Polysemy in morphology: agentive -er suffix

Just as words such as *over* exhibit polysemy, so do morphological categories. Consider the bound morpheme *-er*, the agentive suffix that I discussed briefly, earlier in the chapter:

(20) a. teacher b. villager c. toaster d. best-seller

In each of the examples in (20), the *-er* suffix adds a slightly different meaning. In (20a) it conveys a human agent who regularly, or by profession, carries out the action designated by the verb, in this instance *teach*. In (20b), *-er* relates to a person who lives in a particular place, here a village. In (20c) *-er* relates to an artefact that has the capacity designated by the verb, here *toast*. In (20d) *-er* relates to a particular quality associated with a type of artefact, here the property of selling successfully. Each of these usages is distinct: a teacher is a person who teaches; a villager is a person who dwells in a village; a toaster is a machine that performs a toasting function; and a best-seller is an artefact such as a book that has the property of selling well. Despite these differences, these senses are intuitively related in terms of sharing, to a greater or lesser degree, a defining functional ability or attribute: the ability to teach; the attribute of dwelling in a specific location; the 'ability' to toast; and the attribute of selling well. This demonstrates the capacity of a morphological category to exhibit polysemy.

2.2.3 Polysemy in syntax: ditransitive construction

Just as lexical and morphological categories exhibit polysemy, so do syntactic categories. For instance, consider the **ditransitive construction**, discussed by Goldberg (1995). This construction has the following syntax:

(21) Subject Verb Object1 Object2

The ditransitive construction also has a range of conventional abstract meanings associated with it, which Goldberg characterises in the terms shown in (22). Note, for the time being, that terms like **Agent**, **Patient**, and **Recipient** are labels for **semantic roles**, a topic to which I'll return in Part IV of the book.

(22) a. Sense 1: AGENT successfully causes RECIPIENT to receive PATIENT instantiated by verbs that inherently signify acts of giving (e.g. *give*, *pass*, *hand*, *serve*, *feed* and so on).
e.g. *The Quartermaster gave James a Walther PPK*

b. Sense 2: conditions of satisfaction imply that AGENT causes RECIPIENT to receive PATIENT
instantiated by verbs of giving with associated satisfaction conditions (e.g. *guarantee*, *promise*, *owe*)
e.g. *James promised Moneypenny a date*
c. Sense 3: AGENT causes RECIPIENT not to receive PATIENT
instantiated by verbs of refusal (e.g. *refuse*, *deny*)
e.g. *Bond refused Bloefeld the code*
d. Sense 4: AGENT acts to cause RECIPIENT to receive PATIENT at some future point in time
instantiated by verbs of future transfer (e.g. *leave*, *bequeath*, *allocate*, *reserve*, *grant*)
e.g. *James' parents left him the Skyfall estate*
e. Sense 5: AGENT enables RECIPIENT to receive PATIENT
instantiated by verbs of permission (e.g. *permit*, *allow*)
e.g. *M permitted Bond a licence to kill*
f. Sense 6: AGENT intends to cause RECIPIENT to receive PATIENT
instantiated by verbs involved in scenes of creation (e.g. *bake*, *make*, *build*, *cook*, *sew*, *knit*)
e.g. *Moneypenny baked James the cake*

While each of the abstract senses associated with 'ditransitive' syntax are distinct, they are clearly related: they all concern volitional transfer, although the nature of the transfer, or the conditions associated with the transfer, vary from sense to sense. I will discuss constructions like this in more detail in Part IV of the book when I address cognitive linguistics approaches to grammar, especially the **construction grammar** perspective.

In sum, as we've seen in the case of categorisation, cognitive linguists argue that polysemy is a phenomenon common to 'distinct' areas of language. Both 'fuzzy' categories and polysemy, then, are characteristics that unite all areas of human language and thus enable generalisation within the cognitive linguistics framework.

2.3 Metaphor

Cognitive linguists also argue that metaphor is a central feature of human language. As we saw in the previous chapter, conceptual metaphor is the phenomenon whereby one conceptual domain is systematically structured in terms of another (see also Chapter 12). One important feature of conceptual metaphor is **meaning extension**. That is, metaphor can give rise to new meaning. Cognitive linguists argue that metaphor-based meaning extension can also be identified across a range of 'distinct' linguistic phenomena, and that conceptual metaphor therefore provides further evidence in favour of generalising across the 'distinct' areas of language. In this section I consider the lexicon and syntax.

2.3.1 Metaphor in the lexicon: over (again)

In the previous section I observed that the preposition *over* exhibits polysemy. One question that has intrigued cognitive linguists concerns how polysemy is motivated: how does a single lexical item come to have a multiplicity of distinct yet related meanings associated with it? Lakoff (1987) has argued that an important factor in motivating meaning extension, and hence the existence of polysemy, is conceptual metaphor. For instance, he argues that the CONTROL meaning of *over* that we saw in (19e) derives from the ABOVE meaning by virtue of conceptual metaphor. This is achieved via application of the conceptual metaphor CONTROL IS UP. This conceptual metaphor is illustrated by (23):

(23) a. I'm *on top* of the situation.
b. She's at the *height* of her powers.
c. His power *rose*.

These examples illustrate that POWER or CONTROL is being understood in terms of greater elevation (UP). In contrast, lack of power or lack of control is conceptualised in terms of occupying a reduced elevation on the vertical axis (DOWN), as shown by (24):

(24) a. Her power is on the *decline*.
b. He is *under* my control.
c. He's *low* in the company *hierarchy*.

By virtue of the independently motivated conceptual metaphor CONTROL IS UP, the lexical item *over*, which has an ABOVE meaning conventionally associated with it, can be understood metaphorically as indicating greater control. Through frequency of use, the meaning of CONTROL becomes conventionally associated with *over* in such a way that *over* can be used in non-spatial contexts such as (19e), where it acquires the CONTROL meaning.

2.3.2 Metaphor in syntax: the ditransitive (again)

One of the observations that Goldberg (e.g. 1995) makes in her analysis of the ditransitive construction is that it typically requires a volitional AGENT in the subject position. This is because the meaning associated with the construction is one of *intentional* transfer. Unless there is a sentient AGENT who has the capacity for intention, then one entity cannot be transferred to another. However, we do find examples of this construction where the subject (in square brackets) is not a volitional AGENT:

(25) a. [The rain] gave us some time.
b. [The missed ball] handed him the victory.

Goldberg has argued that examples such as these are extensions of the ditransitive construction, and are motivated by the existence of the conceptual metaphor CAUSAL EVENTS ARE PHYSICAL TRANSFERS. Evidence for this metaphor comes from examples such as the ones in (26), which illustrate that we typically understand abstract causes in terms of physical transfer:

(26) a. David Beckham put a lot of swerve on the ball.
b. She gave me a headache.

In these examples causal events like causing a soccer ball to swerve, or causing someone to have a headache, are conceptualised as the transfer of a physical entity. Clearly the former English soccer star, David Beckham, with his celebrated ability to 'bend' a football around defensive walls, cannot literally put 'swerve' on a ball; 'swerve' is not a physical substance that can be 'put' anywhere. Yet, we have no problem understanding what this sentence means. And this is because our **conceptual systems** – our repository of concepts – are conventionally organised such that we understand causal events, metaphorically, in terms of physical transfer: we understand the event caused by David Beckham *in terms of* a transfer of energy – Beckham causes the ball to swerve by metaphorically *putting* swerve on the ball.

Goldberg argues that it is due to this conceptual metaphor that the ditransitive construction, which normally requires a volitional AGENT, can sometimes have a non-volitional subject such as *The rain*, or *The missed ball*. The metaphor licenses the extension of the ditransitive so that it can be used with non-volitional AGENTS.

To conclude the discussion so far, this section has introduced the perspective, adopted by cognitive linguists, that various areas of human language share certain fundamental organising principles. This perspective is enshrined in the Generalisation Commitment adopted by cognitive linguists. One area in which this approach has achieved considerable success is in uniting the lexical system with the grammatical system, providing a unified theory of grammatical and lexical structure. As we will see in Part IV, cognitive linguistics approaches to grammar treat lexicon and syntax not as distinct components of language, but instead as a continuum. However, the relationship between phonology and other areas of human language has only more recently begun to be explored from a cognitive perspective (see in particular Nathan 2008, and Nesset 2008 for seminal treatments). For this reason, while aspects of the foregoing discussion serve to illustrate some similarities between the phonological subsystem and the other areas of the language system, I shall have relatively little to say about phonology in the remainder of this book.

3 The Cognitive Commitment

We saw above that the Generalisation Commitment leads to the search for principles of language structure that hold across all aspects of language. In related fashion, the Cognitive Commitment represents the view that principles of linguistic structure should reflect what is known about human cognition from other disciplines, particularly the other cognitive sciences (philosophy, psychology, artificial intelligence and neuroscience). Hence, it follows from the Cognitive Commitment that language and linguistic organisation should reflect general cognitive principles rather than cognitive principles that are specific to language.

Accordingly, cognitive linguistics rejects the modular theory of mind that I mentioned above (section 2; see also Chapter 7). Modularity of mind is associated particularly with formal linguistics, but is also explored in other areas of cognitive science such as philosophy and cognitive psychology, and holds that the human mind is organised into distinct 'encapsulated' modules of knowledge, one of which is language (see Evans 2014: Chapter 6, for a critique). While there are different versions of the modularity thesis, in general terms, modules are claimed to 'digest' raw sensory input in such a way that it can then be processed by the central cognitive system (involving deduction, reasoning, memory and so on). Cognitive linguists specifically reject the claim that there is a distinct **language module**, which asserts that linguistic structure and organisation are markedly distinct from other aspects of cognition. Below I present three lines of evidence that, according to cognitive linguists, substantiate the view that linguistic organisation reflects more general aspects of cognitive function.

3.1 Attention: profiling in language

One very general cognitive ability that human beings possess is **attention**, together with the ability to shift attention from one aspect of a scene to another. For instance, when watching a tennis match we can variously attend to the umpire, the flight of the ball back and forth, one or both of the players or parts of the crowd, zooming 'in and out' so to speak. Similarly, language provides ways of directing attention to certain aspects of the scene being linguistically encoded. This general ability, manifest in language, is called **profiling** (Langacker 1987, among others; see also Talmy's (2000a) related notion of **attentional windowing**).

One important way in which language exhibits profiling is in the range of grammatical constructions it has at its disposal, each of which serves to profile different aspects of a given scene. For instance, given a scene in which a boy kicks over a vase causing it to smash, different aspects of the scene can be linguistically profiled:

(27) a. The boy kicks over the vase.
b. The vase is kicked over.
c. The vase smashes into bits.
d. The vase is in bits.

In order to discuss the differences between the examples in (27), I will be relying on some grammatical terminology. I shall explain all terms briefly, as I introduce them.

The aspects of the scene profiled by each of these sentences are represented in Figure 2.2. Figure 2.2(a) corresponds to sentence (27a). This is an **active sentence** in which a relationship holds between the initiator of the action (*the boy*) and the object that undergoes the action (*the vase*). Hence, the boy is the AGENT and the vase is the PATIENT. In Figure 2.2(a) both AGENT and PATIENT are represented by circles. The arrow from the AGENT to PATIENT represents the **transfer of energy**. This reflects the fact that the AGENT is acting upon the PATIENT. Moreover, both AGENT and PATIENT, as well as the energy transfer, are represented in bold. This captures the fact that the entire **action chain** is being profiled, which is the purpose of the active construction.

Now let's compare sentence (27b). This is a **passive sentence**, and is represented by Figure 2.2(b). Here, the energy transfer and the PATIENT are being profiled. However, while the AGENT is not mentioned in the sentence, and hence is not in profile, it must be understood as part of the background. After all, an action chain requires an AGENT to instigate the transfer of energy. To represent this fact, the AGENT is included in Figure 2.2(b), but is not featured in bold, reflecting the position that the AGENT is contextually understood but not in profile.

The third sentence, example (27c), profiles the change in the state of the vase: the fact that it smashes into bits. This is achieved via a **subject-verb-complement construction**. A complement is an obligatory element that is required by another element in a sentence to complete its meaning. In (27c), the complement is the expression *into bits*, which completes the meaning of the expression *smashes*. This is captured by Figure 2.2(c).

In Figure 2.2(c) it is the internal change of state of the vase that is profiled. The arrow within the circle (the circle depicts the vase) shows that the vase is undergoing an internal change of state. The state the vase is 'moving to' is represented by the box with the letter 'b' inside it. This stands for the state 'in bits'. In this diagram, the entity, the change of state and the resulting state are all in bold, reflecting the fact that all these aspects of the action chain are being profiled by the corresponding sentence.

Finally, consider sentence (27d). The grammatical form of this sentence is the **subject-copula-complement construction**. The copula is the verb *be*,

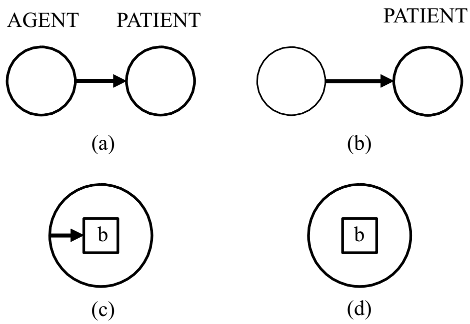


Figure 2.2 Profiling

which is specialised for encoding a particular state. In this case the state is 'in bits', which is captured in Figure 2(d).

In sum, each of the constructions – active, passive, subject-verb-complement and subject-copula-complement – is specialised for profiling a particular aspect of an action chain. In this way, linguistic structure reflects our ability to attend to distinct aspects of a scene. These examples demonstrate how linguistic organisation reflects a more general cognitive ability: attention.

It is worth observing, at this point, that constructions of the kind I have just discussed are not restricted to encoding a canonical action chain (one involving the transfer of energy). For example, the active construction can often be applied in cases where an action is not involved. Consider **stative verbs**, such as *own*. A stative verb encodes a relatively stable state that persists over time. This verb can appear in active or passive constructions, even though it describes a state rather than an action:

(28) a. Tim owns the barber shop in Conwy. [active]
b. The barber shop in Conwy is owned by Tim. [passive]

In Part IV of the book, I will return in more detail to the issue of grammatical constructions, and the range of meanings associated with them.

3.2 Categorisation: fuzzy categories

We saw above that entities such as cups constitute fuzzy categories: they contain members that are more or less representative of the category. This results in a set of members related by family resemblance, rather than a single criterial feature, or a limited set of criterial features possessed by every member of the category. Categories formed by the human mind are rarely 'neat and tidy' it seems. We also saw that fuzzy categories are a feature of language in that members of linguistic categories, despite important similarities, often exhibit quite distinct behaviour. According to the cognitive linguistics perspective, the same principles that hold for categorisation in general also hold for linguistic categorisation.

3.3 Metaphor

As we began to see in the previous chapter, and as we will see in further detail in Chapter 12, the view adopted in cognitive linguistics is that metaphor is a conceptual rather than a purely linguistic phenomenon. Moreover, the key proponents of the conceptual metaphor approach, George Lakoff and Mark Johnson (1980, 1999), argue that many of the ways in which we think and act are fundamentally metaphorical in nature.

For instance, we conceptualise institutions such as governments, universities and businesses in terms of a hierarchy. Diagrams of such institutions place the person with the highest rank at the top or 'head', while the person with the lowest rank is placed at the lowest point or 'bottom'. In other words, hierarchies are conceptualised and represented non-linguistically in terms of the conceptual metaphor: CONTROL/POWER IS UP.

Just as conceptual metaphors such as CONTROL IS UP show up in a range of 'dimensions' of expression – such as social organisation, pictorial representation or gesture, among others – we have begun to see that they are also manifest in language. The English preposition *over* has a conventional CONTROL meaning associated with it, precisely because of meaning extension due to the conceptual metaphor CONTROL IS UP.

In the foregoing discussion, I have explored three ways in which aspects of general cognition show up in language. Evidence of this kind forms the basis of the cognitive linguistics argument that language reflects generalised cognition.

4 Research methods

The purpose of academic research is to produce new knowledge, and consequently, to enhance the field of study in which the researcher is working. Good research should produce an original contribution – one that, in some way, extends the knowledge base within which the researcher is operating. Research is commonly assessed in terms of its **significance** – how and in what way it extends this knowledge base – its **originality** – what is new and fresh about the research – as well as its **rigour** – the degree to which the research was well-conceived, conducted and reported. In this section, I consider the research methods deployed by cognitive linguists in achieving this goal.

4.1 Phenomena studied by cognitive linguistics

In general terms, the research focus of cognitive linguistics can be divided into **theoretical** and **applied**. Theoretical research in cognitive linguistics is concerned with the study of language for its own sake, as noted in Chapter 1, in order to better understand its nature and organisation. Applied research in cognitive linguistics has been concerned, among other things, with the uses to which language is put, with a focus on issues such as (sociolinguistic) variation, ideological or belief systems underpinning language use, language in specific contexts or genres (for instance, literature and political or advertising discourse), and the nature and use of language in specific populations (such as children acquiring their mother tongue, bilingual and multilingual communities), including atypical populations (such as individuals suffering from language pathologies of various kinds). Applied cognitive linguists have also investigated language use for specific purposes (such as the teaching of English to non-native speakers).

Like language scientists of various stripes, cognitive linguists investigate patterns in language use, in order to reveal the nature of the grammatical, semantic and phonological organisation that exists in language in general, as well as within a single language – for instance, the repository of grammatical constructions that constitute a single language, as well as similarities and divergence in terms of constructions across languages. One major aim has been to build a model of what the general properties of a mental grammar must consist of, as well as describing the mental grammars that exist for specific languages. But given the primary commitments of the cognitive linguistics enterprise, cognitive linguists have sought to develop models that are both psychologically plausible and generalisable, as well as ones that reflect the nature of human embodied experience. The focus on linguistic structure and organisation encompasses both spoken as well as signed languages.

Cognitive linguists also consider the contextual and interactional (pragmatic) factors that influence and, indeed, underpin language structure, and use, including the co-timed gestures that accompany spoken language, as well as facial expressions, eye gaze, body posture and other visual cues that contribute to situationally mediated meaning construction.

But for cognitive linguists, while language reflects embodied cognition, it also, accordingly, provides a means of investigating the nature of **conceptual structure** – the patterns of knowledge representation, and the meaning construction processes that inhere in the mind. Hence, a significant focus of cognitive linguistic research has been on the nature and structure of thought. In short, cognitive linguists have deployed language as a means of investigating the nature of the human mind, and specifically the conceptual system – the nature and structure of non-linguistic knowledge – concepts – which language helps to encode and externalise. Hence, while cognitive linguists study the nature of language, as an outcome of **embodied cognition** (see Chapter 8 for full details), they also investigate cognitive structure and organisation, using language and other data and phenomena to draw inferences about the sorts of processes and representations that both enable linguistic communication, including meaning construction, as well as studying the human mind for its own sake.

4.2 Research methods in cognitive linguistics

A **research method** provides a principled mechanism for conducting research. But what drives the research process, and thus, in significant part, determines the research method is a problem, or question – the **research question** – that an appropriately selected method, or methods, can help answer. Without a clear research question, an appropriate method – or confection of methods – can't be selected; in short, the appropriate research method is determined by the research question, not the other way around. Hence, it is essential to be clear on what is being asked before deciding on the way in which to approach the research.

A research method has two components. First, it often involves a particular **technique** for generating or capturing data. And second, this technique is accompanied by an **analytic procedure** to facilitate analysis of the data generated or captured. Moreover, typically, the method is deployed in the context of a specific **theoretical framework**, that makes predictions (or **hypotheses**), which the research method aims to test. In this section, some of the most common methods, deployed in cognitive linguistics, are briefly surveyed, to provide an overview of their various merits, and the sorts of phenomena they are best-suited to investigating. Moreover, none of the methods discussed below is mutually exclusive – all have advantages, as well as limitations. And more often than not, several methods, including the mixing of data collection techniques and analytic strategies from different research methods, are used in order to provide **converging evidence** for a particular analysis of a phenomenon (as discussed in the previous chapter). For instance, a common strategy, in cognitive linguistics, is to deploy the introspective method, supplemented by evidence from another method, such as corpus or behavioural studies, all discussed below, in order to support a particular descriptive analysis or theoretical claim.

4.2.1 Introspective method

The **introspective method** is characterised by the analyst using his or her own native or near-native expertise in a particular language, and drawing conclusions based on that expertise. In short, introspection involves the conscious reflection, by the analyst, on data generated or collected, making explicit use of his or her first-hand knowledge in order to answer the research question.

While data collection techniques vary, one of the most common, and certainly the most common amongst theoretical linguists outside the domains of functional and cognitive linguistics, has been to use **contrived data**. Contrived data constitutes a data set that is generated by the analyst, based on his or her own language expertise. In short, this is data that while being novel, or 'made up', is typically naturalistic. For instance, to ascertain generalisations as to the distinction between, for instance, count versus mass nouns in English, we can generate contrived data of the following sort:

(29) a. The cat has a tail.
b. A cat has a tail.

(30) a. The water is comprised of H_20 molecules.
b. *A <u>water</u> is comprised of H_20 molecules.

In these examples, we can examine the divergent grammatical behaviour of two nouns – *cat* and *water* – by generating novel sentences, in order to compare and contrast the behaviour of the nouns across similar contexts of use. And from this, we see that *water* cannot take the indefinite article, evidenced by the ungrammaticality of (30b) – the hallmark of a mass noun – while *cat* can – the hallmark of a count noun.

But introspection can also proceed by making use of **attested data** – data that has been recorded or captured from **usage-contexts** – situations in which the specific linguistic data was actually uttered – or deployed, in the case of non-spoken modalities. For instance, introspection can apply to data collected by **sampling** across such usage-contexts. Sampling might include using data that was recorded either in a written form – for instance, data harvested by conducting an Internet search, searching in a dictionary, or from a written text, such as a newspaper article. Or it might involve sampling data from an audio recording of spoken language. Data can also be sampled from other sources, such as from a completed questionnaire, distributed to participants, or based on **participant-observation** – a technique in which the analyst is party to the interaction from which the data is to be sampled.

Nevertheless, whatever the data source, the analytic strategy involves conscious reflection, on the part of the analyst, using his or her own expert knowledge of the language in question as a basis for the analysis. There are potentially a number of ways in which this can proceed. The two most common analytic strategies involve **native-speaker intuition**, and the second, application of **analytic principles**.

Native-speaker intuition has, since the second half of the twentieth century, become the most common introspective analytic strategy deployed in the field of linguistics. This strategy involves the analyst applying his or her knowledge of the language to make judgements about the data. A common example of this concerns so-called **grammaticality judgements**. Consider the following examples:

(31) a. *The afraid soldier
b. The scared soldier

The examples in (31) constitute a type of **minimal pair**: the examples vary in a minimal way – the presence of the adjectives *afraid* versus *scared*. A native speaker can apply his or her intuitions about the grammaticality of these expressions – whether they are grammatically well-formed – in the same linguistic context, in order to build a picture of the generalisations that underlie the use of these adjectives: on the basis of the examples in (31) *afraid* is **ungrammatical** before a bare noun, as signalled by the asterisk in (31a), while *scared* is not. Note, however, that the use of the asterisk provides a means of recording a particular native-speaker intuition: for the native speaker in question, me, I judge the use of *afraid* in (31a) to render the expression ungrammatical. That said, grammaticality judgements can be a matter of degree, as illustrated earlier, and may vary across native speakers, and across different communities or dialects of the same language.

Another use of intuition relates to **semanticality judgements** – whether an utterance is semantically well-formed. Consider the following examples:

(32) a. Malcolm began the novel.
b. #Malcolm began the dictionary.

As noted in the previous chapter, the hash sign, preceding the example in (4a), indicates that I judge that particular sentence to be semantically infelicitous: a dictionary is a work of reference that is not, typically, read from cover to cover in the same way that a novel is. Nevertheless, semanticality judgements may also vary – both across speakers, and also across contexts of use. For instance, the 1950s American civil rights leader Malcolm X famously read a dictionary, while in prison, from cover to cover, having nothing else to read. And in that context, the use of *began* now becomes **felicitous** – semantically acceptable.

The second analytic strategy involves application of analytic principles. Typically, this strategy involves comparison across a set of carefully constructed, or harvested, linguistic examples using what might be termed 'discovery' principles that drive the analysis. In cognitive linguistics, a well-known example of this is the procedure developed under the aegis of **Principled Polysemy** (Evans 2004; Tyler and Evans 2003). This procedure provides, essentially, a set of criteria, applied in a particular way, for determining whether a given instance of use of a lexical item constitutes a distinct **sense-unit** – informally a meaning – or not. Consider the following examples:

(33) a. The picture is over the table.
b. The tablecloth is over the table.
c. The clouds are over the sun.

The procedure, as developed by Tyler and Evans (2003), involves a number of steps – described in detail in Chapter 17 – in order to ascertain whether the uses of *over* in each of these examples count as distinct senses. The conclusion, based on the Principled Polysemy procedure, is that while (33a and b) constitute instances of an 'above' sense-unit for *over*, the example in (33c) derives from a 'covering' or 'occlusion' sense-unit: unlike *the picture* (33a) and *the tablecloth* (33b), *the clouds* in (33c) are not above, but rather below the sun – from our earth-bound perspective – and hence the sun is occluded from view.

In contexts where the analyst is not an expert in the language being studied, then native-speaker **informants** have to be used whose introspection can be harnessed by the analyst – the informant must be native in the language being investigated, and fluent in the analyst's language; or a different method must be deployed, for example **distribution analysis** – the use of substitution techniques – associated most notably with Zellig Harris (e.g. 1954), for grammatical analysis; distribution analysis was developed in the 1940s and 1950s in order to enable linguists who were not experts in the language under scrutiny to investigate the grammatical patterns of other languages.

One major advantage of using introspection is that the analyst can construct carefully controlled sets of data, which vary in minimal ways, in order to examine the range of grammatical and semantic patterns that underpin the data. These findings can then be used to form hypotheses, which, ideally, should then be tested using other methods more suited to empirically verifying the psychological reality of the claims made.

For instance, conceptual metaphor theory, as developed by its original architects, Lakoff and Johnson, makes use of introspection. But as mentioned later, in Chapter 4, conceptual metaphors can only ever be inferred from the linguistic data alone: while the linguistic data provides one, albeit important, line of evidence for their existence, conceptual metaphors are claimed to constitute non-linguistic knowledge structures – stable mappings that persist in long-term memory. Hence, other methods are required to substantiate the hypotheses – claims for the existence of specific conceptual metaphors – posited on the basis of linguistic data. One method that has been deployed – and that is well-suited to probing the psychological reality of conceptual metaphors – is the behavioural method, which is discussed below.

A second and important advantage of using introspection is that it provides a ready and accessible means of conducting research: it's 'cheap', in the sense that no outlay is required in terms of equipment, and in terms of time: **human subjects** aren't required. The analyst is able to tap into his or her own introspective reflection, in order to conduct the analysis.

But these advantages also entail some disadvantages. For one thing, as cognitive linguists often do use linguistic data to infer patterns in conceptual structure – a level of conceptual representation that is distinct from language – the analyses, based on introspection, can be unreliable. One famous example is the analysis of the radial category for *over*, described in Lakoff (1987), and reviewed in Chapter 17. The central sense-unit, for instance, that Lakoff claims for *over* appears not to be supported by the empirical data deriving from psycholinguistic behavioural tasks (Tyler 2012; Tyler and Evans 2003). In part, this may be due to flaws in the analytic procedure (as claimed by Tyler and Evans 2003); but it may also be because introspection is not as adept as pinning down conceptual structure as some other methods.

Another disadvantage is that introspection, especially when coupled with contrived data, may not be fully representative of the linguistic facts: an analyst using introspection and sampling using contrived data may not fully generate all the relevant examples, being reliant on his or her intuitions and self-conscious reflection. In this case, the corpus method, discussed below, can assist, both in generating representative usage-based data, as well as facilitating the testing of hypotheses generated on the basis of introspection.

4.2.2 Audio-visual method

The **audio-visual method** deploys audio or audio-visual recording of particular encounters and interactions in order to collect data. The analytic procedure is based on careful and close attention and description of the resulting **transcription** – in the case of audio-analysis – and in the case of audio-visual analysis, the transcription plus the resulting visual images. Instrumentation, such as computers, are often used in order to facilitate precise timing of, for instance, speech–gesture segments, timing of turn-taking moves during interaction, as well equipment specialised for careful and precise acoustic analysis.

One significant advantage of this method is that it enables the study of phenomena that are not available to introspection alone. For example, audio-visual recording enables not just the analysis of the spoken text, but in addition the vocal dynamics, such as prosody and intonation, gesture, body language, facial expression, gaze direction and so on. And consequently, it provides a method that can access phenomena that other methods cannot as effectively reveal.

The emergence of gesture, as an important arena for investigation, in cognitive linguistics – see Chapter 30 – is facilitated by the audio-visual method.

For example, Núñez and Sweetser (2006) provide an audio-visual analysis of the co-timed gestures that accompany speech. And this method provides converging evidence for the nature of the space-to-time conceptual metaphors that exist in Aymara, on the basis of the linguistic data. Hence, while the audio-visual method is well-suited to studying gesture, and its role in the meaning-construction process, and what it shows about the nature, and possibly, the origins of language, it can also be used to supplement and indeed complement a linguistic analysis.

Another advantage is, self-evidently, that the data captured by the audio-visual method is naturalistic; moreover, longer stretches of discourse are available for analysis. This enables greater scope for a more detailed analysis than is possible using, for instance, contrived data.

Despite its significant advantages, the audio-visual method is necessarily limited, in terms of the generalisations that it can be used to support; after all, the data generated by this method are tied to the specific encounters and interactions that are recorded. Hence, it is sometimes used in conjunction with other methods, including introspection.

4.2.3 Corpus method

The **corpus method** uses, typically, computer-aided techniques for capturing large amounts of data. The data is naturalistic, and usually, although not inevitably, in a written form. The analytic procedure involves **tagging** (parts of) linguistic examples, often using a computer software suite, which then enables analysis of the linguistic units founds in the corpus. While a corpus doesn't include the sorts of expressive accompaniments available from the audio-visual method, it does provide large amounts of naturalistic data, which provides a good basis for forming generalisations about the linguistic data.

Moreover, as a corpus involves a large-scale collection of data, it enables analysis of the **frequency** with which particular constructions are used, as well as how, exactly, they are instantiated across different contexts of use. As cognitive linguists place great store on frequency, as a predictor of a mental grammar – as will be seen in Chapter 5 – this provides cognitive linguists with an important method which can be used alone, or in conjunction with other methods. Consequently, the significant advantage of this method is that it enables the discovery of the range of alternative realisations – **alternations** – that linguistic units can participate in – for instance, consider the following examples, based on (31), above:

(34) a. *The afraid soldier
     b. The soldier who is afraid.

This example illustrates an alternation for the adjective *afraid*. The corpus method enables ready identification of such alternations – as we saw earlier, *afraid* can't be used grammatically before a bare noun; but the further example in (34b) reveals that it can be used, to describe the noun, following a relative pronoun. As we saw above, the introspection method cannot, usually, generate the full range of linguistic alternations in evidence, hence the utility of the corpus method.

4.2.4 Behavioural method

The **behavioural method**, sometimes also referred to as the **experimental method**, involves presenting subjects with carefully constructed stimuli, or instructions, and monitoring or recording the behaviour of the subjects in response. The method usually involves controlling a set of stimuli focusing on one cognitive **variable** – the phenomenon being investigated – while carefully eliminating potential interference from other so-called **confounding variables**: variables that might otherwise interfere with the subjects' performance in terms of the specific variable being investigated.

The data captured or observed, in this method, is the behavioural response to the stimuli. This is often achieved via the use of instrumentation, such as an eye-tracking scanner, which monitors eye gaze direction, saccades and so on, during reading comprehension, or the use of a computer to present and record stimuli during experiments. Comprehension time can be recorded, with the aid of computers, down to the level of milliseconds. Capturing data of this sort, in real time, enables the analyst to record behavioural responses **on-line** – which is to say, in real time – as the language user is interacting with the stimuli being presented in the experiment.

However, the behavioural method can also use other strategies to present and record **off-line** behavioural responses. These are responses that allow the subject to reflect on the material presented before responding, attempting to tap into, for instance, native-speaker intuitions. An example, from the work of Sandra and Rice (1995), is to provide instructions to generate and/or judge linguistic examples and sort them into groups of related meanings. This type of off-line measure allows the analyst to infer the conceptual representations underpinning language use, as the subjects' perform the behavioural task.

The analytic procedure deployed in the behavioural method is the use of **inferential statistics**, usually using a computer software package. Inferential statistics represents a technique that enables the analyst to infer the knowledge structures that might lie behind the observed behavioural response to the stimuli presented to subjects. A cornerstone of inferential statistics is to ascertain, in the first instance, whether the observed behaviour is a reliable result, or simply due to chance. This is usually investigated by comparing the behaviour of a **control group** versus a **treatment group**: the subjects exposed to the novel stimuli. Statistical validity of a difference in behaviour, between the two groups, is investigated using what's known as the **t-test**. The t-test compares averages across the two groups, and ascertains whether any difference in behaviour is statistically significant. Statistical significance is achieved when a baseline figure – known as the **alpha level** – is achieved. In the language and cognitive science this is normally set at a threshold of 0.05 per cent. What this means is that every five times (or more) out of 100, the difference in behaviour is statistically significant. The higher the t-value, above this, the greater the statistical significance.

One advantage of the behavioural method is that it can facilitate access to cognitive processing at the level of milliseconds: in short, processing not accessible to conscious observation. Another is that given that it's based on behaviour in response to stimuli, it enables the analyst to infer knowledge structures that might underpin language without requiring the use of language as the stimulus. This can help to get around the potential problem of circularity in terms of using language to infer underlying knowledge structures which are then claimed to license language. For instance, Casasanto and Boroditsky (2008) sought to test the psychological reality of space-to-time conceptual metaphors. But while earlier behavioural experiments made use of language as the stimuli, Casasanto and Boroditsky made use of **psychophysical tasks** – tasks that involve physical rather than linguistic stimuli. This involved having subjects watch lines 'growing' across a computer screen producing lines of different lengths which grew for different temporal elapses (this experiment is discussed in further detail in Chapter 4).

A further advantage is that it enables the analyst to carefully control stimuli that evoke the behaviour being observed, by controlling the various variables to which subjects are being exposed. But this leads to a disadvantage: as the techniques used aim to isolate a single factor, this can lead to decontextualisation – the tasks subjects perform may often appear to bear little resemblance to the sorts of activities they normally engage in in the real world. And this can, potentially, reduce the possibility of relating behaviours exhibited in lab settings with the complex interplay of factors as subjects function normally in their everyday lives.

4.2.5 Neuroscientific method

The advent of cognitive neuroscience – the interdisciplinary study of the brain and nervous system – has provided a range of techniques and methods for directly investigating brain function during the course of linguistic and other cognitive tasks. The principle is that the brain states – for instance electrical impulses, magnetic fields, or blood flow in the brain of subjects – are measured while the subject performs some task. Computer-aided analyses of the results enable the analyst to understand what the brain is doing while the subject is performing the task.

One way this can be achieved is by **neuroimaging**, of which there are several different techniques. Neuroimaging allows an image of the functioning brain to be recorded, either directly or indirectly. For instance, in one neuroimaging technique – **functional imaging** – areas of the brain being investigated are stimulated so that they increase their metabolic rate. This enables those parts that are involved in the processing of a particular task to 'light up', enabling identification of which brain areas are involved in the processing of the behaviour.

Another important set of techniques relates to **electrophysiology**: measuring the electric signals given off by brain cells during language or cognitive processing. Because electric signals are given off at sub-second intervals, this technique enables the analyst to examine the time course in extensive detail, in terms of how the brain is processing a particular task. Both electrophysiological and neuroimaging techniques are increasingly drawn upon, either directly or indirectly, by cognitive linguists.

A case in point concerns **linguistic relativity**, to discussed in more detail in Chapter 7; this amounts to the claim that speaking a different language can lead to cognitive restructuring, such that native speakers of different languages perceive the world in slightly different ways. For example, in an experiment by Thierry et al. (2009), an electrophysiological technique that measures the brain's **event-related potential** (ERP) was used to investigate what the brain of Greek versus English speakers were perceiving, in terms of colour processing, at the time frame of fractions of second, and prior to the perceptual experience becoming available to the subject's conscious awareness. This provides a means of directly investigating claims for cognitive restructuring by directly measuring the brain's electrical signatures.

The advantage of such techniques is that they enable research questions to be settled, by observing brain activity directly or indirectly, a strategy not available to the other methods discussed above. However, a significant disadvantage, for many cognitive linguists, is both the extensive training required to be able to deploy the techniques, and gaining access to the relevant equipment, which can be expensive.

5 The field of cognitive linguistics

Having set out some of the fundamental assumptions behind the cognitive linguistics enterprise, in this section I briefly map out the field. Cognitive linguistics has its roots in theoretical linguistics. Today cognitive linguists no longer restrict themselves to the narrow remit of theory construction: ideas, theories and methods from cognitive linguistics are increasingly applied to a wide array of aesthetic, communicative, developmental, educational and cultural phenomena across a wide array of disciplinary contexts including the behavioural, biological, cognitive and social sciences as well as the humanities. This is testament to the broad appeal and applicability of the range of ideas and theoretical frameworks that have emerged within the cognitive linguistics enterprise. I provide a flavour of just some of the most exciting extensions and applications of cognitive linguistics in Part V of the book.

As we saw in the previous chapter, cognitive linguistics has two main foci. The first constitutes a focus on the way in which knowledge representation – conceptual structure – is organised in the mind. Given the core commitments of the enterprise, cognitive linguists hold that language reflects cognitive organisation. Consequently, cognitive linguists deploy language in order to investigate conceptual structure. A clear example of this is conceptual metaphor theory (Lakoff and Johnson 1980, 1999). Conceptual metaphors are claimed to be units of knowledge representation, in the mind, rather than being linguistic in nature. Yet, as language reflects conceptual organisation, their existence is revealed by patterns in language: patterns in language reveal patterns in the mind (Evans 2015a). Of course, as language provides a somewhat partial window on the mind, cognitive linguists invoke the notion of converging evidence that I introduced in the previous chapter. Behavioural studies from experimental psychology have been deployed in order to provide converging evidence for the psychological reality of conceptual metaphors (see Chapter 4). The upshot is that cognitive linguistic theories, that have deployed language as the lens through which cognitive phenomena can be investigated, amount to models of the mind. I investigate cognitive linguistic approaches to conceptual structure in Part II of the book.

The second constitutes a focus on language: after all, cognitive linguists, like other linguists, study language for its own sake. But again, as a consequence of the cognitive linguistics enterprise, language is held to reflect general aspects of cognition. And as such, language can't be artificially separated from the conceptual phenomena that it in large part reflects and is shaped by. One concrete manifestation of this is that language is held to reflect more general, organisational properties of cognition, such as embodiment and the nature of categorisation – I explore the issue of **embodied cognition** later (see Part II). Another is that aspects of language that are treated as discrete and encapsulated in formal linguistics, such as grammar, cannot be treated as such within cognitive linguistics; cognitive linguists take a broadly functional perspective: language emerged to facilitate communicative meaning. Hence, grammatical organisation, which supports situated meaning, cannot be artificially separated from the study of meaning, which it is specialised to facilitate.

Within cognitive linguistics, the study of language often exhibits either a focus on semantics, or on grammar, although there is typically no hard and fast division between the ways the two are studied, despite the specific focus adopted. In practice, the division arises due to the focus of a particular researcher, or of the research question being investigated, rather than due to a principled division.

The area of study involving cognitive linguistics approaches to semantics, which is explored in detail in Part III of the book, is concerned with investigating a number of semantic phenomena. One such phenomenon is linguistic semantics, encompassing phenomena traditionally studied under the aegis of **lexical semantics** (word meaning), **compositional semantics** (sentence meaning) and **pragmatics** (situated meaning). It also encompasses phenomena not addressed under these traditional headings, such as the relationship between experience, the conceptual system and the semantic structure encoded by language during the process of meaning construction. Cognitive linguistic theories of semantics, such as **conceptual blending theory** (Fauconnier and Turner 2002; Turner 2014), and **Access Semantics** (also known as the **theory of lexical concepts and cognitive models**, Evans

2009, 2013b), are examples of the latter, and about which I shall have more to say in Part III.

Cognitive linguistics approaches to grammar are considered in detail in Part IV of the book. As by now should be becoming apparent, cognitive grammarians take the view that a model of meaning (a 'cognitive semantics' account, not to be confused with Talmy's theory of Cognitive Semantics, see Chapter 10) has to be delineated before an adequate cognitive model of grammar can be developed. This is because grammar is viewed within the cognitive linguistics enterprise as a meaningful system in and of itself, which therefore shares important properties with the system of linguistic meaning and cannot be functionally separated from it.

Cognitive grammarians have also typically adopted one of two foci. Scholars including Ronald Langacker have emphasised the study of the cognitive principles that give rise to linguistic organisation. In his theoretical framework, **Cognitive Grammar**, Langacker (e.g. 1987, 1991, 2008) has attempted to delineate the principles that serve to structure a grammar, and to relate these to aspects of general cognition.

The second avenue of investigation, pursued by researchers including Fillmore and Kay (Fillmore et al. 1988; Kay and Fillmore 1999), Lakoff (1987), Goldberg (1995, 2006) and Croft (2001), among others, aims to provide a more descriptively detailed account of the units that comprise a particular language. These researchers have attempted to provide an inventory of the units of language. Cognitive grammarians who have pursued this line of investigation are developing a set of theories that can collectively be called **construction grammars**, or sometimes **constructionist models**. This approach takes its name from the view in cognitive linguistics that the basic unit of language is a form–meaning symbolic assembly which, as we saw in Chapter 1, is called a construction.

It follows that cognitive approaches to grammar are not restricted to investigating aspects of grammatical structure largely independently of meaning, as is often the case in formal traditions. Instead, cognitive approaches to grammar encompass the entire inventory of linguistic units defined as form–meaning pairings. These run the gamut from skeletal syntactic configurations such as the ditransitive construction I considered earlier, to idioms, to bound morphemes such as the *-er* suffix, to words. This entails that the received view of clearly distinct 'sub-modules' of language cannot be meaningfully upheld within cognitive linguistics, where the boundary between cognitive approaches to semantics and cognitive approaches to grammar is less clearly defined. Instead, meaning and grammar are seen as two sides of the same coin: to take a cognitive approach to grammar is to study the units of language and hence the language system itself. To take a cognitive approach to semantics is to attempt to understand how this linguistic system relates to the conceptual system, which in turn relates to embodied experience. The concerns of cognitive approaches to semantics and cognitive approaches to grammar are thus complementary.

Figure 2.3 provides a schematic representation of the main theoretical foci of cognitive linguistics. The organisation of this book reflects the fact that it

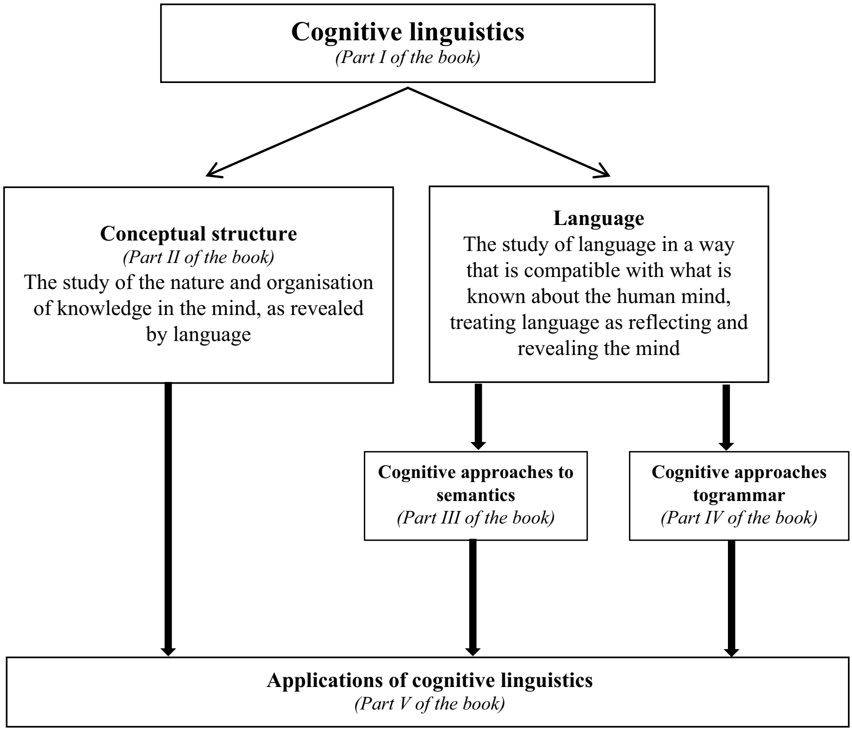


Figure 2.3 Mapping the field of cognitive linguistics

is practical to divide up the study of cognitive linguistics into these areas for the purposes of examining the nature of the cognitive linguistics enterprise, and for getting a better sense of how the enterprise proceeds. However, this should not be taken as an indication that these areas of cognitive linguistics are independent areas of study or research.

SUMMARY

In this chapter, I have provided an overview of the assumptions and commitments that make cognitive linguistics a distinctive enterprise. I have outlined two key commitments widely shared by cognitive linguists. These are the **Generalisation Commitment** and the **Cognitive Commitment**. These two commitments underlie the orientation and approach adopted by cognitive linguists, and the assumptions and methodologies employed in the study of **conceptual structure** and **language**. I then provided an introductory orientation on how to conduct research in cognitive linguistics. I considered the broad array of **research methods** deployed by cognitive linguists. These included the **introspective method**, the **audio-visual method**, the **corpus method**, the **behavioural method**, also known as the **experimental method**, and the **neuro-scientific method**. I also briefly considered the nature of the **research**

process. Research involves producing new knowledge, by building on gaps in existing knowledge. It is commonly assessed in terms of its **significance** – how and in what way it extends this knowledge base – its **originality** – what is new and fresh about the research – as well as its **rigour** – the degree to which the research was well-conceived, conducted and reported. Finally, I provided a brief overview of the field of cognitive linguistics, to be presented in this book: Part II will address conceptual structure, Part III semantics, Part IV deals with grammar, while Part V samples applications of cognitive linguistics.

FURTHER READING

Overview articles

The following two articles, introducing cognitive linguistics 'readers', provide a good orientation to the assumptions and commitments of cognitive linguistics.

- **Evans et al. (2007a)**. This overview chapter provides a comprehensive introduction to the commitments and tenets of cognitive linguistics.
- **Geeraerts (2006b)**. Provides a succinct 'rough guide' to the major concerns and assumptions of cognitive linguistics.

Commitments and assumptions in cognitive linguistics

The following are all influential articles and/or chapters by leading cognitive linguists that set out the assumptions and the nature of the cognitive linguistics enterprise, from slightly different personal and theoretical perspectives.

- **Fauconnier (1999)**. A discussion of methodological issues and the nature of the approach adopted in cognitive linguistics, particularly with respect to meaning. Fauconnier, one of the early pioneers of cognitive linguistics, illustrates with examples from the theory of conceptual blending, which he developed in joint work with Mark Turner.
- **Lakoff (1990)**. In the first part of this important article, published in the very first volume of the journal *Cognitive Linguistics*, Lakoff discusses issues relating to the Generalisation Commitment and the Cognitive Commitment. He also explains how cognitive linguistics differs from Generative Grammar.
- **Langacker (1999a)**. An important article by another pioneering figure in cognitive linguistics. In this article, Langacker evaluates the approach and methodologies employed in cognitive linguistics and relates this to the formalist and functionalist traditions in linguistics. He illustrates with a discussion from some of the key constructs in his Cognitive Grammar framework.

- **Talmy (2000a, 1–18)**. In the introduction to his two-volume edifice, *Toward a Cognitive Semantics*, Talmy outlines his view of the cognitive linguistics enterprise and describes how his own work fits in with and has contributed to this endeavour.

Research methods (in cognitive linguistics)

A selection of useful (hand)books that provide coverage of different aspects of research methods deployed in cognitive linguistics.

- **Gisborne and Hollman (2014)**. An edited collection of chapters examining the way in which (cognitive linguistic) theory is applied to data, and the methods of data collection required.
- **Gonzalez-Marquez et al. (2007)**. Provides a highly accessible introduction to empirical methodology for cognitive linguistic research by leading experts. The volume covers the major research methods deployed in cognitive linguistics, including the corpus, behavioural and neuro-scientific methods.
- **Janda (2013)**. An introductory collection of chapters focusing on the use of different statistical methods for cognitive linguistic research. Chapters focus on chi-square, Fisher test, binomial test, Analysis of Variance (ANOVA), correlation, regression, and cluster analysis.

DISCUSSION QUESTIONS

1. In your own words, what are the two core commitments of the cognitive linguistics enterprise?
2. What are the implications of each of these commitments for i) theory construction and ii) descriptions of linguistic phenomena? Give specific examples to support your contentions.
3. Devise a research question to address a particular linguistic phenomenon you are interested in. What research method, or confection of methods, might you use to address this question, and why? Think about both data collection and analysis, as you reflect on this question.
4. What are the main areas of study in the field of cognitive linguistics, as presented in this chapter? What do they seem to encompass?

3

Foundations of experience I: space

The human experience of space includes knowledge relating to the size, shape, location and distribution of entities in a stable three-dimensional environment. It also includes the ability to detect the nature of entities in the spatial environment, such as the figural properties of an entity, as well as motion. Humans, like countless other species, also have the capacity for **wayfinding** – the ability to navigate in space, including the ability to find specific locations, based on a complex capacity for constructing a **cognitive map** of the environment. This ability to recognise and interact with the spatial environment is fundamental to an organism's ability to function effectively in the world, and one of the most complex computational feats that an organism can perform (O'Keefe and Nadel 1978). In this chapter, I consider various aspects of spatial experience, beginning with findings from **perceptual psychology**, the field concerned with charting the ways in which we construct spatial experience, before moving on to the way in which spatial representation, especially in language and thought, has been studied by cognitive linguists.

1 Spatial perception

The commonplace view assumes that our three-dimensional world of spatial experience is something objectively given, inherent as a feature of reality 'out there' waiting to be discovered. But on the contrary, our world of spatial experience is, in fact, constructed by the mind/brain, and is constrained by our species-specific **embodiment**.

Given the fact of human embodiment, namely that we share similar bodies and neuro-anatomical architectures, it follows that the nature of human experience is constrained by our species-specific embodiment. For instance, the fact that the human visual system doesn't have access to colour in the infrared range means that humans cannot typically experience this part of the colour spectrum – unlike, say, rattlesnakes, the naked human eye cannot perceive heat being given off by other organisms. This thereby constrains the nature of experience available to us. In short, the consequence of our embodiment is that our world of experience will always be constrained: the nature of the world 'out there' will vary from species to species, and, indeed, albeit in subtler ways, even across individuals within the same species (e.g. left versus right handers), a function of **variable embodiment** (Casasanto 2014).

1.1 Three stages of perception

Our mental representation of a stable, spatial environment is achieved by the process of **perception**. Perception consists of three stages: **sensation**, **perceptual organisation** and **identification and recognition**. Sensation concerns the way in which external energy, such as light, heat or (sound) vibrations are converted into the **neural codes** which the brain recognises. This is achieved via the body's sensory or **modal systems** (or **modalities**), such as the visual system (visual experience), the vestibular system (balance, located in the inner ear), audition (aural experience), the haptic system (concerned with weight, pressure and movement), as well as others. Perceptual organisation concerns the way in which this sensory information is organised and formed into a perceptual object, a **percept**. Identification and recognition relates to the stage in the process whereby past experiences and conceptual knowledge are brought to bear in order to interpret the percept. For instance, a spherical object might be identified and recognised as a ball or a coin or a wheel or some other object. This stage involves understanding the nature, function and significance of the percept. As such, a previously formed **concept** is employed in order to identify and categorise the percept. Table 3.1 summarises the stages in perception.

1.2 Percepts versus concepts

The distinction between percepts and concepts relates to distinctions in **representational formats**: how experience is presented at the cognitive level and how it is stored. Percepts constitute coherent representations which derive from sensory experience, and arise from multiple modalities (distinct information 'streams', such as the visual, aural, haptic, olfactory and so on). Percepts are typically available to conscious experience: they are the product of **on-line processing**, resulting from a perceptual stimulus array perceived in the 'here-and-now'.

Table 3.1 Stages in perception

Sensation	External energy stimuli are detected and converted into neural codes
Perceptual organisation	Integration of neural codes by the brain to form a percept
Identification and recognition	The percept is categorised, which involves matching with stored experiences

Concepts, on the other hand, consist of **schematisations**, formed by abstracting away points of differences in order to produce representations which generalise over points of similarity. Thus, the concept CAR, for instance, is a schematisation derived by generalising across many different sorts of specific experiences relating to automobiles, in order to form a single representation. Nevertheless, concepts, while stable schematisations, are not static and unchanging, and are often highly (internally) complex. Indeed, they continue to be updated and thus evolve as the human perceiver continues to be exposed to new experiences. A consequence of the schematic nature of concepts is that, unlike percepts, concepts are representations in the sense of re-presentations: they are stored in memory and can be activated during **off-line processing**. Consequently, they can be recalled in the absence of the percept(s) which may have given rise to them.

Moreover, while percepts relate primarily to the sensory details of a given entity, concepts include a much greater range of information types, including the nature and function of the entity which is being represented, as well as how it relates to other concepts. Thus, concepts are related to one another in a systematic way, and form a structured knowledge 'inventory': the human conceptual system. Hence, concepts constitute 'theories' concerning a particular entity, and as such bring meaning to bear with respect to any given percept (see Mandler 2004).

1.3 Types of perceptual experience

While my focus here is on spatial perception, sensory systems exist to provide information on more than simply our external environment. Traditionally, three main types of perceptual experience have been identified: **exteroception**, **proprioception** and **interoception** (Sherrington 1906). Exteroception involves perception of the outside world. The five traditionally recognised senses – **vision**, **taste** (or **gustation**), **smell** (or **olfaction**), **hearing** (or **audition**) and **touch** (**somatosensation**) – are examples of exteroception: modalities that arise from physiological systems that **transduce** external energy signals, for example light energy in the case of the visual system, into electrical nerve impulses that can be processed by the brain. In addition, another example of an exteroceptive sense is the **vestibular system**: the modality associated with balance, and our sense of whether we are standing upright, lying down and so on.

In contrast to exteroception, interoception relates to perception of the body's internal state. For instance, internal sensory systems transduce energy signals from sensory receptors that enable the brain to help maintain an effective **homeostasis** in the internal bodily environment – essential for the maintenance of life. For instance, activation of stretch receptors in the oesophagus gives rise to the sensation of swallowing, vomiting or of acidic reflux. Interoceptive perception relates to a whole manner of internal sensory systems, relating to different types of pain, temperature, hunger, respiration, heart-rate, chemical build-up, for example carbon dioxide levels in the blood, and so on.

The third type of perception is proprioception, from the Latin *proprius*, meaning 'individual'. Proprioception relates to the sense of the body's parts in relation to one another. For instance, you know that you finger is on your nose, even when your eyes are closed, due to proprioception. The proprioceptive system in humans involves sense receptors attached to muscles, tendons and joints.

A fourth type of perceptual experience is sometimes distinguished, known as **kinaesthesia**. This concerns the felt sense of movement, and derives from the multimodal integration of sensory information arising from proprioception and the vestibular modality. For instance, the sensation of walking in a horizontal direction, along a path, versus vertically up a ladder is a consequence of combining vestibular information (balance and rotation) with proprioception – information coming from muscles, tendons and joints.

Contemporary cognitive linguistics assumes that **embodied experience** arises from all these different types of perceptual experience. Experience, as such, is constrained by the nature of our embodiment and the types of sensory systems we have, the nature of these systems, and the modalities these give rise to. Moreover, our awareness of space is influenced by more than merely exteroception, but also includes proprioception and kinaesthesia.

1.4 How do percepts arise?

Percepts arise from a process termed **scene analysis** (Bregman 1990). Scene analysis is the process whereby the perceptual stimulus array is segregated into coherent percepts. This is achieved by both **bottom-up processing** and **top-down processing** of perceptual stimuli. Bottom-up processing relates to the processing and integration of perceptual 'details' that make up, for instance, object percepts, such as a vase or a ball. Top-down processing relates to the integration of perceptual information which is guided by global principles, enabling the integration of individual percepts into a coherent **spatial scene** (Tyler and Evans 2003). Such principles have been proposed, for instance by **Gestalt psychology**, an important and influential movement that I will consider in detail below.

Bottom-up and top-down processing cross-cut another important distinction which relates to **primitive segregation** versus **schema-based segregation**. That is, scene analysis proceeds by making use of both innate and learned constraints. Primitive segregation is segregation of the stimulus array based on innate, which is to say, pre-given, primitives. Such primitives, which include, for instance, **figure–ground segregation**, discussed below, derive from invariants in the stimulus array which have, through evolutionary processes, come to be 'hardwired' in the human brain. In contrast, schema-based segregation involves scene analysis which employs learned constraints.

1.5 Bottom-up theories

Before objects can be identified visual details must be processed and integrated by the visual system. Variations in visual scenes, in terms of i) light intensity, that is, adjacent regions of light and dark areas – known as **contrast**

phenomena, ii) patterns and iii) colour, form repeated patterns known as **visual texture**. The patterns, for instance, curly versus straight hair, or a tiger's stripes versus a leopard's spots, are often the result of the physical surface properties such as differentially oriented strands, and direction of light and direction of motion.

1.5.1 Texture perception

One important bottom-up theory of visual texture perception is known as **feature integration theory** (Julesz 1981). This theory assumes that there are two major stages involved in the perception of visual texture. The first stage, known as the **preattentive stage**, involves the unconscious processing of visual texture. Julesz (1981) has proposed that the preattentive stage serves to process textural primitives, the fundamental components of visual texture. These he dubs **textons**.

Textons are distinct and distinguishable characteristics of any given visual display. For instance, textons include straight lines, line segments, curvature, widths, lengths, intersections of lines and so on. According to Julesz, the first stage of visual texture perception involves discriminating between the range of textons in a visual display. The second stage is the **focused attention stage**. This involves conscious processing in order to integrate the textons into complex unitary objects.

1.5.2 Object perception

Just as textons have been proposed as the primitive elements of visual texture perception, a related bottom-up theory has been proposed to account for object identification. This theory, associated with the work of Biederman (1987), is called **recognition by components**. Biederman's essential insight is that the identification of objects involves the combination of a set of primitive three-dimensional geometric components which he dubs **geons**, short for 'geometric icons'.

Geons are simple volumes such as cubes, spheres, cylinders and wedges (see Figure 3.1). Biederman has proposed thirty-six geons which can be combined in a range of ways giving rise to complex objects. Biederman argues that object perception crucially relies upon recognising the components which make up an object, the geons. Figure 3.1 illustrates how a perceived object is comprised of a range of constituent geons. The objects on the right correspond to perceived objects (for instance, a telephone, a torch, and so on) and the images on the left relate to the constituent geons.

1.6 Top-down theories: form perception

In addition to identifiable components of images and objects, there are also higher-level processes involved that are essential for the perception of forms and the grouping of objects. Moreover, these appear to be innate. I discuss two

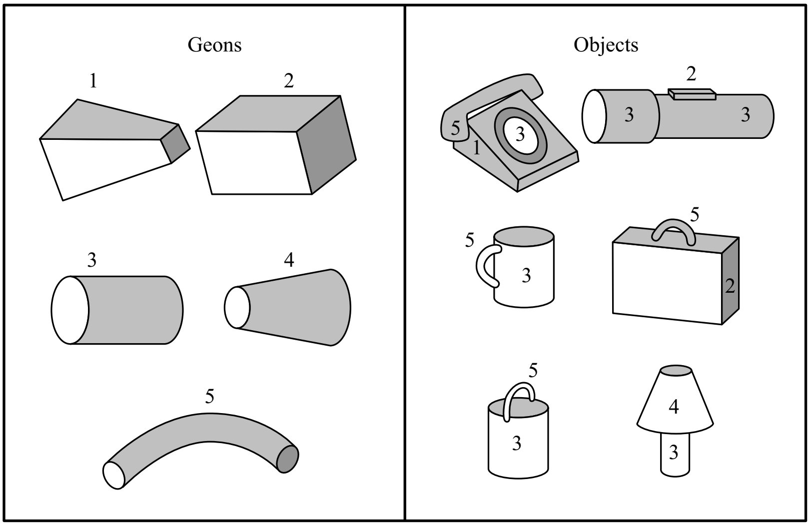


Figure 3.1 Geons and object recognition (adapted from Biederman 1987)

sorts of such organising principles below, figure–ground segregation and the Gestalt grouping principles.

1.6.1 Figure–ground organisation

A fundamental way in which we segregate entities in our environment, thereby perceiving distinct objects and surfaces, comes from our ability to perceive certain aspects of any given spatial scene as 'standing out' from other parts of the scene. This is known as **figure–ground organisation**.

The phenomenon of figure–ground organisation was pointed out by the Danish psychologist Edgar Rubin in a celebrated doctoral thesis, which he defended at the University of Copenhagen in 1915. Rubin observed that in visual perception we see parts of a given spatial scene as being made up of well-defined objects, which 'stand out' from the background: we see objects as three-dimensional entities as distinct from the terrain in which they are located.

Human perception appears to automatically segregate any given scene into figure–ground organisation. A **figure** is an entity which possesses a dominant shape, such as definite contour, or colouring. The figure stands out with respect to the **ground**, that part of a scene which is relegated to 'background'. For instance, in Figure 3.2, the image of the lighthouse, the figure, stands out from the grey horizontal lines, the ground, as a recognisable and distinct image. Rubin proposed a number of perceptual differences between the figure and ground. These I have summarised in Table 3.2.

1.6.2 Gestalt grouping principles

The perceptual mechanisms which facilitate this were formalised by the movement known as Gestalt psychology, which first emerged at the end

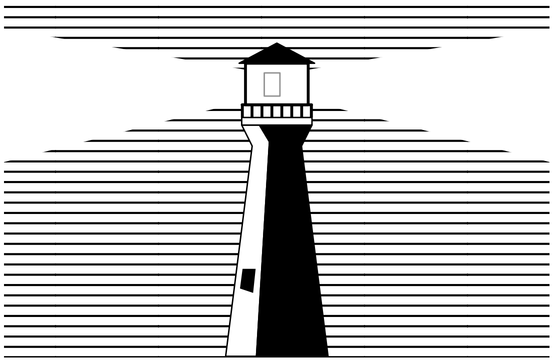


Figure 3.2 Figure–ground segregation

Table 3.2 Perceptual characteristics of figure versus ground

Figure	Ground
Appears to be thing-like	Appears to be substance-like
A contour appears at edge of figure's shape	Relatively formless
Appears closer to the viewer, and in front of the ground	Appears further away and extends behind the figure
Appears more dominant	Less dominant
Better remembered	Less well remembered
More associations with meaningful shapes	Suggests fewer associations with meaningful shapes

of the nineteenth century. Gestalt psychologists such as Max Wertheimer (1880–1943), Wolfgang Köhler (1887–1967) and Kurt Koffka (1886–1941) were interested in the principles which allow unconscious perceptual mechanisms to construct wholes or **gestalts** out of incomplete perceptual input – *gestalt* is German for 'whole' or 'form'. These so-called **Gestalt principles** provide structure to and thereby constrain experience. I briefly survey some of the most important Gestalt principles below.

Principle of proximity

This holds that elements in a scene which are closer together will be seen as belonging together. This is illustrated in Figure 3.3. The consequence of dots

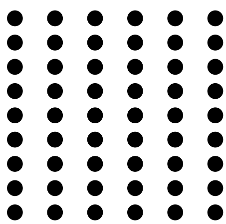


Figure 3.3 Columns of dots

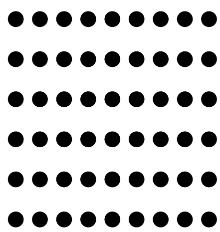


Figure 3.4 Rows of dots

being closer together on the vertical axis rather than on the horizontal axis means that we receive a strong sense of this image being organised into columns of dots rather than rows.

If we now change the scene so that the dots are more proximal on the horizontal axis then we perceive a series of rows. This is illustrated in Figure 3.4.

Principle of similarity

This holds that entities in a scene which share visual characteristics, such as size, shape or colour, will be seen as belonging together. For instance, in Figure 3.5, we receive a strong sense that the scene is organised in terms of columns (rather than rows). In fact, the shapes are equidistant on both the horizontal and vertical axes. However, due to the principle of similarity, similar shapes – squares or circles – are related to one another, and perceived as forming columns.

Principle of closure

Another important principle is that of closure. This holds that incomplete figures are often completed, even when part of the perceptual information is missing. For instance, in Figure 3.6, we see a white triangle overlaid on three

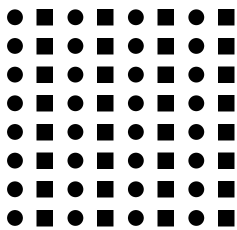


Figure 3.5 Columns of shapes

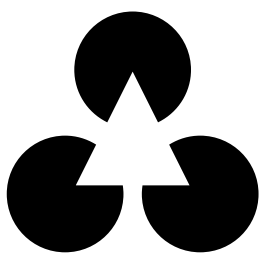


Figure 3.6 A triangle and three black circles

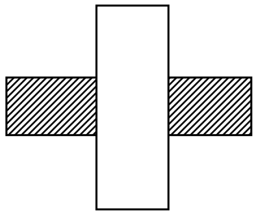


Figure 3.7 Two rectangles

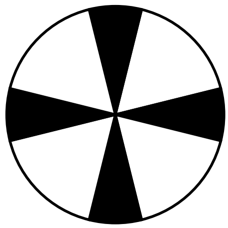


Figure 3.8 A black cross

black circles, even though the image could simply be of three incomplete circles.

Principle of continuity
The next principle holds that human perception has a preference for continuous figures. This is illustrated in Figure 3.7. Here, we vividly perceive two unbroken rectangles, one passing behind another, even though this is not what we actually see. In fact, the shaded rectangle is obscured by the first, so we cannot tell if it is one or two separate rectangles.

Principle of smallness
Finally, I consider the principle of smallness. This states that smaller entities tend to be more readily perceived as figures than larger entities. This is illustrated in Figure 3.8. We are more likely to perceive a black cross, than a white cross, as the black shading occupies a smaller proportion of the image.

Taken together, the Gestalt principles strongly suggest that the world is not objectively given. Rather, it is in part constructed: mental representations are thereby constrained, by processes fundamental to perceptual processing. As I will also show, below, these facts of perception give rise to universal constraints in our language for describing space and spatial relations.

2 Linguistic reflexes of perceptual experience

As already noted, one of the contentions of cognitive linguistics is that language reflects experience as mediated by our embodiment, which is to say, our species-specific perceptual systems. This is known as the **thesis of embodied cognition** – discussed in more detail in Part II of the book. In this section, I consider two examples of this: first, the distinction between the lexical classes – NOUN versus PREPOSITION – which reflects a distinction, in visual perception, between 'what' and 'where' information; and second, the grammatical distinction between SUBJECT and OBJECT, which, in terms of scene analysis, reflects figure–ground segregation in spatial scenes.

2.1 'What' versus 'where' systems in perception and language

Neuroscientists have discovered that when visual information from the eye is transduced – which is to say, converted – by the human visual system, into electrical signals in the optical nerve that the brain recognises, different types of visual stimuli travel along two separate pathways. These pathways lead to visual processing in two different areas within the brain's visual cortex (Ungerleider and Mishkin 1982).

The primary visual system, known as the **focal system**, often referred to as the 'what' system, provides information relating to form recognition and object representation. It enables us to identify and recognise objects, including the recognition of attributes such as colour, for instance.

The second system, known as the **ambient system**, and often referred to as the 'where' system, provides information relating to where an object is located in body-centred space, rather than with details of the object itself. Thus, light signals in the eye are transformed by the brain providing two distinct sorts of information relating to 'what' and 'where'.

More recently Milner and Goodale (1995) have demonstrated that while the focal stream provides information that allows humans to perceive particular objects ('what'), the ambient stream provides functional information which facilitates readiness for action in order to interact with objects and other entities in the world. Hence, the focal stream provides information leading to the conscious awareness of objects and other entities in the physical environment, while the ambient stream serves to facilitate motor programming.

In classic research on spatial representation in language, cognitive scientist Barbara Landau and linguist Ray Jackendoff propose that the 'what' and 'where' systems may have linguistic reflexes. Landau and Jackendoff (1993) argue that spatial relations, as encoded by prepositions in a language like English, and objects as encoded by count nouns, roughly approximate the perceptual representations deriving from the 'where' and 'what' systems, in visual perception, respectively.

While the 'what' visual system provides detailed figural information about objects – their shape, texture, colour and so on – according to Landau and Jackendoff, the linguistic reflex of this constitutes the count nouns of a given language. A language such as English, for instance, has a lexicon of tens of thousands of count nouns, providing a detailed vocabulary for object names. Moreover, this lexical system is further enhanced by many more words based on geons, as well as textons, providing a rich vocabulary for describing object shapes, parts of shapes and so on. Some representative examples of nouns of object parts is provided in Table 3.3.

In contrast, the 'where' visual system provides information concerning the location of an entity in space. And by necessity, this sort of perceptual

Table 3.3 Linguistic reflexes of perceptual primitives geons and textons

Names for object parts	nose, leg, stem, handle, etc.
Names for spatial parts (axes and axial parts)	top, bottom, front, back, side, right, left, etc.
Objects as surfaces	edge; (2D shapes): square, circle, oval, trapezoid, etc.; (thickened surfaces): slab, sheet, slice, layer, lamina, stratum, etc.
Names for negative parts (cf. closure)	groove, hole, pit, notch, slot, scratch, depression, cavity, dent, etc.

information is less detailed than the 'what' properties associated with an object. The linguistic reflex of this perceptual stream is manifested by spatial relations, encoded in a language, such as English, by prepositions, for example *in*, *on*, *through*, *over* and so on. Importantly, the number of prepositions, simple prepositions such as *on*, and complex prepositions such as *in front of*, are far fewer, numbering significantly less than 100 distinct vocabulary items. Moreover, the nature of spatial representation, as encoded by prepositions, is much sparser, in terms of the level of detail provided. To illustrate, consider some examples of the English preposition *through*:

(1) a. The tunnel runs through the mountain.
b. The jogger ran through the mountain.
c. The skewer is through the meat.
d. The dog jumped through the hoop.
e. The boy looked through the window.

These examples reveal that *through* places almost no constraints on the nature of the figure, nor the ground, in the spatial scenes depicted, for instance, in terms of the shape, dimensions, magnitude or even whether the figure and ground can be animate or not. Figures include inanimate entities such as a tunnel and a skewer, or animal entities such as a jogger, boy and dog. Moreover, there can be motion, as in the case of the jogger, lack of motion, as in the skewer, or different types of subjective or **fictive motion** (Talmy 2000a), when the tunnel runs through the mountain, or the boy looks through the window: clearly a tunnel is not literally *running* through the mountain; but by conceptualising the tunnel's trajectory as a virtual path along which we travel, it can be conceptualised as undergoing fictive motion.

These examples reveal that the only constraint *through* provides is that there must be a figure and a landmark transected by the figure. But the figural details of both figure and landmark are not constrained by the preposition: the landmark can have a volumetric interior, as in the case of a mountain, or not as in the case of a hoop or a window. In short, just as the 'where' system provides less richly detailed perceptual information, this is reflected by the English lexical class, prepositions, which serve as the linguistic reflex of this aspect of spatial perception.

2.2 Figure–ground segregation in perception and language

Just as perceptual scene analysis involves segregation of a figure from the ground, this also has a linguistic reflex. Entities represented linguistically in spatial scenes demonstrate a figure–ground asymmetry. While one entity is typically privileged, and constitutes the figure, the second entity is given less prominence, and is referred to as the ground, or the **reference object**. In English this is mirrored by syntax. For instance, the figure normally precedes the preposition occupying the subject position; in contrast, the ground or reference object follows the preposition, occupying the so-called **oblique** (indirect object) position. Sentences in which the reference object precedes the preposition, are semantically odd:

(2) a. The bike is near the house.
b. #The house is near the bike.

In sentence (2a) *the bike* is the figure, and *the house* constitutes the ground or reference object. In (2a) by placing *the bike* in the subject position it takes on a privileged status and becomes the figure, with *the house* being demoted to reference object. Yet, when *house* and *bike* are reversed, such that *house* occupies subject position and *bike* the oblique position, the sentence is semantically odd, as signalled by the hash sign preceding the sentence in (2b).

According to Talmy (1978, 1983), this follows as the figure is typically the smaller and, hence, more focal perceptual element. And this is reflected, linguistically, by aligning with the position assigned to the grammatical subject in a sentence. In short, in the case of two entities, if one meets the criteria for being the figure (recall Table 3.2), then it is this which aligns with the subject position. In contrast, the entity that fits the perceptual criteria for reference object aligns with the oblique position in a sentence. As such, grammatical behaviour appears to reflect perceptual attributes. This has led to Talmy (2000a) proposing linguistic criteria for 'grammatical' figure and reference object (see Table 3.4). These criteria, based on linguistic encoding, closely mirror the perceptual criteria from Table 3.2.

3 Spatial representation in language

In this section, I review some of the key claims and findings, by cognitive linguists, in terms of the linguistic representation of space. According to one formulation, spatial representation constitutes a 'level of mental representation devoted to encoding the geometric properties of objects in the world and the spatial relationships among them' (Landau and Jackendoff 1993: 217). I examine, here, how cognitive linguists characterise spatial representation.

3.1 The nature of spatial schemas

Some of the most influential work on the nature of spatial representation in language derives from the research programme of Leonard Talmy. Talmy (2000a, 2006)

Table 3.4 Figure–ground segregation, as encoded in language (adapted from Talmy 2000a: 183)

Figure	Reference object (or ground)
Has unknown spatial properties, to be determined	Acts as reference entity, having known properties that can characterise the primary object's unknowns
More moveable	More permanently located
Smaller	Larger
Geometrically simpler	Geometrically more complex
More recently on the scene/in awareness	Earlier on the scene/in awareness
Of greater concern/relevance	Of lesser concern/relevance
Less immediately perceivable	More immediately perceivable
More salient, once perceived	More backgrounded, once figure is perceived
More dependent	More independent

claims that the representation of thoughts and ideas, in language, can be divided into two systems: a **content system** and a **structuring system**. These two systems are realised, in language, in terms of the distinction between open-class elements and closed-class elements – a distinction I introduced in Chapter 1. His focus has been on the nature of the second of these: the structuring, or **closed-class** system.

There are two reasons for this. First, a comprehensive classification is possible, Talmy maintains, for the structuring (closed-class) subsystem of language. This follows as the structuring system constitutes a closed-class. Consequently, it should be possible, in principle, to provide a complete linguistic description of the nature of the spatial relations that constitute the structuring system for any given language. In contrast, the linguistic constituents that make up the content system, such as count nouns, is open-class. This makes it, in principle, far more difficult to ever provide a complete classification for a language, of that system.

And second, as the structuring system provides the content system with its conceptual underpinnings, its 'scaffolding', then the principles that facilitate this are presumed to be universal across all languages. This therefore justifies the research effort in attempting a classification of the way in which language(s) encode space, as realised in the linguistic structuring system.

Talmy (2006) presents a seminal study into what he dubs **spatial schemas**. These consist of pre-packaged bundles of spatial **elements** which exhibit a particular arrangement, and are encoded in language by closed-class forms. In English, for instance, spatial schemas are encoded by prepositions.

To illustrate, consider a spatial scene encoded by the following linguistic expression:

(3) The board lay across the road.

Talmy observes that the spatial schema encoded by the preposition *across* consists of a delimited number of geometric elements, holding between the figure (F), *the board*, and the ground (G), *the road*. A complete identification of these elements is sufficient to fully describe the spatial schema; moreover, if just one of these properties is altered, then a different spatial schema arises. The properties that Talmy identifies as making up the *across* schema are given below:

(4) a. F is spatially related to G
    b. G is ribbonal
    c. F is linear (and generally bounded at both ends)
    d. The axes of F and G are roughly perpendicular
    e. F is parallel to the plane of G
    f. F is adjacent to the plane of G
    g. F's length is at least as great as G's width
    h. F touches both of G's edges
    i. The axis of F is horizontal (the plane of G is typically, but not necessarily, horizontal)

The description in (4) captures the following: that *across* describes a spatio-geometric relationship such that a smaller, 'linear' entity, a board, lies on the road, a longer 'ribbonal' entity, so that the board runs perpendicular to the 'ribbonal' road, touching both of the road's edges. While, on the face of it, there is an impressive amount of detail contained in (4), Talmy's point is that this nevertheless provides a complete description of the *across* schema. And this is possible precisely because spatial closed-class elements, such as the preposition *across*, provide a schematic representation of 'where', rather than the immeasurably richer representations for, say, count nouns, which relate to the 'what' of multimodal spatial experience.

Analysing the *across* schema in (4), it's possible to exhaustively identify all the spatio-geometric elements that comprise the schema.

(5) Elements of the *across* spatial schema:
    a. a figure
    b. a ground
    c. a point
    d. a line
    e. a plane
    f. a boundary (a point as boundary to a line, a line as boundary to a plane)
    g. parallelness
    h. perpendicularity
    i. horizontality
    j. adjacency (contact)
    k. relative magnitude

While the elements in (5) are sufficient for describing the nature of the *across* schema in English, and while the nature of the elements exhibited by other spatial

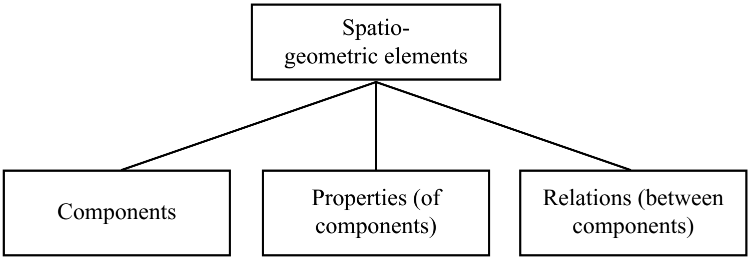


Figure 3.9 Universal aspects of spatial schemas

schemas may vary – either by making use of all others or a subset of these – there are further features shared by all spatial schemas cross-linguistically. Spatial schemas can be analysed in terms of their i) spatio-geometric **components**, the ii) **properties** of components and iii) the **relations** between components (Talmy 2006). I consider these (see Figure 3.9) below, in turn.

3.1.1 Spatio-geometric components

The components that comprise a spatial scene consist of a figure and a ground, as discussed earlier. However, languages often allow more complex partitioning of spatial scenes. This involves segregating the ground into two reference objects in order to better locate the figure. These are termed **primary reference object** and **secondary reference object** respectively. While the primary reference object is normally explicitly encoded by a lexical item, the secondary reference object need not be, but might merely be implied. For instance, consider the following sentence:

(6) Big Ben is north of the River Thames.

While *the River Thames* is the primary reference object, the secondary reference object, *the Earth*, is implied by the spatial expression *north of*; it is with respect to the Earth that Big Ben can be north of the river Thames. Talmy (2000a) identifies two kinds of secondary reference object, **encompassing** and **external**.

Encompassing reference objects of this type are typically asymmetric in terms of orientation, and encompass the primary reference object. Hence, they provide a frame for locating the primary reference object, which in turn serves to locate the figure. The example in (6) provides an illustration of this type. The Earth, in this example, constitutes an encompassing secondary reference object, containing the primary reference object, *the River Thames*. Moreover, it is by virtue of the Earth having an asymmetric orientation – the north–south distinction – that it is possible to identify the location of the figure with respect to the primary reference object.

Another example of a secondary reference object is a *queue*, which again has asymmetric, front–back orientation – due to the orientation of the people who are standing in the queue. Consider the following example:

(7) Jane is ahead of Mary in the queue/line for ice-cream.

In this example, the queue provides an orientational frame which encompasses the primary reference object, *Mary*, who serves, in turn, to locate the figure, *Jane*. Notice that it is by virtue of the orientation imposed by the secondary reference object that *Jane*'s location vis-á-vis the primary reference object, *Mary*, is established. After all, *Mary* could be facing away from the front of the queue to talk to somebody behind her. Even in this situation, it would still be permissible to describe *Jane* as ahead of *Mary* (in *the queue*). Table 3.5 summarises the components of a spatial scene.

3.1.2 Properties of components

In addition, Talmy (2006) outlines seven distinct universal properties of the components that make up a given spatial schema. The first three properties all relate to the component, ground.

Dimension

This property concerns the possible dimensions a ground can have, as specified by a spatial schema. In the examples in (8), I have included the ground, for example *the dot*, *the trail* and so on, for illustrative purposes, but not a figure. Each of the examples feature a preposition, for example *near*, *along* and so on, that encodes a distinct spatial schema:

(8) a. near the dot [zero dimension for a point]
b. along the trail [one dimension for a line]
c. tapestry over the wall [two dimensions for a plane]
d. cherries throughout the jelly [three dimensions for a volume]

In short, spatial schemas specify one of four possible dimensions for the ground.

Number

This property concerns the number of discrete entities that comprise the ground, with four possibilities:

(9) a. near the tree [one entity]
b. between the trees [two entities]

Table 3.5 Components of a spatial scene

Figure	The entity being located
Primary reference object	The entity used to locate the figure
Secondary reference object	The entity that provides an orientational frame, with respect to the primary reference object, enabling location of the figure

c. among(st) the trees [several entities]
d. amid(st) the trees [many entities]

Phase of matter
This property relates to the nature of the volume that comprises the ground:

(10) a. in the field/swimming pool/air/water/house/fire [any phase of matter]
b. inside the house [vacancy only]
(cf. *inside the air/swimming pool/water)

The point, here, is that some spatial schemas place no restrictions on the ground's phase of matter, an example being *in*, which allows the ground's phase of matter to be solid, liquid or fire, or indeed to be construed as vacancy. In contrast, some schemas, for instance, *inside*, require that the phase of matter constitute vacancy only. And indeed, in some languages, spatial schemas are restricted to a ground constituting specific phases of matter, such as fire (Talmy 2006).

I now turn to two properties that centre on the permissible characteristics of the figure.

Motive state
This property concerns the motion (or lack thereof) of the figure. These examples include linguistic encoding for figure, (e.g. *I*,), spatial schema (e.g. *into*) and ground, (e.g. *the library*):

(11) a. I went into the library. [motion]
b. I stayed at the library. [stationariness]

What this shows is that two motive states for the figure are specified by spatial schemas: motion or stationariness.

State of boundedness
This property concerns the state of boundedness of the path undertaken by a moving figure, with two possibilities:

(12) a. I walked along the pier (for 10 mins/*in 10 mins) [unbounded]
b. I walked the length of the pier (in 10 mins/*for 10 mins) [bounded]

While the preposition, *along*, stipulates, in principle, an unbounded motion trajectory, some spatial schemas, such as the complex preposition, *the length of*, stipulate a bounded path of motion.

The final two properties concern the intersection between the figure and ground.

State of consolidation

This concerns the area or region of the ground with respect to which the figure can be located. Spatial schemas encode two possibilities:

(13)	a.	The hiker will be waiting at the landmark.	[compact]
	b.	The hiker will be waiting around the landmark.	[diffuse]

While some spatial schemas, such as *at*, stipulate a compact state of consolidation, proximal to the ground, others, such as *around*, allow a more diffuse state.

The final property relates to the relationship between a motive figure and the secondary reference object.

Type of geometry

This concerns the geometric property of the path undertaken by a fictive figure, with respect to a secondary reference object:

(14)	a.	The boat drifted (further and further) away from the island.	[rectilinear]
	b.	I kept walking around the castle wall.	[radial]

The distinction, in these examples, is quite subtle. In (14a), the complex preposition *further and further away* designates a relation holding between a figure, *the boat*, and a ground, or primary reference object, *the island*. But the path of motion is itself divided into path phases, which, in Figure 3.10, I label as L_1 and L_2, standing for specific locations of the terrain, in this case, water, surrounding the island, and which serves as the secondary reference object. The ellipse represents the primary reference object, *the island*, and the arrow the motive path of the figure. Now, in this spatial schema, the progression of the figure, along its motive path, is conceived in terms of the location at which the figure is fixed, with the schema denoting successive locations in the secondary reference object, and away from the primary reference object. Importantly, this spatial schema conceives of the secondary reference object as providing a frame of reference with respect to the primary reference object: *the island*. From this perspective, the motive path is rectilinear, progressing away from the primary

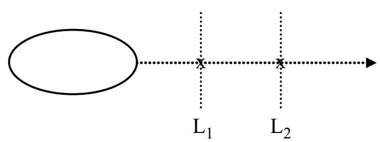


Figure 3.10 Rectilinear geometry of the motive path

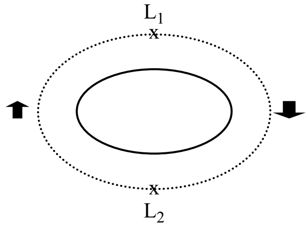


Figure 3.11 Radial geometry of the motive path

reference object, as fixed by successive phases of travel against the secondary reference object: the terrain encompassing the primary reference object.

In contrast, in the radial geometry type, the motive path, while also occurring in terrain beyond the primary reference object, remains centred on the primary reference object. Hence, the path of motion, fixed in the terrain, remains more or less equidistant from the primary reference object, the castle walls (see Figure 3.11).

3.1.3 Relations between components

I now consider the nature of the relations between components that spatial schemas have the potential to encode. These designate the possible ways in which the figure and ground can be spatially related. As we've seen with the properties of components, while the relations are sophisticated, they nevertheless concern relatively schematic structural aspects of a spatial scene. Talmy (2006) identifies five relations which he claims to have cross-linguistic validity. In each of the examples, I've underlined the linguistically encoded spatial schema.

Relative orientation
This concerns the orientation of the figure with respect to the ground. There are three possible types of relative orientation:

(15) a. The path runs <u>along</u> the river. [parallel]
b. The bridge runs <u>across</u> the river. [perpendicular]
c. The passage branches <u>off from</u> the main path. [oblique]

Degree of remove
This concerns the relative proximity or distance with respect to the figure and ground, with four possibilities in the spatial schemas of the world's languages:

(16) a. The carousel is <u>in the front of</u> the fairground. [coincidence]
b. The fly is <u>on</u> the table. [adjacency]
c. The fly is <u>over</u> the table. [proximal]
d. The carousel is <u>far from</u> the fairground. [distal]

Degree of dispersion
This concerns the degree to which the figure is found with respect to the ground, with two possibilities:

(17) a. There are typos here and there in the book. [sparse]
b. There are typos all over/throughout the book. [dense]

Relation to directedness
This concerns whether the directedness of the motive path of the figure is aligned, or not, with the inherent directedness of the ground:

(18) a. The axon grew along the chemical gradient. [co-directional]
b. The axon grew against the chemical gradient. [antidirectional]

Contour
The final relation concerns the trajectory shape of the motive figure with respect to the ground, with two possibilities being specified for: neutral or non-neutral. In terms of a non-neutral contour, a number of possibilities are evident in English:

Neutral:
(19) The boy walked through the woods. [neutral]

Evidence for the contour neutrality of the spatial schema encoded by *through* comes from examples of the following sort, where the contour is specified by the verb:

(20) The boy zigzagged through the woods.

Non-neutral:
(21) a. The boy ran across the field. [straight]
b. The boy ran over the field. [arced]
c. The boy ran around the field. [circular]
d. The boy ran about the field. [meandering]

3.2 The functional nature of spatial schemas

An important function of the spatial schemas associated with prepositional forms is to encode spatio-geometric properties. Nevertheless, a major finding of cognitive linguistics research is that spatial schemas often do more than this: spatial schemas regularly exhibit quite marked flexibility, going beyond purely spatio-geometric designations (Coventry and Garrod 2004; Deane 2005; Evans 2010a; Feist 2010; Herskovits 1986; Sinha and Kuteva 1995; Tyler and Evans 2003; Vandeloise 1991, 1994). Let's consider some examples, based on the seminal research of Anette Herskovits (1986, 1988).

First, the same preposition often appears to include quite distinct geometric descriptions:

(22) a. the water in the vase
b. the crack in the vase

The example in (22a) relates to an entity, *the water*, the figure, 'contained' by the ground, *the vase*, which relates to the volumetric interior of the ground. In contrast, in (22b) the semantic contribution of *in* concerns a relation between a 'negative' region, namely a lack of substance, *a crack*, which is not part of the volumetric interior of the vase, but rather forms part of the ground's boundary, namely the physical structure of the vase. Put another way, *in* relates to quite distinct spatio-geometric relations in these examples.

Second, the spatial relations encoded by prepositions often appear to diverge from straightforward spatial relationships. For instance, the following expression:

(23) the dictionary on the table

can be used unproblematically to refer to a dictionary placed on top of another book which is 'on' the table. The dictionary is not actually 'on' the table, but rather 'on' the book which is in direct contact with, and therefore 'on', the table. The question then is: what licenses the use of *on*, when the dictionary in question is not, in fact, 'on' the table?

Third, there often appears to be what Herskovits refers to as **added constraints** which apply to prepositions. For instance, in examples of the following kind:

(24) a. the man at the desk
b. the schoolboy at the bus stop

the relation implied is more specific than a purely spatio-geometric designation. In the example in (24a), the use of *at* implies, and is understood to mean, that not only is the figure, *the man*, in close proximity to his desk, but he is also working at his desk (or at least in a position to do so). Similarly, in (24b), in addition to the co-locational relation, this expression implies that the schoolboy is 'waiting' at the bus stop, presumably for a bus. The schoolboy is co-located with the bus stop *in order to* catch a bus. In fact, Herskovits has argued, we seldom employ prepositions merely to describe a purely spatio-geometric relationship.

Fourth, there are often unexplained **context dependencies** associated with prepositions. Consider an example such as the following:

(25) Georgie is at the crèche.

This example appears only to work when both speaker and addressee are not also present at the crèche. In the case when the speaker and addressee are located at the crèche, the following would be more likely:

(26) Georgie is (somewhere) in the crèche.

Finally, there are a number of other restrictions which appear to relate to relative salience and/or relevance. For instance, in a scenario such as that represented by Figure 3.12, in which there is an apple located beneath an upturned bowl, the following expression is semantically odd (as indicated by the preceding hash sign):

(27) #the apple in the bowl

This shows that when the bowl is not actually containing – in the sense of supporting – the apple, but is nevertheless 'enclosing' it, as in Figure 3.12, the use of *in* is not acceptable.

Cognitive linguists argue that the spatio-geometric relations encoded by spatial schemas, such as prepositions, have **functional consequences**: consequences which arise from how we interact with objects and entities in our physical environment, and in our daily lives. To illustrate, take the mundane example of a cup of coffee. Imagine holding it in your hand. If you move the cup slowly up and down, or from side to side, the coffee moves along with the cup. This follows as the cup is a container with a bottom and sides and thus constrains the location of any entity within these boundaries. The functional consequence of a cup serving to contain the liquid is that the liquid goes wherever the cup does. While this is, perhaps, a statement of the obvious, this, and other functional consequences of spatial relationships enable language users to deploy prepositions to refer to functional aspects of spatial scenes, in addition to the purely spatio-geometric properties that make up a given scene.

In his research, the late cognitive linguist, Vandeloise (1991, 1994) argued compellingly that any account of spatial semantics that leaves out their functional nature fails to properly account for how they are actually employed. For instance, the force-dynamic properties associated with a cup as a container also show up in linguistic content, as illustrated by the semantic contribution of the preposition *in*. Consider the diagram in Figure 3.13.

Vandeloise observes that the image depicted could either represent a bottle or a light bulb. As example (28) reveals, we can use the preposition *in* to describe the relation between *the light bulb* (Figure) and *the socket* (Ground).

(28) The bulb is in the socket.

In contrast, if we use *in* to describe the relation between a bottle and its cap, this depiction is semantically anomalous, as illustrated by (29).

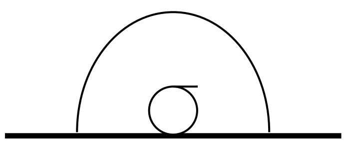


Figure 3.12 The apple beneath the bowl

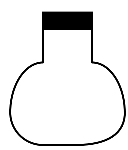


Figure 3.13 A bottle or a light bulb? (adapted from Vandeloise 1994)

(29) #The bottle is in the cap.

Vandeloise points out that while the spatial relation holding between the figure and ground in each of these utterances is identical, sentence (28) is semantically acceptable, while (29) is, nevertheless, semantically odd. He argues it is not the spatial relation holding between the figure and ground that accounts for the acceptability or otherwise of *in*. Rather, the relevant factor is one of force-dynamics: '[W]hile the socket exerts a force on the bulb and determines its position, the opposite occurs with the cap and the bottle' (Vandeloise 1994: 173). Not only is the position and the successful function of the bulb contingent on being *in* (contained by) the socket, but the socket also prevents the bulb from succumbing to the force of gravity and falling to the ground. In contrast, the position and successful functioning of the bottle is not contingent on being *in* the cap. This suggests that our knowledge of the functional consequences associated with containment affects the contextual acceptability of a preposition such as *in*.

In short, the 'property of containment is fundamental to the basic human usage of containers, which not only . . . enclose, but also constrain the movement of their contents' (Sinha and de López 2000: 30–1). Indeed, Tyler and Evans (2003) have argued that this property of containment is a functional, rather than a purely, spatio-geometric consequence of what they term **bounded landmarks** – entities that have the structural properties of an interior, a boundary and an exterior, such as boxes or coffee cups. In light of this observation, Tyler and Evans proposed that the prototypical representation of a spatial scene, encoded by the preposition *in*, relates a **proto-scene** (Figure 3.14). A proto-scene constitutes an idealised representation of the geometric properties abstracted from across the range of typical usage contexts in which the preposition is used (I will have more to say about proto-scenes in Chapter 17).

Figure 3.14 represents the following. The landmark (or ground) associated with *in* is specified as having the spatio-geometric properties of interior, boundary and exterior: a bounded landmark. The top-most side of the bounded landmark is represented as a dashed line to indicate that it can be optionally absent. The small sphere represents the figure, enclosed by the bounded landmark. Crucially, however, the proto-scene also involves a **functional element**: an element that forms part of the representation of the

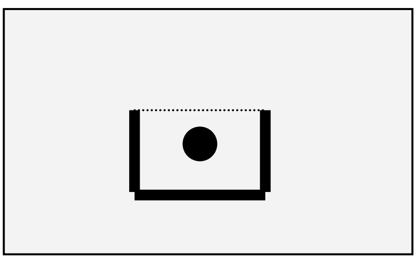


Figure 3.14 Proto-scene for *in* (adapted from Tyler and Evans 2003)

Figure 3.15 Flower in a vase

proto-scene. Tyler and Evans propose that the functional element associated with our mental representation of *in* concerns the ability of the landmark to exert force dynamics over the enclosed entity, such that it is **located with surety** – fixed in space by virtue of the bounded landmark. Hence, the proto-scene in Figure 3.14, which encodes the spatio-geometric properties of *in*, together with the 'located with surety' functional element accounts for the ways in which *in* is used in a variety of contexts, hence going beyond purely spatial enclosure.

The functional element encoded by *in* licenses a range of non-canonical usages. Consider one example (based on Tyler and Evans 2003):

(30) The flower is in the vase.

The example in (30) relates to a spatial scene that can be diagrammed as in Figure 3.15.

This reveals that, in actual fact, in spatial scenes of the sort described by (30), the flower is patently not enclosed by the vase. While the stem is enclosed, the functional consequence of the stem being enclosed is that the flower itself is located with surety: its location is fixed in space, due to the spatio-geometric, and consequently, force-dynamic properties of the container. The bounded landmark – the vase – supports the flower by virtue of enclosing the flower's stem. In short, cognitive linguists have shown that spatial scenes – as captured by the idealised notion of a proto-scene in Figure 3.14 – encode more than just spatial properties; they also encode functional consequences, given the ways humans typically interact with spatial scenes.

3.3 Spatial frames of reference

An important finding from cognitive linguistic research concerns the discovery that language also affords a means of locating the figure in a given spatial scene. Since the 1970s, following the ground-breaking research of Nobel Laureate, and neurobiologist, John O'Keefe, it has been established that humans have a biological means of locating objects and entities in space, relative to other entities. In neurobiological terms, our species has **place cells**, which are found in the hippocampus region of the brain. Moreover, these enable us to construct **cognitive maps** of our spatio-physical environment, facilitating wayfinding (O'Keefe and Nadel 1978).

In terms of language, this biological feature of the human brain manifests itself, in part, in terms of what Levinson (2003) has dubbed spatial **frames of reference**. A spatial frame of reference, which I shall abbreviate as **s-FoR** (so as to be distinguishable from temporal frames of reference introduced in the next chapter), amounts to the claim that in locating a figure with respect to a landmark, we make use of fixed as well as relativised aspects of the spatial environment in fixing the location of the figure. In essence, to say that a spatial schema encodes an s-FoR is to claim that it provides a means of locating a figure with respect to a landmark.

An s-FoR is a relatively complex locational system, that can be contrasted with cognitively simpler forms of **spatial reference**. For instance, in many everyday spatial scenes, a figure can be located using a spatial schema alone, without invoking an s-FoR. To illustrate, consider an entity, say a dog, located with respect to a tree:

(31) The dog is by the tree.

This sentence provides what is known as **topological reference** (Levinson 2003). It involves two entities, or **coordinates**: the location of the dog, the figure, and the location of the landmark, the tree, which serves as the reference object. We know where the dog is, by virtue of the spatial schema, encoded by the preposition *by* – underlined in (31). Knowledge of the spatial schema encoded by the preposition *by* allows us to infer that the dog is located somewhere in close proximity to the reference object: the tree.

But to be able to say, more precisely, where the dog is, with respect to the tree, we require more than two coordinates: a dog and a tree. We require a third coordinate. This third coordinate, known as the **origo**, provides an anchoring coordinate, enabling us to establish the spatial relationship between the figure and ground relative to the larger spatial context that they both inhabit. And with a third coordinate, we move from simpler topological reference to the more sophisticated s-FoR.

To illustrate, consider the following examples:

(32) a. The cat is in front of the tree.
b. The dog is on the tree's left.

These examples reveal something quite interesting: in contrast to the example in (31), we are able to specify, with far greater precision, the relative location of the figure, the cat and dog, with respect to the landmark: the tree. We know where to look in order to find each of these creatures, by following a particular angle directed away from the tree, for example *left*. This is more complex than mere location based on proximity without specifying an angle, as in the case of *by*.

Although it may not be obvious on first blush, each of the examples in (32) achieves this by making use of three coordinates, rather than just two. After all, a tree is perfectly symmetrical: it doesn't have an inherent front, back, left or right. So, this then begs the question as to how we might interpret the sentences in (32) such that you and I understand where, precisely, we should go to, in the vicinity of the tree in order to locate the cat and dog, respectively.

The answer is that these examples make use of an implicit **coordinate system**, in order to more precisely specify the relative location of the cat and dog, in front of and left of the tree, respectively. To demonstrate this, consider the image in Figure 3.16.

Figure 3.16 reveals that a human observer is tacitly present in the sentences in (32). While a tree doesn't have an inherent asymmetric organisation – a left, right, front and back – human beings do. But by virtue of the spatial scene being viewed by an implicit human observer, the tree is able to inherit the asymmetric embodiment of the observer. In short, this enables the projection of human coordinates, *onto* the tree. And as such, the tree can co-opt a left, right, front and back.

As the human observer faces the tree, the convention in English – although it varies in other languages – is for a **mirror-image alignment** to be projected onto the tree (Tyler and Evans 2003). Just as we look into a mirror and see our own reflection, so too the tree's 'front' faces the tacit observer. And projecting right and left, in mirror-image fashion, so too the tree also now has a left and a right. In Figure 3.16, points A and B now correspond to the tree's front and back, and C and D to the tree's right and left, respectively.

What this shows is that while the tree remains the primary reference object – we're locating the figure, for instance, the dog, with respect to the tree, the observer provides a **secondary reference object**: it serves as the third coordinate, the originating point or origo, for the s-FoR. By virtue of the tree

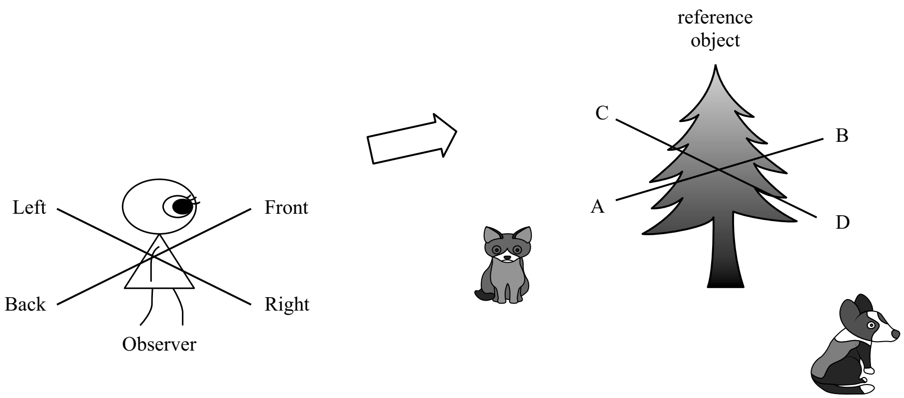


Figure 3.16 Projecting human spatial coordinates onto a tree

borrowing a coordinate system (front/back, right/left) from the observer (the origo), which is projected onto the tree in mirror-image fashion, we can make sense of the examples in (32) and locate the cat and dog, respectively, as portrayed in Figure 3.16.

3.3.1 Case study: Talmy's taxonomy of s-FoRs

Talmy (2000a) provides a taxonomy of s-FoRs, which I have illustrated in Figure 3.17. A bifurcation – a two-way division – can be made based on whether an s-FoR makes use of a single reference object, or uses, in addition, a secondary reference object. According to Talmy, there is just one s-FoR of the former type. This is the **ground-based** s-FoR which makes use of a single reference object. In addition, there are three s-FoRs which involve a secondary reference object. These s-FoRs are: **field-based**, **guidepost-based** and **projector-based**.

In the case of the ground-based s-FoR, while there is a single reference object, this combines two coordinates: the origo and the primary reference object. The consequence is that only certain entities can fulfil this function: entities that have an intrinsic asymmetric organisation, such as buildings, that have fronts and backs. Consequently, in the ground-based s-FoR, the coordinate of origo is thus coincident with the primary reference object.

To illustrate each of these s-FoRs, consider a simple cityscape scene, illustrated in Figure 3.18. Now imagine a situation in which a speaker is directing a hearer to the grocery store. There are a number of ways in which the exact location of the grocery store can be located, in keeping with the four reference frames identified.

Ground-based

This is the simplest kind of s-FoR. It involves just a primary reference object, the office building, and employs the intrinsic geometry of the reference object, which serves as the origo, in order to locate the figure. Hence, this type of

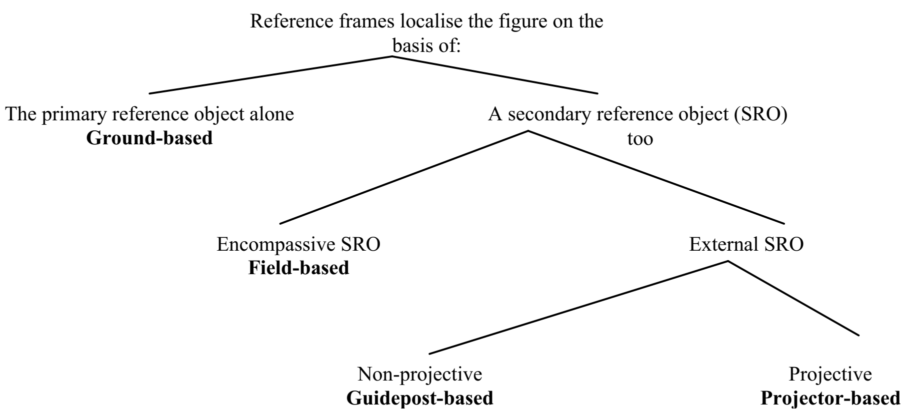


Figure 3.17 Talmy's taxonomy of s-FoRs found in the languages of the world (adapted from Talmy 2000a: 213)

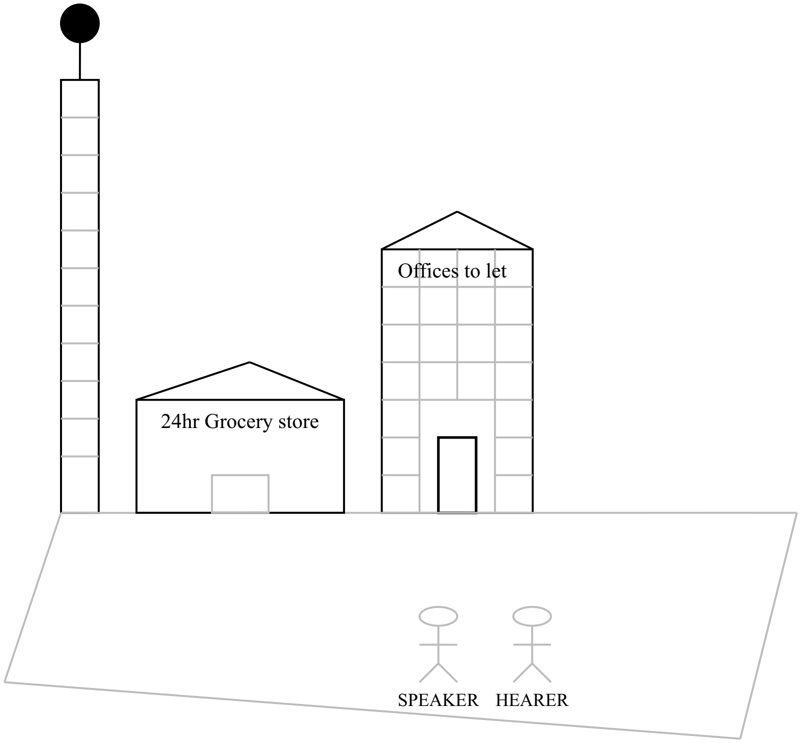


Figure 3.18 Simple cityscape scene

s-FoR is **ground-based**. An example of ground-based reference is given in the sentence in (33), and is illustrated in Figure 3.19. That is, the office building has an intrinsic front, back and sides, which is appealed to by the speaker. The crossed lines in Figure 3.19 which overlay the office building indicate that it is the office building which is providing the frame of reference in order to locate the figure. In this example, as the reference object, the office building, possesses an inherent asymmetrical organisation (front, back and sides), this provides a coordinate system which can be used to provide the reference point with **axial properties**, enabling us to locate the figure. If we assume that the origo is at the centre of the office building, then the perpendicular axes – front to back, and side to side – can be used to help locate the figure:

(33) The grocery store is next to the office building.

In this example, the grocery store, the figure, can be located as being adjacent to (rather than behind or in front of) the office building, the ground.

Field-based

As with the remaining s-FoRs, the field-based type additionally involves an explicit secondary reference object that serves as the origo for the system. Field-based reference is characterised by an **encompassing** secondary reference object, such as the Earth, as in (34). Figure 3.20 provides a depiction.

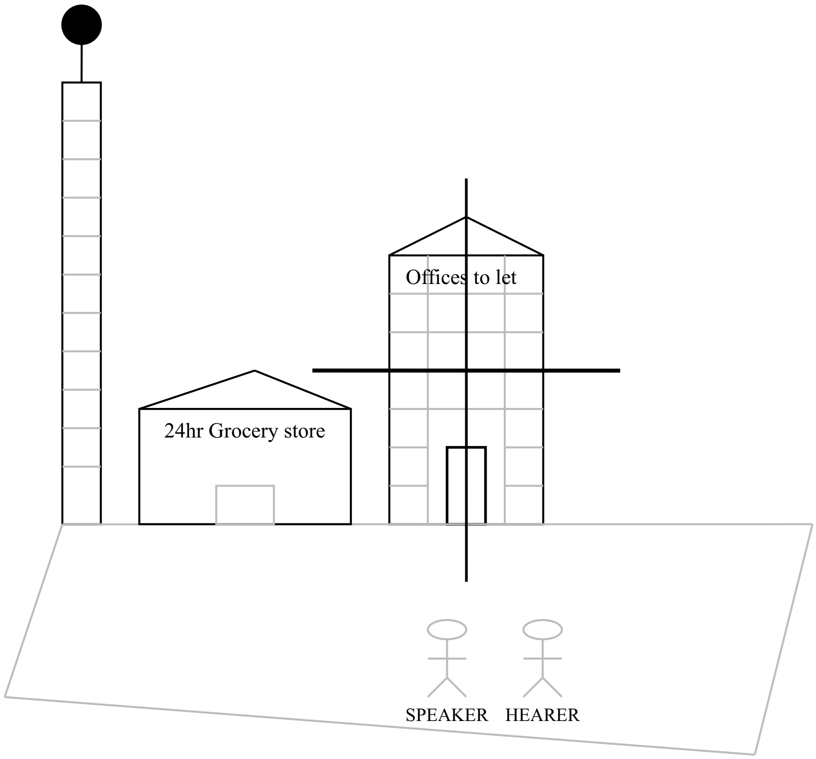


Figure 3.19 Ground-based reference

The crossed-lines indicate the **cardinal points**, that is, north, south, east and west which take their reference from the Earth – the origo. It is with respect to the cardinal points that the primary reference object obtains its coordinate system. And in so doing, this coordinate system is projected onto the office building, giving it a north/south/east/west asymmetric organisation. This assumed coordinate system can then be used to locate the figure, the grocery store, as in (34):

(34) The grocery store is to the west of the office building.

Guidepost-based

Guidepost-based s-FoRs also involve a secondary reference object. However, this type, like projector-based framing (see below), involves an external, rather than an encompassing secondary reference object. In the guidepost-based strategy, the external secondary reference object is a non-animate entity, here the tower, which is external to the primary reference object. Hence, it does not have an encompassing function. In the example in (35), and Figure 3.21, it is the tower which serves to identify that portion of the primary reference object, the office building, with respect to which the grocery store is located. It is for this reason that this type of reference frame is termed guidepost-based.

(35) The grocery store is on the tower side of the office building.

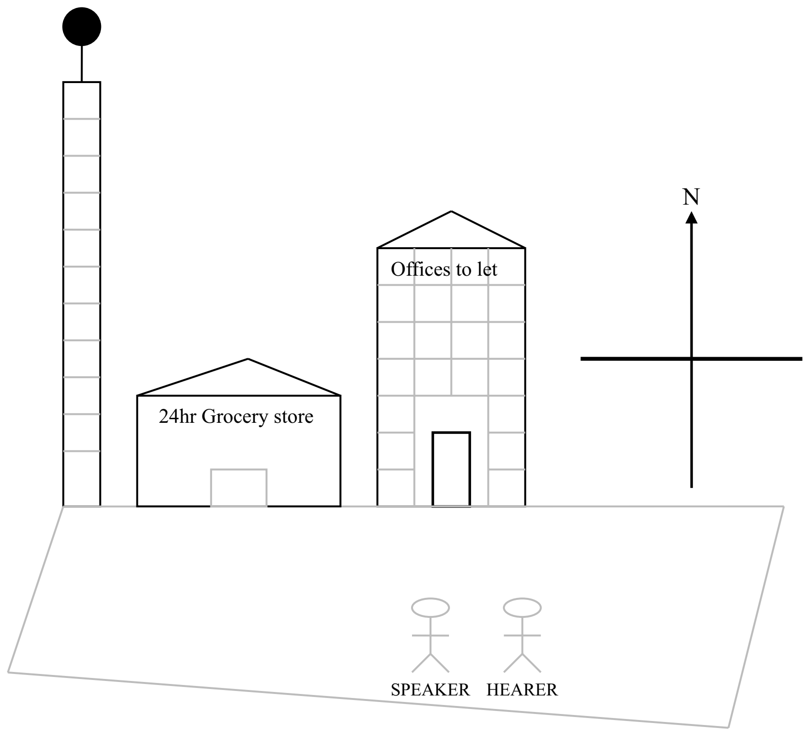


Figure 3.20 Field-based reference

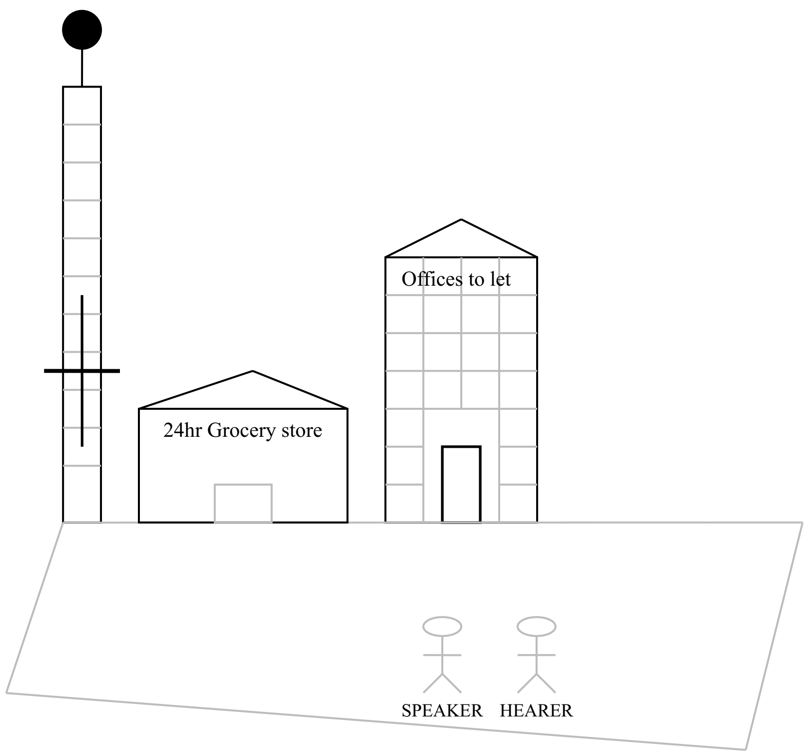


Figure 3.21 Guidepost-based reference

Projector-based
The final kind of s-FoR is also due to an external secondary reference object. As we saw in the discussion of Figure 3.16, which exemplifies this s-FoR, the secondary reference object is an animate entity: in this situation the speaker, whose location serves as the secondary reference object, thereby providing the primary reference object with its origo. This s-FoR, exemplified in (36) and Figure 3.22, is projector-based, in Talmy's terms, as the speaker is 'projecting' their own intrinsic asymmetry – left, right, back, front – onto the primary reference object: the office building.

(36) The grocery store is on the office building's right side.

4 Cross-linguistic variation in the representation of space

Our species appears to have universal linguistic resources for encoding and describing our spatial environment; these include spatial schemas and s-FoRs. And these linguistic devices, for encoding spatial relations, appear to reflect aspects of the pan-human embodiment we share, and the spatio-physical environment we collectively inhabit. Nevertheless, languages often surprise us in terms of their diverse linguistic representations of space. In this section, I consider two non-Indo-European languages: Korean and Guugu Yimithirr.

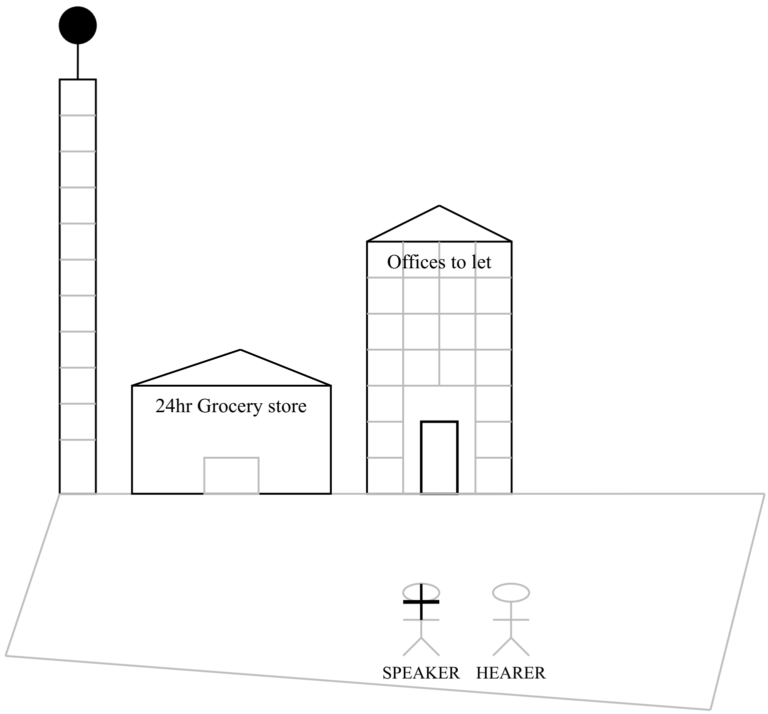


Figure 3.22 Projector-based reference

4.1 Categorising spatial scenes in English and Korean

One way in which languages diverge is in the kind of spatial relation which holds between the figure and ground even for objectively similar spatial scenes. A striking illustration of this is the way English and Korean choose to conventionally segregate spatial scenes, as revealed by the work of Melissa Bowerman and Soonja Choi (e.g. Bowerman 1996a; 1996b; Bowerman and Choi 2003; Choi and Bowerman 1991).

In order to illustrate, consider the spatial scenes described in (37) and (38), respectively, diagrammed in Figure 3.23.

(37) PUT ON
- a. put cup on table
- b. put magnet on refrigerator
- c. put hat on
- d. put ring on finger
- e. put top on pen
- f. put Lego block on Lego stack

(38) PUT IN
- a. put video cassette in case
- b. put book in case
- c. put piece in puzzle
- d. put apple in bowl
- e. put book in bag

The scenes described in the examples in (37) and (38) are lexicalised employing what are technically termed **verb particle constructions** (VPCs; also known as 'phrasal verbs'). They involve the use of a verb in conjunction with a spatial particle. The VPCs employed by English, to describe the scenes depicted in Figure 3.23, are *put on* and *put in*. The first VPC, *put on*, suggests an action involving the placement of the figure in contact with a surface of some kind. The second, *put in*, suggests placement of the figure in some bounded landmark such as a container. The reader familiar only with English might be forgiven for thinking that this is the only way these spatial scenes can be conceptualised.

However, the situation in Korean is very different. The English examples in (37) are categorised into spatial scenes of four different kinds. This is achieved using the four distinct Korean verbs given in (39):

(39)
- a. NOHTA
  'put on horizontal surface'
- b. PWUCHITA
  'juxtapose surfaces'
- c. SSUTA
  'put clothing on head'

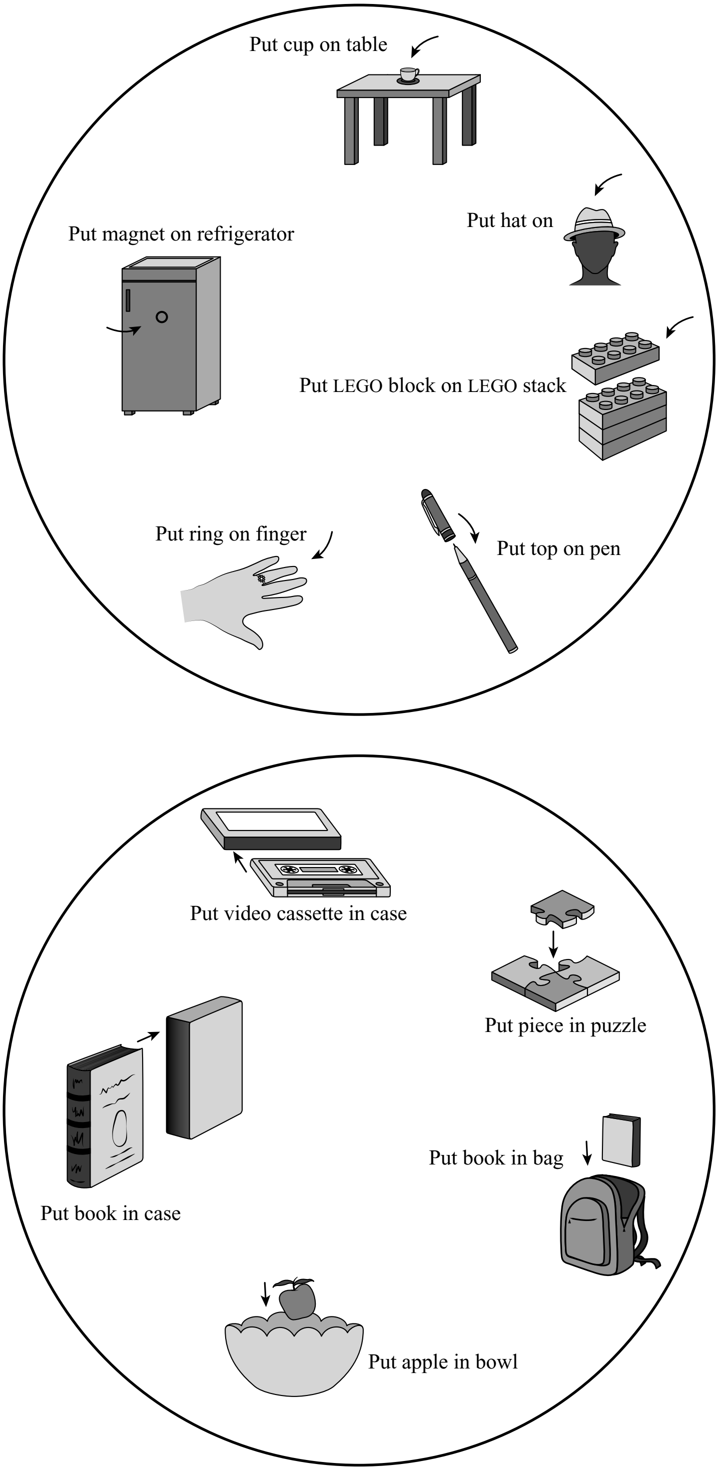


Figure 3.23 Spatial scenes for *put in* versus *put on* (adapted from Bowerman and Choi 2003: 393)

d. KKITA
'interlock/fit tightly'

Hence, the scenes described using the English expression *put on*, are categorised in the following way in Korean:

(40) *nohta* – 'put on horizontal surface'
for example, put cup on table
(41) *pwuchita* – 'juxtapose surfaces'
for example, put magnet on refrigerator
(42) *ssuta* – 'put clothing on head'
for example, put hat on
(43) *kkita* – 'interlock/fit tightly'
for example a. put ring on finger
b. put top on pen
c. put Lego block on Lego stack

Similarly, the English examples in (38) are categorised into spatial scenes of two different kinds. This is achieved using two Korean verbs as in (44):

(44) a. KKITA – 'interlock/fit tightly'
b. NEHTA – 'put loosely in or around'

Hence, the scenes described using the English expression *put in*, are categorised in the following way in Korean:

(45) *kkita* – 'interlock/fit tightly'
for example a. put video cassette in case
b. put book in case
c. put piece in puzzle
(46) *nehta* – 'put loosely in or around'
for example a. put apple in bowl
b. put book in bag

Accordingly, the way Korean categorises the scenes described in (37) and (38) in English, is diagrammed in Figure 3.24, which contrasts with the situation depicted in Figure 3.23.

The psychologist Dan Slobin (e.g. 2003) has described situations of the kind just considered in terms of **thinking for speaking**: a particular language 'forces' its speakers to pay attention to certain aspects of a scene in order to be able to encode it in language. While the grammatical resources of English constrains English speakers in how they categorise spatial scenes of the kinds I've been discussing, such that they must 'decide' whether the figure is being placed on a surface or in a container, Korean enforces different kinds of decisions. Accordingly, Korean speakers must pay attention to different aspects of

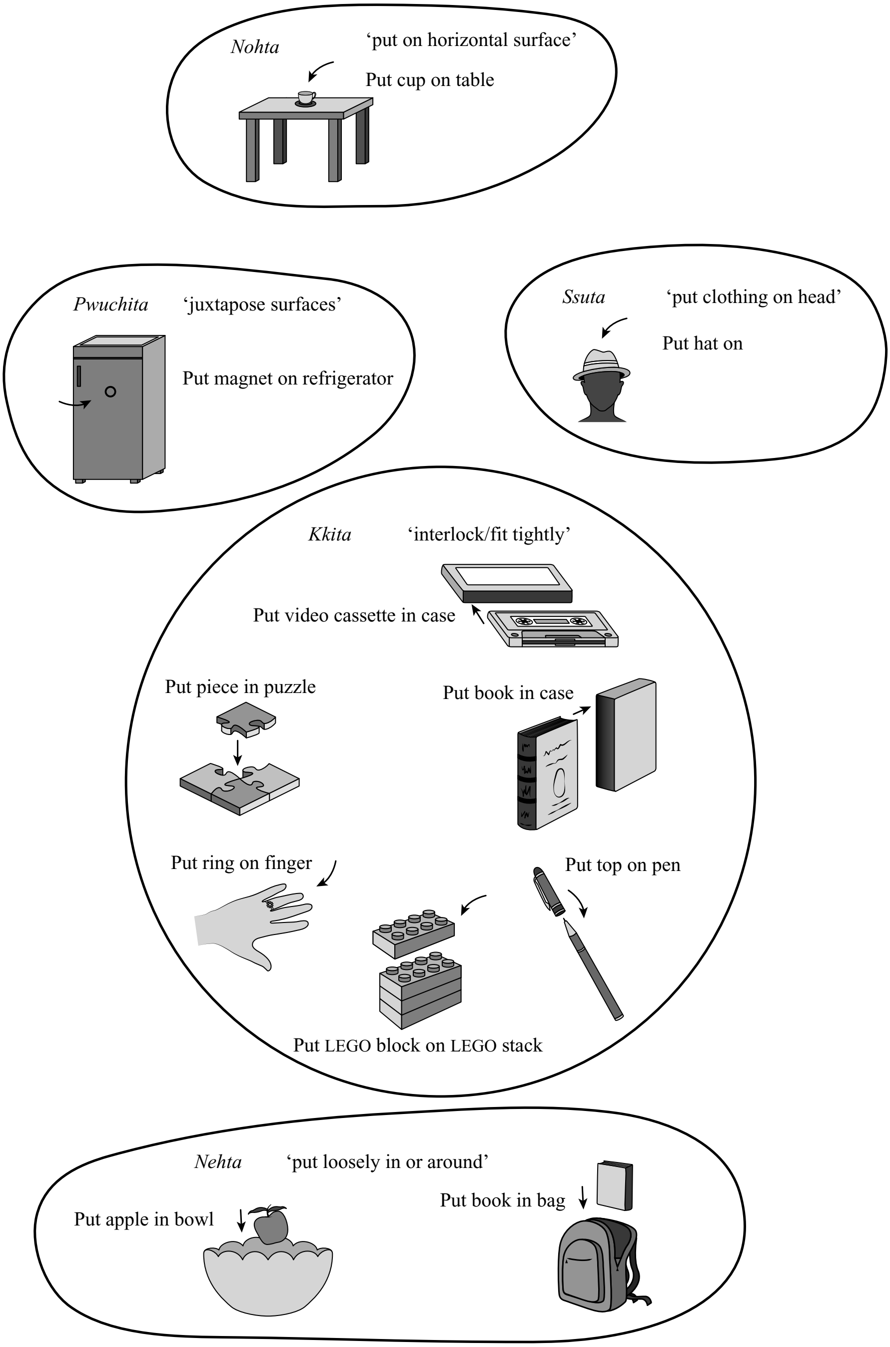


Figure 3.24 Korean lexicalisation using five verbs (adapted from Bowerman and Choi 2003: 394)

the scenes in question, such as what kind of surface is involved, and what kind of contact is involved, for example the juxtaposition of surfaces, a tight fit or a loose fit. These choices are not due to these scenes somehow being experienced in a different way in, for instance, England as opposed to the Korean Peninsula.

Rather, they are ways of categorising the same objectively similar experiences arising from the language-specific ways in which experience is filtered and expressed. As Slobin puts it:

> [T]he activity of thinking takes on a particular quality when it is employed in the activity of speaking. In the evanescent time frame of constructing utterances in discourse one fits one's thoughts into available linguistic frames. 'Thinking for speaking' involves picking those characteristics of objects and events that (a) fit some conceptualization of the event, and (b) are readily encodable in the language. **I propose that, in acquiring a native language, the child learns particular ways of thinking for speaking.** (1996: 76; original emphasis)

4.2 S-FoRs in Guugu Yimithirr

I now briefly turn to Guugu Yimithirr, an indigenous language of North Queensland, Australia, studied extensively by John Haviland (e.g. 1998) and Stephen Levinson (e.g. 1997, 2003). The languages of the world evidence a limited number of frames of reference. What is interesting about this language is that it appears to make exclusive use of the encompassing (or field-based) reference frame. Levinson describes the situation in the following way:

> Instead of notions like 'in front of', 'behind', 'to the left of', 'opposite', etc. . . . Guugu Yimithirr speakers must specify locations as (in rough English gloss) 'to the North of', 'to the South of', 'to the East of', etc. The system is used at every level of scale, from millimetres to miles, for there is (effectively) no other system available in the language; there simply is no analogue of the Indo-European prepositional concepts. (1996: 180)

The field-based terms employed in Guugu-Yimithirr are given in Figure 3.25.

Rather than strictly relating to the cardinal points of the compass north, south, east and west (which are marked as N, E, S and W, respectively, in Figure 3.25), the terms in Guugu-Yimithirr actually encompass quadrants, which only roughly correspond to the European-based points of the compass. However, like the points of the compass, the four quadrants are based on the

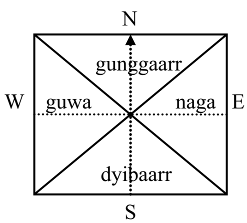


Figure 3.25 The field-based spatial terms of Guugu-Yimithirr (adapted from Haviland 1998)

Earth as an absolute frame of reference. In order to be able to employ this s-FoR and encode relative locations in space, speakers of Guugu-Yimithirr must dead-reckon the location of a particular object with respect to the field-based reference frame in Figure 3.25. What is interesting about this language is that unlike English, which uses field-based terms just for large-scale geographical reference, for example *Europe is north of Africa*, Guugu-Yimithirr can *only* employ field-based reference. As Foley (1997: 217) summarises, 'the sun doesn't go down, it goes west; the fork isn't at my left, it lies south; the tide doesn't go out, it goes east'.

SUMMARY

This chapter has been concerned with the cognitive linguistic approaches to the representation of space. I began by considering the perceptual basis of spatial representation: our mental representation of a stable, spatial environment is achieved by the process of **perception**. Perception consists of three stages: **sensation**, **perceptual organisation** and **identification and recognition**. Sensation concerns the way in which external energy, such as light, heat or (sound) vibrations are converted into the **neural codes** which the brain recognises. This is achieved via the body's sensory or **modal systems**, such as the **visual system** (visual experience), the **vestibular system** (balance, located in the inner ear), **audition** (aural experience), the **haptic system** (concerned with weight, pressure and movement), as well as others. Perceptual organisation concerns the way in which this sensory information is organised and formed into a perceptual object, a **percept**. A previously formed **concept** is employed in order to identify and categorise the percept. While percepts relate primarily to the sensory details of a given entity, concepts include a much greater range of information types, including the nature and function of the entity which is being represented, as well as how it relates to other concepts. Thus, concepts are related to one another in a systematic way, and form a structured knowledge 'inventory': the human **conceptual system**. A fundamental way in which we segregate entities in our environment, thereby perceiving distinct objects and surfaces, comes from our ability to perceive certain aspects of any given spatial scene as 'standing out' from other parts of the scene. This is known as **figure–ground organisation**. Moreover, there are innate principles which allow unconscious perceptual mechanisms to construct wholes or **gestalts** out of incomplete perceptual input. These **Gestalt principles** provide structure to and thereby constrain experience. Another issue addressed in the chapter concerned the representation of **spatial schemas** in language. Spatial schemas consist of pre-packaged bundles of spatial elements which are encoded by closed-class forms, for instance as prepositions in a language such as English. Spatial schemas can be analysed in terms of their i) **spatio-geometric components**, ii) the **properties of components** and iii) the **relations between components**. Another issue considered was **spatial frames of reference (s-FoRs)**: a coordinate system involving a **figure**, a **reference object** and an **origo**. I presented a case study, based on the work of Talmy, who identifies four kinds of s-FoRs. Finally, the chapter examined some of the ways in which languages diverge cross-linguistically in terms of their representation of space.

FURTHER READING

The relationship between space in language and cognition

- **Bloom et al. (1996)**. This edited volume collects together a number of important and influential papers by leading cognitive scientists who have worked on space and spatial cognition. Particularly relevant papers in this volume include those by Ray Jackendoff, Melissa Bowerman and Jean Mandler.
- **Carlson and van der Zee (2004)**. This volume considers the notion of function and functional features in the representation of space in cognition and in language. Each chapter defines these notions, from a distinct theoretical framework, and then considers how they are deployed in cognitive and linguistic representations of space.
- **Evans and Chilton (2010)**. This volume brings together nineteen articles from leading scholars from cognitive linguistics and cognitive science who investigate the relationship between spatial cognition and spatial language, providing a representative overview of the state of the art, in terms of language and space research, as well as pointing to new directions in terms of findings, theory and practice. Chapters address spatial perception, wayfinding, the representation of motion, the range of innate capacities for spatial representation, plus the role of experience in giving rise to spatial concepts. The volume also addresses the way in which language represents space.
- **Mix et al. (2009)**. Considers the nature and function of space, and its role in language use and language learning. The volume is highly interdisciplinary in nature and brings together computer scientists, linguists, roboticists and developmental psychologists who consider the way in which the physical aspects of space may undergird the memory and meaning systems in the mind – systems that are not, of themselves, concerned with space.

Spatial representation of prepositions

- **Coventry and Garrod (2004)**. This book presents experimental evidence for a perceptual and body-based basis for spatial prepositions.
- **Herskovits (1986)**. A seminal study that challenged the orthodoxy, at that time, which viewed spatial representations in language, as encoded

by linguistic markers such as prepositions, as having a primarily spatio-geometric basis. Herskovits argued that much of the semantic representation of spatial schemas can only be understood in terms of non-spatial functions.

- **Hickmann and Robert (2006)**. A collection of specially commissioned chapters, by leading linguists and psychologists, examining the relationship between spatial representation in language and cognition, their similarity and divergence. Chapters focus on issues including linguistic typology, spoken versus signed languages, spatial pathologies in language and cognition, and the issue of linguistic relativity.
- **Tyler and Evans (2003)**. The definitive treatment available of the semantics and sense-networks of English prepositions from a cognitive linguistics perspective.
- **Vandeloise (1991)**. An important and influential case study in the functional nature of spatial representation as encoded in language. This study focuses on spatial representation in French prepositions, considering implications for English.

Spatial frames of reference

- **Levinson (2003)**. Surveys the research conducted by Levinson and his colleagues in the Max Plank Institute at Nijmegen in the cross-linguistic diversity in spatial representation. Presents a highly influential taxonomy of s-FoRs and considers the implications of the findings for the issue of linguistic relativity.
- **Talmy (2000a: Chapter 3)**. Presents a revised version of Talmy's pioneering and highly influential study of the way language and languages structure space in language. This paper was first published in 1983.

Cross-linguistic variation

- **Fortescue (2011)**. Presents a taxonomy of s-FoRs for indigenous languages of the North Pacific Rim, ranging from Vancouver Island to Northern Japan. Fortescue makes a compelling case for the relationship between experiential factors, including environment – such as riverine and archipelago systems – and wayfinding, as manifested in linguistic spatial cognition.
- **Levinson and Wilkins (2006)**. This collection examines cross-linguistic variation and diversity, in grammars of space, from the perspective of semantic typology: the cross-linguistic variation in the semantic parameters used to structure specific semantic fields. In general terms, the perspective presented in the volume is to question the assumption that it is possible to establish clear-cut universals across languages. The volume constitutes a companion volume to Levinson (2003).
- **Thiering (2015)**. Considers the spatial representation of three indigenous and minority languages from sub-Arctic Canada, central Mexico and

Papua New Guinea. Taking a cognitive linguistic perspective, the author provides insightful case studies shedding light on the way in which key theoretical constructs, including the notion of gestalts, figure–ground organisation and cognitive maps, can be used to understand representations for space and navigation in areally and genetically unrelated languages from mountain and prairie regions.

DISCUSSION QUESTIONS

1. What count as linguistic reflexes of the perceptual and conceptual basis for spatial representation? What's the rationale for positing these sorts of 'reflexes'?
2. What sorts of ways has cognitive linguistics modelled spatial representation in language? Think of examples of theoretical constructs deployed by cognitive linguists and the rationale for proposing these.
3. How are languages broadly similar, in the ways in which they represent space? And how do they diverge? Discuss based on examples considered in this chapter and/or based on languages you may be familiar with.

4

Foundations of experience II: time

Like space, time is also a foundational domain in terms of human experience. Like other species, humans must be able to compute not only *where* objects and other entities are located in the world, and *what* those objects and entities *are doing*; in addition, they must also be able to judge *when* events are happening, *in what order* and for *how long*. At the level of human experience, time concerns, at the very least, understanding the distinction between now and not-now, succession and duration. Without the capacity for perceiving and responding to the *flow* of events, and the ability to judge the duration of an event, even the most basic of endeavours would become impossible. Everyday activities – ranging from the ability to tell the time, to interpreting a train timetable, would become impossible – these self-evidently presuppose an understanding of the nature of time. But even many of our most basic capacities, which we take for granted, including language, as well as our ability to coordinate motor actions – upon which a host of behaviours depend, such as lifting and setting down objects, walking, running and so on – are dependent upon temporal processing.

This chapter provides an overview of some of the key findings, from cognitive linguistics, concerning the nature of temporal cognition, as well as the representation of time in language. But given the interdisciplinary study of time, this discussion is framed in terms of findings from other disciplines in the behavioural and brain sciences, from which the cognitive linguistics perspective on time draws. Such disciplines include **psychology** – the study of the mental processes that underlie human behaviour – as well as **cognitive neuroscience** – the empirical study of the human brain and nervous system.

1 Temporal perception

I began the previous chapter by considering how space is perceived. We saw that the entities that make it up, in our world of experience – objects, places, physical terrain, people and so on – arise via perceptual processing. Our embodiment provides us with sensory systems that process distinct streams or modalities of information, transducing energy signals harvested from the external environment into percepts, such as a coffee cup or even this book.

But time, on the face of it, appears to be something quite different from this. For one thing, it is not at all obvious that time is something that is 'out there' waiting to be discovered in the same way as our spatial environment. For another, there don't appear to be sensory systems for time designed to provide a means of harvesting *external* energy signals, converting them into the equivalent of percepts. So, if there are no 'temporal percepts', what is time? How is it different and/or similar to space? And where does it come from? These are questions that I address in this section, by examining findings that suggest that time has a **phenomenological basis**: time constitutes both a subjectively and a psychologically real experience – or more precisely, a set of experiences – that are indeed, at least in part, directly perceived at the level of subjective awareness.

1.1 The subjective reality of time

Several decades of research by experimental psychologists have established that temporal awareness is subjectively real – we directly and vividly perceive it. Much of this research has been concerned with the perception of duration, which, as we shall see later, is an important, albeit just one, facet of our subjectively real experience of time. A number of factors influence our perception of time, which I review in this section.

1.1.1 Experience of events

The social psychologist, Michael Flaherty (1999), in now classic work, has observed that time can be perceived as 'speeding up' or 'slowing down' in response to specific sorts of events. The phenomenologically real experience of time slowing down is known as **protracted duration**. This is a response, by the human experiencer, when focusing on events of two kinds. First, this arises when the **perceptual stimulus array** is impoverished: for instance, when waiting for an appointment, or being imprisoned, with little to occupy oneself. This is evidenced by the spoken protocol produced by a concentration camp survivor:

(1) The days passed with a terrible, enervating, monotonous slowness, the tomorrows blending into weeks and the weeks blending into months. 'We were about a year in Auschwitz,' says Menashe, 'but in Auschwitz, one day – everyday – was like 10 years.' (Flaherty 1999: 60)

Second, the vivid experience of time proceeding more slowly than usual also arises in response to events that are full of complex perceptual stimuli, such as a near-death experiences, as evidenced by the following, describing a car crash:

(2) My first thought was, 'Where did that car come from?' Then I said to myself, 'Hit the brakes.' . . . I saw her look at me through the open window, and turn the wheel, hand over hand, toward the right. I also [noticed] that the car was a brown Olds. I heard the screeching sound from my tires and knew . . . that we were going to hit . . . I wondered what my parents were going to say, if they would be mad, where my boyfriend was, and most of all, would it hurt . . . After it was over, I realized what a short time it was to think so many thoughts, but, while it was happening, there was more than enough time. It only took about ten or fifteen seconds for us to hit, but it certainly felt like ten or fifteen minutes. (Flaherty 1999: 52)

Protracted duration is caused by a heightened awareness of a particular stimulus array, either because the interval experienced is 'empty', as in (1), or because a lot is being experienced in a short space of time, a 'full' interval, as in (2).

The experience of time 'speeding up' is termed **temporal compression**. This concerns our felt experience that time is proceeding more quickly than usual; it is most often associated with routine behaviours, which we carry out effortlessly without much attention to the task at hand. According to Flaherty, temporal compression arises from what he terms **routine complexity**: an event or activity that, initially, is complex, as when learning a new behaviour, can, with practice or experience, become routine. And this can lead to the activity becoming processed without much awareness of its **temporal contour**. This leads, in turn, to the sensation that time is proceeding more quickly than usual. For instance, the drive to work, on the first day of a new job, represents a new activity, one that requires paying attention to the details of the route in order not to become lost. But as the drive becomes routinised – perhaps after a few weeks of the daily drive – the driver begins to focus less on details of the route, until one day, they might marvel at the vivid sensation that the drive has gone by 'in a flash', as if the car has 'driven itself' to the workplace.

Further evidence for these **time dilation** effects – protracted duration and temporal compression – comes from the psychology lab. In one study, subjects watched a video recording of an event full of both activity and danger: a bank robbery. The researchers found that while the recording lasted for just thirty seconds, when subjects were invited to estimate how long it lasted, participants typically judged it to have lasted five times longer, at 150 seconds, on average (Loftus et al. 1987).

Another type of study – also focusing on time dilation – involves the use of sensory deprivation. In one condition, subjects were located in a sensory isolation unit. They were then asked to estimate the time of day at various intervals throughout a sixty-hour period. Without the availability of ready temporal cues – such as daylight, clocks and so on – subjects consistently underestimated the temporal elapse. On average, subjects perceived time to be proceeding more slowly; each 'hour' was estimated as having lasted 1.12 hours (Campbell 1986).

Taken together, these findings provide compelling evidence both for the direct perception of temporal experience – both protracted duration and temporal compression are widely attested – and that they reliably correlate with 'empty' and 'full' intervals, respectively. Moreover, while they correlate to specific genres of events ('empty' versus 'full'), there is nothing inherent in the events themselves that causes time to feel as if it is slowing down or speeding up: this appears to be a consequence of the human experiencer's response to these event types.

1.1.2 Vital functioning

While time dilation effects can arise due to human responses to specific sorts of experiences, there is also strong evidence, going back to the 1930s, that our awareness of time is a consequence of bodily functioning: if the body's vital functions are speeded up or slowed down, due to an increase or decrease in temperature, or due to imbibing stimulants or depressants, this has a real effect on how individuals experience the passage of time.

Experiments which have investigated this phenomenon have made use of a **subjective minute** paradigm: subjects, in normal conditions, count from one to sixty, with each number being counted at a rate they judge to correspond to one second. But when subjects are subjected to higher temperatures, such that their bodily functioning speeds up, so too their count speeds up. In one study, a subject with a body temperature of ninety-eight degrees Fahrenheit, judged a minute as corresponding to around fifty-two seconds. However, at 101 degrees Fahrenheit, the subjective minute decreased to around forty seconds in real time. In short, the higher the temperature, the faster the count, and hence, the shorter the subjective minute. In contrast, when subjects have their bodily temperature lowered, for instance, by being immersed in cold water, their count slows down, leading to a subjective minute being judged as lasting longer than it otherwise would (Fraisse 1984).

1.1.3 Individual factors

Finally, temporal judgements can be influenced by individual factors, such as personality. This has been investigated using an **ambiguous question** paradigm, in the work of Sarah Duffy and colleagues (Duffy and Feist 2014; Duffy et al. 2014). In her work, Duffy made use of a paradigm first developed by psychologists McGlone and Harding (1998). This involved posing an ambiguous question about the rescheduling of an event, for instance: *Wednesday's meeting has been moved forward two days: Which day does it now take place on?*

Under normal circumstances, subjects report that the meeting has 'moved forward' to Monday, or Friday, with each response occurring about 50 per cent of the time, which is to say, at chance level. But what Duffy found was that when personality or lifestyle variables were controlled for, this affected how subjects responded. Introverts, and those who have relatively little control over their lifestyle, tended to respond Monday. In contrast, extroverts, and those who have relatively greater control over their lifestyle, typically respond with Friday. What this reveals is that temporal reasoning can be influenced by individual factors. I'll return to the reason for this divergence, later in the chapter, once we've examined the **conceptual metaphor theory** approach to time.

In a further study, Duffy and Evans (2016) found that temporal judgements could be amended if the nature of the event in question were changed. For instance, if the experimental paradigm concerns, not a meeting, but rather, a party, extroverts consistently answer Monday, rather than Friday, in response to the ambiguous question. In short, the **event valence** – whether the event is perceived as being positive (a party) or negative (a meeting) – can influence subjects' judgements: presumably a positive event, such as a party, influences subjects such that they look forward to the event. And this led to subjects responding selecting Monday, rather than Friday in response to the ambiguous question: the event 'moved forward' to Monday, an earlier point in time, rather than being 'moved back' to Friday.

Finally, the neuroscientist David Eagleman (Eagleman and Holcombe 2002) has observed that subjects' perception of when an event occurs is influenced by whether or not the human subject has caused the event. In particular, Eagleman found that when subjects judge that they have caused the event, the event is perceived as occurring earlier. In contrast, if the event is judged as being caused by an outside influence, it is perceived as occurring later.

In short, all these findings point to the following: temporal awareness and temporal judgements are subjectively real – we do directly experience time, as revealed by cases of time dilation effects. Moreover, these effects can arise from neurobiological functioning, and from human subjects' responses to particular sorts of events (Eagleman et al. 2005). Moreover, it's not the events themselves that are somehow giving rise to the temporal dilation. Rather, this appears to be a consequence of how the human subject is processing the particular stimulus array, leading to distortions in the 'normal' experience of the passage of time.

1.2 Facets of temporal experience

The commonplace way in which we think about time often concerns what has been dubbed the **matrix conception** (Evans 2004), also referred to as **time-as-such** (Sinha et al. 2011). The idea is that time provides a manifold, or matrix, constituting *the* event within which all other events unfold. From this perspective, we think of time as something eternal, that envelops us: it comes before our birth, and continues long after our death. In classical theories of mechanics, best exemplified by Sir Isaac Newton's *Mathematical Principles of Natural Philosophy*, published in 1687, time is conceived as the cog that drives existence – a force of nature that is in perpetual, equable motion. The linguistic reflex of this matrix conception of time is evidenced by the following:

(3) Time flows on (forever).

But this matrix conception is just that: a conception. This way of thinking about time in fact constitutes a **reification** of a range of temporal experiences. And as such, it gives rise to an **ontological category** – a representation – that enables us to abstract away from aspects of temporal experience, enabling us to conceive of time as an entity, that is, in some sense, distinct from the events that it is part of. And this means we can conceive of time as an entity independent of events, which we can employ for intersubjective reflection – to think and talk about time (Evans 2013b).

While the human brain appears not to have a central timekeeper – a 'clock' in the brain – nevertheless, over the last few decades, neuroscientists and psychologists have discovered that the brain is awash with a host of different timing mechanisms, associated with a range of different sorts of temporal experiences – experiences we become consciously aware of – that have, in turn, enabled us to construct complex conceptualisations and representations for time, such as the matrix conception (e.g. Eagleman 2008, 2009; Eagleman and Pariyadath 2009).

One way of approaching the range of temporal experiences we are consciously aware of, is to compare space with time. Indeed, and as we shall see later in the chapter, a large body of work in cognitive linguistics has been concerned with the way in which our concepts for time are grounded in, and indeed, arguably parasitic on experience of our spatio-physical environment. But at the level of phenomenological experience, time constitutes a real set of experiences types, that precede this – subsequent – structuring in terms of space.

1.2.1 Parameters for comparing space and time

There are three **parameters** that can be used to compare and contrast the domains of space and time – a parameter, in this sense, constitutes a feature exhibited by both domains (Evans 2013b; Galton 2011). Based on Evans (2013b), the parameters are **magnitude** – which is to say quantity: how much space or time there is. The second is **dimensionality** – how many, and the nature of the dimensions exhibited by both domains. The third is **directedness** – the inherent directionality associated with each domain.

In terms of the first parameter, magnitude, the **substrate** – informally, the 'stuff' – that makes up the domain of space is matter. And the property of matter is **extension** – matter can be divided, measured, counted and weighed. In contrast, in the domain of time the substrate is action, and the property of action is **duration**: the elapse associated with a given event, or sub-event.

While the substrate in both domains can be quantified – both (spatial) extension, and (temporal) duration exhibit magnitude, and hence, can be measured – nevertheless, the substrate and properties of the substrate is qualitatively different in both domains. Moreover, both properties would appear to be fundamental to both human experience, and are self-evidently available to conscious awareness. Humans are remarkably good at judging temporal elapse – duration – even in the absence of spatio-physical cues, as we

Table 4.1 Comparison of space and time in terms of magnitude

Domain	Space	Time
Substrate	Matter	Action
Property	Extension	Duration

saw earlier. In short, we don't have to experience space to be able to 'feel' the passage of time – we experience temporal 'passage' in the absence of spatial cues. Table 4.1 summarises the distinction between space and time in terms of magnitude.

In terms of the second parameter, dimensionality, space exhibits three **dimensions** – or **planes** – enabling us to locate specific regions in space. These are the **transversal** (left/right), **sagittal** (front/back) and **vertical** (up/down) planes. Hence, our everyday representation of space can be said to be three dimensional.

In contrast, in the domain of time, there is simply one dimension, which we might liken to **succession**. One event follows another, in a sequence, as when Monday follows Sunday and precedes Tuesday, or coffee follows dessert in a formal dinner. Our world of experience is contingent on being aware of the sequential nature of events.

The third parameter, directedness, also reveals a qualitative distinction between the two domains. In the domain of space, it's possible to move in a variety of directions, up, down, forwards or back, and from side to side. The term used to describe this quality is **isotropicity**: space is isotropic in the sense that it is symmetrical; we can undertake motion in any direction.

In contrast, in terms of time, the directedness is unidirectional, from the future, to the present, to the past. Moreover, this is irreversible: once an event has occurred, it cannot 'unoccur'. For instance, a cup of coffee cooling on a desk cannot somehow spontaneously heat itself up again, once it has gone cold: past events are firmly 'located' in the past. This asymmetric feature of time's directedness is known as **anistropicity**: time has a unidirectional manifestation, in contrast to space.

A further feature of our experience of time, but not of space, is what Galton (2011) has identified as **transience**. This amounts to the vividly felt experience of the ephemeral nature of time: it is fleeting, in the sense that one moment replaces another, in our conscious awareness, with another replacing that one and so on. This facet of time, transience, is not evident in the domain of space: matter is fixed, and relatively stable; objects and other entities persist through time.

Moreover, the transient nature of time appears to have a neurological basis. It's well known that the brain's timing mechanisms have an outer window of around three seconds. This is known as the **perceptual moment** (Pöppel 1994, 2009). Every two to three seconds or so, our perceptual processes are updated, giving rise to a new temporal window as we perceive ongoing events in our environment. It is for this reason that ambiguous figures, such as the vase/face illusion, below, are updated every 2–3 seconds: look at the figure closely,

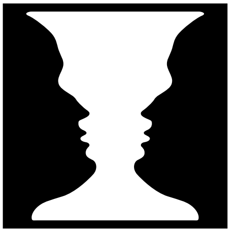


Figure 4.1 Ambiguous figure (adapted from Rubin 1915)

and it will switch from one variant to another, every few seconds. And this arises from the brain's temporal codes, which allow us to update what we are perceiving in our environment. Pöppel has argued that the perceptual moment, arising from the way the brain constructs our experience of time, forms the basis for our phenomenological awareness of the present: now.

1.2.2 A taxonomy of temporal experience types

Based on proposals by philosopher, Anthony Galton (2011), Evans (2013b) has developed a taxonomy of temporal experience types, common to our species, all of which appear to have reflexes in language.

At the most basic level, temporal experience consists of **temporal elements**. These are phenomenologically simple experience types that contribute to – or in some cases arise from – our experience of transience. These include felt experience types such as now, past, future, earlier and later. An event can be experienced in terms of each of these categories. Moreover, these elements of temporal experience cross-cut one another: two past events can be judged as being earlier and later, while both being set in the past, as evidenced by the following linguistic example:

(4) The transistor was invented before the microchip.

While the invention and manufacture of transistors – which powered the early radios – came before the emergence of the microchip, both inventions are firmly 'located' in the past.

The second experience type relates to the **temporal parameters** I discussed earlier: duration, succession and anistropicity. Evans (2013a, 2013b) argues these constitute three facets of our more global experience of transience. Hence, these constitute **transience types**. Duration, succession and anistropicity – the experience of the 'passage' from future to present to past – give rise to a coherent experience of transience. Table 4.2 summarises these, while Figure 4.2 illustrates how these temporal experiences contribute to the global experience of transience.

Transience types logically support more complex temporal experience types – **temporal qualities**. These include experiences such as **frequency**, **change** and **synchronicity**. The idea is that these more complex temporal experiences arise from evaluations made possible by simpler experiences such

Table 4.2 Transience types

Transience type	Description
Duration	The felt experience of the passage constituting an elapse
Succession	The felt experience of the passage involving earlier and later experience types
Anisotropicity	The felt experience that the passage exhibits inherent asymmetry – a felt distinction between future, present and past

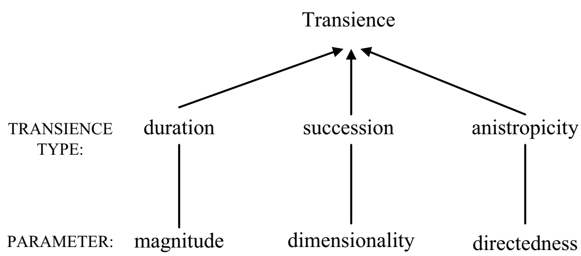


Figure 4.2 Types of transience and their parameters

as transience types, and temporal elements. In particular, temporal qualities involve comparison judgements with respect to transience. For instance, an awareness of change involves a comparison, or awareness of a difference between two states at different temporal intervals. Frequency involves the identification of a number of iterations of experiences, or experience types at different temporal intervals, in order to ascertain how often a similar event has occurred; **synchronicity** involves an awareness of two experiences or experience types occurring at the same temporal moment.

2 Linguistic representations for time

In this section, I explore the way cognitive linguists have investigated the domain of time. In particular, I review how time is represented in language, and the range of insights this provides in terms of cognitive representations for time.

2.1 The spatialisation of time

While time is, at the level of conscious experience, multifaceted and directly perceived, in terms of how we represent time, both in language and thought, time often appears to recruit structure from the domain of space. This observation has been explored in detail within the highly influential conceptual metaphor theory. In this section, I consider the work of Lakoff and Johnson (1980, 1999), before moving on to that of Moore (2006, 2014). Conceptual metaphor theory will be introduced in detail in Chapter 12. But my purpose here is to draw out key findings revealing the way in which space is often recruited to support concepts for time.

2.1.1 Time is space

Linguist George Lakoff and philosopher Mark Johnson (1980, 1999) have, in their research, focused on a specific type of linguistic data that allow the cognitive linguist to infer patterns of knowledge representation in conceptual structure. Consider some examples:

(5) a. Summer is fast approaching.
    b. The vacation has come and gone.

Examples such as these provide evidence for what Lakoff and Johnson dub a **conceptual metaphor**. While each of the sentences is concerned ostensibly with time, and specifically the relative imminence of a temporal event – *summer* – or the past occurrence of a temporal event – *the vacation* – the language used relates to motion through space: *fast approaching*, and *come and gone*. What this shows is that our ability to talk and think about the passage of time is grounded in our prior experience and understanding of physical passage. In short, there is a stable knowledge structure, in our conceptual systems – a conceptual metaphor – that structures temporal passage in terms of physical passage.

According to Lakoff and Johnson, it is by virtue of this structuring – metaphorically *understanding* time in terms of (motion through) space, hence 'conceptual' metaphor – that we can conceive of time as something that can come and go. In short, a large part of the way we think about and conceptualise time is constructed by conceptual metaphors: the projection of structure from the domain of SPACE, and motion through space, furnishes us with important ways of thinking about TIME, which, but for the conceptual metaphor, would not otherwise be possible.

Lakoff and Johnson posit a number of conceptual metaphors for time, based on linguistic evidence. The first is the Time Orientation metaphor, also known as NOW IS HERE (Grady 1997a). A conceptual metaphor involves concepts from one domain, the **source domain** – SPACE – being projected onto corresponding concepts in a **target domain** – TIME. Moreover, the conceptual metaphor establishes a long-term cognitive link in memory, so that we can use ideas from the domain of SPACE not only to talk about temporal concepts, but also to think about TIME.

In the Time Orientation metaphor, depicted in Figure 4.3, locations in physical space are mapped onto temporal elements: future, present and past. Importantly, however, the location of these elements takes its reference from both the location of a human observer, and the observer's physiology – with a front and a back. Hence, the observer's location HERE structures the concept of NOW; the physical space in front of the observer structures the concept of FUTURE, while the physical space on the observer's sagittal (front/back) axis structures the concept of PAST. Accordingly, we can use physical space ahead of the observer to metaphorically understand the concept of FUTURE, while the space behind the observer enables us to understand the concept of PAST.

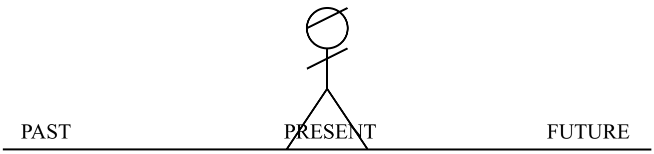


Figure 4.3 The Time Orientation metaphor

Consider some linguistic evidence for inferring this conceptual metaphor within our conceptual systems:

(6) a. That's all *behind* us now.
b. What's it like to be *here*, in the twenty-first century?
c. We're looking *ahead* to the future.

These examples show that while we're using the language from the literal domain of space, which I've italicised – *behind*, *here* and *ahead* – these notions in fact relate to, respectively, PAST, NOW and FUTURE. In short, language provides evidence that the orientation of a human experiencer, in space, is being recruited to understand aspects of temporal experience: notably the temporal elements NOW, FUTURE and PAST.

A conceptual metaphor involves a series of what are termed **mappings** – cognitive links that structure corresponding sets of concepts across the two domains of knowledge. These are summarised in Table 4.3.

According to Lakoff and Johnson, the Time Orientation metaphor combines with our understanding of motion through space to give rise to two further 'motion' metaphors. The first is the Moving Time metaphor, also known as TIME IS (OBJECTS IN) MOTION ON A PATH.

In this conceptual metaphor, 'times', represented by the circles in Figure 4.4, are in motion from the future, towards a static observer – corresponding, metaphorically, to the present, and then away behind into the past. The dashed arrows in Figure 4.4 illustrates that it is 'times' that are in motion.

Table 4.3 Mappings for the Time Orientation metaphor

Source domain: SPACE	Mappings	Target domain: TIME
THE LOCATION OF OBSERVER	→	THE PRESENT
THE SPACE IN FRONT OF THE OBSERVER	→	THE FUTURE
THE SPACE BEHIND THE OBSERVER	→	THE PAST

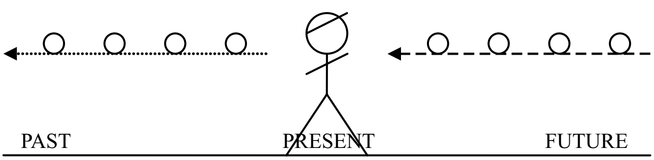


Figure 4.4 The Moving Time metaphor

Evidence for this conceptual metaphor comes from linguistic examples of the following sort, drawing from motion through space to understand the relative imminence and occurrence of future, present and past events:

(7) a. The time for action has arrived.
b. The summer just zoomed by.
c. I can see the face of things to come.
d. The time for end-of-summer sales has passed.

The mappings for this conceptual metaphor are given in Table 4.4.

The reversal of the Moving Time metaphor is the Moving Observer metaphor, also known as TIME IS (OUR) MOTION ON A PATH. Here, time is structured in terms of the conceived motion of the observer along the sagittal plane. In this metaphor system, time is conceptualised as a physical timescape, with events conceptualised as physical locations towards and past which the observer moves (see Figure 4.5).

In this conceptual metaphor, it is the 'times' that are now static locations, as indicated by the circles in Figure 4.5. And it is the observer that undergoes metaphoric motion towards and past them, as indicated by the arrow indicating direction of the observer's travel. And in this way, the observer's motion towards and past events enables us to conceptualise FUTURE, PRESENT and PAST.

Table 4.4 Mappings for the Moving Time metaphor

Source domain: MOTION OF OBJECTS	Mappings	Target domain: TIME
OBJECTS	→	TIMES
THE MOTION OF OBJECTS PAST THE OBSERVER	→	THE 'PASSAGE' OF TIME
PROXIMITY OF OBJECT TO THE OBSERVER	→	TEMPORAL 'PROXIMITY' OF THE EVENT
THE LOCATION OF THE OBSERVER	→	THE PRESENT
THE SPACE IN FRONT OF THE OBSERVER	→	THE FUTURE
THE SPACE BEHIND THE OBSERVER	→	THE PAST

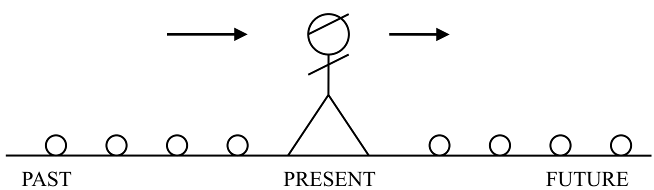


Figure 4.5 The Moving Observer metaphor

Table 4.5 Mappings for the Moving Observer metaphor

Source domain: MOTION OF OBSERVER	Mappings	Target domain: TIME
LOCATIONS ON OBSERVER'S PATH	→	TIMES
THE MOTION OF THE OBSERVER	→	THE 'PASSAGE' OF TIME
THE LOCATION OF THE OBSERVER	→	THE PRESENT
THE SPACE IN FRONT OF THE OBSERVER	→	THE FUTURE
THE SPACE BEHIND THE OBSERVER	→	THE PAST
DISTANCE OF OBSERVER FROM LOCATION	→	TEMPORAL 'DISTANCE' OF EVENT
RAPIDITY OF MOTION OF OBSERVER	→	IMMINENCE OF EVENT'S OCCURRENCE

Evidence for this conceptual metaphor comes from linguistic examples of the following kind:

(8) a. We're getting *close to* the end of term.
b. The relationship *extended over* many years.
c. We're *fast approaching* decision time.
d. He left *at* 10 o'clock.
e. We're *halfway through* April.

The mappings for this conceptual metaphor are given in Table 4.5.

2.1.2 Experimental evidence

There is experimental support from the psychology lab for the psychological reality of conceptual metaphors for time. In one study, psychologist Dedre Gentner and colleagues (Gentner et al. 2002) used a **metaphor consistency paradigm**. This paradigm is based on the idea that if conceptual metaphors are psychologically real, then when a particular conceptual metaphor is activated in the mind when reading a sentence, then reading a subsequent sentence that involves the same conceptual metaphor should be **primed** for, enabling the subject to comprehend the second sentence more quickly. In contrast, a second sentence that doesn't make use of the same conceptual metaphor should take longer to process. Gentner and colleagues did indeed find a **priming effect**: when two sentences employ the same conceptual metaphor, the second sentence is understood more quickly than when it relates to a different conceptual metaphor. In short, this experiment provides evidence for the psychological reality of the conceptual metaphors proposed by Lakoff and Johnson.

Further experiments, by Lera Boroditsky (2000) and Daniel Casasanto (Casasanto and Boroditsky 2008) have shown that not only are conceptual metaphors psychologically real, they are **asymmetric**, as predicted by Lakoff and Johnson, based on the linguistic evidence. They found that while we use space to reason about time, we tend not to use time to reason about space. One task tested this by asking subjects to watch lines grow across a computer screen at faster and slower rates, and hence for different durational elapses. Importantly, lines of greater length were invariably judged as having a longer duration, even when that was not the case. In contrast, lines of shorter length were judged as having shorter duration, again, even when that was not the case. What this reveals is that we automatically use physical length when making judgements about duration, but not vice versa (Casasanto and Boroditsky 2008).

An important idea in conceptual metaphor theory is that what is being recruited by conceptual metaphors is **inferential structure**: while we cannot observe time, if it even exists as a thing unto itself, we observe events, and compare them. And this enables us to infer the temporal dimensions of experience that are grounded in the direct experience of events. For Lakoff and Johnson, time is directional and irreversible, because events are; events cannot 'unhappen'; time is continuous because we experience events as continuous; time is segmentable because events have beginnings and ends; and time can be measured because iterations of events can be counted.

Lakoff and Johnson summarise this view as follows: 'Very little of our understanding of time is purely temporal. Most of our understanding of time is a metaphorical version of our understanding of motion in space' (1999: 139). Hence, time does not exist as a 'thing-in-itself . . . [w]hat we call the domain of time appears to be a conceptual domain that we use for asking certain questions about events through their comparison to other events' (Lakoff and Johnson 1999: 138). In short, 'our concept of time is cognitively constructed . . . events and motion are more basic than time' (Lakoff and Johnson 1999: 167). From this perspective, the relation between time and space is asymmetric. Time is constructed via conceptual metaphors which import knowledge structure from the domain of (motion through) space. And as such, while we use space to structure time, we are far less likely, if at all, to use time to structure space.

2.1.3 Further developments

In more recent research within the conceptual metaphor tradition, Kevin Moore (2006, 2011, 2014) has revised two aspects of the conceptual metaphor perspective that time is structured in terms of space. First, Moore nuances the view that time is parasitic on prior spatial experience. In point of fact, Moore proposes, contrary to Lakoff and Johnson, that TIME has inherent structure independent of the metaphors that serve to structure it – a position consistent with the findings I reviewed earlier. Second, he observes that Lakoff and Johnson have conflated distinct conceptual metaphors, which, if properly understood, enable the analyst to account for, on the face of it, paradoxical linguistic examples.

Moore argues that in analysing space-to-time mappings we are not dealing with distinct and homogenous domains such as SPACE and TIME, but with a complex array of experience types. In particular, rather than assuming that temporal conceptual metaphors involve a single target domain, TIME, he proposes that there are two distinct target **frames**:

i) succession: times occur in sequence;
ii) ego-centred time: the experience of now, and the constantly changing status of times relative to now.

While the Moving Time and Moving Observer conceptual metaphors, discussed above, are better thought of in terms of ego-centred time – events metaphorically move relative to the location of the observer, or the observer undergoes relative motion – Moore argues there is a third space-to-time motion metaphor, which relates to the notion of succession.

To see why this conceptual metaphor is required, let's consider some potentially paradoxical examples, for Lakoff and Johnson's account:

(9) a. In the weeks *following* next Tuesday, there will be very little to do.
b. Tuesday *comes after* Monday.

(10) a. During the weeks *preceding* last Tuesday, things were impossibly hectic.
b. Monday comes *before* Tuesday.

The examples in (9) and (10) are, on the face of it, paradoxical. In (9), the examples relate to the future – *the weeks following next Tuesday*, refers to weeks that are in the future, with respect to *next Tuesday* – yet they involve language that concerns being located behind – *following* – which is normally associated with the past.

In contrast, in (10), the examples relate to the past, but employ language relating to being 'in front', for instance, *preceding* and *before*. Lakoff and Johnson argued that while ostensibly paradoxical, these are nevertheless still accounted for by the Moving Time metaphor. This follows as, in these examples, temporal events are themselves being conceptualised as having inherent fronts and backs. Hence, we can use locations behind to refer to the future because a time that is in the future, is following an earlier time, and hence can be said to be following the earlier time.

But Moore has shown, in fact, that this conclusion constitutes a misanalysis. He posits a third space-to-time motion metaphor: SEQUENCE IS RELATIVE POSITION ON A PATH metaphor. He argues that in this conceptual metaphor, there is no observer. Rather, temporal events are metaphorically structured with respect to one another, in motion on a path: a temporal event, and its location in a temporal sequence, provides the conceptual metaphor with its reference

Table 4.6 Mappings for SEQUENCE IS RELATIVE POSITION ON A PATH

Source frame: ORDERED MOTION	Mappings	Target frame: SUCCESSION
MOVING ENTITIES AT DIFFERENT POINTS ON A (ONE DIMENSIONAL) PATH	→	TIMES IN A SEQUENCE
AN ENTITY THAT IS AHEAD OF ANOTHER	→	A TIME THAT IS EARLIER THAN ANOTHER TIME
AN ENTITY THAT IS BEHIND ANOTHER	→	A TIME THAT IS LATER THAN ANOTHER TIME

point. And this conceptual metaphor results from an understanding of succession, giving rise to the temporal relations EARLIER and LATER.

In contrast, the Moving Time and Moving Observer conceptual metaphors involve understanding temporal motion in terms of the observer, which provides a reference point: namely NOW. And it is with respect to this reference point that temporal events can be said to be future or past based. In short, while the Moving Time metaphor enables us to conceptualise events as being past or future based, SEQUENCE IS RELATIVE POSITION ON A PATH enables us to conceptualise events as being EARLIER or LATER. And in principle, two events can be earlier or later from one another regardless of whether they are set in the future or past. The mappings for the SEQUENCE IS RELATIVE POSITION ON A PATH metaphor are provided in Table 4.6.

This conceptual metaphor accounts for the linguistic examples in (9) and (10) in a natural way. According to Moore, these examples don't invoke the notions of PAST and FUTURE, which arise from the Moving Time (and Moving Observer) metaphors posited by Lakoff and Johnson. Instead, succession, one of the transience types discussed earlier, rather than anistropicity – the distinction between future, present and past – underpins these examples: it's not the case that these examples invoke individual units of time ('times'), conceptualised as having fronts and backs. Rather, they invoke our understanding of succession, metaphorically structured in terms of motion on a path; from this perspective, earlier times precede later times in the same way that an object on a path is physically ahead of, and arrives before, another that is located behind it. And in this way, the paradox apparent in these examples is resolved.

2.2 Lexical concepts for time

While language points to the existence of conceptual metaphors for time, a conceptual metaphor is a unit of conceptual structure, rather than a unit of language per se. So, how is time encoded in language?

Evans (2004) argues that many of the concepts for time, arising from different facets of temporal experience, can be identified as being directly encoded by language. Concepts of this sort are termed **lexical concepts** (Evans 2004, 2006, 2009). A lexical concept is a unit of knowledge which is represented by a single lexical item, or by a fixed expression. Examples from English include the lexical items *time*, *past*, *present*, *future* and so forth – an idea later developed as part of the theory of Access Semantics (see Evans 2013b; and Chapter 18).

Evans (2004) distinguished between **primary lexical concepts** for time and **secondary lexical concepts**. Primary lexical concepts are those that relate to putatively universal aspects of human cognitive processing. These concern experiences such as duration, simultaneity, assessment of a temporal 'point', the experience of now and so forth. Experiences of this kind can be traced to underlying perceptual mechanisms and processes, as discussed earlier.

Accordingly, concepts of this kind are likely to be more common in the languages of the world, and when they occur, to be more similar across languages. Primary lexical concepts can be contrasted with secondary lexical concepts; rather than relating to fundamental aspects of cognitive function, these are cultural-constructs, and thus may often be culture specific. A good example of this is the concept of time as a commodity, in which time is conceptualised as being something valuable which can be bought and sold, just like physical merchandise. This lexical concept, while present in the languages of the industrialised world, which pay for labour in terms of 'units' of time, is entirely absent in many non-industrialised cultures. In this section I will only be concerned with primary lexical concepts.

2.2.1 Time

In order to give an illustration of some of the primary lexical concepts, let's examine the English lexical item *time*. This lexical form encodes a number of primary lexical concepts which show up in distinct contexts. The lexical concepts I will address are DURATION, MOMENT, EVENT and INSTANCE.

Duration

The concept of duration shows up in linguistic contexts such as the following:

(11) The relationship lasted a long time.

In this example, the lexical item *time* refers to a durational elapse. There are two variants of this duration lexical concept, which are reflexes of the time dilation effects, in human experience, that I discussed earlier: protracted duration and temporal compression. The first, protracted duration, relates, recall, to the experience that time is proceeding more slowly than usual:

(12) Time drags when you have nothing to do.

Protracted duration, as we saw earlier, is caused by a heightened awareness of a particular stimulus array, either because the interval experienced is 'empty', as in (12), or because a lot is being experienced in a short space of time, a 'full' interval. The second variant, temporal compression, concerns our experience that time is proceeding more quickly than usual, and is most often associated with routine behaviours, which we carry out effortlessly without much attention to the task at hand. Evidence that this experience is encoded in language comes from examples such as the following:

(13) a. The time has sped/whizzed by.
b. Where has the time gone?
c. Time flies when you're having fun.

Moment

Another aspect of our temporal experience is the ability to assess time in terms of discrete moments, as distinct from assessments of intervals of duration. This experience also shows up in language, as attested by examples of the following kind:

(14) a. The time for a decision has come.
b. Now is the time to address irreversible environmental decay.

Each of the uses of *time* in these examples could be paraphrased by the term *moment*. That is, in these examples, time is being conceptualised not in terms of an interval, an elapse whose duration can be assessed, but rather as a discrete point.

Event

Another conceptualisation of time relates to the notion of an event. This constitutes an occurrence of some kind. According to Evans (2004), events derive, at the perceptual level, from temporal processing, which serves to bind particular occurrences into a temporally framed unity: an event. To illustrate consider the following sentences:

(15) With the first contraction, the young woman knew her time had come.

(16) The man had every caution given him not a minute before to be careful with the gun, but his time was come as his poor shipmates say and with that they console themselves. (British National Corpus)

In each of these examples, a particular event – childbirth and death, respectively – is being lexicalised by the word form *time*. This suggests that the notion of an event is closely tied up with temporal experience.

Instance

The final temporal lexical concept I consider is the notion of instance. Temporal events can be enumerated, and as such constitute instances of particular kinds of temporal event.

(17) With that 100m race the sprinter had improved for the fourth time in the same season.

In this example, *time* refers not to four distinct moments, but rather to a fourth instance of improvement. This usage provides linguistic evidence that temporal events can be related to one another and ‘counted’ as distinct instances of an event-type.

2.2.2 Temporal aspects of an event: Christmas

Now let’s consider a lexical item other than *time*, which exhibits these distinct aspects of temporal experience. Consider the word form *Christmas*. This relates to a particular kind of temporal event, namely one which is calendrically framed: Christmas is a festival which takes place at the same time each year, traditionally 25 December. While the festival of Christmas is self-evidently a cultural construct – deriving from the Christian tradition – linguistically it can be employed in contexts which exhibit the same dimensions of temporal experience just described, dimensions which appear to derive from our cognitive abilities, and so pre-linguistic experience of time.

Protracted duration
In this example, the temporal event of Christmas can be experienced in terms of protracted duration, and thus ‘feel’ as if it’s proceeding more slowly than on previous occasions:

(18) Christmas seemed to drag this year.

Temporal compression
Analogously, Christmas can appear to be proceeding more quickly than usual. As with protracted duration, temporal compression then relates to an experience of time which constitutes an assessment of the nature of the duration associated with the festival known as Christmas.

(19) Christmas sped by this year.

Moment
Just as *time* can be conceptualised in terms of discrete moments or ‘points’ of time, so too a temporal event such as Christmas can be conceptualised and so-lexicalised as a temporal point:

(20) Christmas has finally arrived/is here.

Instance
Finally, instances of Christmas can be counted and so compared with one another:

(21) This Christmas was better than last Christmas.

2.3 Temporal frames of reference

In recent years, a growing research effort has been expended on uncovering the linguistic resources facilitating frames of reference in the domain of time (e.g. Bender and Beller 2014). As we saw in the previous chapter, a spatial frame of reference (s-FoR) involves the use of three coordinates: a figure is located with respect to a reference object, often by projecting axes from a third location, an origo, enabling the precise location of the figure.

In contrast, in the domain of TIME, events are not located in space, but, rather, are fixed in time (Bender et al. 2012; Kranjec 2006; Zinken 2010). For instance, **time-reckoning**, using artefacts such as clocks and watches, is a paradigm example of a **temporal frame of reference** (**t-FoR**): a clock provides a means of fixing a temporal point with respect to a temporal frame of reference, enabling language users to be able to 'tell' the time.

Within cognitive linguistics, there have been three main ways in which researchers have approached this phenomenon. The first has been to examine the way in which spatial structure has been recruited in order to facilitate t-FoRs. There have been two strands to this research effort. The first has been to examine the spatial basis of t-FoRs from the perspective of conceptual metaphor theory (e.g. Moore 2011). The second has applied research findings from s-FoRs, such as Levinson's (2003) taxonomy, and apply this to t-FoRs (e.g. Tenbrink 2011).

The second approach has examined temporal reference in its own terms. This perspective takes the view that as temporal reference involves events being fixed in time, rather than locations in space, then to examine the nature of t-FoRs requires examining what the inherently temporal basis of temporal reference amounts to (e.g. Evans 2013a, 2013b).

Finally, and from a linguistic perspective, research has begun to examine the grammatical resources involved in temporal reference (e.g. Huumo 2017). However, this approach has used the conceptual metaphor approach as the basis for its linguistic analysis. In the subsections below, I present an introduction to examples of spatial and temporal approaches to t-FoRs.

2.3.1 The spatial basis of t-FoRs

Given the observation, especially from conceptual metaphor theory, that temporal concepts recruit from the domain of SPACE, early taxonomies for t-FoRs (e.g. Bender et al. 2010; Tenbrink 2011) modelled temporal reference by analysing it in terms of language deriving from motion through space.

For instance, Tenbrink (2011) has insightfully applied Levinson's (2003) taxonomy of frames of reference in the domain of SPACE, to that of TIME. Levinson argued, akin to Talmy, that in the domain of SPACE, a frame of reference can be intrinsic, relative or absolute, with the origo deriving from the intrinsic organisation of the ground, from the projection of an observer's orientation, or from absolute aspects of an encompassing field, such as the Earth's cardinal points:

(22) Intrinsic:
a. The grocery store is to the side of the office building.
Relative:
b. The grocery store is on the left of the office building.
Absolute:
c. The grocery store is to the east of the office building.

Tenbrink, for instance, identifies around ten distinct t-FoRs. These include sub-types of intrinsic, relative and absolute FoRs. For instance, consider the following example:

(23) Good times lie before me. (Tenbrink 2011: 716)

Tenbrink suggests that this example arises from a 'temporal static' variant of her intrinsic t-FoR. This follows as the **reference point** (RP), the ego, encoded by *me*, and the **relatum** (Tenbrink's term for the entity being 'located' in time), encoded by *good times*, are static. It's an example of the intrinsic t-FoR, as the third coordinate in Tenbrink's taxonomy, the perspective point, is coincident with the RP. Hence, the perspective point is that of the ego, and thus is making use of the RP's intrinsic orientation: the RP is directed towards the relatum which lies in front of the RP/ego. But the criteria for classification relates to the nature of the spatial language used. Hence, rather than getting to the heart of what makes time distinct from space – namely the range of transience types discussed earlier – Tenbrink's taxonomy interprets temporal reference in terms of the spatial language used to describe time.

2.3.2 The temporal basis of t-FoRs

A somewhat different approach to t-FoRs has been developed by Evans (2013a, 2013b), which attempts to uncover the nature of temporal reference in its own terms, by grounding temporal reference in terms of the transience types introduced earlier; the rationale for this is the contention that the hallmark of time, and what makes it distinct from space, relates to transience.

Evans presents a taxonomy for t-FoRs, building on the taxonomy of transience types discussed earlier in the chapter. This gives rise to three distinct t-FoRs. In this taxonomy, three coordinates are deployed. The first is the **target event** (TE) – the event being fixed in time. This is an analogue of the figure in an s-FoR. The second coordinate is the **reference point** (RP) – the entity with respect to which the TE is fixed. The analogue of this in an s-FoR is the reference object, which serves to locate the figure. And finally, the third coordinate is the **origo** (O) – the element that anchors the RP to one of the three transience types (anistropicity, succession and duration). And in turn, grounding temporal reference in one of three distinct transience types gives rise to three qualitatively distinct kinds of t-FoRs.

Before examining these, let's consider a linguistic example to illustrate the nature of the coordinates in a t-FoR:

(24) We are fast approaching Christmas.

This sentence, in terms of temporal reference, can be paraphrased as follows: 'Christmas is fixed in the future, with respect to now, but is relatively imminent.' Hence, the TE is Christmas, the temporal event that is being fixed in time. The RP is encoded by *we* – the 'location' of the observer. But crucially, the observer's location is fixed by virtue of the origo, to the transience type that grounds the t-FoR. In this case, the origo constitutes the observer's phenomenological experience of 'now', which anchors the RP to the transience type anistropicity: the evolution from future to present to past. Hence, while the example does make use of the language of space, and specifically motion, in actual fact, temporal reference is a consequence of our understanding of the RP's location being grounded in a specific transience type: anistropicity. And because the RP, *we*, is so-anchored, we can fix the event with respect to the phenomenological experience of now. From this perspective, the TE, *Christmas*, is fixed in the future, with respect to the RP's experience of now.

Evans (e.g. 2013a) identifies three specific t-FoRs, each of which have linguistic sentence-level (constructional) reflexes. Moreover, each t-FoR gives rise to a distinct temporal relation. I briefly review each of these.

The **deictic t-FoR** fixes a TE by using the ego's location (RP), which is anchored by the ego's now – 'deictic' derives from the Greek 'to point', and in this case, what is pointed to, and what grounds this t-FoR is the egocentric experience of now. Accordingly, this t-FoR is grounded in the transience type anistropicity – the asymmetric experience of time running from future to present to past. The consequence is that linguistic utterances that reflect this serve to identify whether the TE is future-based, present-based or past-based with respect to the RP:

'future-based'
(25) Christmas is approaching.

'present-based'
(26) Christmas has arrived.

'past-based'
(27) Christmas has gone.

The second type is the **sequential t-FoR**. This provides a temporal coordinate system that relates to the transience type: succession. This subjective experience provides a basis for distinguishing between events as a sequence, and distinguishing between earlier versus later, irrespective of the ego's now. The sequential t-FoR fixes a TE, by using another event

(RP), which is fixed with respect to the first event in the event sequence (O). It hence gives rise to an earlier/later relation. To illustrate, consider the following:

(28) Christmas is before New Year's Eve.

In (28), the TE being fixed in time is Christmas. But it is fixed with respect to another event, New Year's Eve, which is the RP. Crucially, the RP is anchored in the transience type succession. Hence, the TE event can be evaluated as earlier or later than the RP, by virtue of being grounded in this transience type. In short, this t-FoR does not provide an evaluation of the egocentric (or deictic) time – the notions of future, present and past – but rather, earlier and later.

The third and final t-FoR is the **extrinsic t-FoR**. This relates to the transience type: duration. The t-FoR is extrinsic in the sense that it doesn't rely on internal properties of the RP to obtain grounding in a transience type. For instance, the deictic t-FoR is anchored by virtue of the observer's experience of now, while the sequential t-FoR is anchored by virtue of two or more events necessarily forming a sequence, hence exhibiting the property succession. In contrast, the transience type associated with the extrinsic t-FoR is that of duration. And it is closely associated with time measurement systems such as calendars and clocks. Moreover, the temporal relation that arises is the matrix relation, a conception of duration as providing a manifold or frame which subsumes all other events, as discussed earlier in the chapter.

For instance, consider the following expression:

(29) Christmas 1914

A TE is fixed with respect to an RP, which is anchored in the transience type duration. This establishes the temporal point, occupied by the TE, within a temporal matrix; in turn, this provides an extrinsic conception, enabling us to fix the TE in absolute terms, without reference to the egocentric experience of now, or inherent relationships between temporal events, such as events in a sequence.

In the example in (29), the TE, *Christmas*, is fixed with respect to the RP, 1914 – the 1,914th iteration of the event, which is anchored by an origo to the durational matrix. The origo is a culturally salient event, the incarnation of Christ – which serves as the origo for the Anno Domini dating system upon which this example depends. Hence, by understanding duration in terms of a manifold, which can be subdivided into temporal parts, and counted, a TE, a particular iteration of Christmas, can be fixed, by virtue of its temporal 'distance', from an origo; and this is achieved by virtue of the counting system being deployed. A summary of the three types of t-FoRs is provided in Table 4.7.

Table 4.7 Summary of three t-FoRs

Name of t-FoR	Type of transience	Temporal relation
Deictic	Anistropicity	Future/present/past
Sequential	Succession	Earlier/later
Extrinsic	Duration	Matrix

3 Cross-linguistic patterns in the conceptualisation of time

In this section I briefly address cross-linguistic patterns in the conceptualisation of time. In particular, I focus on how time is encoded in semantic structure. Hence, I will not address issues such as the grammatical encoding of time, and time-reference such as tense systems. I focus on just two non-Indo-European languages – Aymara and Mandarin – to provide an indicative sense of just how differently other languages sometimes encode time, vis-à-vis English

3.1 The past and future in Aymara

Aymara is an indigenous South American language, spoken in the Andean region of Peru, Chile and Bolivia. There is good linguistic and gestural evidence that in Aymara the concept of FUTURE is conceptualised as being metaphorically 'located' behind the observer (or ego), while the PAST is conceptualised as being in front (Núñez and Sweetser 2006). This pattern is at odds with that of a language such as English.

Let's begin, then, by examining how the lexical concepts encoded by the forms *past* and *future* are conceptualised in English:

Future in English

(30) a. The future lies in front of us.
b. She has a bright future ahead/in front of her.

We see in these examples that the lexical concept FUTURE is structured in terms of locations which are situated in front of the ego. This is also true of other lexical concepts which are future-oriented, as seen in the following:

(31) a. Old age lies way ahead of him.
b. Having children is in front of us.
c. The years ahead of us will be difficult.

This situation contrasts with the lexical concept PAST:

Past in English

(32) The past is behind me.

This example reveals that just as English conceptualises the FUTURE as being located in front, the lexical concept PAST is structured in terms of a location situated behind the ego. Moreover, this also holds for all past-oriented lexical concepts:

(33) a. My childhood is behind me.
b. Once divorced, she was finally able to put an unhappy marriage behind her.

Now let's consider how the future and past are conceptualised in Aymara. To do this, let's consider the Aymaran expressions for *past* and *future*:

(34) *mayra* *pacha*
front/eye/sight time
'past time'

(35) *q'ipa pacha*
back/behind time
'future time'

The word for *time* in Aymara is *pacha*; *mayra* means 'front' while *q'ipa* means 'back' or 'behind'. The expression for *past* is literally 'front time', while that for *future* is 'behind time'. This gives a very different pattern of conceptualisation from English. Supporting evidence that the past is conceptualised as being located in front and the future behind comes from a gestural study of Aymara speakers carried out by Núñez et al. (1997). This study reveals that when speaking about the past, Aymara speakers gesture in front while gesturing behind when speaking about the future.

The reason for this very different pattern appears to be motivated by another aspect of the Aymaran language. Aymara, unlike English, grammatically encodes **evidentiality**: speakers are obliged, by their language, to mark the data source for a particular proposition, for instance whether the speaker has witnessed the event being described with their own eyes, or whether the event is known to them through hearsay, and so forth (Miracle and Yapita Moya 1981). It appears likely, therefore, that due to the value assigned to visual evidence this has consequences for the elaboration of concepts such as PAST and FUTURE.

As experiences which have been experienced (past) have been witnessed at first hand, while experiences which have yet to be experienced (future) have not, then the past is conceptualised as being located in front of the ego, as this is the region which can be seen. In contrast, as the future is conceptualised as not having been yet seen, and as the region behind the ego is inaccessible to the human visual apparatus, it is likely that for this reason the future in Aymara is conceptualised as being located behind (Evans 2004; Lakoff and Johnson 1999; Miracle and Yapita Moya 1981).

3.2 Earlier and later in Mandarin

I now briefly consider the way in which the temporal concepts of EARLIER and LATER are conceptualised in Mandarin; this contrasts with the pattern in English.

In English, as we've seen, concepts which concern the distinction between EARLIER and LATER are structured, metaphorically, in terms of their relative location on the horizontal axis. The following examples are indicative:

(36) a. Tuesday comes/is before Wednesday.
b. Wednesday comes/is after Tuesday.

In Mandarin, there is a productive pattern in which the vertical axis serves to elaborate this distinction. That is, concepts which are earlier (= experienced first) are conceptualised as being higher or upper, while those concepts which are later (= experienced subsequent to the first) are conceptualised as being lower. The following examples, taken from Yu (1998), are illustrative:

(37) a. *shang-ban-tian*
upper-half-day
'morning'
b. *xia-ban-tian*
lower-half-day
'afternoon'

(38) a. *shang-ban-ye*
upper-half-night
'before midnight'
b. *xia-ban-ye*
lower-half-night
'after midnight'

(39) a. *shang-ban-yue*
upper-half-month
'the first half of the month'
b. *xia-ban-yue*
lower-half-month
'the second half of the month'

(40) a. *shang-ban-nian*
upper-half-year
'the first half of the year'
b. *xia-ban-nian*
lower-half-year
'the second half of the year'

(41) a. *shang-bei*
upper-generation
'the elder generation'
b. *xia-bei*
lower-generation
'the younger generation'

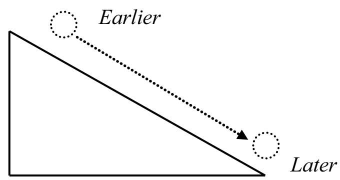


Figure 4.6 The slope model (adapted from Shinohara 2000: 5)

According to Shinohara (2000), this pattern of lexicalisation has an experiential motivation, based on our ubiquitous experiences of gravity and slopes. When an object is rolled down a slope, the earlier event is at the top of the slope, while due to the force of gravity the later event is lower down. This is diagrammed in Figure 4.6.

SUMMARY

The chapter began by considering time's **phenomenological basis**: time constitutes both a subjectively and a psychologically real experience – or more precisely, a set of experiences. I considered **time dilation effects**, such as **protracted duration** and **temporal compression**, and showed that these directly perceived experiences derive from our bodily functioning, a response to external events, rather than residing in the world itself. Experiments which have investigated time dilation effects have often made use of the **subjective minute** paradigm. Moreover, we saw that temporal judgements can be influenced by individual factors, such as personality. This issue has been investigated using an **ambiguous question** paradigm. I then addressed the nature of time, and how it differs from space, in terms of representations in thought and in language. The commonplace way in which we think about time often concerns what has been dubbed the **matrix conception** also referred to as **time-as-such**. This constitutes a **reification** of a range of temporal experiences, enabling us to conceive of time as an entity, that is, in some sense, distinct from the events that it is part of. There are three **parameters** that can be used to compare and contrast the domains of space and time – **magnitude** – which is to say quantity: how much space or time there is; **dimensionality** – how many, and the nature of the dimensions exhibited by both domains; and **directedness** – the inherent directionality associated with each domain. In terms of magnitude, the **substrate** that makes up the domain of time is **duration**: the elapse associated with a given event, or sub-event. In terms of dimensionality, time exhibits one dimension: **succession**. Finally, in terms of directionality, time is asymmetric, exhibiting **anistropicity**: time has a unidirectional manifestation. It has been proposed that these three features of time give rise to the phenomenon of **transience –** the vividly felt experience of the ephemeral nature of time – and a feature not evident in the domain of space. The chapter also considered the way time is represented in the mind, by examining the highly influential **conceptual metaphor theory** account. And it considered the way time is represented in language, examining temporal **lexical concepts**. A case study was presented, illustrating this idea, which presented a taxonomy for modelling **temporal frames of reference** (t-FoR). Three t-FoRs were considered: the **deictic t-FoR** which relates to the **transience type** anistropicity; the **sequential t-FoR** which is grounded in the transience type succession; and the **extrinsic t-FoR**, which relates to the transience type: duration. Finally, the chapter examined examples of cross-linguistic variation in time, by considering two non-Indo-European languages – Aymara and Mandarin.

FURTHER READING

The relationship between language and temporal cognition

- **Evans (2004)**. Considers distinct lexical concepts for time, and what this reveals about the relationship between the language of time and temporal cognition.
- **Evans (2013b)**. This book makes use of the framework of Access Semantics, also known as the theory of lexical concepts and cognitive models (LCCM theory) – discussed further in Chapter 18 in the present book. It examines the relationship between linguistic and non-linguistic representations for time. It does so by studying the nature of t-FoRs as well as the nature of figurative meaning construction in the domain of time.
- **Flaherty (1999)**. A seminal study examining the nature of time dilation effects in language and cognition. In particular, the book focuses on temporal compression, protracted duration and routine complexity.
- **Flaherty (2010)**. An important study in which the notion of 'time work' is developed: the way in which, through folk psychology and social behaviour and practice, we construct the temporal contours of our lives and social world.
- **Jaszczolt and De Saussure (2013)**. This volume brings together philosophers and linguists who consider the nature of temporal representation in language and in the mind. Sections deal with time, tense, modality and temporal reference in discourse, as well as the cognition and metaphysics of time.

The relationship between space and time

- **Filipović and Jaszczolt (2012)**. This book examines cross-cultural differences in representing time and space. It does so by focusing on the nature of events, examining the role of space and time in their representation. The volume is highly interdisciplinary, bringing together researchers from disciplines including linguistics, psychology, philosophy and anthropology.

- **Majid et al. (2013)**. A research topic in the open-access journal *Frontiers in Psychology*. Ten articles by leading researchers from a range of disciplines explore the connection between time and space, from linguistic anthropological, cognitive science and linguistic perspectives. Highly recommended.
- **Tenbrink (2007)**. An insightful book-length investigation into the relationship between time and space based on language use.

The conceptual metaphor approach to time

- **Lakoff and Johnson (1999)**. Chapter 10 of this book presents the conceptual metaphor approach to time, as classically formulated by Lakoff and Johnson. This work has been hugely influential, not just in linguistics, but in cognitive science more generally.
- **Moore (2014)**. This book advances the conceptual metaphor approach to time. It does so with a detailed analysis of English and the West African language Wolof. It draws on the notion of conceptual frames in order to present a compelling account.

Psycholinguistic reality of temporal metaphors

- **Boroditsky (2000)**. One of the first studies to demonstrate the asymmetric relationship between time and space, and in so doing to provide support for the psychological reality of space-to-time conceptual metaphors.
- **Casasanto and Boroditsky (2008)**. One of the first studies to demonstrate the psychological reality of space-to-time conceptual metaphors without using language, but rather psychophysical experiments, and hence, independently confirming the existence of conceptual metaphors in the domain of time.

Temporal frames of reference

- **Bender et al. (2010)**. A cross-linguistic approach to t-FoRs, examining German, English, Mandarin and Tongan.
- **Evans (2013a)**. A taxonomy of t-FoRs that seeks to understand temporal reference in its own terms, invoking the notion of 'transience'.
- **Tenbrink (2011)**. The most detailed taxonomy of t-FoRs using Levinson's (2003) framework from the domain of space.

Time in other languages

- **Alverson (1994)**. This book constitutes an application of the conceptual metaphor approach to cross-cultural semantics, focusing on time in English, Mandarin, Hindi and Sesotho.

- **Casad (2012)**. A detailed book-length examination of the locative system in Cora, an indigenous language spoken in Mexico, and the way it's extended in the domain of time.
- **Núñez and Sweetser (2006)**. An influential study providing a conceptual metaphor analysis of the language and gestures used by the Aymara, an indigenous South American people. Aymara is especially noteworthy for conceptualising the past in front and future behind.
- **Shinohara (1999)**. A book-length study of the conceptual metaphor system for time in Japanese.
- **Sinha et al. (2011).** An important study on Amondawa, an indigenous language spoken by a remote tribe in Amazonia. The Amondowia language is noteworthy, according to the authors, for its apparent lack of space-to-time conceptual metaphors.
- **Yu (1998)**. This study contains a chapter on how time is conceptualised in Mandarin, from the perspective of conceptual metaphor theory.

DISCUSSION QUESTIONS

1. What are the similarities between TIME and SPACE? And how do they differ?
2. What are the reasons for thinking that TIME is a mental construct built upon our prior experience of SPACE? And what might be reasons for disputing this?
3. Do you think that TIME and SPACE are equally basic domains of experience, or that one is more foundational than the other? Why?
4. In what ways is the linguistic encoding of TIME broadly similar across languages? And in what ways does it diverge? Base your discussion on examples in this chapter, and/or on languages you may know.

5

Language in use I: knowledge of language

One of the guiding principles of cognitive linguistics is that our knowledge of language emerges from use, the subject of this and the next chapter. The consequence of this thesis is that language use, as well as contexts of use, play a central role in how language evolves over time (language change) and for how we acquire our native language (language acquisition). Some linguistic theories have attempted to separate the mental knowledge of language from language use. For example, in developing the Generative Grammar framework, Chomsky (e.g. 1965) has argued that language can only be meaningfully investigated from an internalist perspective (internal to the mind of the individual) rather than from the (externalist) perspective of language use. In Chomsky's terms, this is the distinction between **competence** (knowledge) and **performance** (use). Chomsky privileges competence over performance as the subject matter of linguistics.

In rejecting the distinction between competence and performance, cognitive linguists argue that knowledge of language is derived from patterns of language use during the course of social interaction and hence, communication (e.g. Goldberg 2006; Tomasello 2008); further, they posit that knowledge of language is knowledge of how language is used. In the words of psychologist and cognitive linguist Michael Tomasello (2003: 5): 'language structure emerges from language use'. This is known as the **usage-based thesis**.

The purpose of this (and the next) chapter is to provide an overview of the assumptions and theories that characterise this position in cognitive linguistics. One of the central assumptions is that language use is integral to our knowledge of language, our 'language system' or 'mental grammar' (see also Chapter 21). According to this view, the organisation of our language system is intimately related to, and derives directly from, how language is actually used (e.g. Goldberg 2006; Tomasello 2008). It follows from this assumption that language structure cannot be studied without taking into account the nature of language use. This perspective is what characterises cognitive linguistics as a **functionalist** rather than a **formalist** approach to language, a distinction, in terms of models of grammar, that I explore in more detail in Part IV of the book.

In this chapter I begin by outlining the main components of a usage-based view of the language system. I do so in order to focus on three areas of cognitive linguistics that attempt to integrate the usage-based thesis with theoretical models of various linguistic phenomena. The first phenomenon I address, and the subject of this chapter, is **knowledge of language**. In the next chapter I address language change and language acquisition, from the usage-based perspective. In the context of cognitive linguistics, and specifically this chapter, the term 'grammar' is used in its broadest sense to refer to the system of linguistic knowledge in the mind of the speaker. In this sense, 'grammar' refers not just to phenomena such as morphosyntax, but also to meaning and sound. The cognitive linguistics view of grammar encompasses i) the units of language (form–meaning pairings variously known as **symbolic assemblies** or **constructions** – introduced in Chapter 1), which constitute the inventory of a particular language; and ii) the processes that relate and integrate the various constructions in a language system.

The specific theory I introduce in this chapter is the framework called **Cognitive Grammar**, developed by Ronald Langacker, one of the so-called founding fathers of cognitive linguistics (Cognitive Grammar has been influential in the development of cognitive approaches to semantics – see Chapters 16 and 17, and is central to the constructionist approach to grammar adopted in cognitive linguistics – see Chapters 22–24, as well as the cognitive linguistics approach to grammatical change – see Chapter 27). But the reason for introducing Cognitive Grammar here is that Langacker's approach explicitly adopts the usage-based thesis; indeed, Langacker was one of the early proponents of the usage-based perspective, and, moreover, coined the term.

1 Language in use

In this section I outline some of the assumptions shared by researchers who have adopted the usage-based thesis in their theoretical accounts of linguistic structure, organisation and behaviour.

1.1 A usage event

Perhaps the most important concept underlying usage-based approaches to language is the **usage event**. A usage event is an **utterance**. Consider the following two definitions of the term 'utterance' provided by two leading proponents of the usage-based approach:

> [An utterance is] a particular, actual occurrence of the product of human behavior in communicative interaction (i.e., a string of sounds), as it is pronounced, grammatically structured, and semantically and pragmatically interpreted in its context. (Croft 2001: 26)

> An utterance is a linguistic act in which one person expresses towards another, within a single intonation contour, a relatively coherent communicative intention in a communicative context. (Tomasello 2000: 63)

As these statements indicate, an utterance is a situated instance of language use which is culturally and contextually embedded; it represents an instance of linguistic behaviour on the part of a language user. A language user is a member of a particular linguistic community who, in speaking (and, indeed, in signing or writing), attempts to achieve a particular **interactional goal** or set of goals using particular **linguistic** and **non-linguistic strategies**. Interactional goals include attempts to elicit information or action on the part of the hearer, to provide information, to establish interpersonal rapport (e.g. when 'passing the time of day') and so on. The linguistic strategies employed to achieve these goals might include the use of speech acts (requesting, informing, promising, thanking and so on), choices over words and grammatical constructions, prosody and intonation structures, choices over conforming or not conforming to discourse conventions such as turn-taking and so on. Non-linguistic strategies include motion-based strategies known as **kinesics** (e.g. facial expressions, nature and direction of eye gaze and eye contact, gesture, orientation of the speaker, etc.), space-based strategies known as **proxemics** (e.g. proximity of **interlocutors** – the participants in a linguistic exchange – in terms of interpersonal space and so on), the use of time and timing, known as **chronemics** (e.g. the timing mechanisms used in discourse exchanges), the use of touch, known as **haptics**, and the use of vocal quality and non-prosodic features of sound, known as **vocalics** (e.g. laughter, crying, sighing, etc.)

As I shall define it, a usage event or utterance has a unit-like status in that it represents the expression of a coherent idea, making (at least partial) use of the conventions of the language (the 'norms' of linguistic behaviour in a particular linguistic community). In other words, an utterance is a somewhat discrete entity. However, I use the expressions 'unit like' and 'somewhat discrete' because the utterance is not an absolutely discrete or precisely identifiable unit. This is because utterances involve grammatical forms (for example, word order), semantic structures (patterns of meaning), speech sounds, patterns of intonation (for example, pitch contours), slight pauses, and accelerations and decelerations. While these properties converge on discreteness and unity, they do not co-occur in fixed patterns, and therefore do not provide a set of criteria for collectively identifying an utterance. In this respect, utterances differ from the related notion of **sentence**.

A sentence, as often defined in linguistics, is an abstract entity. It is an **idealisation** that has determinate properties, often stated in terms of grammatical structure. For example, one definition of (an English) sentence might consist of the formula in (1):

(1) S → NP VP

In this formula, 'S' stands for sentence, 'NP' for subject noun phrase, and 'VP' for the verb phrase or **predicate** which provides information about the subject NP.

The notion of a sentence, while based on prototypical patterns found in utterances, is not the same as an utterance. Utterances typically occur spontaneously, and often do not conform to the **grammaticality requirements** of a well-formed sentence (recall the discussion of ungrammaticality in Chapter 1). For example, in terms of structure, an utterance may consist of a single word (*Hi!*), a phrase (*No way!*), an incomplete sentence (*Did you put the . . .?*) or a sentence that contains errors of pronunciation or grammar because the speaker is tired, distracted or excited, and so on.

While much of formal linguistics has been concerned with modelling the properties of language that enable us to produce grammatically well-formed sentences, utterances often exhibit **graded grammaticality**. This fact is widely recognised by linguists of all theoretical persuasions. As this discussion indicates, while a sentence can be precisely and narrowly defined, an utterance cannot. While sentences represent the structure associated with a prototypical utterance, utterances represent specific and unique instances of language use. Once a sentence is given meaning, context and phonetic realisation, it becomes a (spoken) utterance. Typically, cognitive linguists place little emphasis on the sentence as a theoretical entity. In contrast, the notion of a usage event or utterance is central to the usage-based perspective privileged in cognitive linguistics.

1.2 The relationship between usage and linguistic structure

As noted earlier, in Chomskyan Generative Grammar there is a separation between knowledge of language (competence) versus use of language (performance). According to this view, competence determines performance, but performance can also be affected by language-external factors (e.g. fatigue, a slip of the tongue and so on), so that performance often fails to adequately reflect competence. In direct opposition to this view, cognitive linguists argue that knowledge of language is derived from and informed by language use. As we shall see in the next chapter, language acquisition is understood from this usage-based perspective not as the activation of an innately prespecified system of linguistic knowledge (for instance, the Chomskyan notion of **Universal Grammar**, which I discuss in Chapter 7), but instead as the extraction of linguistic units or constructions from patterns in the usage events experienced by the child. This process relies upon general cognitive abilities, leading to a set of units or constructions eventually becoming built up: it is this that constitutes, from this perspective, the inventory that represents the speaker's language system or knowledge of language. Furthermore, in usage-based theories of language change, change is seen not as a function of system-internal change, but as a function of interactional and social (usage-based) pressures that motivate changes in the conventions of the language system (explored in the next chapter).

1.3 Comprehension and production

Language use involves both the production of language and the comprehension of language. This is because it involves interaction between speakers and hearers. While speakers 'put ideas into words' and utter them, hearers are faced with the task of 'decoding' these utterances and retrieving the ideas that language users attempt to convey by producing their utterances – this is achieved by a language user constructing simulations (see Part III of the book). A theory of language has to characterise the system that underlies linguistic interaction, regardless of whether it is an account of language knowledge or an account of language processing.

Nevertheless, these two types of theory provide explanations of somewhat different aspects of this system. Theories of language processing, such as accounts of language acquisition, fall within the sub-discipline of **psycholinguistics**, and seek to explain the 'step-by-step' processes involved in the production and comprehension of language.

For example, theories of language processing seek to discover the principles that govern how speakers match up concepts with words and retrieve those words from the lexicon, how hearers break a string of sounds up into words and find the grammatical patterns in that string, what constraints memory places on these processes, why speech errors happen and so on.

In contrast, theories of language knowledge concentrate on describing the knowledge system that underlies these processes. Accounts of language processing usually assume a particular theory of language knowledge as a starting point, and place an emphasis on experimental methods. The cognitive linguistic theories I discuss in this book are theories (or **models**) of language knowledge. However, because cognitive linguists adopt the usage-based thesis, the interactional and goal-directed nature of language use is central to the models adduced by cognitive linguists.

1.4 Context

The **context** in which an utterance or usage event is situated is central to the cognitive linguistics account. This is particularly true for word meaning, which is **protean** in nature (Evans 2009). By protean, I mean that word meaning is rather changeable. While words bring with them a conventional meaning, the context in which a word is used has important effects on its interpretation. In short, 'context' can itself influence or affect the meaning of a word.

One kind of context is sentential or **utterance context**. This relates to the other elements in the string. Consider example (2), focusing in particular on the meaning of the preposition *in*:

(2) a. The kitten is in the box.
 b. The flower is in the vase.
 c. The crack is in the vase.

These examples involve spatial scenes of slightly different kinds, where *in* reflects a spatial relationship between the figure and the reference object. In (2a) the figure, *the kitten*, is enclosed by the reference object, *the box*, so that the spatial relationship is one of containment.

However, in the other two examples, *in* does not prompt for quite the same kind of meaning. In (2b) the flower is not enclosed by the vase, since it partly protrudes from it. Equally, in (2c) *in* does not prompt for a relationship of containment, because the crack is on the exterior of the vase. As these examples illustrate, the meaning of *in* is not fixed but is derived, in part, from the elements that surround it.

A second kind of context relates not to the other elements in the utterance itself but to the **background knowledge** against which the utterance is produced and understood. Consider example (3):

(3) It's dark in here.

If said by one caver to another in an underground cavern, this would be a factual statement relating to the absence of light in the cavern. If uttered by a linguistics professor to a student who happened to be sitting next to the light switch in a poorly lit seminar room, this might be a request to turn the light on. If uttered by one friend to another upon entering a brilliantly lit room, it might be an ironic statement uttered for the purpose of amusement. As this range of possible meanings demonstrates, the context of use interacts with the speaker's intentions and plays a crucial role in how this utterance is interpreted by the addressee. One consequence of the role of context in language use is that **ambiguity** can frequently arise. For example, given the cave scenario I sketched above, example (3) might reasonably be interpreted as an expression of fear, a request for a torch and so on.

In order to distinguish the conventional meaning associated with a particular word or construction, and the meaning that arises from context, I will refer to the former as **coded meaning** and the latter as **pragmatic meaning**. For example, the coded meaning associated with *in* relates to a relationship between a figure and a reference object in which the reference object has properties that enable it to enclose (and contain) the figure. However, because words always occur in context, coded meaning represents an idealisation based on the prototypical meaning that emerges from contextualised uses of words. In reality, the meaning associated with words always involves pragmatic meaning, and coded meaning is nothing more than a statement of this prototypical meaning abstracted from the range of pragmatic (situated) interpretations associated with a particular word. According to this view, pragmatic meaning is 'real' meaning, and coded meaning is an abstraction.

1.5 Frequency

The final assumption relating to the usage-based thesis that I introduce here is the notion of **frequency**. If the language system is a function of language use, then it follows that the relative frequency with which particular words or other kinds of constructions are encountered by the speaker will affect the nature of the language system. This is because cognitive linguists assume that linguistic units that are more frequently encountered become more entrenched (that is, established as a **cognitive pattern** or **routine**) in the language system.

According to this view, the most entrenched linguistic units tend to shape the language system in terms of patterns of use, at the expense of less frequent and thus less well entrenched words or constructions. It follows that the language system, while deriving from language use, can also influence language use.

2 Cognitive Grammar

In this section, I present an overview of Cognitive Grammar, the model of language developed by Ronald Langacker. The purpose of this section is to illustrate what a usage-based account of language looks like, rather than to provide a detailed overview of the theory. I shall return to some of the details of Langacker's theory later, especially in in Part IV of the book.

Langacker's model is called 'Cognitive Grammar' because it represents an attempt to understand language not as an outcome of a specialised language module, but as the result of general cognitive mechanisms and processes. Langacker argues that language follows the same general principles as other aspects of the human cognitive system. In this respect, Cognitive Grammar subscribes to the Generalisation and Cognitive Commitments that I explored in Chapter 2.

It is also important to observe that the term 'grammar', as Langacker uses it, is not being deployed in its narrow sense, where it refers to a specific subpart of language relating to syntactic and/or morphological knowledge. Instead, the term 'grammar' is used in the broad sense, where it refers to the language system as a whole, incorporating sound, meaning as well as morphosyntax.

I begin with a brief sketch of the central assumptions of Cognitive Grammar. This approach rejects the modular view adopted by formal models – a perspective I'll briefly review in Chapter 7 – according to which language is a system of 'words and rules' consisting of a lexicon, a syntactic component containing rules of combination that operate over lexical units, and other components governing sound and sentence meaning.

Instead, Cognitive Grammar takes a symbolic or constructionist view of language, according to which there is no distinction between syntax and lexicon; rather, the grammar consists of an inventory of units that are form–meaning pairings: morphemes, words and grammatical constructions. These units, which Langacker dubs **symbolic assemblies** (as discussed in Chapter 1), unite properties of sound, meaning and grammar within a single representation.

2.1 Abstraction, schematisation and language use

In Cognitive Grammar, the units that make up the grammar are derived from language use. This takes place by processes of **abstraction** and

schematisation. Abstraction is the process whereby structure emerges as the result of the generalisation of patterns across instances of language use. For example, a speaker acquiring English will, as the result of frequent exposure, 'discover' recurring words, phrases and sentences in the utterances they hear, together with the range of meanings associated with those units.

Schematisation is a special kind of abstraction, which results in representations that are much less detailed than the actual utterances that give rise to them. Instead, schematisation results in **schemas**. These are achieved by setting aside points of difference between actual structures, leaving just the points they have in common. For instance, in example (2), we saw that the three distinct utterances containing the lexical item *in* have slightly different meanings associated with them. These distinct meanings are situated, arising from context. I argue that what is common to each of these utterances is the rather abstract notion of enclosure; it is this commonality that establishes the schema for *in* (recall the discussion of spatial schemas in Chapter 3). Moreover, the schema for *in* says very little about the nature of the figure and reference object, only that they must exist, and that they must have the basic properties that enable enclosure. Crucially, symbolic assemblies, the units of the grammar, are nothing more than schemas.

As we saw in Chapter 1, there are various kinds of linguistic units or symbolic assemblies. They can be words like *cat*, consisting of the three sound segments [k], [æ] and [t] that are represented as a unit [kæt], idioms such as [*He/she kick*-TENSE *the bucket*], bound morphemes including the plural marker [-*s*] or the agentive suffix [-*er*] in teacher, and syntactic constructions such as the ditransitive construction that we encountered in Chapter 2.

In sum, abstraction and schematisation, fundamental cognitive processes, produce schemas based on usage events or utterances. In this way, Cognitive Grammar makes two claims:

i) general cognitive processes are fundamental to grammar; and
ii) the emergence of grammar as a system of linguistic knowledge is grounded in language use.

2.2 Schemas and their instantiations

Cognitive linguists argue that grammar not only derives from language use, but also, in part, motivates language use. It does this by licensing or **sanctioning** particular usage patterns. A usage pattern instantiates its corresponding schema; instantiations, therefore, are specific instances of use, arising from a schematic representation. This idea is illustrated in Figure 5.1.

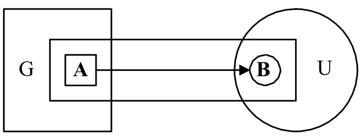


Figure 5.1 An instantiation of a schema (adapted from Langacker 2000: 10)

In Figure 5.1, the box labelled G represents the repository of conventional units of language: the grammar. The circle labelled U represents a particular usage event: an utterance. The box labelled A in the grammar represents a conventional unit: a symbolic assembly. The circle labelled B represents a specific linguistic element within an utterance. The arrow signals that B instantiates (or 'counts as an instance of ') schema A. This means that A sanctions B.

2.3 Partial sanction

Of course, language use is not a simple case of language users deploying the finite set of symbolic assemblies represented in their grammar. After all, the richness and variety of situations and contexts in which language users find themselves, and the range of meanings that they need to express, far exceed the conventional range of units a language possesses. Although impressive in its vast complexity, the inventory of constructions available in a single language is nevertheless finite.

One solution to the restrictions imposed on language use by the finiteness of these resources lies in the use of linguistic units in ways that are only partially sanctioned by the range of constructions available in the language. Consequently, language use is often partially **innovative**. For example, consider the word *mouse*. This word has, since the 1980s, acquired a new meaning: it refers not only to a rodent, but also to a computer 'mouse', which has a similar shape. When this new pattern of usage first appeared, it was an innovation, applied by the manufacturers of the computer hardware. This new usage was only partially sanctioned by the existing construction. This is illustrated by the dotted arrow in Figure 5.2. In this diagram, A represents the linguistic unit with the form *mouse* and the meaning: RODENT, while the B has the same form but the meaning: PIECE OF COMPUTER HARDWARE USED TO CONTROL THE CURSOR.

As we will see when I discuss language change in the next chapter, **partial sanction** only results in language change when it is diffused through a linguistic community and becomes established as a conventional unit in its own right.

2.4 The non-reductive nature of schemas

An important feature of Langacker's framework, which results from positing a direct relationship between grammatical organisation and language use, is that the model is **non-reductive**. As I noted above, one of the factors involved

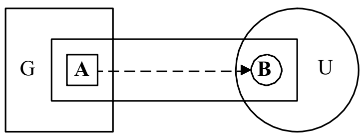


Figure 5.2 Partial sanction by a schema (adapted from Langacker 2000: 10)

in the establishment of constructions is frequency: if a particular linguistic structure recurs sufficiently frequently, it achieves the status of an **entrenched unit**. As a result of the process of **entrenchment**, schemas arise that have different **levels of schematicity**. This means that some schemas are **instances** of other, more abstract, schemas. In this way, the grammar acquires an internal hierarchical organisation, where less abstract schemas are instances of more abstract schemas. For example, consider prepositions (P) like *to*, *on* and *in*, which are combined with a complement NP to form a prepositional phrase (PP). In example (4), the NP is bracketed.

(4) a. to [me]
 b. on [the ground]
 c. in [the shed]

The expressions in (4), *to me, on the ground* and *in the shed*, are common phrases that probably have unit status for most speakers of English: they are constructions.

However, there is another schema related to these constructions, which has the highly schematic form [P [NP]] and the highly schematic meaning DIRECTION OR LOCATION WITH RESPECT TO SOME PHYSICAL ENTITY. The constructions in (4) are instances of the more abstract schema [P [NP]]. This is illustrated in Figure 5.3.

This view of grammar is non-reductive in the following way. The constructions in (4) can be predicted by the more general schema of which they are instances. But, the fact that they can be predicted does not mean that they can be eliminated from the grammar. On the contrary, the fact that expressions of this kind are ones that frequently occur ensures that they retain unit status as distinct constructions. Moreover, by virtue of sharing a similar structure and a common abstract meaning, this ensures that the more abstract schema coexists, with them, in the grammar.

This non-reductive model stands in direct opposition to Chomskyan Generative Grammar – about which I shall more to say in Chapters 7 and 21 – which places emphasis on **economy of representation**. This is because Generative Grammar assumes that the rapid acquisition of an infinitely creative system of language can only be plausibly accounted for by a small and efficient set of principles. In particular, the Chomskyan model seeks to eliminate redundancy: the same information does not need to be stated in more than

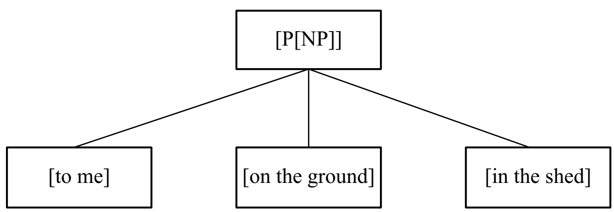


Figure 5.3 Schema-instance relations

one place, as this makes the system cumbersome. According to this view, the fact that the expressions in (4) are predictable from the more abstract schema means that these instances can be eliminated from the grammar and 'built from scratch' each time they are used. Hence, in Generative Grammar, the only construction that would be stored in the grammar is the abstract schema. However, this schema would lack schematic meaning and would instead have the status of an 'instruction' about what kinds of forms can be combined to make grammatical units. Accordingly, what I am calling a 'schema' is actually a 'rule' in Generative Grammar. While schemas are derived from language use and thus incorporate a meaning element, rules are minimally specified structural representations that predict the greatest amount of information possible in the most economical way possible.

2.5 Frequency in schema formation

As we have seen, the central claim of Cognitive Grammar, with respect to the usage-based thesis, is that usage affects grammatical representation in the mind. Furthermore, frequency of use correlates with entrenchment. Two main types of frequency effects have been described in the literature: **token frequency** and **type frequency**. Each of these gives rise to the entrenchment of different kinds of linguistic units. While token frequency gives rise to the entrenchment of instances, type frequency gives rise to the entrenchment of more abstract schemas.

Token frequency refers to the frequency with which specific instances are used in language. For instance, the semantically related nouns *falsehood* and *lie* are differentially frequent. While *lie* is much more commonly used, *falsehood* is more restricted in use. This gives rise to differential entrenchment of the mental representations of these forms. This is illustrated in the diagrams in Figure 5.4. In this figure, the degree of entrenchment of a linguistic unit, whether an instance or more abstract schema, is indicated by the degree to which the square box is emboldened.

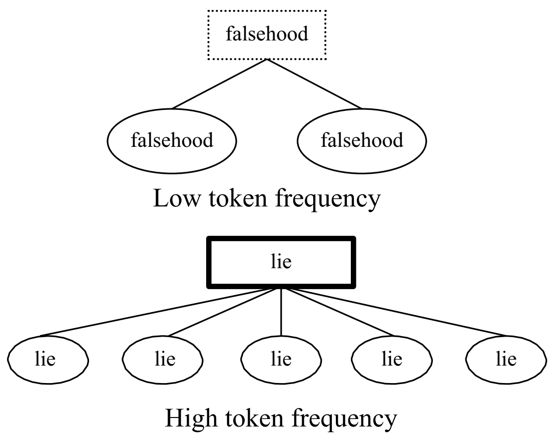


Figure 5.4 Frequency effects and entrenchment of instances

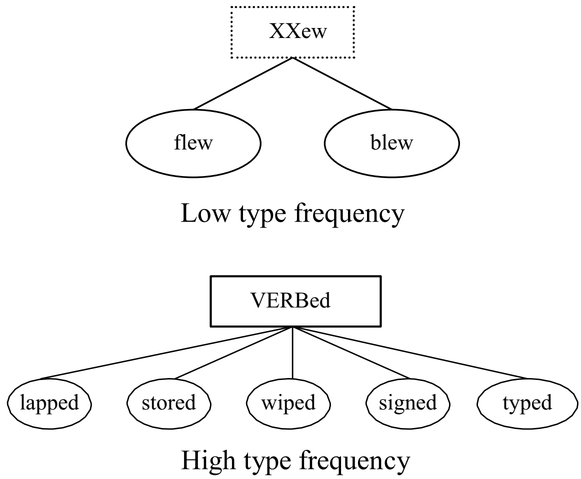


Figure 5.5 Frequency effects and entrenchment of schemas

Now let's consider type frequency. While token frequency gives rise to the entrenchment of instances, type frequency gives rise to the entrenchment of more abstract schemas. For instance, the words *lapped*, *stored*, *wiped*, *signed*, *typed* are all instances of the past tense schema [VERB*ed*]. The past tense forms *flew* and *blew* are instances of the past tense schema [XX*ew*]. As there are fewer usage events involving the distinct lexical items *blew* and *flew* (as there are fewer distinct lexical items of this type relative to past tense forms of the *-ed* type), then it is predicted that the [XXew] type schema will be less entrenched in the grammar than the [VERBed] type schema. This is diagrammed in Figure 5.5.

Recall that, due to the non-reductive nature of representations in Cognitive Grammar, the predictability of an instance from a schema does not entail that the instance is not also stored in the grammar. Indeed, a unit with higher token frequency is more likely to be stored. For instance, the form *girls* is predictable from the lexical item *girl*, plus the schema [NOUN-S]. However, due to the high token frequency of the form *girls*, this lexical item is likely to be highly entrenched, in addition to the form *girl* and the plural schema [NOUN-S].

In their classic work, Bybee and Slobin (1982) provide empirical evidence for the view that frequency correlates with degree of entrenchment (see also Bybee 2010). They found that highly frequent irregular forms resist regularisation, while infrequent irregular forms tend to become regularised over time. Bybee and Slobin compared irregular past tense forms of English verbs like *build – built* from Jesperson's (1949) historical grammar of English with their modern forms in the (1982) *American Heritage Dictionary*. They found that more frequently used irregular verbs like *lend* had retained the irregular past tense form (*lent*). In contrast, less frequent forms like *blend* could alternate between the irregular form with *-t* (*blent)* and the regular past tense form with the suffix *-ed* (*blended*). However, highly infrequent forms like *wend* were (by 1982) listed only with the regular past tense suffix (*wended*).

Table 5.1 Past tense endings of selected verbs in 1982 (adapted from Bybee and Slobin 1982)

Most frequent	Less frequent	Infrequent
past form *-t* only	past form *-ed* or *-t*	past form *-ed* only
bend–bent	blend–blended/blent	wend–wended
lend–lent	geld–gelded/gelt	
send–sent	gird–girded/girt	
spend–spent	rend–rended/rent	
build–built		

Table 5.1 lists the past tense endings for these verbs as they appear in the 1982 dictionary.

SUMMARY

In this chapter I have addressed the **usage-based thesis** of cognitive linguistics. In particular, I have considered how this thesis relates to accounts of knowledge of language (**grammar**). I began by outlining the main assumptions that characterise the usage-based view of language. The first relates to the central importance of the **utterance**, which is a situated instance of language use, culturally and contextually embedded, and represents an instance of linguistic behaviour on the part of a language user. The second key assumption is the idea that knowledge of language is derived from, and informed by, language use. The third key assumption is that human language can only be meaningfully accounted for by emphasising the interactive nature of language use. The fourth relates to the central importance of **context** to the usage-based model, particularly in the case of accounting for word meaning. The final assumption is that the relative **frequency** of linguistic units affects the nature and organisation of the language system. I then explored these issues by introducing Langacker's usage-based model: **Cognitive Grammar**. This model assumes that linguistic units or **symbolic assemblies** are explicitly derived from language use, via a process of **abstraction**, which gives rise to **schemas**.

FURTHER READING

Language and use

- **Barlow and Kemmer (2000)**. This is a seminal collection of papers by leading proponents of the usage-based approach to linguistic theory. The introductory article by Kemmer and Barlow is a particularly useful overview of the main tenets of usage-based approaches.

- **Bybee (2010)**. Presents a theory of language structure arising from use, which has implications for cognitive processing and language evolution.
- **Givón (1995)**. Now a classic, Givón presents his seminal work on linguistic notions of markedness and iconicity and shows how frequency and context are symptoms of language use, giving rise to linguistic structure.
- **Taylor (2012)**. An important and influential book by a leading cognitive linguist. The author makes the case for thinking that units of language can be conceived as a mental corpus, arising from usage and shaped frequency, stored from past encounters with similar expressions.
- **Verhagen (2005)**. A seminal work by a leading cognitive linguist illustrating the usage-based thesis at work. This book provides a detailed case study of constructions of intersubjectivity, showing that the function and meaning of grammatical constructions typically is more concerned with how language users relate to and engage with the perspective and points of view of others, rather than merely describing the world.

Frequency and language structure

- **Bybee and Hopper (2001)**. This edited volume brings together leading researchers who explore the relationship between frequency and the emergence of language structure. Chapters present evidence from natural conversation, diachronic change, variability, child language acquisition and psycholinguistic experimentation.

Langacker's usage-based model

- **Langacker (1987)**. Langacker's foundational work, influential in many areas of cognitive linguistics, provides a thorough overview of the usage-based perspective.
- **Langacker (1999b)**. Chapter 4 outlines the usage-based model.
- **Langacker (2000)**. An article-length overview of the ways in which Cognitive Grammar is usage-based.
- **Langacker (2002)**. Chapter 10 specifically addresses the usage-based model.
- **Langacker (2008)**. A more recent, single-volume overview of Cognitive Grammar, which incorporates revisions made to the model since Langacker's 1987 volume.

DISCUSSION QUESTIONS

1. What are the main claims associated with the usage-based view of language? And what sorts of evidence can be called upon to support these claims?
2. Based on Langacker's usage-based account of language, what are the main tenets of a cognitive linguistics account of our mental grammar? What lines of evidence support this account?
3. What does it mean, to say that mental representations in our mental grammars are *non-reductive*? What are the arguments for this contention? Do you find them convincing or not, and why?

6

Language in use II: language change, and acquisition

The previous chapter introduced the usage-based thesis, central to cognitive linguistics. This contends that language use is integral to our knowledge of language, our 'language system' or 'mental grammar'. But as noted at the outset of the previous chapter, the usage-based thesis also plays a central role in how language evolves over time (language change) and for how we acquire our native language (language acquisition). These are the two issues that I focus on in this chapter.

I begin by considering the role of usage in language change. I do so by examining William Croft's **utterance selection theory** of language change. This theory views language use as the interface that mediates between the conventions of a language (those aspects of use that make a language stable) and mechanisms that result in deviation from convention resulting in language change.

I then investigate language acquisition. I explore how children acquire the grammar of their native language; and I do so from the perspective of the usage-based model developed by developmental and comparative psychologist, Michael Tomasello, which integrates insights from cognitive linguistics and cognitive psychology into a theory of first language acquisition.

1 A usage-based approach to language change

In this section I examine an influential usage-based approach to language change, the theory of utterance selection developed by William Croft in his (2000) book *Explaining Language Change*. Before doing so, I briefly introduce the branch of linguistics concerned with language change, **historical linguistics**.

1.1 Historical linguistics and language change

Historical linguistics is concerned with describing how languages change and with attempting to explain why languages change. It concerns the histories and prehistories of languages and relationships between languages. Since the 1960s, explanations in historical linguistics have been revolutionised by the sociolinguistic examination of language variation. This concerns the observation that the language we use (the words and phrases we choose, the way we pronounce them and so on) varies from day to day, from situation to situation and from person to person. Language variation occurs at the level of the individual, in that each speaker employs distinct registers of language in different situations (formal, informal, 'motherese' and so on), and at the level of the group, in that speakers can be grouped according to **regional dialect** and **social dialect**.

In the process of language change, speakers either consciously or unconsciously target the variation that already exists in the language due to social factors, selecting some variants over others and spreading them through a speech community. Language change can be – and often is – gradual, and in some cases almost imperceptible, but over time the results can be spectacular.

To see how spectacular, let's briefly examine a few changes that have taken place in English. English belongs to the **Germanic branch** of the **Indo-European family** of languages. A **language family** is a group of 'genetically' related languages, in the sense that they are hypothesised to have emerged from a common 'parent' language. Such relations are established on the basis of systematic correspondences in terms of words, sounds or grammar. Between the years AD 450 and 550, several Germanic tribes, speakers of Old Frisian, from parts of modern-day Netherlands, Denmark and Northern Germany, arrived and settled in what is now England. In doing so they pushed the native Britons – the Celts – westwards, hence the restriction of the Celtic languages (the ancestors of Cornish and Welsh) to the western peripheries of the country.

Within a few centuries, the language spoken by these tribes was sufficiently distinct from the Germanic language of continental Europe to be referred to by a new name. Texts from the period refer to the language as *Englisc*, and from around AD 1000 there is evidence that the country is referred to as *Englaland*, 'land of the Angles', one of the Germanic tribes. In a cruel twist, the displaced inhabitants, the Celts, were labelled *wealas*, meaning 'foreigners', by the invaders, which provides the derivation of the modern forms *Welsh* and *Wales*.

The English spoken in the centuries just after the arrival of the Germanic tribes is called Old English (or Anglo-Saxon) by historians of the language. Old English is spectacularly different from Modern English. To get a sense of some of the differences, consider the sentences in (1) and (2):

(1) sēō cwēn geseah þone guman
'The woman saw the man'

(2) se guma geseah þā cwēn
'The man saw the woman'

These sentences illustrate some of the differences between Old and Modern English. Perhaps the most striking difference is the unfamiliar look of some of the words, although some of the sounds are somewhat familiar. For instance, the Old English word for 'woman', *cwēn*, has developed into the modern-day form *queen*. This is an example of a phenomenon called **narrowing**: over time a word develops a more specialised, or narrower, function. Today *queen* can only be applied to a female monarch, whereas in Old English it could be applied to all adult females.

Another striking difference is that Old English had a **case system**. Case is the morphological marking of grammatical relations such as Subject and Object. In example (1), the subject of the sentence features a definite article 'the' marked with **nominative** (subject) case *sēō*, indicating that what comes next is the subject of the sentence. The definite article *þone* indicates **accusative** (object) case, indicating that *guman* is the object of the sentence. One consequence of the morphological flagging of subject and object is that word order was not as rigid in Old English as it is in Modern English. In Modern English, we know which expression in a sentence is the subject and which is the object by their position in the sentence: while the subject precedes the verb, the object follows it. One advantage of a case system is that the language is less reliant on word order to provide this kind of information.

Yet another difference illustrated by these sentences also concerns the definite articles: in addition to encoding case, Old English also encoded **gender**. While *sēō* and *se* in (1) and (2) are both nominative case forms, the former encodes feminine gender and the latter masculine gender. Similarly, while *þa* and *þone* in (1) and (2) both encode accusative case, *þa* encodes masculine gender and *þone* encodes feminine gender. In addition, observe that nouns show **case agreement** with the definite article which precedes them: the distinction between *guman* and *guma* results from case agreement.

Finally, these examples reveal another striking distinction. Some past tense verbs in Old English were marked by the prefix *ge-*, as in *geseah*, which contrasts with the modern past tense equivalent, *saw*. Historical linguistics is concerned, then, with explaining how and why Old English evolved into the version of English that we recognise today.

1.2 The utterance selection theory of language change

In this section, I focus on a particular cognitively oriented theory of language change: the utterance selection theory of language change developed by Croft (2000). The key assumption behind this approach is that languages don't change; instead, people change language through their actions. In short, language is changed by the way people use language. In this respect, Croft's approach takes a usage-based perspective on language change.

At first glance, this perspective may seem problematic. Language is a system that people use for communication. Given that humans are not telepathic, then if communication is to succeed, a speaker and hearer must share a common **code** (a technical term for a single variety of a language). This means that the speaker and hearer follow certain conventions in the way they use language, a convention being a regularity in behaviour which all speakers in a particular linguistic community adhere to, either consciously or unconsciously. Hence, it follows that a language is a **conventional system** that allows speakers to express meanings that will be recognised by others in the same linguistic community. For instance, the use of the word *dog* is **arbitrary** in the sense that there is nothing predictable about the sounds that are used to refer to the concept DOG in English. Other languages use different sounds (e.g. *chien* in French and *Hund* in German).

However, a convention of English holds that the word *dog* refers to a particular kind of animal: the word has a **conventional meaning**. This means that all English speakers can use this word to refer to this animal and in so doing they are following a convention of English. In addition, strings of words can also represent conventions. For example, as we saw in Chapter 1, the idiomatic meaning of the expression *He kicked the bucket*, is 'he died' not 'a male kicked a bucket'. This is a convention of English. Similarly, the phrase: *Can you pass me the salt?* which is literally a question about someone's ability to do something, is normally understood as a request. This is also a convention of English.

If convention is so important to human language and linguistic behaviour, why does language change? If everyone is following the conventions of the language, how do languages change and what causes this change? For this to happen, someone must break a convention and this **innovation** must then undergo **propagation**, which means that the change spreads through the linguistic community and becomes established as a new convention. As we saw above, the conventions of Old English and Modern English are radically different; yet, these are two varieties of the same language, separated by time but connected by the process of **continuous replication**.

According to Croft, the explanation lies in the fact that: 'there cannot be a word or phrase to describe every experience that people wish to communicate' (Croft 2000: 103). Language use has to be partly non-conventional if it is to express all human experience, yet it is also partly conventional in that novel uses rely upon existing aspects of language. One area in which human experience frequently outstrips the conventions of language, and thereby necessitates innovation, is the domain of technological advances. The telephone, the computer, the car and the camcorder are all inventions that have emerged relatively recently. Their emergence has necessitated the **coining** of new words.

Consider the word *camcorder*. This describes a handheld camera that records moving pictures. The new word *camcorder* made use of existing conventional forms *camera* and *recorder*, and blended them to create *camcorder*. This is called a **formal blend**. Blending is a productive word formation process in which elements from two existing words are merged to provide a new word, as in the standard textbook example of *smog* from *smoke* and *fog*. Blending relies partly on convention (using existing words), but is also partly innovative, creating a new word.

By assuming the two processes of innovation and propagation, Croft's approach explicitly acknowledges that language change is both a **synchronic** and a **diachronic** phenomenon. A synchronic view of language examines the properties of language at a specific discrete point in time: innovation occurs

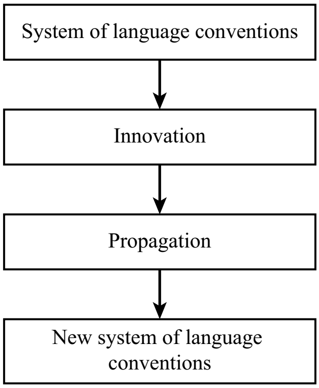


Figure 6.1 The structure of language change

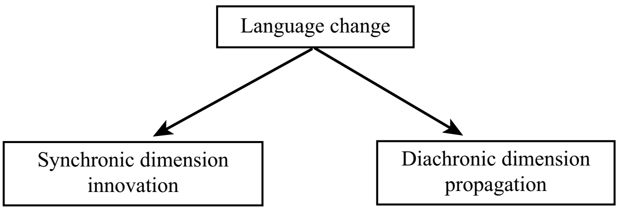


Figure 6.2 The synchronic and diachronic dimensions of language change

at a specific point in time. A diachronic view of language considers its properties over a period of time: propagation occurs over a period of time, in that an innovation sometimes requires centuries to become fully conventionalised. Figure 6.1 illustrates the structure of language change.

A (set of) convention(s) is changed when the convention is first broken: this is innovation. If this innovation is propagated throughout a linguistic community, it can become established as a convention, and this changes the language. The diagram in Figure 6.2 captures the view that language change involves synchronic and diachronic dimensions (in contrast to some theories of language change, which only consider propagation as language change).

1.3 The generalised theory of selection and the theory of utterance selection

The theory of utterance selection takes its inspiration from neo-Darwinian evolutionary theory, particularly the application of theories of biological evolution to sociocultural constructs like scientific theories. David Hull, a philosopher of science, has attempted to draw out the similarities between various versions of neo-Darwinian evolutionary theory and has developed what he calls a **generalised theory of selection**. Because Croft draws upon Hull's generalised theory of selection in developing his theory of utterance selection, I begin by outlining four key ideas from Hull's theory.

The key concepts in the generalised theory of selection are: i) **replica-**

tor; ii) **interactor**; iii) **selection**; and iv) **lineage**. A replicator is an entity whose structure can be passed on in successive replications. An example of a replicator, from biology, is the gene, which contains material that is passed on to offspring through procreation. Crucially, however, the process of replication may introduce differences, which result in a slightly different structure from the original replicator. Changes introduced during ongoing replication are cumulative, and result in a replicator that, through successive replications, can have quite different properties from the original replicator. For instance, genes are contained in DNA sequences. Because errors, known as **mutations**, can occur during the process of **replication**, new DNA sequences can be replicated. This process is known as **altered replication** and contrasts with **normal replication** which copies the original replicator exactly. An interactor is an entity that interacts with its environment in such a way that replication occurs. An example of an interactor from biology is an individual organism.

Selection is the process whereby the extinction or proliferation of interactors results in the differential perpetuation of replicators. For example, if a particular individual or set of individuals dies out, then the corresponding gene pool, the set of replicators, is lost. Finally, lineage relates to the persistence of an entity over time, due either to normal or to altered replication. An example of this idea from biology is a **species**. Table 6.1 summarises these ideas.

Croft's theory of utterance selection applies these notions to language change. However, before looking in detail at what the counterparts of each of these constructs might be in the domain of language, it is important to address the motivations for treating language change in terms of a theory of generalised selection. Recall that cognitive linguists view language change as the result of language use, in particular the result of interaction between interlocutors. As a consequence, there are selectional pressures exerted on linguistic conventions, because language is a system in use that changes as a response to the new uses to which it is put. From this perspective, it makes perfect sense to apply an evolutionary framework to language change.

Next, let's consider what the linguistic counterparts of the constructs illustrated in Table 6.1 might be. I begin with the idea of a replicator. In biology,

Table 6.1 Key ideas in the generalised theory of selection (Croft 2000)

Concept	Description
Replicator	An entity possessing structure that can be passed on
Replication	The process of copying a replicator
Normal replication	The process of replication resulting in an exact copy
Altered replication	The process of replication whereby the resulting replicator is different from the replicator it copies
Interactor	An entity that interacts with its environment so that replication occurs
Selection	The process whereby replicators are differentially perpetuated (i.e. some replicators are more successful than others)
Lineage	An entity that persists over time due to replication

the **gene** represents a replicator which is embedded in strands of DNA. In the theory of utterance selection, a replicator is an element of language realised in an utterance. Recall that in the previous chapter I defined an utterance as a usage event: each utterance constitutes a unique speech event bounded in space and time. From this perspective, even if a language user were to repeat an utterance, we would still be looking at two distinct utterances. The elements of language that are realised in utterances, and that can therefore count as replicators, include words, morphemes and grammatical constructions. Croft calls these linguistic replicators **linguemes**. Crucially, just as each utterance is a unique event, so is each lingueme.

The linguemes in any given utterance are usually associated with a conventional meaning. Normal replication occurs when linguemes are used in accordance with the conventions of the language. Altered replication, which is essentially innovation, occurs when an utterance provides a meaning that breaks with the conventions of the language. Hence, altered replication (innovation) occurs when there is a disjunction between the conventional form–meaning mapping within an utterance. I discuss this in more detail below.

In the theory of utterance selection, the interactors are the language users. Of course, language change does not depend solely on a group of speakers dying or being more successful at breeding, although **language death** can be caused by an entire speech community dying out. More commonly, interactors play a role in the selection of utterances by virtue of the various **social** and **communication networks** within which they interact.

In terms of language change, just as altered replication can be equated with innovation, so can selection be equated with propagation. The selection and use of a particular utterance containing a particular lingueme or set of linguemes can propagate the altered replication (the innovation), enabling it to diffuse through a linguistic community. In time, this innovation becomes established as a new convention.

Finally, I turn to the concept of lineage. In terms of language change, this relates to **etymology**. Etymology is the study of the history of linguistic units, particularly words; etymologists are linguists who study the historical chain of developments affecting word form and meaning. Table 6.2 summarises the

Table 6.2 Terms for generalised theory and linguistic equivalents (adapted from Croft 2000)

Terms from the generalised theory of selection	Linguistic equivalents
Replicator	Lingueme
Interactor	Language user
Normal replication	Conforming to linguistic conventions
Altered replication	Not conforming to linguistic conventions (innovation)
Selection	Propagation
Lineage	Etymology

notions discussed in the generalised theory of selection and its equivalents in linguistic theory.

1.4 Causal mechanisms for language change

In this section I consider the social mechanisms that give rise to replication, resulting in normal replication, altered replication (innovation), and selection (propagation). Because the theory of utterance selection is usage-based, our concern is with utterances (usage events), which are embedded in linguistic interaction. For this reason, we require a theory that explains the nature of, and the motivations for, the kinds of interactions that language users engage in.

Recall that the usage-based view of language change assumes that these interactions preserve language stability (by following linguistic conventions), bring about innovation (by breaking linguistic conventions) and give rise to propagation due to the differential selection of certain kinds of linguemes by language users in a sociocultural context. And this results in the establishment of new conventions. In order to account for human behaviour in linguistic interaction, Croft adopts a model proposed by Rudi Keller (1994), which describes linguistic interaction in terms of a number of maxims. The hypermaxims and maxims discussed below are therefore drawn from Keller's work. Note, however, that while I have numbered the maxims for present purposes, these numbers do not derive from Keller's work.

Keller views linguistic behaviour as a form of social action, in keeping with functional approaches to language. He proposes a number of maxims in order to model what language users are doing when they use language. The maxims described here are in service of a more general principle, which Keller (1994) calls a hypermaxim. In Keller's terms, this is the **hypermaxim of linguistic interaction** and can be stated as follows:

(3) **Hypermaxim**: 'Talk in such a way that you are most likely to reach the goals that you set yourself in your communicative enterprise' (Keller 1994: 106).

Croft argues that by observing the various maxims in service of fulfilling the hypermaxim of linguistic interaction, speakers facilitate normal replication, altered replication and selection, and thus bring about language change.

1.4.1 Normal replication

As we have seen, a theory of language change must be able to account for the relative stability of language as well as offering an explanation for how and why language changes. Recall that convention is crucial to the success of language as a communicative system. Croft argues that normal replication, which enables stability, arises from speakers following the maxim stated in (4):

(4) **Maxim 1**: 'Talk in such a way that you are understood' (Keller 1994: 94).

Of course, this maxim states the rather obvious but no less important fact that speakers normally intend to be understood in linguistic interaction. In order to be understood, speakers follow the conventions of their native language. Hence, the unintended consequence of observing Maxim 1 is normal replication: stability in language.

1.4.2 Intentional altered replication

Croft argues that innovation arises because, in addition to wanting to be understood, speakers also have a number of other goals. These are summarised by the series of maxims stated in (5)–(8):

(5) **Maxim 2**: 'Talk in such a way that you are noticed' (Keller 1994: 101).

(6) **Maxim 3**: 'Talk in such a way that you are not recognizable as a member of the group' (Keller 1994: 101).

(7) **Maxim 4**: 'Talk in an amusing way' (Keller 1994: 101).

(8) **Maxim 5**: 'Talk in an especially polite, flattering or charming way' (Keller 1994: 101).

These maxims relate to the 'expressive' function of language: in order to observe the hypermaxim (achieve one's goals in linguistic interaction), speakers might follow Maxims (2)–(5). Yet, in following these maxims, the speaker may need to break the conventions of the language. As a consequence, innovation or altered replication takes place. I will look at some specific examples below. A further maxim posited by Keller, which may be crucial in altered replication, is stated in (9):

(9) **Maxim 6**: 'Talk in such a way that you do not expend superfluous energy' (Keller 1994: 101).

This maxim relates to the notion of **economy**. The fact that frequently used terms in a particular linguistic community are often shortened may be explained by this maxim. Croft provides an example from the community of Californian wine connoisseurs. While in the general English-speaking community wine varieties are known by terms like *Cabernet Sauvignon*, *Zinfandel* and *Chardonnay*, in this speech community, where wine is a frequent topic of conversation, these terms have been shortened to *Cab*, *Zin* and *Chard*. As Croft (2000: 75) observes: 'The energy expended in an utterance becomes superfluous, the more frequently it is used, hence the shorter the expression for it is likely to be(come).'

While some theories of language treat economy in terms of mental representation (as a function of psycholinguistic processing costs), Croft argues that Maxim 6, which essentially relates to economy, actually relates to a speaker's interactional goals in a communicative context. In short, Maxim 6 can only be felicitously followed when it doesn't contravene other maxims, like Maxim 1. It is only in a context involving wine connoisseurs, for instance, that the diminutive forms do not flout Maxim 1 and are therefore felicitous.

1.4.3 Non-intentional altered replication

The changes that arise from maxims considered thus far are **intentional**: deliberate on the part of the language user. However, there are a number of mechanisms resulting in altered replication that are **non-intentional**. These processes are nevertheless grounded in usage events. I briefly consider these here.

Sound change

The first set of non-intentional mechanisms relates to regular sound change. Sound change occurs when an **allophone**, the speech sound that realises a **phoneme**, is replicated in altered form. Because the human **articulatory system** relies on a highly complex motor system in producing sounds, altered replication can occur through 'errors' in **articulation**. In other words, the articulatory system can **overshoot** or **undershoot** the sound it is attempting to produce, giving rise to a near (slightly altered) replication. Of course, it seems unlikely that an individual's speech error can give rise to a change that spreads throughout an entire linguistic community. Nevertheless, the celebrated sociolinguist William Labov (1994) suggests that mechanisms like overshoot or undershoot can give rise to vowel **chain shifts** in languages.

A chain shift involves a series of sound changes that are related to one another. This typically involves the shift of one sound in phonological space which gives rise to an elaborate chain reaction of changes. Chain shifts are often likened to a game of musical chairs, in which one sound moves to occupy the place of an adjacent pre-shift sound, which then has to move to occupy the place of another adjacent sound in order to remain distinct and so on. The net effect is that a series of sounds move, forming a chain of shifts and affecting many of the words in the language.

A well-known example of a chain shift is the **Great English Vowel Shift**, which took effect in the early decades of the fifteenth century and which, by the time of Shakespeare (1564–1616), had transformed the sound pattern of English. The Great Vowel Shift affected the seven long vowels of **Middle English**, the English spoken from roughly the time of the Norman conquest of England (1066) until about half a century after the death of Geoffrey Chaucer (around 1400). What happened was that the seven long vowels were raised: they were articulated with the tongue higher in the mouth. This corresponds to a well-known tendency in vowel shifts for long vowels to rise, while short vowels fall.

Labov (1994) has suggested that chain shifts might be accounted for in purely articulatory terms. That is, the tendency for long vowels to undergo raising in chain shifts might be due to articulatory pressure for maintaining length; this results in the sound being produced in a higher region of the mouth: the phenomenon of overshoot. Undershoot applies to short vowels, but in the opposite direction (lowering). Crucially, this type of mechanism is non-intentional because it does not arise from speaker goals but from purely mechanical system-internal factors.

Another non-intentional process that results in sound change is **assimilation**. Croft, following suggestions made by Ohala (1989), argues that this type of sound change might be accounted for not by articulatory (sound-producing) mechanisms, but by non-intentional auditory (perceptual) mechanisms. Assimilation is the process whereby a sound segment takes on some of the characteristics of a neighbouring sound. For instance, many French vowels before a word-final nasal have undergone a process called **nasalisation**. Nasal sounds – like [m] in *mother*, [n] in *naughty* and the sound [ŋ] at the end of *thing* – are produced by the passage of air through the nasal cavity, rather than the oral cavity. In the process of nasalisation, the neighbouring vowel takes on this sound quality, and is articulated with nasal as well as oral airflow.

For instance, French words like *fin* 'end' and *bon* 'good' feature nasalised vowels. The consequence of this process is that in most contexts the final nasal segment [n] is no longer pronounced in Modern French words, because the presence of a nasalised vowel makes the final nasal sound redundant. Notice that the spelling retains the 'n', reflecting pronunciation at an earlier stage in the language before this process of sound change occurred.

The process that motivates assimilation of this kind is called **hypocorrection**. In my example of hypocorrection, the vowel sound is reanalysed by the language user as incorporating an aspect of the adjacent sound: here the nasal. However, this process of reanalysis is non-intentional: it is a **covert process**, one that does not become evident to speakers until the nasalisation of the vowel results in the loss of the nasal sound that **conditioned** the reanalysis in the first place.

Form–meaning reanalysis

Non-intentional altered replication is not restricted to sound change, but can also affect symbolic units. Recall that symbolic units are form–meaning pairings. Language change that affects these units I dub **form–meaning reanalysis** (Croft uses the term **form-function reanalysis**). Form–meaning reanalysis involves a change in the mapping between form and meaning. Consider examples (10) and (11).

(10) I'm going to the library.

(11) I'm going to be an astronaut (when I grow up).

What concerns us here is the meaning of the *be going to* construction. In example (10), this expression describes a physical path of motion, while in (11) it describes future time, which is the more recent meaning associated with this construction. This is an example of a type of form–meaning reanalysis known as **grammaticalisation**, an issue to which I'll return in detail in Part IV of the book (Chapter 27). As I noted above, the term reanalysis does not imply a deliberate or intentional process. Instead, the reanalysis is non-intentional, and derives from pragmatic (contextual) factors.

1.4.4 Selection

I now turn to the social mechanisms responsible for selection. In particular, I look at how the innovation is propagated through a linguistic community so that it becomes conventionalised. In the theory of utterance selection, mechanisms of selection operate over previously used variants. One such mechanism proposed by Keller is stated in (16).

(12) **Maxim 7**: 'Talk like the others talk' (Keller 1994: 100).

Croft argues that this maxim is closely related to the theory of **accommodation** (Trudgill 1986). This theory holds that interlocutors often tend to accommodate or 'move towards' the linguistic conventions of those with whom they are interacting in order to achieve greater rapport or **solidarity**. A variant of Maxim 7, posited by Keller, is stated in (13).

(13) **Maxim 8**: 'Talk in such a way that you are recognized as a member of the group' (Keller 1994: 100).

This maxim elaborates Maxim 7 in referring explicitly to **group identity**. From this perspective, the way we speak is an **act of identity**, as argued by LePage and Tabouret-Keller (1985). In short, one function of the language we use is to identify ourselves with a particular social group. This means that sometimes utterances are selected that diverge from a particular set of conventions as a result of the desire to identify with others whose language use is divergent from those conventions.

1.5 Causal mechanisms of language stability and change

We have seen that the theory of utterance selection is a usage-based theory of language change because it views language as a system of use governed by convention. Nevertheless, there are a number of causal mechanisms that maintain stability, and lead to language change. In particular, language change results from breaking with convention and selecting some of the new variants created as a result of this departure.

While the propagation of new forms can be due to intentional mechanisms relating to the expressive functions associated with language, it also involves non-intentional articulatory and perceptual mechanisms. Moreover, the selection of variants is due to sociolinguistic processes such as accommodation,

Table 6.3 Causal mechanisms involved in language stability and change (adapted from Croft 2000)

Normal replication	Altered replication (innovation)	Selection (propagation)
Follow conventions of the language *Maxim 1*: Talk in such a way that you are understood	**Be expressive** *Maxim 2*: Talk in such a way that you are noticed *Maxim 3*: Talk in such a way that you are not recognisable as a member of the group *Maxim 4*: Talk in an amusing way *Maxim 5*: Talk in an especially polite, flattering or charming way **Be economical** *Maxim 6:* Talk in such a way that you do not expend superfluous energy **Non-intentional mechanisms** (1) Sound change: articulatory factors (over/undershoot) or auditory factors (hypocorrection) (2) Reanalysis of form–meaning mapping	**Accommodation** *Maxim 7*: Talk like the others talk **Act of identity** *Maxim 8*: Talk in such a way that you are recognised as a member of the group **Prestige** Adoption of changes as a result of aspiring to a social group

identity and prestige. Table 6.3 summarises the causal mechanisms of language change.

2 The usage-based approach to language acquisition

In this section I consider the question of *how* linguistic units are derived from patterns of language use by exploring a usage-based account of child language acquisition. In particular, I focus on the acquisition of meaning and grammar rather than phonological acquisition. Here I'll be basing my discussion on the theory proposed by the developmental psychologist Michael Tomasello.

According to Ronald Langacker, a usage-based account of language acquisition posits that language learning involves 'a prodigious amount of actual learning, and tries to minimise the postulation of innate structures specific to language' (Langacker 2000: 2). In this approach to language acquisition, the burden of explanation is placed upon the acquisition of linguistic units rather than upon a putative Universal Grammar. While cognitive linguists do not deny that humans are biologically pre-specified to acquire language, they reject the hypothesis that there exists a specialised and innate cognitive system that equips us for knowledge about grammar. Instead, cognitive linguists argue that humans employ generalised and species-specific **sociocognitive abilities** in the acquisition of language.

2.1 Empirical findings in language acquisition

The empirical study of first language acquisition is known as **developmental psycholinguistics**. Since the early studies in developmental psycholinguistics such as Braine (1976) and Bowerman (1973), one of the key cross-linguistic findings to have emerged is that infants' earliest language appears to be **item-based** rather than **rule-based**: infants first acquire specific item-based units (words), then more complex item-based units (pairs and then strings of words), before developing more abstract grammatical knowledge (grammatical words and morphemes, complex sentence structures and so on). Cognitive linguists argue that this provides evidence for a usage-based theory of language acquisition, and that more recent empirical findings in developmental psycholinguistics, particularly since the late 1980s and early 1990s, support this view.

Let's look in more detail at what it means to describe early language acquisition as item-based. When a child first produces identifiable units of language at around the age of twelve months – the **one-word stage** – these are individual lexical items. However, these lexical items do not equate with the corresponding adult forms in terms of function. Instead, the child's first words appear to be equivalent to whole phrases and sentences of adult language in terms of communicative intention. For this reason, these early words are known as **holophrases**. These can have a range of goal-directed communicative intentions. In a study of his daughter's early language, Tomasello found that his daughter's holophrases fulfilled a number of distinct functions, which are illustrated in Table 6.4.

In addition, the item-based nature of first language acquisition is also revealed at the **two-word stage**, which emerges at around eighteen months. After holophrases, children begin to produce multi-word expressions. These are more complex expressions than holophrases in that they contain two or more lexical items. Some of these early multi-word utterances are of the type *ball table*, when a child sees a ball on the table and concatenates two units of equal status (here nouns) in order to produce a more linguistically complex utterance.

However, the majority of early multi-word utterances are not like this. Instead, many early multi-word utterances exhibit **functional asymmetry**. This means that the expressions contain a relatively stable element with 'slots' that can be filled by other lexical items. In essence, early multi-word utterances, rather than containing two or more words of equal status, tend to be 'built' around a functionally more salient and stable word. Tomasello calls expressions like these **utterance schemas** (which are also known as **pivot schemas**). Like holophrases, utterance schemas reflect the communicative intention of an equivalent adult utterance, but represent the acquisition of

Table 6.4 Holophrases (adapted from Tomasello 2003: 36–7)

Holophrase	Communicative function
Rockin	*First use*: while rocking in a rocking chair
	Second use: as a request to rock in a rocking chair
	Third use: to name the rocking chair
Phone	*First use*: in response to hearing the telephone ring
	Second use: to describe activity of 'talking' on the phone
	Third use: to name the phone
	Fourth use: as a request to be picked up in order to talk on the phone
Towel	*First use*: using a towel to clean a spill
	Second use: to name the towel
Make	*First use*: as a request that a structure be built when playing with blocks
Mess	*First use*: to describe the state resulting from knocking down the blocks
	Second use: to indicate the desire to knock down the blocks

Table 6.5 Examples of utterance schemas (adapted from Tomasello 2003: 66)

here's the X	put X here	X broken	Mommy's X-ing it
I wanna X	throw X	sit on the X	let's X it
more X	X gone	open X	it's a X
a X	X here	I'm X-ing it	I X-ed it

more schematic knowledge, allowing a wider range of lexical items to fill the slots. The obligatory element is known as the **pivot**.

Representative examples of utterance schemas are provided in Table 6.5. In this table, X represents the slot that is 'filled in' and corresponds to a word that describes an entity (noun) or an action (verb). (There is no significance to the order in which these utterances are listed in the table.) Because most utterance schemas appear to revolve around verb-like elements, Tomasello (1992) labelled these units **verb-island constructions**. Only later do these verb-island constructions develop into the more familiar constructions of adult-like speech.

Tomasello argues that a further way in which early acquisition is item-based rather than rule-based is in its **lack of innovation**. Early language use is highly specific to the verb-island constructions that the child has already formed: it resists innovation. Tomasello proposes that this is because early utterance schemas are highly dependent on what children have actually heard rather than emerging from abstract underlying rules. In an experiment carried out by Tomasello and Brooks (1998), two- to three-year-old children were exposed to a nonsense verb *tamming* (meaning 'rolling or spinning') used in an intransitive frame. This is illustrated in example (14).

(14) The sock is tamming.

This usage is intransitive because the verb *tamming* does not have an object. The children were then prompted to use *tamming* in a **transitive syntactic frame**: one with an object. One such prompt was a picture in which a dog was causing an object to 'tam'. The question presented to the children was *What is the doggie doing?* But the children were found to be poor at producing *tamming* in a transitive frame (e.g. *He's tamming the car*). Moreover, they were also found in a further study to be poor at understanding the use of *tamming* in a transitive frame.

Tomasello draws two conclusions from these findings: i) two and three year olds were poor at the *creative* use of the novel verb *tamming*; and ii) early utterance schemas are highly dependent on contexts of use in which they have been heard. Tomasello argues that it is only later, as children acquire more complex and more abstract constructions, that they come to be more competent in the creative use of language.

2.2 The cognitive view: sociocognitive mechanisms in language acquisition

As we have seen, in addition to the usage-based thesis, the other guiding principle of cognitive approaches to grammar is the symbolic thesis: the claim that the language system consists of symbolic assemblies, or conventional pairings, of form and meaning (Chapter 21 considers these two guiding principles in further detail). According to Michael Tomasello and his colleagues, when children acquire a language, what they are actually doing is acquiring constructions: linguistic units of varying sizes and increasing degrees of abstractness. As the complexity and abstractness of the units increase, linguistic creativity begins to emerge.

According to this view, the creativity exhibited by young children in their early language happens because they are 'constructing utterances out of various already mastered pieces of language of various shapes and sizes, and degrees of internal structure and abstraction – in ways appropriate to the exigencies of the current usage event' (Tomasello 2003: 307). This view of language acquisition is called **emergentism**, and stands in direct opposition to **nativism**, the position adopted in Generative Grammar models (Evans 2014). Tomasello is claiming that the process of language acquisition involves a huge amount of learning. Recall that cognitive linguists reject the idea that humans have innate cognitive structures that are specialised for language (the Universal Grammar hypothesis, to be discussed in more detail in the next chapter). In light of that fact, we must address the question of what cognitive abilities children bring to this process of language acquisition.

Recent research in cognitive science reveals that children bring a battery of sociocognitive skills to the acquisition process. These skills appear to be **domain-general**. This means that they are not specific to language, but relate to a range of cognitive domains. According to cognitive linguists, these skills facilitate the ability of humans to acquire language. Tomasello argues that there are two kinds of general cognitive ability that facilitate the acquisition of language: i) a **pattern-finding ability**; and ii) an **intention-reading ability**.

The pattern-finding ability is a general cognitive skill that enables humans to recognise patterns and perform 'statistical' analysis over sequences of perceptual input, including the auditory stream that constitutes spoken language. Tomasello argues that pre-linguistic infants – children under a year old – employ this ability in order to abstract across utterances and find repeated patterns that allow them to construct linguistic units. It is this pattern-finding ability that underlies the abstraction process assumed by Langacker, which I discussed in the previous chapter.

The evidence for pattern-finding skills is robust and is apparent in pre-linguistic children. For instance, in one such early study, Saffran et al. (1996) found that at the age of eight months, infants could recognise patterns in auditory stimuli. This experiment relied on the **preferential looking technique**, which is based on the fact that infants look more at stimuli with which they are familiar. Saffran et al. presented infants with two minutes of synthesised speech, consisting of the four nonsense words *bidaku*, *padoti*, *golabu* and *tupiro*. These nonsense words were sequenced in different ways so that infants would hear a stream of repeated words such as: *bidakupadotigolabubidakutupiropadoti* and so on. Observe that each of these words consisted of three syllables.

Infants were then exposed to new streams of synthesised speech, which were presented at the same time, and which were situated to the left and the right of the infant. While one of the new recordings contained 'words' from the original, the second recording contained the same syllables, but in different orders, so that none of the 'words' *bidaku*, *padoti*, *golabu* or *tupiro* featured. The researchers found that the infants consistently preferred to look towards the sound stream that contained some of the same 'words' as the original. This shows that pre-linguistic infants are able to recognise patterns of syllables forming 'words' in an auditory stream and provides evidence for the pattern-finding ability.

Further research (see Tomasello 2003, 2008 for reviews) demonstrates that infant pattern-finding skills are not limited to language. Researchers have also found that infants demonstrate the same skills when the experiment is repeated with non-linguistic tone sequences and with visual, as opposed to auditory, sequences. Some of the key features associated with the human pattern-finding ability are summarised in Table 6.6.

Finally, this pattern-finding ability appears not to be limited to humans but is also apparent in our primate cousins. For instance, tamarins demonstrate the same pattern recognition abilities when exposed to the same kinds of auditory and visual sequencing experiments described above for human infants. Of course, if we share the pattern-finding ability with some of the non-human primates, and if these pattern-finding skills facilitate the acquisition of language, we need to work out why only humans acquire and produce language.

According to Tomasello, the answer lies in the fact that the pattern-finding skills described above are necessary but not sufficient to facilitate language acquisition. In addition, another set of skills are required: intention-reading

Table 6.6 Human pattern-finding abilities (adapted from Tomasello 2003)

Human pattern-finding abilities
The ability to relate similar objects and events, resulting in the formation of perceptual and conceptual categories for objects and events. Category formation aids recognition of events and objects.
The ability to form sensorimotor schemas based on recurrent perception of action. This is associated with the acquisition of basic sensorimotor skills, and the recognition of actions as events, such as crawling, walking, picking up an object and so on.
The ability to perform distributional analysis on perceptual and behavioural sequences. This allows infants to identify and recognise recurrent combinations of elements in a sequence and thus identify and recognise sequences.
The ability to create analogies (recognition of similarity), between two or more wholes, (including utterances), based on the functional similarity of some of the elements in the wholes.

Table 6.7 Human intention-reading abilities (adapted from Tomasello 2003)

Human intention-reading abilities
The ability to coordinate or share attention, as when an infant and adult both attend to the same object.
The ability to follow attention and gesturing, as when an infant follows an adult's gesture or gaze in order to attend to an object.
The ability to actively direct attention of others, such as drawing attention to a particular object or event, for example by pointing.
The ability of culturally (imitatively) learning the intentional actions of others, such as imitating verbal cues in order to perform intentional actions.

abilities. While pattern-finding skills allow pre-linguistic infants to begin to identify linguistic units, the use of these units requires intention-reading skills, which transform linguistic stimuli from statistical patterns of sound into fully fledged linguistic symbols. In short, this stage involves 'connecting' the meaning to the form, which gives rise to the form–meaning pairings that make up our knowledge of language. Only then can these linguistic sounds be used for communication. This process takes place when, at around a year old, infants begin to understand that the people around them are **intentional agents**: their actions are deliberate and their actions (behaviour) and thoughts (mental states) can be influenced. The emergence of this understanding allows infants to 'read' the intentions of others. Some of the features that emerge from this intention-reading ability are summarised in Table 6.7.

Like pattern recognition skills, these intention-reading skills are domain-general. Unlike pattern recognition skills, they are **species-specific**: only humans possess a complete set of these abilities. The evidence is becoming less equivocal as to whether our nearest primate cousins, for instance chimpanzees, recognise **conspecifics** (members of the same species) as intentional agents – there is increasing evidence that chimps do recognise other chimps as having intentions (Evans 2015a; Tomasello 2008, 2014). But what they appear to be missing is a fully fledged **cooperative intelligence** (Evans 2015a), what Tomasello (2014) dubs **shared intentionality**.

What marks humans out from other species is our ability, even from a young age, to adopt a cooperative cognitive stance towards others. Language is the paradigmatic example of this, requiring both an awareness that other members of the species are using linguistic signals to attempt to communicate, by signalling a communicative intention, and an awareness of the appropriate strategies for interacting with others, in goal-directed communication (see Evans 2015a).

In terms of language acquisition, this cooperative intelligence is manifested in terms of intention-reading skills, which begin to emerge just before the infant's first birthday. Tomasello argues that the emergence of holophrases shortly after the infant's first year is directly correlated with the emergence of these skills.

Our intention-reading abilities consist of three specific but interrelated phenomena: i) **joint attention frames**; ii) the understanding of **communicative intentions**; and iii) **role reversal imitation**, which is thought to be the means by which human infants acquire cultural knowledge. According to this view, language acquisition is contextually embedded and is a specific kind of **cultural learning**.

A joint attention frame is the **common ground** that facilitates cognition of communicative intentions and is established as a consequence of a particular goal-directed activity. When an infant and an adult are both looking at and playing with a toy, for example, the attention frame consists of the infant, the adult and the toy. While other elements that participate in the scene are still perceived (such as the child's clothes or other objects in the vicinity), it is this **triadic relationship** between child, adult and toy that is the joint **focus of attention**.

The second important aspect of intention-reading involves the recognition of a communicative intention. This happens when the child recognises that others are intentional agents and that language represents a special kind of intention: the intention to communicate. For example, when the adult says *teddy bear*, the adult is identifying the toy that is the joint focus of attention and is employing this linguistic symbol to express the intention that the child follow the attention of the adult. This is represented in Figure 6.3, where the unbroken arrow represents the communicative intention expressed by the adult. The dotted arrows represent shared attention.

Finally, Tomasello argues that intention-reading skills also give rise to **role reversal imitation**. Infants who understand that people manifest intentional behaviour may attend to and learn (by imitation) the behavioural means that others employ to signal their intentional state. For example, the child may imitate the use of the word *teddy bear* by an adult in directing attention to an object, in order to themselves direct the adult's attention to the object – by reversing roles, and directing the parent's attention, the child is imitating the parent's use of *teddy bear*.

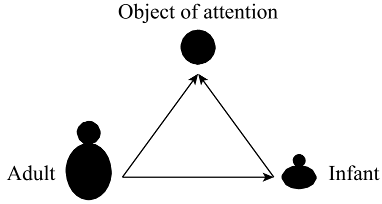


Figure 6.3 The use of a linguistic symbol in a triadic relationship expressing a communicative intention (adapted from Tomasello 2003: 29)

Tomasello (2003) cites two studies that support the view that infants have a good understanding of the intentional actions of others and can imitate their behaviour. In an experiment reported by Meltzoff (1995), two groups of eighteen-month-old infants were shown two different actions. In one, an adult successfully pulled the two pieces of an object apart. In a second, an adult tried but failed to pull the two pieces apart. However, both sets of infants, when invited to perform the action they had witnessed, successfully pulled the two pieces apart. Meltzoff concludes that even the infants who had not witnessed pieces successfully pulled apart had understood the adult's intention.

In the second experiment, Carpenter et al. (1998) exposed sixteen-month-old infants to intentional and 'accidental' actions. The intentional action was marked vocally by the expression *there!* while the 'accidental' action was marked by *whoops!* The infants were then invited to perform the actions. The children performed the intentional action more frequently than the 'accidental' action. Carpenter et al. concluded that this was because the children could distinguish intentional actions from non-intentional ones, and that it is these intentional actions that they attempt to reproduce. In conclusion, Tomasello (2003: 291) claims that language acquisition involves both 'a uniquely cognitive adaptation for things cultural and symbolic (intention reading) and a primate-wide set of skills of cognition and categorisation (pattern finding)'.

SUMMARY

In this chapter I have continued our exploration of the **usage-based thesis** of cognitive linguistics. In doing so, I have considered what this thesis means for understanding how language evolves over time (**language change**), and for how we gain or acquire our native language (**language acquisition**). I began by introducing the theme of language change, and saw that Croft's model of language change, the **utterance selection theory**, emphasised the importance of **linguistic convention** and **interaction** in language change. Drawing on ideas from evolutionary theory, Croft argues that language use represents the interface that mediates between linguistic convention, **altered replication** (innovation) of linguistic form–meaning units and **selection** (propagation), giving rise to the adoption of new linguistic conventions (language change). I then examined the work of the developmental psycholinguist Michael Tomasello. Based on empirical findings that early language acquisition is **item-based** rather than **rule-based**, Tomasello argues for a construction-based or symbolic view of language acquisition, which relies upon domain-general **pattern-finding skills** and **intention-reading skills**. Tomasello argues that language use, in the context of **joint attentional frames**, facilitates the imitation of linguistic behaviour, which is a form of **cultural learning**.

FURTHER READING

The usage-based approach

- **Ibbotson (2013)**. An important survey article which summarises a range of usage-based perspectives and their approach to language acquisition processing and cross-linguistic variation.

Usage-based approach to language change

- **Croft (2000)**. In this important book, Croft adopts a usage-based perspective in attempting to develop a new theory of language change.

The usage-based approach to language acquisition

- **Achard and Niemeier (2000)**. A special issue of the journal *Cognitive Linguistics*, devoted to research by cognitively oriented developmental psycholinguists.
- **Tomasello (1992)**. Tomasello's case study of the early linguistic development of his daughter.
- **Tomasello (2000)**. In this article, Tomasello presents a succinct overview of some of the ideas developed in his 2003 book (see below).
- **Tomasello (2002)**. A collection of articles by leading pioneers in developmental psycholinguistics. While not specifically focused on the usage-based perspective, this is an invaluable resource on the state of the art in language acquisition research.
- **Tomasello (2003)**. The definitive book-length usage-based account of language acquisition.

Shared intentionality, cooperative intelligence and their role in communication

- **Evans (2015a)**. Chapter 10 addresses the nature and emergence of cooperative intelligence, which sets humans apart from other species, facilitating the emergence and acquisition of language.

- **Tomasello (2008)**. An account of some of the cognitive factors involved in enabling human communication and acquisition of language.
- **Tomasello (2014)**. An influential account of what Tomasello dubs the Shared Intentionality hypothesis, within an evolutionary context: the idea that what marks humans as distinct, in their cognitive and linguistic capacities, concerns the ability to share intentional states.

DISCUSSION QUESTIONS

1. What are the main claims associated with a usage-based approach to language change? And what are the arguments supporting this view?
2. What are the main tenets associated with a usage-based approach to language acquisition? What arguments support this perspective?
3. Based on the presentation in this and the previous chapter, what do you consider to be the main strengths of the usage-based approach to language, and why? Do you see any weaknesses, and why?

7

Key topics in language science: formal versus cognitive linguistics

This chapter provides an orientation to six key research topics that have, since the 1950s, preoccupied the discipline of theoretical linguistics, within the dominant Anglo-American tradition, as well as related disciplines in the cognitive sciences, most notably philosophy and psychology. These topics are:

i) the nature of language origins and its time depth;
ii) language universals;
iii) how children acquire their mother tongue;
iv) whether the mind is modular;
v) the issue of semantic universals;
vi) the nature of the relationship between language and thought, also known as linguistic relativity.

As these topics, and the questions they gave rise to, arose and were formulated, in the first instance, in the context of formalist approaches to language and mind, I begin by framing each of these topics in light of the relevant formalist perspective. Cognitive linguistics arose, from the late 1970s onwards, as a reaction to formalist positions on these very issues. Hence, I then follow up by addressing these topics from the perspective of cognitive linguistics.

The general position taken by most formal linguistic theories represents a commitment to **nativism**: the assumption that key aspects of language and the mind are too complex to be learned from experience alone. Hence, much of what appears to be unique to human beings must, in one form or another, be pre-programmed into the micro-circuitry of the human brain at birth. Notable exemplars of this perspective include the research programme of Noam Chomsky – the dominant linguist of the second half of the twentieth century – as well as the research of Jerry Fodor, the philosopher of mind. For instance, Chomsky has argued, beginning with his landmark 1965 publication, *Aspects of the Theory of Syntax*, that the rudiments of human grammar are programmed into the human genome, giving rise to what he has dubbed a **Universal Grammar**. And analogously, Fodor, beginning with his now classic 1975 monograph, *The Language of Thought*, claimed that we can learn the meanings of a natural language – any language – precisely, and only because we have an innate stock of concepts with which we are born.

In contrast, cognitive linguistics adopt, in broad terms, a form of **experiential realism** (Lakoff and Johnson 1980, 2003). There clearly have to be innate mechanisms and constraints that enable human infants to acquire their mother tongue, and to learn the meanings associated with words and other grammatical constructions (Evans 2015a). However, these constraints are not specific to language, but are domain-general, as intimated in the preceding chapter, thereby enabling the detailed knowledge associated with grammar, and with concepts, through experience.

Formal linguistics has typically attempted to model the nature of linguistic knowledge (morphosyntax, semantics, phonology and so on), in terms of **formal models**. The assumption has been, as we first saw in Chapter 2, that language is a discrete, encapsulated component (or module) in the mind – its fundamental essence is present at birth, hence, it sits apart from other mental faculties. And as such, it can be studied in its own right, without regard for other sorts of intelligences. And to study this distinct component of mind with precision, formalisms from mathematics and logic have been applied to the study of language and mind, which enable the analyst to narrow in on specific aspects of language, which may run on their own principles. Hence, formal approaches to language often focus on a specific domain of linguistic enquiry – syntax or semantics or phonology – which are all assumed to operate in qualitatively distinct ways. Examples of formal models include the range of theoretical approaches that make use of, in one form or another, **truth-conditional semantics** – which I review in Chapter 14 – and the family of Generative grammars – including the various avatars associated with Chomsky, for instance, **Government and Binding Theory** (Chomsky 1981), and **Minimalism** (Chomsky 1995) – as well as related approaches, which nevertheless depart from Chomsky's **derivational perspective**. These include Head-driven Phrase Structure Grammar (e.g. Borsley 1996, 1999), and Lexical Functional Lexical Grammar (e.g. Bresnan et al. 2015), which assume the Universal Grammar hypothesis. I review formal approaches to grammar in Chapter 21.

In contrast, theories of language and mind, in cognitive linguistics, are not formal models in this sense – they don't draw upon arcane formal mechanisms from logic, for instance. Needless to say, cognitive linguistic theories make use of an impressive – and, often, for the neophyte – a bewildering array of technical terms, and a range of other sorts of formalisms (as we shall see in later parts of the book). But the rationale is always to adhere to the two core commitments of the cognitive linguistics enterprise, as outlined in Chapter 2, together with a further set of guiding principles (which I outline, respectively, for conceptual structure in Chapter 8, for semantic structure in Chapter 14 and for cognitive approaches to grammar in Chapter 21). For cognitive linguists, models of language and the mind must be generalisable across knowledge types (e.g. semantics versus syntax versus phonology); and they must be psychologically plausible: they must cohere with what is known about the way the brain/mind works from other cognitive sciences.

1 Language origins and time depth

Until relatively recently, questions concerning the origins and time depth of language were not considered to be appropriate concerns for language science. And the reason for this concerned the lack of any meaningful data which might inform sensible discussion surrounding these questions. But in recent times, with advances in **genetic dating techniques**, advances in **palaeoanthropology** – the study of the **hominin** fossil record – and **cognitive neuroscience** – the interdisciplinary study of the mind/brain, and with the advent of sophisticated computational modelling techniques, there has been an explosion in terms of research, and theories, focusing on these questions. The term 'hominin' covers humans, extinct species of humans and immediate ancestors of ancestral humans, following the evolutionary separation from other **great apes**, around six million years ago.

1.1 The received view of human evolution

Based on Klein (2009), the received view of human evolution is as follows. Our lineage originated in Africa, separating from chimpanzees and bonobos – a species of pigmy chimpanzees – around six million years ago, with several distinct genera of upright apes that developed **bipedalism**. The most famous fossil remains belong to an individual, nicknamed Lucy, a member of the species *Australopithecus afarensis* (note: names of species begin with the genus, with a capital first letter, which, in this case is *Australopithecus*, meaning 'southern ape', followed by the name of the species, with a lower case first letter, in this case *afarensis*, which relates to the Afar region in modern day Ethiopia, where fossils for the species were (first) discovered).

By around 2.5 million years ago, a new genus and species emerged, *Homo habilis* ('Handy man') – the first species of the new genus *Homo*; *Homo habilis* was, probably, a descendent of the genus *Australopithecus*. By 1.8 million years ago, *Homo erectus* ('upright man') had emerged – a more advanced species of *Homo* – and so began a gradual diaspora around the globe. Indeed, a recently discovered species, *Homo floresiensis*, a species of pigmy humans, standing around 1.1 metres (3.5 feet) tall, and living on the island of Flores in Indonesia, until around 12,000 years ago, may have evolved from early dispersals of *Homo erectus* (Aiello 2010). Around one million years ago, perhaps later, *Homo erectus* in Africa had evolved into *Homo heidelbergenis*, the presumed common ancestor of *Homo sapiens* ('wise man') – our species – and *Homo neanderthalensis* ('Neanderthal man'), named after the Neander valley site in Germany where the first specimen was found.

Homo heidelbergenis ('Heidelberg man') – again named after the site in Germany where the first specimen was uncovered – was the first species known to have been capable of bringing down large game, and had developed sophisticated stone tool technology, including projectile, stone-tipped javelins for use in hunting. The spread of *Homo heidelbergensis* from Africa to Europe and Asia gave rise to the emergence of *Homo neanderthalensis*, a robust, stocky hominin, whose physiology was suited to the glacial climate then in evidence in Europe. In Africa, *Homo heidelbergenis* had, by around 170,000 years ago, evolved into anatomically modern *Homo sapiens* ('wise man'). From around 100,000 years ago, these same anatomically modern humans began dispersing across the Middle East and Eurasia, gradually displacing and replacing the pre-existing *Homo neanderthalensis*, which became extinct by around 30,000 years ago.

1.2 How old is language?

A key question that has exercised many researchers is whether modern language emerged with our species, or predated it. A relatively widely held view, until recently, was that language emerged with our species, arising perhaps no more than 100,000 years ago, or even more recently (Berwick and Chomsky 2016). Indeed, Noam Chomsky is, perhaps, the most famous advocate for the recent and sudden emergence of language: 'roughly 100,000+ years ago . . . there were no languages . . . a rewiring of the brain took place in some individual', leading to the emergence of language (Chomsky 2010: 58–9). For Chomsky, language emerged suddenly, due to chance mutation – an evolutionary process known as **saltation**. Moreover, due to its sudden appearance, Chomsky reasons that language emerged to aid thought, rather than communication between individuals.

There are a number of reasons for Chomsky's conjecture that language emerged very recently and quite suddenly, the two most significant being the following. First, there is evidence for a cultural explosion that took place among humans, from around 50,000 years ago, a period known as the **Upper Palaeolithic** – the late Old Stone Age. From around this time, sophisticated stone tools appeared, as did rudimentary jewellery, the first evidence of art – with fairly sophisticated cave painting – fishing, dwellings being constructed with foundations, as well as evidence of a complex symbolic culture, with evidence of ritual and perhaps religious practice. It was thought that this flowering of culture could not have occurred without the prior emergence of language, the emergence of which facilitated it.

And second, it was also believed that the older *Homo neanderthalensis* species that predated the arrival of humans outside Africa lacked the capacity for language. This conjecture was based on two assumptions. First, early reconstructions of the vocal tract suggested that *Homo neanderthalensis* lacked the capacity for human-like speech, suggesting limited spoken linguistic abilities (e.g. Lieberman et al. 1972). Moreover, it was assumed, based on the fossil record, that the cultural explosion of the Upper Palaeolithic was confined to *Homo sapiens* alone, and not our sister species *Homo neanderthalensis* (e.g. Mithen 1996).

Over the last decade, however, both assumptions have come under pressure (see Dediu and Levinson 2013; Evans 2015a: Chapter 10; Everett 2017;

Lieberman 2015; and Villa and Roebroek 2014 for reviews). Recent reconstructions of the Neanderthal articulatory capacity suggest that Neanderthals may, in fact, have possessed both human-like speech production and auditory capacities. Moreover, it now seems, based on recent archaeological evidence, that Neanderthals probably did have an extensive and rich material culture – including the ability to produce cave-wall engravings (Rodríguez-Vidal et al. 2014) – that may have approached those in evidence among humans of the Upper Palaeolithic. Indeed, even a leading proponent such as Philip Lieberman, whose early research suggested an inferior speech capacity, compared to *Homo sapiens* (e.g. Lieberman and Crelin 1971), concludes that Neanderthals' must have possessed language: 'I . . . find it hard to believe that Neanderthal hominids did not also have a well-developed language' (Lieberman 1994: 232).

Moreover, advances in genetic dating techniques reveal that Neanderthals and early humans may have engaged in interbreeding. For instance, contemporary adult humans have between 4 and 10 per cent of Neanderthal DNA, with the highest concentrations found in non-African adults. This suggests that early humans are likely to have regarded Neanderthals as approximate equals, which would suggest the capacity for human-like communication, and comparable cognitive prowess. From this perspective, the last common ancestor of both humans and Neanderthals – *Homo heidelbergensis* – is also likely to have had some language-like capacity (Dediu and Levinson 2013; Tomasello 2014). Hence, (spoken) language may be as old as half a million years. This suggests that earlier species of ancestral humans, such as *Homo erectus*, must have had some form of language, possibly a gestural system of communication – a spoken linguistic ability would only have evolved if a symbolic/linguistic ability was already present. This further suggests that language in some form, may have existed around 1.8 million years ago, or even earlier (for a range of related views see, for instance Corballis 2003; Everett 2017; Hurford 2014; Lieberman 2006).

1.3 What motivated the rise of language?

A focus for researchers working within or influenced by cognitive linguistics has been to understand the prerequisites for the emergence of language. Tomasello (2014) argues that the prerequisite for language was a form of what has been dubbed **cooperative intelligence** (Evans 2015a) – recall the discussion in the previous chapter; in other great ape (also known as **hominid**) species, behaviour tends to be individualistic, rather than cooperative (there are eight living species of great apes across four genera: *Pongo* (orangutan), *Gorilla* (gorilla), *Pan* (chimpanzee) and *Homo* (human). Tomasello argues that as language is fundamentally cooperative, it could only have arisen in contexts where cooperation was the norm. And for that to have occurred, a significant change in the **biocultural niche** (Sinha 2009) occupied by ancestral humans must have arisen.

A plausible scenario, one supported by archaeological evidence, is the shift, in early species of *Homo*, away from a primarily vegetarian diet – fruit and plants, the norm among the great apes – towards a meat diet. Initially this may have involved scavenging. But later, hunting became a central activity of ancestral humans. The social arrangements necessitating and supporting hunting parties would imply a move away from purely individualistic behaviours, and would have had dramatic consequences for all aspects of social life, including the need for establishing conventions for preserving monogamous breeding relationships, the greater involvement of fathers in child-rearing – as compared to other great apes – and the cooperative manufacture and use of stone tools and weapons for catching large game (Deacon 1997; see also Everett 2017).

Tomasello (2014) has argued that this shift led to a change in the cognitive strategy adopted by early humans, moving from **individual intentionality** – the strategy apparent in the great apes – to **joint intentionality** – the ancestral human strategy. This involves an understanding of others as agents whose thoughts and feelings can be influenced; and it is likely to have paved the way for the emergence of a genuinely cooperative mode of thought thus enabling cooperative social practice.

The anthropological linguist, Stephen Levinson (2006), has studied the interactional precursors that such changes would have resulted in, that may have preceded the advent of language. These amount to a 'toolkit' of uniquely human behaviours that Levinson terms the **human interaction engine** – see Evans (2014: Chapter 8) for discussion. Most importantly, we recognise others as having thoughts and feelings, and moreover, we can simulate what they may be thinking and feeling. And consequently, we can intentionally intervene, using communicative signals, in order to influence those thoughts and feelings. Crucially, this interactional or cooperative intelligence is not contingent on language, but precedes it. After all, while a cough can be a reflex behaviour, when suffering from, say, a heavy cold, it can also serve as a communicative cue, as when we cough to indicate that someone 'shut up' in a tricky situation. The point is that we potentially recognise the communicative intentions of others, even when we don't share a common language: our cooperative intelligence underwrites our ability to use language to begin with (see Evans 2015a, 2016). From this perspective, the emergence of language was driven by the rise of a cooperative intelligence, that supported a range of interactional features and strategies, which would have provided the crucible for the incubation of symbol use – a linguistic system – for purposes of communication.

1.4 Stages in language evolution

Theories differ as to the precise trajectory of language. But one popular theory is that language – as a symbolic system – may have first emerged in the gestural modality (e.g. Arbib 2012; Corballis 2003). Other species, especially chimpanzees, make ready use of gestures to communicate, and the signs deployed are both flexible and individually learned (see Evans 2014: Chapter 2, for a review). This may have enabled the development of a spoken ability which may have been in place by the time of the last common ancestor of humans and Neanderthals (Dediu and Levinson 2013).

Everett (e.g. 2016) has proposed, in keeping with the foregoing, that symbolic representation and language evolved gradually, with grammar emerging incrementally and gradually, reaching its current level of sophistication later in the process of linguistic evolution: As Everett puts it:

> language is primarily a tool for communication, not primarily a means of thought expression . . . language has its roots in intentional iconicity of Australopithecines and probably had reached the level of a G1 grammar (linear ordering of symbols + gestures) some 2.5 million years ago. Other forms of language, e.g. hierarchical, recursive grammars, are later embellishments that are neither necessary nor sufficient to have human language. (Everett 2016: 133)

This view of Darwinian **gradualism** (Everett uses the term **uniformitarianism**) can be contrasted with the Chomskyan view that grammar evolved suddenly and all at once as chance mutation, a saltation (Everett uses the term **catastrophism**).

Recent research on **grammaticalisation** – the process whereby grammatical categories emerge – see Chapter 27 – also supports the thesis that grammar emerged later, and the more general view of gradualism. The evidence suggests that once a rudimentary language system was in place, a complex grammar would have taken time to emerge, and is likely to have developed in stages, perhaps taking thousands, possibly hundreds of thousands of years to emerge (Heine and Kuteva 2007). Indeed, the earliest **lexical classes** are likely to have been nouns and possibly verbs, with other lexical classes evolving from these 'primitive' units of grammar. The ability to engage in **recursive thought** – the ability to embed words and phrases within others – to produce complex grammar, would have emerged gradually, and would only have been possible in the later stages of the evolution of grammar. Indeed, recent longitudinal studies of new languages, such as Nicaraguan sign language (Senghas and Coppola 2001) and the Al-Sayyid Bedouin **village sign language** (Sandler et al. 2005, 2011), show that in contemporary human populations, a complex grammar takes at least three generations to fully emerge.

2 Language universals

I now turn to the issue of whether language exhibits absolute, or exceptionless universals: the idea that, despite appearances to the contrary, the world's 7,000 or so languages are all underpinned by a set of grammatical universals – a universal being an aspect of grammatical structure common to all of the world's languages. I begin by first introducing the thesis of **Universal Grammar (UG)** developed by Chomsky. The UG hypothesis has been hugely influential in linguistics, and the cognitive linguistics position, which I then move on to, can be seen, in part at least, as a reaction to it.

2.1 The Universal Grammar approach

The thesis of UG constitutes a central axiom of the various theories of **Generative Grammar**, developed by Chomsky and his co-workers, from the 1960s onwards. The essential insight is that all of the world's 7,000 or so languages possess an infrastructure or pre-specification for grammar that is common to all – children are born with this pre-specification as part of their biological endowment, in short UG is **hard-wired**. For instance, while the grammar of English is different from French, Swahili and Japanese, the idea is that once we strip away the surface details, underneath there is a universal 'blueprint' for grammar shared by all languages.

Chomsky (1965) presented this pre-specification for grammar in terms of what he called **formal** and **substantive universals**. Substantive universals are grammatical categories including the 'big four' lexical classes – noun, verb, adjective and adverb – and grammatical functions such as Subject, and Object: what we might think of as the basic 'building blocks' of grammar. Chomsky (1965: 66) suggested that languages select from a universal set of these substantive categories. Formal universals are rules like **phrase structure rules**, which determine how phrases and sentences can be built up from words, and **derivational rules**, which guide the reorganisation of syntactic structures, allowing certain kinds of sentences to be **transformed** into or derived from other kinds of sentences (for example, the transformation of a declarative sentence into an interrogative sentence).

In the light of evidence from linguistic **typology** – the branch of linguistics that investigates linguistic diversity – and the realisation that absolute universals of the substantive and formal kind may not exist, in the 1980s Chomsky developed a more flexible approach to Universal Grammar, called the **Principles and Parameters** approach. According to this model, the universal pre-specification for language is captured in terms of a limited set of principles that can vary according to a small set of parameters of variation. These parameters – which can be conceived as 'switches' in the mind/brain – are 'set' on the basis of the properties of language an individual is exposed to during childhood. For example, given sufficient exposure to spoken language, a child's grammatical system will set the 'head initial/final parameter' at 'initial' for languages like English where verbs precede their objects, but will set this parameter at 'final' for languages like Korean, where verbs follow their objects.

For example, one linguistic universal in an earlier Chomskyan theory, that adopted the principles and parameters model, was held to be the **X-bar schema** (e.g. Chomsky 1981). This amounted to the claim that a small set of category neutral rules provided the basis for the phrase structure of the world's languages. This idea is illustrated in Figure 7.1. In this diagram, X is a **variable** that can be instantiated by a word of any class, and P stands for **phrase**. X represents the **head** of the phrase, which projects the 'identity' of the phrase. The **specifier** contains unique elements that occur at one of the 'edges' of the phrase, and the complement is another phrasal unit that completes the

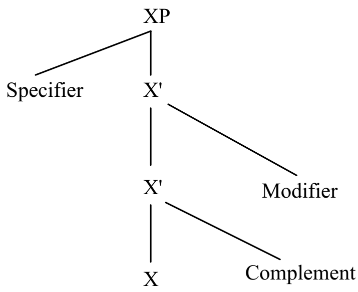


Figure 7.1 The X-bar approach to phrase structure

meaning of the head. A modifier adds additional optional information. The name 'X-bar' relates to the levels between head (X) and phrase (XP), which are labelled X' to show that they have the same categorial status (word class) as X, but are somewhere between word and phrase.

Table 7.1 provides some examples of phrase structures in English that could be built out of this basic structure. Notice that some of the cells in Table 7.1 are empty. The idea behind the X-bar model is that only the head is obligatory in the phrase, although each individual head may bring with it some requirements of its own for which this structure can be exploited. For example, a transitive verb will require a complement (object), while an intransitive verb will not. Another important feature of this model is that while hierarchical relations between head, specifier, complement and modifier are universal (this means that the phrasal unit underlies the phrase structure of every language), linear relations are not (this means that the parts can occur in different linear orders).

This is where the idea of **parameter setting** comes in, in terms of language acquisition. A child exposed to a **head initial language** such as English, on this account, adopts an X-bar structure where the head X precedes the complement. A child exposed to a **head final language** such as Korean adopts an X-bar structure where the head follows its complement. Because the X-bar model specifies that the complement always occurs next to the head, only two 'options' are permitted. This illustrates the restricted nature of the parameters of variation in this model.

Because of the very strong claim made by the Universal Grammar thesis – there is a set of absolute, or exceptionless universals – it takes only one counter

Table 7.1 Phrase structures in English

Phrase	Specifier	Head	Complement	Modifier
Noun phrase (NP)	that	lover	of caviar and wine	in the boudoir
Verb phrase (VP)	Moneypenny	loves	Bond	unashamedly
Adjective Phrase (AdjP)	very	aggrieved	by it	
Preposition phrase (PP)	right	over	the hill	

example to contradict a proposed universal. But as critics of this approach have observed, the X-bar model does not account for **non-configurational languages** such as the native Australian language Dyirbal (e.g. N. Evans and Levinson 2009; Tomasello 1995). A non-configurational language is one in which words are not grouped into obvious phrasal units. The application of the X-bar model to this type of language raises a number of questions about how the Dyirbal child sets his or her head initial/final parameter.

A more recent version of Chomskyan Generative Grammar, the Minimalist Program (Chomsky 1995), also subscribes to this approach. From this perspective, linguistic differences emerge from parameter setting that apply to biologically instantiated principles: the underlying architecture for all languages.

For cognitive linguists, (as well as many linguistic typologists), there are three significant problems with the UG hypothesis. These are:

i) the falsifiability problem;
ii) the methodological problem;
iii) the abstractness problem.

I briefly address each of these, below, in turn.

2.1.1 The falsifiability problem

For cognitive linguistics, a significant problem with the UG hypothesis is that it is **unfalsifiable**. The eminent philosopher of science, Sir Karl Popper, pointed out in 1959 that any good scientific theory must be **falsifiable**: it must be formulated in such a way that it makes clear predictions which can be empirically investigated, where 'empirically' means data can be gathered which tests the prediction(s) made by the theory (Popper 2002). If a hypothesis is unfalsifiable then it cannot be tested. And if it cannot be tested, then the hypothesis is unscientific – it cannot be shown to be *either* right *or* wrong – entering the realm of mere pseudoscience.

The claim for hard-wired principles with which we are born, specifically designed to enable the ability to acquire language, is in essence a **biological claim**, rather than a linguistic one – Generative Grammar explicitly takes what Chomsky terms **the biolinguistic perspective** (Chomsky 2004). After all, the linguistic 'principles' that form the basis of UG are hard-wired into the micro-circuitry of the human brain at birth, part of our biological endowment.

But, while investigating commonalities across languages can, in principle, lead to uncovering putative linguistic universals, these can only be used to *infer* the existence of a biological pre-specification that is unique to language in general, rather than providing direct evidence for a hard-wired biological pre-specification. This follows as, without independent biological evidence, the use of language data as evidence provides a circular form of reasoning (e.g. Behme 2015; Katz and Postal 1991; Postal 2004).

This reasoning is circular (and hence potentially problematic) in the following way: the biologically pre-specified principles are held to lead to putative linguistic universals. But, the putative universals identified in language are then used as 'evidence' to ascertain the existence of the underlying biologically specified principles that give rise to the linguistic universals. What is required, in addition, therefore, is independent biological evidence for principles that are specific to linguistic structure. But some cognitive linguists suggest that such independent biological evidence may not in fact exist in any case (e.g. Evans 2014; Tomasello 1995).

A related problem is that even if linguistic data were sufficient to demonstrate the biological claims associated with UG, the testing ground for the Universal Grammar thesis is not limited to the 7,000 or so living languages today. Given that universals in the UG sense are universals of the absolute/exceptionless kind, then the empirical examination of languages must constitute all the languages that have ever existed, and those that will exist. Typologists Nicholas Evans and Stephen Levinson estimate that there may be as many as half a million languages that have existed in the history of our species. But given that linguists don't have ready access to all the dead languages of the past – without access to a time-machine – then putative universals can never truly be falsified (N. Evans and Levinson 2009).

2.1.2 The methodological problem

The second problem is **methodological** in nature. And this relates to the sort of linguistic data used to infer the existence of universal, biologically specified principles unique to the so-called **language faculty**, and universal across all languages (e.g. Postal 2012; Sampson 2005). Chomsky's approach to linguistic enquiry takes what he has dubbed a **Galilean approach** (Chomsky 2012; see Behme 2014a, 2014b for a critique). From this perspective, the UG hypothesis is not, in fact, a hypothesis; Universal Grammar is held to be an **axiom** – a self-evident truth – and consequently one that doesn't need to be established or proven. Accordingly, the search for linguistic universals can proceed safe in the knowledge that there *are* such universals. And findings that are potentially problematic for a putative universal can, judiciously, be set aside, if the universal seems otherwise to hold aside from such recalcitrant data. Chomsky's claim is that this strategy, which he attributes to Galileo, enables the setting aside of potentially problematic findings, as the underlying claim – the existence of Universal Grammar – being an axiom is not in doubt. But this strategy has been criticised as unscientific by a number of commentators (see, for instance, Behme 2014a, 2014b; Behme and Evans 2015; Evans 2014).

On some Generative Grammar accounts, the underlying principle of the biologically endowed language faculty manifests itself in terms of syntactic **recursion**: the ability to embed syntactic units within others, giving rise to sentences, of, in principle, great complexity and length (Hauser et al. 2002). But the linguistic anthropologist Daniel Everett has claimed that at least one language, Pirahã, spoken by an indigenous tribe from Amazonia in Brazil may not exhibit recursion (Everett 2005). When faced with such a problematic finding, Chomsky (e.g. 2012) has argued that, if we allow that Everett is correct, and Pirahã does not exhibit recursion – and Everett's analysis has been disputed by some Generativists (e.g. Nevins et al. 2009) – either this data can be set aside, which is to say, ignored, or that the theoretical principle that facilitates recursion can be adapted in order to account for the findings. But critics of this so-called Galilean approach, which enables problematic data to be set aside, suggest that this is an example of how UG can never be falsified (see Behme 2014b; Lieberman 2015).

2.1.3 The abstractness problem

As noted earlier, linguistic typology has steadily revealed that truly exceptionless universals are vanishingly rare, should they even exist (discussed further below). This has led, in recent versions of Chomskyan theory, to claims for highly abstract biologically pre-specified principles. For instance, in Chomsky's Minimalist Program, as noted above, a recent version of Generative Grammar that adopts the UG hypothesis, Chomsky seeks to reduce UG to fundamental, minimalistic and, hence, highly abstract operations, that provide maximal generative power.

One such highly abstract operation is **Merge**. This computational operation enables two syntactic objects of any kind to be combined to form a new syntactic unit. Indeed, for Chomsky, this putative feature of UG is one that, in effect, distinguishes language from other cognitive faculties. But for Chomsky's critics, this level of abstraction becomes banal, akin to observing that all (spoken) languages contain oral vowels and consonants. Moreover, the consequence is that the price for such abstraction is that such putative universals arguably fail to distinguish how grammar is distinct from other combinatorial systems, such as music, which also involves combining units (albeit pitch classes and pitch–class combinations).

2.2 The cognitive linguistics approach

As cross-linguistic study has progressed since the 1960s, typologists have uncovered languages which continue to surprise us. For instance, the world's languages exhibit every conceivable word order pattern – Table 7.2 provides a sample of word order patterns based on an analysis of 1,377 languages.

Languages exhibit incredible diversity in terms of their sound inventories, ranging from eleven distinct sounds to 144. Some languages, the 130 or so of the world's recognised sign languages, don't use sounds at all. Moreover, some languages lack most or all of the lexical classes, which, at one point or another, were considered to be universal. For instance, many languages lack adverbs; some such as Malay lack adjectives. It has even been claimed that some languages may lack nouns and verbs, such as

Table 7.2 Word order patterns for a sample of the world's languages (adapted from Dryer and Haspelmath 2013)

Word order pattern	No. of languages
SOV	565
SVO	488
VSO	95
VOS	25
OVS	11
OSV	4
No dominant word order	189
Total sample:	**1377**

Note: S = subject, V = verb, O = object, e.g. *John* (*S*) *kissed* (*V*) *Mary* (*O*)

Straits Salish, an indigenous language spoken in British Columbia (Evans 2014).

Indeed, given the facts of linguistic diversity, the eminent typologist Joseph Greenberg (1990) argued that truly exceptionless universals are, in fact, restricted to the banal, for instance:

(1) All languages exhibit oral vowels and consonants.

However, even this 'banal' example is invalidated by the world's sign languages: a sign language exhibits the same complexity as a spoken language; but it doesn't make use of sounds. Greenberg argued that languages exhibit tendencies, rather than exceptionless universals; for instance, if language X has feature Y, then it will *tend* to exhibit feature Z.

Cognitive linguists argue against the view that language is pre-specified in the sense that grammatical organisation is mapped out by an innate 'blueprint' for grammar, along the lines of the UG hypothesis. And as such, human 'universals' are not to be found *in* language. Universals, such as they are, derive from the sorts of experiences that we share, which are a consequence of the broadly equivalent physical environments we inhabit, and hence experience, allied with the common neuroanatomical structures we share: our brains and bodies. This means that there is broad embodied equivalence, in terms of what we experience, and how we experience it, that is common to all humans the world over, regardless of the language(s) we use. Our physical and cognitive capacities naturally place constraints on what we perceive, central to the sorts of ideas we can conceive of, and the ways in which languages can work: language is not specific to a given medium of production, but there are, naturally, physical and cognitive constraints (e.g. memory) that determine the sorts of sounds that any given human language can make use of, and the range of articulators that sign languages can use. Nevertheless, with the limits prescribed by these constraints, large variation in the lexical, grammatical and phonological inventories of a specific language are nevertheless possible, and indeed the norm.

2.2.1 Human interactional intelligence

Some cognitive linguists tend to see universals, such as they are, in terms of a common infrastructure for communication that makes language possible in the first place. For instance, Stephen Levinson (2006) has proposed that humans possess a form of **interactional intelligence**: a predisposition to engage in interaction with one another in communicative settings for specific ends. Interaction is a specific type of cooperative behaviour, which derives from the cooperative intelligence referred to above. Moreover, interactional intelligence is what facilitates communication, and specific systems of communication such as language, as well as other systems of communication ranging from Morse code to Emoji (Evans 2017).

According to Levinson, there are a number of properties that are universal to human interaction. First, we respond to communicative intentions, rather than behaviours. For instance, a cough can be a reflex action to choking on food: a behaviour. Or we can interpret it as a surreptitious signal: an intentional action. In addition, the intentional actions are transparent to the recipient: they are designed with the recipient in mind. Third, interaction for communicative ends is independent of language. Levinson argues that the ability to communicate in humans is a property of our minds, arising from our interactional intelligence: it is independent of language, but language massively amplifies our ability to utilise our interactional intelligence. Moreover, interaction is cooperative: whenever we communicate, we cooperate for purposes of the interaction, in the sense that we engage in **joint activities** (Clark 1996), in order to achieve mutual goals, for instance making a purchase in a retail service encounter. And, finally, interaction has a structure to it. This arises not from rules, but, rather, from expectations. For instance, a question demands an answer, giving rise to a turn-taking sequence.

The properties of human interaction that I have been describing appear to be supported by a common cognitive infrastructure that makes communication possible. Levinson dubs this our **interaction engine**: a toolkit of knowledge and behaviours that allows us to communicate with one another. According to Levinson (2006: 44), 'underlying universal properties of human interaction . . . can be thought of as having a cognitive-and-ethological foundation' (note: **ethology** concerns the nature and study of behaviour). Moreover, from an evolutionary perspective, he suggests that the 'interaction engine' has most likely been pieced together from a patchwork of 'motivational tendencies, temporal sensitivities (reaction contingencies), semicooperative instincts, ancient ethological facial displays, the capacity to analyze other's actions through mental simulation, and so forth' (ibid.).

2.2.2 Universal scenes of experience

Yet while languages often surprise us in their diversity, all languages appear to have the means of conveying the basic scenes of human experience. For instance, the typologist, and cognitive linguist, William Croft, observes that while there are no exceptionless language universals (beyond the banal), commonalities across languages can nevertheless be explained in terms of a universal **conceptual space**: a system of knowledge based on the way in which humans interact with others, and their environment, resting on their shared embodiment. From this perspective, many typologists adopt some version of a **semantic map model** in accounting for cross-linguistic patterns or tendencies (Croft 2003: 133). A semantic map is a language-specific typological pattern, which rests upon the universal conceptual space.

For instance, many scenes of everyday experience are common to our species the world over: countless times a day we pass artefacts – money, gifts, flowers, a cup of coffee, books – to another person. This constitutes a **universal scene of experience**, which populates our universal conceptual space. And in English, as we saw in Chapter 2, there exists a sentence-level grammatical mechanism – the ditransitive construction – that encodes exactly this aspect of experience, involving an agent (John), a recipient of the artefact (the shop assistant) and the artefact being transferred (cash):

(2) John gave the shop assistant the cash.

While other languages may have slightly different conventionalised linguistic resources for conveying the same scene, nevertheless all languages require a means of linguistically encoding this aspect of conceptual space. After all, no matter whether you are a speaker of English, Wolof, Korean or Guugu Yimithirr, you move objects from one location to another, you give someone something and perform countless other sorts of mundane tasks. Moreover, these everyday scenes are performed many times a day, no matter where you come from or what culture you are embedded in. These sorts of everyday scenes are common to all of us: they are universal. Moreover, these everyday scenes from human experience are encoded across all the world's languages.

This doesn't mean, of course, that languages encode universal scenes in the same way – it simply means that they have conventional linguistic resources for doing so. In Chapter 2, I introduced the ditransitive construction (X CAUSES Y TO RECEIVE Z). This sentence-level construction exemplifies one such universal scene of experience. Countless times a day, we give something to someone: English encodes the essential components of these scenes of object transfer with a sentence-level construction. While the details vary, such as who does the transferring, the nature of the transfer event, what is transferred and to whom, English provides us with a ready-made template that enables us to convey anything ranging from concrete transfer as in (3) to more abstract scenes of transfer, in (4):

(3) The Quartermaster gave James a Walther PPK.

(4) She gave me a headache.

While scenes of transfer are relatively complex, there are other types of relational scenes which are simpler in nature, but which also appear to be universal. For instance, humans the world over appear to conceptualise certain entities as belonging to others. This notion of possession also appears to be a universal, a relation that is central to human experience. Languages differ, often markedly, in how they express this. Possession can be signalled by genitive case, indicated by the *-'s*, as in *John's shoes*; by prepositions, for instance, *of* in *Queen of England*; by dedicated possessive markers; or in a range of other ways (Heine 1997). But all languages so far discovered encode possession in one way or another.

Other sorts of universals relate to domains of experience, such as SPACE and TIME, as indicated in Chapter 3 and 4. In our everyday lives we are very much creatures that inhabit the here and now: SPACE and TIME. We all need to be able to distinguish between here and there, and now and then. And the grammatical systems of the world's languages provide a range of lexical and grammatical resources allowing us to distinguish between present and past, and our relative location in space with respect to other aspects of our physical environment. Whether it has a grammatical system for tense or aspect, or signals temporal distinctions in other ways, each language provides its users with resources for speaking and thinking about their egocentric experiences in the spatio-temporal matrix of embodied experience.

3 Language acquisition

I now turn to a consideration of questions concerning **first language (L1) acquisition**, namely, how children begin to acquire their L1, from around twelve months of age, becoming relatively competent users by around the age of four years. Specifically, I briefly compare the usage-based account that I presented in the previous chapter with the **nativist view** that is assumed within the Chomskyan Generative Grammar framework. This comparison is important because, in many respects, the usage-based view and the nativist view stand in direct opposition to one another. Furthermore, Chomsky's ideas were influential among developmental psycholinguists, particularly during the 1960s and 1970s, and are sometimes presented as the 'standard' view of language acquisition in some contemporary linguistics textbooks – although the situation is now changing.

Chomsky's UG hypothesis goes hand in hand with the nativist thesis: the claim that, not only is there a UG that underpins the grammar of all the world's languages, but that it is also innate. In short, UG is claimed to be programmed into the micro-circuitry of the human brain at birth (Pinker 1994). Consequently, once a human infant has begun to acquire a sufficient amount of vocabulary, our innate Universal Grammar kicks in, shortly after twenty months of age, enabling language-specific rules of grammar to begin to emerge. From this perspective, an explicit claim made by Chomsky is that language constitutes an 'organ', much like a human heart or liver: it literally grows in the mind, making use of the innately prescribed Universal Grammar, which enables a child to figure out, based on the language input it's exposed to, exactly how to construct a mental grammar for its mother tongue.

3.1 The rise of the nativist approach to L1 acquisition

Until the 1960s, the main influence on developmental psychology was the theory of **behaviourism**. This is the doctrine that learning is governed by inductive reasoning based on patterns of association. Perhaps the most famous example of associative learning is the case of Pavlov's dog. In this experiment a dog was trained to associate food with a ringing bell. After repeated association, the dog would salivate upon hearing the bell. This provided evidence, the behaviourists argued, that learning is a type of stimulus–response behaviour. The behaviourist psychologist B. F. Skinner (1904–90), in his 1957 book *Verbal Behavior*, outlined the behaviourist theory of language acquisition. This view held that children learnt language by imitation and that language also has the status of stimulus–response behaviour conditioned by positive reinforcement, known as **operant conditioning**.

In his famous review of Skinner's book, Chomsky (1959) argued that some aspects of language were too abstract to be learned through associative patterns of the kind proposed by Skinner. While Chomsky's review of Skinner may have been somewhat disingenuous, and contained a number of misunderstandings and errors (see MacCorquodale's 1970 rebuttal of Chomsky, and Palmer's 2006 review of the debate), Chomsky's review is notable for the following reason. In it, Chomsky first presented a version of his famous argument, which, later, came to be known as the **poverty of the stimulus argument** (Chomsky 1980). The idea is that language is simply too complex to be acquired from the impoverished input or stimulus to which children are exposed. He argued that the behaviourist theory (which assumes that learning is based on imitation) failed to explain how children produce utterances that they have never heard before, as well as utterances that contain errors that are not present in the language of their adult caregivers. Furthermore, Chomsky claimed, children do not produce certain errors that we might expect them to produce if the process of language acquisition were not rule-governed. Moreover, children acquire language well before they enter formal schooling, and receive little in the way of explicit instruction from parents and caregivers.

Chomsky's theory was the first mentalist or cognitive theory of human language, in the sense that it attempted to explore the psychological representation of language and to integrate explanations of human language with theories of the human mind and cognition. The poverty of the stimulus argument led Chomsky to posit that there must be a biologically predetermined ability to acquire language which, as we have seen, later came to be called Universal Grammar.

3.2 The cognitive linguistics critique

For cognitive linguists, however, this reasoning derived not from specific evidence – in fact, there was little in the way of evidence when Chomsky was first formulating the poverty of the stimulus argument, and later the details of his UG thesis in the 1960s. Indeed, the field of linguistic typology was only emerging. And moreover, the field of **developmental psycholinguistics** – which studies how children acquire their mother tongue – had yet to emerge. Chomsky's famous argument amounted, from the perspective of its critics, to lack an empirical basis (Pullum and Scholz 2002) and to be theoretically untenable (Evans 2014).

In the intervening years, findings have emerged that are problematic for the nativist thesis. I briefly review three of these here:

i) problem of absence of discontinuous learning jumps;
ii) problem of absence of evidence not implying evidence of absence;
iii) problem of findings from neurobiology.

3.2.1 Problem of absence of discontinuous learning jumps

First, if Universal Grammar is innate, then the expectation is that grammar should emerge in discontinuous jumps: once a child has sufficient evidence, from its input, for a particular grammatical rule, then the relevant 'switch' should be flicked in the child's mind/brain, and all corresponding instances should be configured appropriately; grammar should emerge in terms of whole-sale jumps. But as Tomasello (e.g. 2003) has argued at length this is not the case.

For example, once a child understands that a particular noun can be modified by an article, for instance, the definite article *the*, then all nouns should have this 'rule' applied across the board. But this turns out not to the case: children persist in using articles only with those nouns with which they've heard them. It is only at a relatively late stage that children begin to generalise articles across all relevant nouns.

3.2.2 Problem of absence of evidence not implying evidence of absence

Despite Chomsky's poverty of the stimulus argument – children have nothing to guide them, in their language input, which might constrain the mental grammar they construct during early life – cognitive linguists claim that this turns out not to be the case. In fact, absence of evidence might amount, according to cognitive linguists, to evidence of absence. And in this way, children can use absence in order to construct their mental grammar.

If children were employing the associative or inductive learning strategies proposed by the behaviourists, then, as Chomsky pointed out, we might expect them to make mistakes in question formation. For example, based on data like the sentences in (5), children might posit the rule in (6) as part of the inductive process.

(5) a. The man is bald.
 b. Is the man bald?

(6) Rule for question formation:

Move the verb to the front in the corresponding declarative sentence.

Furthermore, given the data in (7), we might expect children to produce sentences such as (8a), which is formed by moving a verb to the front of the sentence. The underscore shows the position of the verb in the corresponding declarative sentence. However, as Chomsky pointed out, children do not make errors like these, despite the absence of any direct evidence that such constructions are not well formed, and despite the fact that constructions like (8b) are rather rare in **motherese**: child-directed speech. Despite this, children produce examples such as (8b), which rests upon the unconscious knowledge that the first *is* in (7) is 'buried' inside a phrasal unit (bracketed).

(7) [The man who is running] is bald.

(8) a. *Is the man who ___running is bald?
b. Is the man who is running __ bald?

According to Chomsky, children must have some innate knowledge that prohibits sentences such as (8a) but permits sentences such as (8b).

However, as Tomasello (1995) observes, the problem with this argument is that in the input children are exposed to, they do not hear the relative pronoun *who* followed by an *-ing* form. Thus, they do have the evidence, albeit evidence of absence, upon which to make the 'right' decision, and this can be done by means of pattern-finding skills, as discussed in the previous chapter.

Moreover, more recent research now appears to further support the view that children may use lack of evidence as evidence of absence. Adele Goldberg (e.g. 2016; Boyd and Goldberg 2011) has argued for what she dubs **statistical preemption**: children use statistical patterns, evident in their language input, to establish which grammatical constructions should occur where, and to preempt using grammatical constructions 'incorrectly', in positions in which they are *not* used in adult-like speech. In short, children appear to learn what to say from what isn't said: lack of evidence for a construction counts as evidence not to use it in certain ways.

Take, as an example, the word *afraid*; *afraid* can occur following a relative pronoun, but not before a 'bare' noun:

(9) a. The soldier who is afraid
b. *The afraid soldier

This follows not from a grammatical rule, but from patterns of language use. Children hear *scared* in the position occupied by *afraid* in (9b) in naturally occurring speech:

(10) The scared soldier.

And accordingly, this pre-empts the use of *afraid* in the same context. In short, Chomsky's argument for the poverty of stimulus is, for cognitive linguists, a non sequitur, an argument that doesn't follow from its premise. The premise is that children receive no overt correction, leading to the conclusion that they cannot learn language: hence, it is not learned, rather, it must be innate. But on the contrary, the fact that there is no overt correction doesn't mean that language must be innate: there is still evidence that a child can draw upon in acquiring a grammar – lack of evidence appears to constitute evidence of absence, enabling the child to figure out what to say from what isn't said.

3.2.3 Problem of findings from neurobiology

Finally, cognitive linguists point to findings from **neurobiology**, over the last few decades, which suggest the human genetic endowment simply doesn't have the coding power to place anything as detailed as an inborn UG into the micro-circuity of the human brain (e.g. Evans 2014), thereby guiding first language acquisition.

As we saw in the previous chapter, research from cognitive linguistics proposes that children bring a sophisticated array of general learning mechanisms to the language acquisition process, mechanisms not foreseen by Chomsky: children bring much more to this task than the inductive learning strategies posited by the behaviourists, which Chomsky attacked in his 1959 critique of B. F. Skinner. It is claimed that infants bring with them an array of cognitive skills, including categorisation and pattern-finding skills, which emerge developmentally and are in place from at least seven months of age. In addition, children also develop an array of sociocognitive (intention-reading) skills, which emerge before the infant's first birthday – as discussed in the previous chapter.

4 Modularity of mind

Another important issue concerns whether language is a distinct **module of mind**; a module, in this sense, is a dedicated neural architecture that evolved to process just one type of information: in this case, language. Hence, on the modular view, linguistic processing is **encapsulated**: it proceeds without interference or contamination from any other type of information that the brain processes. This perspective is part of larger view of the mind as modular, developed by the late philosopher Jerry Fodor (1983), and adopted by formalist approaches to language, including Chomskyan Generative Grammar: it goes hand in hand with the nativist perspective – that humans are biologically endowed with the rudiments of language – and the evolutionary perspective of saltation – that language emerged as a sudden mutation.

4.1 Double dissociations

An important line of evidence required to demonstrate modularity is known as a **double dissociation**: if language really were a module, then while damage to the language faculty should result in **aphasia** – a deficit in producing or comprehending language – other aspects of cognitive function, such as general intelligence, should be unaffected. This would demonstrate a dissociation between language and intelligence: language can be 'knocked out', while normal intellect remains. But a double dissociation also requires the reverse: language remains intact, while general intelligence is impaired.

In his review of the evidence, Steven Pinker (1994) proposed just such a double dissociation. His starting point was the early research by Bellugi et al. (1988) on patients who suffer from **Williams Syndrome**, a defective gene, who have impaired intellect, with an IQ around 50 – normal intelligence features an IQ of between 80 and 114. Yet Williams Syndrome sufferers appear, at least on the face of it, to have near-normal linguistic capability. This amounts to a claim for a dissociation between language (unimpaired) and general intelligence (impaired).

Second, the reverse dissociation involves a phenomenon known as **specific language impairment (SLI)**: while language is impaired – sufferers have problems with aspects of grammatical processing, often missing out the small function words from sentences, and have difficulty comprehending what others are saying – their intelligence rates as normal. This amounts to a claim for a dissociation between intelligence (unimpaired) and language (impaired).

But more recent studies suggest that Williams Syndrome and SLI may not give rise to solely intellect and language impairments, respectively; indeed, children from both populations exhibit similarities in the area of morphosyntax (Stojanovik et al. 2004). The language of Williams Syndrome patients is far from normal, and certainly not 'intact' as claimed in the original work on the syndrome by Bellugi et al. (1988): in fact, it is somewhat impaired (Mervis 2003). Williams Syndrome children acquiring their mother tongue have difficulty mapping words for an entity onto that entity. For instance, children with Williams Syndrome exhibit an atypical tendency to use a new word for an entity to refer to just part of that entity, for instance, the handle of the entity. Moreover, children with Williams Syndrome exhibit impairments across a number of domains, including pragmatic language use and social relationships, contrary to early claims (Laws and Bishop 2004).

Early lines of research suggested that SLI may result from a genetic defect, which led to the search for an 'SLI gene'. But as research progressed, it became clear that 'no single cause could account for all cases . . . in most children the disorder has a more complex basis, with several genetic and environmental risk factors interacting' (Bishop 2006: 217). Indeed, recent research, including research on languages other than English, suggests that there are often a range of causes, and SLI cannot always be straightforwardly restricted to a linguistic deficit, nor may it have a single cause. Moreover, it appears that SLI may constitute a 'spectrum' condition: SLI may not be a distinct condition, but may, rather, reflect 'the extreme end of a language aptitude continuum' (Leonard 2014: 1). In light of the recent research findings, the aptness of the term 'specific language impairment', which has been in use since the 1980s, has been questioned, and it has recently been proposed that, at the very least, the term 'specific' be removed from the label (Reilly et al. 2014).

4.2 Localisation of language

A related argument for language being an innate module comes from research on **localisation of language** in the brain. Unlike the mind, the brain is a physical object, and neuroscientists have been able to discover much in recent years about what kinds of processes take place in different parts of the brain. In fact, it has been known since the nineteenth century that there are parts of the brain that are specialised for linguistic processing, for most if not all people.

There is an overwhelming tendency for language processing to take place in the left hemisphere of the brain, and areas responsible for the production of language (**Broca's area**) and comprehension of language (**Wernicke's area**) have been shown to occupy distinct parts of the brain. These findings have prompted some formal linguists to argue that this supports the view that we are biologically predetermined for language, and specifically, that localisation provides evidence for a hard-wired 'language gene'.

However, this is not an issue about which cognitive linguists and generative linguists disagree. The nature of their disagreement concerns the nature of these biological systems: whether they are **domain-general**, as argued by cognitive linguists, or whether they are **specialised** for language as argued for by Chomsky and his followers. Recent research reveals that Broca's area is implicated in a range of motor tasks – it's not restricted to language (Evans 2014). Moreover, patients with Broca's aphasia can recover, as language production can sometimes relocate to other brain regions, as documented in a number of clinical cases. Furthermore, recent neurolinguistic studies reveal that language processing seems to be widely distributed throughout the brain (Pulvermüller et al. 2005).

4.3 The cognitive linguistics critique

The recent evidence reveals that both Williams Syndrome and SLI are not what they originally seemed: Williams Syndrome is not associated with severe intelligence deficits; rather, these are typically mild. Moreover, there is atypical language development; language is certainly not intact as originally proposed. This appears to be a complex genetic disorder that leads to multiple deficits, including social and pragmatic language functioning. Equally, SLI is a spectrum disorder, that does not appear to have a single, genetic cause, but environmental factors also play a role. The two conditions do not, it seems, amount to a double dissociation in terms of the developmental trajectories of language and general intelligence. Analogously, the findings that aspects of language processing tend to localise in particular areas of the brain does not provide compelling evidence for an encapsulated module of mind.

From the perspective of cognitive linguistics, the claims made by the modular view of mind, and the claim for an encapsulated language faculty, are too strong. The evidence points to significant cross-domain interaction in the mind/brain, which makes strict modularity problematic up front.

For instance, a well-known illusion is the McGurk effect, named after the Scottish psychologist, Harry McGurk who first observed it (McGurk and MacDonald 1976). If a sound, for instance, *ba*, is played to an audience, while simultaneously watching a video of a person's mouth produce a different sound, say *ga*, what the audience perceive is a blend of the two sounds. In short, this illusion demonstrates that language perception can be influenced by the visual modality, which should be impossible if language were an encapsulated module of mind.

In the final analysis, the claim that language is an encapsulated module of mind falls foul of the two primary commitments of cognitive linguistics, introduced in Chapter 2: the Cognitive Commitment and the Generalisation Commitment. The Cognitive Commitment represents a commitment to providing accounts of language and mind that are cognitively plausible. In light of the evidence, positing a language module, in the sense of formal linguistics, is not cognitively plausible.

The Generalisation Commitment represents a commitment to account for language and mind without invoking theoretical formalisms and accounts prior to having exhausted more general and generalised accounts. This follows from the cognitive linguistics view that language is an outcome of, and symbiotically linked to, generalised aspects of cognition, and that it cannot be adequately understood and studied without recourse to its interconnection with more general aspects of cognitive function.

5 Semantic universals

Another important topic concerns the range and nature of concepts that human infants come equipped with at birth. According to Jerry Fodor, children are born with an innate repository of concepts, which form the basis for a 'language of thought', sometimes referred to as **Mentalese** (Fodor 1975, 2008). Mentalese provide cognitively complex creatures, such as humans, with a language-like basis that makes thought possible. And from this perspective, human infants are able to learn the meanings of the words in their mother tongue because, in essence, they are simply mapping words onto these pre-existing concepts: in short, we can learn a language, any language, because we already have the concepts in place, in our innate language of thought, for words to map onto, concepts that are, in some sense, universal. This idea is expressed by Li and Gleitman in the following way:

> Language has means for making reference to the objects, relations, properties and events that populate our everyday world. It is possible to suppose that these linguistic categories and structures are more or less straightforward mappings from a preexisting conceptual space, programmed into our biological nature. Humans invent words that label their concepts. (Li and Gleitman 2002: 266)

5.1 The semantic decomposition approach

The thesis that there are semantic universals – concepts which are common to all members of our species – are termed **semantic primes** or **primitives**, and has given rise to an approach to semantics known as the **semantic decomposition** or **componential analysis** approach. Unlike the UG hypothesis, which is associated with the Chomskyan Generative Grammar perspective, this approach, or collection of approaches, is not associated with a particular type of theoretical framework. Indeed, semantic decomposition has been advocated, in various guises, by a range of theorists, including Jackendoff (1983), Pinker (1994), Li and Gleitman (2002) and Wierzbicka (1996). The intuition behind the semantic decomposition approach is that there is a universal set of primitive semantic concepts, innately given, for which any particular language provides a language-specific label. Moreover, these can be combined to produce more complex meanings, which can be encoded in language.

Some linguists who adopt this type of approach argue that words rarely label individual semantic primitives, but combinations or 'bundles' of primitives that combine to create the rather complex concepts that words denote. For instance, Ray Jackendoff, in his pioneering 1983 book *Semantics and Cognition*, argued that conceptual structure consists of a range of **ontological categories**, some of which are primitives. A primitive, in this sense, is an entity that cannot be reduced further, and can be combined with other primitives in order to produce more complex categories. Some of the primitives Jackendoff proposed are [THING], [PLACE], [DIRECTION], [ACTION], [EVENT], [MANNER] and [AMOUNT]. Indeed, these ontological categories can be encoded in language. For instance, each of these corresponds to a *wh*-question word, such as *what*, *who*, *when* and so on. This is illustrated by the question and answer sequences below (drawn or adapted from Jackendoff 1983: 53):

(11) What did you buy?
A fish [THING]

(12) Where is my coat?
On the coat hook [PLACE]

(13) Where did they go?
Into the garden [DIRECTION]

(14) What did you do?
Went to the cinema [ACTION]

(15) What happened next?
The toy fell out of the window [EVENT]

(16) How did you cook the eggs?
Slowly [MANNER]

(17) How long was the fish?
Over a metre (long) [AMOUNT]

In addition to primitive ontological categories, the relations that hold between them are also primitives. Consider example (18).

(18) The statue is in the park.

The THEME of the sentence – what the sentence is about – is a particular [THING], lexicalised by the expression *the statue*. Moreover, *the statue* is located with respect to a particular [LOCATION], lexicalised by the expression *in the park*, which consists of the preposition, *in*, and a reference object, *the park*. Given that a [LOCATION] is typically occupied by a [THING], there is a relationship holding between [PLACE] and [THING] in which [THING] is a function of [PLACE]. Jackendoff calls this a **thematic relation** [PLACE-FUNCTION].

Jackendoff argues that semantic primitives of this kind derive from the domain of spatial experience and are 'hard wired', or innate. In addition, he posits rules that enable the creation of new combinations as new concepts are acquired. The ontological categories and relations can also be deployed by more abstract concepts. For instance, abstract states can also be structured in terms of the [PLACE-FUNCTION] relation, even though abstract states such as TROUBLE or LOVE cannot be construed as locations:

(19) a. John is in trouble.
b. John is in love

According to Jackendoff's account, the reason that the [PLACE-FUNCTION] relation can be applied to abstract states such as TROUBLE and LOVE is because these more abstract concepts are being structured in terms of more primitive ontological categories.

5.2 The cognitive linguistics critique

The semantic decomposition approach faces a number of challenges. In particular, it is difficult to establish empirically what the 'right' semantic primitives might be, or how many there are. Furthermore, 'classical' componential theories, which assume a set of necessary and sufficient conditions, face the problem of accounting for how an entity can still count as an instance of a category in the absence of one or more of these components (e.g. a three-legged cat is still described as *cat*).

More generally, just as the human genome doesn't have the coding power to place a detailed UG in the micro-circuitry of the human brain, the same can be said for an innate stock of semantic universals. Given the fact of human embodiment, discussed in Chapter 3 and in more detail in Part II of the book, namely that we share similar cognitive and neuro-anatomical architectures (minds, brains and bodies), it follows that the nature of human experience, and the nature of possible conceptual systems that relate to this experience, will be constrained. For instance, and the fact that the human visual system lacks access to colour in the infrared range (unlike other species, for instance rattlesnakes), means that humans cannot experience this part of the colour spectrum. This constrains the nature of experience available to us, and the range of concepts we can form based on that experience.

Moreover, the nature of the environment humans inhabit has a number of basic commonalities, irrespective of whether one lives in the Arctic, the Kalahari Desert or on a tropical island. Gravity and the other 'physical laws' are experienced by humans in essentially the same way the world over. These 'invariant' features of the environment place important constraints upon what it is possible to experience at the cognitive level. Cognitive linguists argue that these commonalities provide shared human constraints enabling the emergence of a conceptual system, upon which language can be constructed. Indeed, and as we shall see in Chapter 9, the developmental psychologist, Jean Mandler (e.g. 2004), has argued for a general learning mechanism that works on embodied experience, early in the lifespan, enabling rudimentary concepts – known as **image schemas** – to develop.

6 Language and thought

The final issue I consider concerns the relationship between language and thought, and in particular, whether habitual patterns in the language we speak can lead to a restructuring of our cognitive system. This principle is often referred to as **linguistic relativity**, and is most often associated with the work of Benjamin Lee Whorf (published posthumously in 1956).

The principle of linguistic relativity is not the same as claiming that language can influence the way we behave: after all, the interactive function (recall the discussion in Chapter 1) of language facilitates exactly this: we use language to soothe, persuade, convince, seduce and so on. Rather the principle claims that divergent grammatical patterns, and semantic categories, in a given language will influence the way in which we categorise and perceive the world, leading to divergent worldviews held by speakers of different languages.

From the perspective of formalist linguistics, the linguistic relativity principle is simply wrong. After all, if there are universal conceptual primitives, and thus languages are broadly similar, then the facts of linguistic variation are rather superficial. From this it follows that thought itself must be broadly similar, cross-culturally.

6.1 Strong versus weak versions of linguistic relativity

Following Whorf's death, in 1941, psychologists sought to empirically test the issue of linguistic relativity. Two versions were formulated. The first, the so-called **strong version**, holds that language determines thought: thought is not possible in the absence of language. However, this view is untenable. After all, findings from ethology – the field that studies animal behaviour – demonstrates that many species are, in fact, capable of rudimentary thought processes (Evans 2014: Chapter 2; Hurford 2007); and, clearly, other species lack human-like language. Moreover, pre-linguistic infants are capable of thought processes, such as basic arithmetic operations, involving keeping track of the number of dolls in a visual scene, by adding and subtracting (Evans 2014; Wynn 1992, 1995a, 1995b). If language determined thought, then pre-linguistic infants should be incapable of basic conceptual processes such as these until they acquire their mother tongue.

Moreover, further evidence against the strong version of linguistic relativity comes from language communities. For instance, while English has a set of eleven **basic colour terms** – terms that are monolexemic, and which are not subsumed by others – other languages have fewer. A tribe from New Guinea, the Dani, only have two basic colour terms in their language, one for light and one for dark. Yet, Dani subjects have little difficulty learning a set of colour based on the richer set from English (Heider 1972; Rosch 1975a, 1978). If language entirely determines thought, then the Dani should not be able to categorise in the way common in English.

The strong version of the linguistic relativity principle holds that language entirely determines thought. That is, it is impossible to conceive of aspects of the world not provided for by a particular language. This leads to the view that language constitutes a 'straightjacket' which entirely restricts what it is possible to conceptualise. While the strong version of linguistic relativity is untenable, the findings which emerge in cognitive linguistics and related fields, particularly in linguistic anthropology, cognitive psychology and language acquisition studies, suggests that language can and does influence thought and action. Hence, a cognitive linguistic approach to the relationship between language, thought and experience, and the facts of cross-linguistic diversity, is compatible with the so-called **weak version** of the linguistic relativity principle. Hence, the picture from cognitive linguistics might be termed **neo-Whorfian**.

6.2 The cognitive linguistics perspective

From the perspective of cognitive linguistics, there are two lines of evidence which support a weaker version of the linguistic relativity principle.

The first line of evidence concerns language as facilitating our conceptualising capacity. The contention in cognitive linguistics is that language reflects patterns of thought: language represents a means of encoding and externalising thought. Patterns of meaning in language represent a conventional means of encoding conceptual structure and organisation for purposes of communication. This constitutes the symbolic function of language, as described in Chapter 1. Hence, different ways of expressing or encoding ideas in language represent different patterns of thought which can have an impact on the way we function and reason.

A good example of this is the famous study described by Gentner and Gentner (1983) in which they trained different English-speaking subjects in **analogical models** of electricity. One group was taught that electricity can be represented as a teeming crowd of people, while another group was given the analogy of water flowing through a pipe, as in a hydraulic system. The mappings between these two models and an electrical circuit are as indicated in Tables 7.3 and 7.4, respectively.

Importantly, each analogical model predicted different things about an electrical circuit. For instance, a circuit with batteries connected serially will produce more current than a circuit with batteries in parallel. This is predicted by the analogy based on the hydraulic system, where serial pumps one after the other will produce a greater flow rate of water. In the moving crowd model as the battery corresponds simply to the crowd, it is hard to think of a meaningful contrast between a serial and a parallel connection.

In terms of a circuit involving resistors connected in serial and parallel fashion, serial resistors reduce current while parallel resistors increase it. In this circuit the moving crowd model is better at predicting this outcome as resistance is modelled in terms of gates. Parallel gates allow more people through while serial gates allow through less.

Gentner and Gentner hypothesised that if subjects use the models to reason about the circuit, then each group should produce dramatically divergent results, which is exactly what they found. Subjects who had been trained in the hydraulic system model were better at correctly predicting the effect of serial versus parallel batteries on current, while subjects who were familiar with the moving crowd model were better at predicting the effect of serial versus parallel resistors on current. This study reveals that the use of language to represent particular conceptualisations can indeed affect non-linguistic thought, such as problem solving with respect to electrical circuits.

Now let's consider cross-linguistic differences. After all, the weaker version

Table 7.3 Moving crowd model (adapted from Gentner and Gentner 1983: 120)

Moving crowd	Electric circuit
Course/passageway	Wire
Crowd	Battery
People	Resistor
Pushing of people	Voltage
Gates	Resistance
Passage rate of people	Current

Table 7.4 Hydraulic system model (adapted from Gentner and Gentner 1983: 110)

Hydraulic system	Electric circuit
Pipe	Wire
Pump	Battery
Narrow pipe	Resistor
Water pressure	Voltage
Narrowness of pipe	Resistance
Flow rate of water	Current

of the linguistic relativity principles states that cross-linguistic differences should have divergent effects on non-linguistic aspects of thought.

First of all, let's reconsider the domain of space. I noted in Chapter 3 that the Aboriginal language, Guugu Yimithirr, exclusively employs a field-base frame of reference for locating entities in space (Haviland 1998; Levinson 2003). An important consequence of this is that speakers of Guugu Yimithirr must be able to dead-reckon their location with respect to the cardinal points employed in their language, wherever they are in space. Based on a comparative study of Guugu Yimithirr and speakers of Dutch, a language like English which makes extensive use of other frames of reference such as ground-based and projector-based reference, Levinson (1997) found that the ability of Guugu Yimithirr speakers to dead-reckon whatever their particular location, necessitated by their language, had profound consequences for non-linguistic tasks. It was found that when Guugu Yimithirr speakers were taken to an unfamiliar terrain, with restricted visibility such as a dense rainforest, they were still able to dead-reckon, identifying particular directions with an error rate of less than 4 per cent. This contrasted with a comparable study involving Dutch speakers who were much less accurate. This constitutes a real Whorfian effect in which the nature of spatial representation in language has consequences for speaker's non-linguistic abilities.

Now let's consider a study which investigated the influence of language for time on non-linguistic thought and action. One such study was carried out by cognitive psychologist Lera Boroditsky and colleagues. Boroditsky et al. (2011) were interested in investigating whether differential conceptualisation of time between English and Chinese speakers would produce a noticeable effect in an implicit measure such as reaction time. Recall that in Chapter 4 I observed that a common way of structuring the concepts for Earlier and Later in Chinese is by virtue of the vertical axis, as in *upper* and *lower*. In English these concepts are conceptualised primarily in terms of the horizontal axis, *before/after*. Boroditsky exposed Mandarin and English speakers to primes, which related either to the vertical or the horizontal axis. She then asked the subjects to answer a series of true or false questions to a range of statements employing the temporal concepts Earlier or Later (e.g. *March comes earlier than April*). Boroditsky found that Mandarin speakers were faster in responding to questions involving the terms *earlier* and *later* when the prime related to the vertical axis. In contrast, native speakers of English were faster when the prime related to the horizontal axis. This applied even when both sets of subjects were carrying out the task in English. In short, habits in language appear to influence the way in which subjects across the two languages think about the domain of TIME.

One objection that has been levelled at the neo-Whorfian thesis, that language influences or shapes thought, comes from Steven Pinker (2007). Pinker argues that the findings relating to space and time, described above, amount to correlation, not causation. In short, just because speakers of different language with different ways of expressing aspects of time and space also behave in different ways, doesn't mean that the behaviour is caused by divergent language systems. In particular, these experiments involve **behavioural tasks** – conceptual structure is inferred from behaviour, rather than being directly observed; and often the tasks make use of language. To demonstrate causation, what is required is a means of demonstrating divergent behaviour in the absence of language.

One technique that has been used to investigate this issue makes use of a non-invasive technique for measuring brain activity, by measuring electrical signals produced by the brain, while subjects were perceiving colours on a computer screen. The experiment, conducted by Thierry and colleagues (2009; see also Athanasopoulos et al. 2009), took advantage of a distinction in colour categorisation across two languages: English and Greek. In Greek there are two distinct colour terms for blue. The Greek term *ble* covers the dark blue range, while *ghalazio* covers the light blue range.

In the experiment, subjects watched sequences of different coloured green and blue shapes. Thierry and colleagues found that Greek speakers were sensitive to different shades of blue, in terms of how quickly they perceived the different shades – as revealed by the brain's electrical activity. In contrast, English speakers – who lack the linguistic distinction in blue – were not. In contrast, both Greek and English speakers – who both have a single, monolexemic word form for green exhibited the same sensitivity when perceiving hues in the green range. Crucially, what the experimenters measured was brain activity – perceptual processing of colour – at fractions of a second, prior to the perceptual experience coming into conscious awareness. Moreover, the experiment did not involve language in any way: subjects simply watched different colours on a screen, and their brain activity was measured.

What the experiment revealed, then, was that there is a clear relationship between a linguistic distinction across the two languages – Greek versus English – as it relates to the blue colour range, in terms of perceptual processing: divergent lexical patterns appear to have caused a cognitive restructuring: Greek and English speakers perceive the blue range in divergent ways, a consequence of a distinction across the two languages. This provides one of the first direct and concrete demonstrations of a real **Whorfian effect**.

The position adopted in cognitive linguistics, that there are commonalities in the way humans experience, perceive, think and use language, means that we share a common conceptualising capacity. However, these commonalities are no more than constraints, delimiting a range of possibilities. As language reflects conceptual structure, and gives rise to conceptualisation – language encodes conceptual structure in the service of prompting for new ways of thinking – distinct patterns of thought, conventionally encoded in languages, can serve to differentially influence non-linguistic thought and action. That is, the basic commitments of cognitive linguistics are consonant with a weak version of the linguistic relativity principle – language can lead to a cognitive restructuring, as in the case of the 'Greek blues' experiment – a position which is increasingly gathering empirical support.

SUMMARY

This chapter has reviewed six of the central issues that have exercised linguists and other cognitive scientists since at least the middle of the twentieth century. I considered the nature of language origins and its time depth, language universals, how children acquire their mother tongue, whether the mind is modular, the issue of semantic universals and, finally, the nature of the relationship between language and thought, also known as linguistic relativity. The discussion of these issues compared and contrasted the perspective of formal linguistics with that of the more recent cognitive linguistics view. Formal linguistics, especially as associated with the work of Noam Chomsky and Jerry Fodor, has typically attempted to model the nature of linguistic knowledge (morphosyntax, semantics, phonology and so on), in terms of **formal models**. The assumption is that language is a discrete, encapsulated component (or **module**) in the mind – its fundamental essence is **hard-wired**, and hence present at birth, and sits apart from other mental faculties. In contrast, cognitive linguistics adopts the perspective of **experiential realism**: there is no biological pre-specification for language, but rather it is acquired from experience – from usage-based input – facilitated by **cross-domain** aspects of cognition. In terms of the first topic, which addressed the time depth and evolutionary origins of language, I considered the Chomskyan view that language emerged relatively recently, for purposes of thought, rather than communication, as a genetic mutation, known as saltation. This is contrasted with the cognitive linguistics perspective which assumes a much longer, gradual trajectory, predicated on a gradual adaptation to a new **biocultural niche**, occupied by ancestral humans, and for purposes of communication, in keeping with Darwinian **gradualism**. The second topic concerned language universals. Following findings from linguistic typology, cognitive linguists contend that it is increasingly clear there are no absolute, exceptionless universals of the kind advocated by Chomsky and his supporters. Rather, language is shaped and constrained by commonalities in terms of **embodied cognition**, and a shared biocultural and physical niche, occupied by humans. Increasingly, cognitive linguists tend towards the view that what is universal to language concerns a common **conceptual space**, which languages occupy, in terms of language-specific **semantic maps**, to varying and sometimes overlapping degrees. In terms of the third issue, language acquisition, formal linguists contend that a pre-specification for human grammar, a so-called **Universal Grammar**, is innate. In contrast, cognitive linguists view grammatical structure and organisation as an outcome of **usage-based factors** (of the sort discussed in the previous chapter), shaped and constrained by a common embodied cognitive apparatus, common learning mechanisms and a shared conceptual space, which divergent grammatical systems populate to varying degrees. In terms of the fourth issue, whether the mind is modular, formal linguists have also claimed that language constitutes a distinct, encapsulated **module of mind**. In light of the welter of evidence, cognitive linguists hold that strict modularity is too simplistic a view of mental organisation: language reflects other aspects of cognitive function, which have shaped the nature and organisation of language. I also considered the issue of **semantic universals**, and the so-called language of thought: **Mentalese**. This perspective gives rise to the notion of **semantic primitives**, with language users mapping the words they acquire as part of their mother tongue, onto pre-existing semantic universals. We've seen that, for cognitive linguists, concepts are not innate, but arise, through experience, from learning, and mechanisms that facilitate learning. And finally, I briefly examined the principle of **linguistic relativity**. There is an increasing body of evidence suggesting that language can indeed lead to cognitive restructuring: language influences thought. And this **neo-Whorfian** perspective is widely assumed within cognitive linguistics.

FURTHER READING

Language origins and time depth

- **Berwick and Chomsky (2016)**. A recent exposition of the Chomskyan saltation perspective on language evolution.
- **Everett (2017)**. A recent, articulate and compelling interdisciplinary review of the relevant literature, arguing for the gradual emergence of language over evolutionary time.
- **Heine and Kuteva (2007)**. Using the perspective of grammaticalisation theory, provides a reconstruction of the evolution and emergence of the world's major grammatical categories.
- **Hurford (2014)**. A highly accessible overview reviewing the evidence and contradictory positions on language evolution in an objective way.

Language universals

- **Christiansen et al. (2009)**. A volume of chapters on the nature of language universals. Contributors are leading experts who take language-specific versus non-specific perspectives. The volume is highly interdisciplinary.
- **Croft (2003)**. An essential primer on typology and universals from a leading linguistic typologist and cognitive linguist.
- **Good (2008)**. A collection of specially commissioned chapters by leading experts from Chomskyan and Cognitive-Functional perspectives. Considers the extent to which universals have a language-related basis versus non-linguistic factors, and how universals constrain language change.

Language acquisition

- **Ambridge and Lieven (2011)**. A state-of-the-art review, in which the authors carefully compare and contrast usage-based versus generative approaches to language acquisition. The book considers and evaluates findings and contrasting explanations for the data in the areas of phonology, including both perception and production; word meaning and word learning; and grammar acquisition, including inflection, as well as simple and complex syntax.
- **Dąbrowska (2004)**. An excellent and highly accessible primer in psycholinguistics by a leading cognitive linguist. Considers the nature and status of theories of grammar, from the perspective of what is cognitively and neurologically plausible. Also considers the relationship between what is innate and acquired knowledge, in first language acquisition.

Modularity of mind

- **Fodor (1983)**. The seminal treatise on mental modules. Fodor in his pomp, but not for the faint-hearted, as the prose, while brilliant, can be dense.
- **Pinker (1997)**. A popular and well-written account of a version of the modularity view of the human mind; Pinker advocates a 'massive modularity' perspective: modules that evolved to fulfil specific functions over evolutionary time.
- **Wallace (2010)**. An accessible critique of various theories of modularity, including Fodorian modularity, as well as the so-called 'massive modularity' perspective, advocated by Steven Pinker and others.

Universal semantics

- **Chemero (2011)**. An important and compelling rebuttal of the Fodorian computational theory of mind. Chemero argues against computational-like representations, proposing, instead, that thought relies on embodied perceptual experience, rather than representations.
- **Fodor (1975)**. A seminal defence of the computational theory of mind. Fodor argues, with great gusto, that thought can be viewed as language-like, proposing his Language of Thought hypothesis.
- **Jackendoff (1983)**. A seminal componential theory of semantics and cognition, in which semantic concepts can be divided into components, and combined to create new meanings.
- **Lakoff (1987)**. A seminal cognitive linguistics account proposing that semantics can be thought of as embodied image schemas – holistic gestalts, rather than components or primitives – whereby semantics parts emerge from wholes, rather than vice versa. This is illustrated with three famous case studies which apply the construct of the image schema to grammar, lexical semantics and metaphor.

Language and thought

- **Deutscher (2010)**. A popular, and sympathetic account of Whorfian relativity. Highly accessible.
- **Everett (2013)**. A highly useful survey of experimental research on linguistic relativity, covering domains including spatial orientation, temporal perception, number recognition, colour discrimination, object/substance categorisation and the construal of gender.
- **Gumperz and Levinson (1996)**. A seminal collection of papers by leading experts that, in effect, helped relaunch the issue of linguistic relativity as a bona fide research topic.
- **Lee (1996)**. An excellent reconstruction of Whorf's ideas, based on careful analysis of his writings, together with a critical analysis of the myths and anxieties surrounding his ideas.
- **McWhorter (2016)**. A rebuttal of the principle of linguistic relativity, written for a popular audience.

DISCUSSION QUESTIONS

1. In general terms, how can we characterise i) the formal linguistics perspective on language and mind, and ii) the cognitive linguistics perspective?
2. For each of the topics mentioned below, what does the cognitive linguistics perspective claim, and what are the lines of evidence for this?
   i) the nature of language origins and its time depth;
   ii) language universals;
   iii) how children acquire their mother tongue;
   iv) whether the mind is modular;
   v) the issue of semantic universals;
   vi) the nature of the relationship between language and thought, also known as linguistic relativity.
3. For each of the topics, are you persuaded by the cognitive linguistics or the formal linguistics perspective, and why or why not?

Part II: Conceptual structure

As I observed in Chapter 1, cognitive linguists study language for its own sake; they seek to describe and account for its systematicity, its structure, the functions it serves and how these functions are realised by the language system. But cognitive linguists also study language because language reflects patterns of thought: it offers a window into cognitive function, providing insights into the nature, structure and organisation of thoughts and ideas. This is one of the most salient ways in which cognitive linguistics differs from other approaches to the study of language: language is assumed to reflect certain fundamental properties and design features of the human mind. As such, language provides a window, albeit a partial one, on the mind.

Given the Generalisation Commitment (Chapter 2), cognitive linguists assume that language reflects the nature and organisation of thought, commonly referred to as **conceptual structure**. Hence, for cognitive linguists, language provides a ready means of studying the organisational principles of conceptual structure. Conceptual structure, for cognitive linguistics, includes the nature of **concepts** – the central plank of mental life – as well as the ways in which concepts are organised with respect to one another. This organisation includes **mappings** between concepts, and between sets of concepts, allowing conceptual structure to be shared and inherited between conceptual **domains** (as in the case of **conceptual metonymy**) and across domains (as in the case of **conceptual metaphor**). Conceptual structure also includes the way in which concepts are organised into domains, as well as smaller units of organisation such as **frames**. But it is important to remember that when cognitive linguists deploy language to study conceptual structure, the constructs and theories they propose, based on linguistic evidence, are assumed not to relate to language per se, but to the patterns in conceptual structure posited on the basis of the linguistic evidence. In Part II of the book, then, I explore the way in which cognitive linguistics deploys language data to study non-linguistic conceptual structure, as well as the sorts of conceptual structure phenomena proposed, all based on observing patterns in language.

Part II of the book is made up of six chapters. In Chapter 8, I begin by introducing the two guiding principles of the cognitive linguistics approach to conceptual structure. These are: i) the thesis that conceptual structure derives from embodiment, also known as the embodied cognition thesis; and ii) the thesis that semantic structure reflects conceptual structure. I also compare and contrast the cognitive linguistics perspective with the computational or disembodied view of conceptual structure which cognitive linguistics rejects.

Chapters 9 illustrates the first of the two guiding principles of cognitive linguistics research on conceptual structure. It does so by considering the nature of embodiment, and the formation of rudimentary concepts, known as the **image schema**. The chapter introduces the work of development psychologist, Jean Mandler, and the pioneering research on image schemas by philosopher Mark Johnson. Image schemas are among the earliest units of conceptual structure to emerge, in the lifespan, and are directly motivated by embodied experience. The emergence of image schemas illustrates the principle that conceptual structure emerges from embodied experience

In Chapter 10, the second guiding principle – the thesis that semantic structure reflects conceptual structure – is illustrated. I do so by introducing the theory of Cognitive Semantics developed by Leonard Talmy, aspects of which were first introduced in Chapter 3. In his theory of Cognitive Semantics, Talmy demonstrates the way in which semantic structure – and, particularly, what he terms **schematic meaning**, as encoded by closed-class lexical forms – encodes the structural properties of referents (the situations and entities that language describes: objects, people, scenes and so on). I show that on Talmy's account, schematic meaning is directly related to fundamental aspects of embodied cognition, and can be divided into a number of distinct **schematic systems**, each of which provides a distinct type of meaning that is closely associated with a particular kind of embodied experience. Talmy's work presents compelling evidence from language that semantic structure reflects conceptual structure, and, in turn, that conceptual structure arises from embodied experience.

Chapter 11 considers the two guiding principles in tandem. It does so by addressing the way in which the human mind forms concepts – due to principles of categorisation, and in particular the development of a new approach known as **prototype theory**. Empirical findings reveal that when we form categories in our minds, these are based on a **prototype** – an amalgam of the range of features typical of members of the category in question. Moreover, when we identify other entities as belonging to the category or not, we do so with respect to the prototype. This leads to so-called **typicality effects**, whereby category members can be ranked as better or worse examples of a category, in the way, for instance, that robins and blackbirds are generally assessed as being good members of the category BIRD, while penguins and ostriches are judged as less good examples. This new perspective inspired the development of George Lakoff's theory of **idealised cognitive models** (ICMs), which the chapter considers in detail. The main claim to emerge from this research was that typicality effects are surface phenomena, arising from underlying ICMs of various kinds. Lakoff argues that prototype structure is not to be directly equated with conceptual structure and organisation, but that typicality effects emerge from the way in which the underlying idealised cognitive models are structured and interact, with significance for other aspects of conceptual, semantic and grammatical organisation.

Chapter 12 then turns to a major theoretical development in cognitive linguistics: conceptual metaphor theory, originally developed by Lakoff and Johnson. The essential insight is that conceptual structure is organised by foundational sets of conceptual mappings that structure more abstract domains of knowledge in terms of more concrete domains, deriving from embodied experience. Moreover, these **cross-domain mappings**, dubbed conceptual metaphors, can be inferred on the basis of linguistic data, and serve to provide the basis for key aspects of semantic structure. As such, by exploring conceptual metaphor theory we are provided with a case study in the operation of the two guiding principles of a cognitive linguistics approach to conceptual structure.

Finally, Chapter 13 considers two later developments arising originally from conceptual metaphor theory: **primary metaphors**, and the phenomenon of conceptual metonymy. Cognitive linguists have argued that both primary metaphors and conceptual metonymy are foundational to conceptual structure. Primary metaphors are held to arise in **primary scenes** of experience, and as such provide the embodied grounding for more complex **compound metaphors**. The chapter considers the distinction between these two types of conceptual metaphor: primary versus compound, and how conceptual structure is elaborated by the **unification** of primary metaphor to give to more complex conceptual structures. In contrast to conceptual metaphors, conceptual metonymy is held to constitute a type of operation that **highlights** one entity by referring to another entity within the same domain (or **domain matrix**). Some researchers propose that conceptual metonymy may be more fundamental to conceptual organisation than conceptual metaphor, and may even underpin conceptual metaphors. I consider this contention, and what it means for a cognitive linguistics approach to conceptual structure.

8

What is a cognitive linguistics approach to conceptual structure?

In this chapter I provide an orientation to the cognitive linguistics approach to conceptual structure. Accordingly, the chapter serves as an introduction to Part II of the book. I begin, in the next section, by introducing the two guiding principles that underpin a cognitive linguistic approach to conceptual structure. I then compare and contrast the **embodied cognition** perspective developed within cognitive linguistics with the alternative, **disembodied cognition** view. Finally, I examine the relationship between embodiment, conceptual structure and semantic structure.

1 Guiding principles

In this section I consider two central assumptions of the cognitive linguistics approach to conceptual structure. These are listed below:

i) conceptual structure is embodied (the 'embodied cognition thesis', also known as the **embodied mind**);
ii) semantic structure reflects conceptual structure.

These principles, as with the principles that guide cognitive linguistics approaches to semantics (Part III) and grammar (Part IV) can be viewed as outcomes of the two key commitments described in Chapter 2: the Generalisation Commitment and the Cognitive Commitment.

1.1 Conceptual structure is embodied

As we saw in Chapters 3 and 4, a fundamental concern for cognitive linguists is the nature of the relationship between conceptual structure and the world of experience (**perception**); this includes the external world of sensory experience (**exteroception**), as well as our internal world of bodily experience (**interoception**) – ideas introduced in Chapter 3. Accordingly, cognitive linguists set out to explore the nature of human interaction with and awareness of the internal and external world, and to build an overall account of conceptual structure that is consonant with the ways in which we experience the world and ourselves.

One idea that has emerged, in this attempt, is the **thesis of embodied cognition** (the notions of **embodiment** and **embodied experience** were briefly introduced in Chapter 3, and will be discussed in more detail in the next chapter). This amounts to an attempt to explain the nature of conceptual organisation on the basis of perceptual experience with the external (physical) and internal (subjective) world of experience.

Ever since the seventeenth-century French philosopher, René Descartes, developed the view that mind and body are distinct entities – the principle of **mind/body dualism** – there has been a common assumption within philosophy and, more recently, other cognitive sciences, that the mind can be studied without recourse to the body, and hence without recourse to embodiment. In modern linguistics this **rationalist approach** has been most evident in formal approaches such as the Generative Grammar approach developed by Noam Chomsky (see Chapters 7 and 21) and formal approaches to semantics, such as the framework developed by Richard Montague (see Chapter 14). Proponents of these approaches argue that it is possible to study language as a formal or computational system, without taking into account the nature of human bodies or human experience.

In contrast, cognitive linguistics is not rationalist in this sense, but instead takes its inspiration from traditions in psychology and philosophy that emphasise the importance of human experience, the centrality of the human body, and human-specific cognitive structure and organisation, all of which affects the nature of our experience. According to this **empiricist** (or **experientialist**) **approach**, the human mind – and therefore language –cannot be investigated in isolation from human embodiment.

The idea that experience is embodied entails that we have a species-specific view of the world due to the unique nature of our physical bodies. Consequently, our construal of reality is likely to be mediated, in large measure, by the nature of our bodies.

One obvious way in which our embodiment affects the nature of experience is in the realm of colour. While the human visual system has three kinds of photo-receptors or colour channels, other organisms often have a different number. For instance, the visual system of squirrels, rabbits and possibly cats make use of two colour channels, while other organisms, such as goldfish and pigeons, have four colour channels. Having a different range of colour channels affects our experience of colour in terms of the range of colours accessible to us along the colour spectrum. As I first noted in Chapter 3, some organisms can see in the infrared range, such as rattlesnakes, which hunt prey at night and can visually detect the heat given off by other organisms. Humans are unable to see in this range. As this simple example demonstrates, the nature of our visual apparatus – one aspect of our physical embodiment – determines the nature and range of our visual experience.

Similarly, the nature of our **biological morphology** – the kinds of body parts we have – together with the nature of the physical environment with which we interact, determines other aspects of our experience. For instance, while gravity is an objective feature of the world, our experience of gravity is determined by our bodies and by the **ecological niche** we inhabit. For instance, hummingbirds – which can flap their wings up to a remarkable fifty times per second – respond to gravity in a very different way from humans. In order to overcome gravity, hummingbirds are able to rise directly into the air without pushing off from the ground, due to the rapid movement of their wings. Moreover, due to their small size, their experience of motion is rather different from ours: hummingbirds can stop almost instantaneously, experiencing little momentum. Compare this with the experience of a sprinter at the end of a 100m race: a human cannot stop instantaneously but must take a few paces to come to a standstill.

Now consider organisms that experience gravity even more differently. Fish, for example, experience very little gravity, because water reduces its effect. This explains their morphology, which is adapted to the ecological niche they inhabit and enables motion through a reduced-gravity environment. The neuroscientist Ernst Pöppel (1994) has even suggested that different organisms might have different kinds of **neural timing mechanisms** which underpin abilities such as event perception (see Chapter 4). This is likely to affect their experience of time. The idea that different organisms have different kinds of experiences due to the nature of their embodiment is known as **variable embodiment**.

In cognitive linguistics, the thesis of embodied cognition – the guiding principle that conceptual structure reflects embodied experience – holds that the nature of conceptual organisation, which is to say, conceptual structure, arises from (internal and external) bodily experience; in short, experience is meaningful for us as it arises from our experiences, as mediated by our bodies, as we interact with our environment. And as such, the concepts we form, and the ways in which they become organised, arise as a direct consequence of the nature of our bodies, as we act in and interact with the world around us.

To illustrate, imagine a man in a locked room. A room has the structural properties associated with a **bounded landmark**: it has enclosed sides, an interior, a boundary and an exterior. As a consequence of these properties, the bounded landmark has the additional functional property of containment: the man is unable to leave the room. Indeed, this instance of containment is partly a consequence of the properties of the bounded landmark and partly a consequence of the properties of the human body (Tyler and Evans 2003). Humans cannot pass through minute crevices in the way that, for instance, gas or odours can. Nor can they pass underneath a door in the way that small insects can, such as ants. This shows that containment, for us, is a meaningful (or functional) consequence of a particular type of physical relationship that we, as humans, have experienced in our interaction with the world (recall the discussion in Chapter 3).

The concept associated with containment is an instance of what cognitive linguists refer to as an image schema (Johnson 1987; Lakoff 1987). Indeed, an image schema is inferred, on the basis of linguistic and behavioural evidence, as it is viewed as a rudimentary concept, one that emerges early in the lifespan, as a direct consequence of interaction with the external environment. While the image-schematic concept CONTAINER is grounded in the directly embodied experience of interacting with bounded landmarks, image-schematic conceptual structure can also give rise to more abstract kinds of meaning. For example, consider the following examples from Lakoff and Johnson (1980: 32):

(1) a. He's *in* love.
b. We're *out of* trouble now.
c. He's *coming out of* the coma.
d. I'm *slowly getting into* shape.
e. He *entered* a state of euphoria.
f. He *fell into* a depression.

In these examples, the expressions highlighted in italics reveal that more abstract states, such as LOVE, are conveyed as if they were physical entities that it is possible to be 'in'. Lakoff (1987) and Johnson (1987) both argue that examples like the ones in (1) are licensed by the **metaphorical projection** of the CONTAINER image schema onto the abstract conceptual domain of STATES, to which concepts such as LOVE, TROUBLE and HEALTH belong. This results in the conceptual metaphor STATES ARE CONTAINERS, a unit of conceptual structure, arising from embodied experience. Consequently, the idea behind metaphorical projection is that meaningful structure from bodily experience gives rise to concrete concepts such as the CONTAINER image schema, which in turn serves to structure more abstract conceptual domains such as STATES. In this way, conceptual structure is embodied. I will look in detail at image schemas in the next chapter.

1.2 Semantic structure reflects conceptual structure

This guiding principle asserts that the nature of meaning conveyed by language, **semantic structure**, refers to concepts in the mind of the speaker rather than to objects in the external world. In short, semantic structure, which includes the meanings conventionally associated with words and other linguistic units, reflects concepts and other systematic patterns in the way thought is organised. As we saw in Chapter 3, the conventional meanings associated with words are linguistic concepts or **lexical concepts**: the conventional form that conceptual structure requires in order to be encoded in language (semantic structure). Crucially, as semantic structure reflects conceptual structure, cognitive linguists contend that semantic patterning in language (semantic structure) can be deployed as (one line of) evidence to infer patterns in the organisation of conceptual structure. And it is precisely for this reason that the linguistic data in (1), above, can be used to infer the embodied basis of conceptual structure: as the linguistic examples reveal that more abstract states are structured in terms the physical notion of a container, then the cognitive linguist can infer that conceptual structure has an embodied basis.

That said, the claim that semantic structure reflects conceptual structure does not mean that the two are identical. Rather, cognitive linguists claim that the meanings associated with linguistic expressions, such as words, form only a subset of possible concepts. After all, we have many more thoughts, ideas and feelings than we can conventionally encode in language.

For example, we have a concept for the place on our faces below our nose and above our mouth where moustaches go. We must have a concept for this part of the face in order to understand that the hair that grows there is called a *moustache*. However, as Langacker (1987) points out, there is no English word that conventionally encodes this concept (at least not in the non-specialist vocabulary of everyday language). It follows that the set of lexical concepts is only a subset of the entire set of concepts in the mind of the speaker.

Indeed, the phenomenon of **untranslatable words** – monolexemic words unique to a given language that must be translated by a string of words in another – provides evidence for how semantic structure reflects the complex permutations of conceptual structure. For instance, the Welsh word *hiraeth* refers to a mixture of longing, grief and wistfulness, when thinking nostalgically about the something lost or someone departed. *Tingo* from the Polynesian language Pascuan, spoken on Easter Island, describes the act of slowly stealing all the items from your neighbour's house by gradually borrowing one item at a time, but never returning the items borrowed. The Brazilian Portuguese word *cafuné* describes the tender act of running one's fingers through your lover's hair. Then there is *utepils*, from Norwegian. This refers to consuming beer outside on a sunny day. It literally means 'outside lager/pils'. What each example illustrates is that there is no direct (monolexemic) translation into English.

For any theoretical account of language, the principle that semantic structure reflects conceptual structure is of greater significance than we might think. Recall that semantic structure relates not just to words but to all linguistic units. A linguistic unit might be a word such as *cat*, a bound morpheme such as *-er*, as in *driver* or *teacher*, or indeed a larger conventional pattern, such as the structure of an active sentence (2) or a passive sentence (3):

(2) William Shakespeare wrote *Romeo and Juliet*. ACTIVE

(3) *Romeo and Juliet* was written by William Shakespeare. PASSIVE

Because active and passive constructions are conventionally associated with a functional distinction, namely the point of view we are adopting with respect to the subject of the sentence, cognitive linguists claim that the active and passive structures are themselves meaningful: in active sentences we are focusing on the active participant in an event by placing this unit at the front of the construction. In passive sentences, we are focusing on the participant that undergoes the action. The conventional meanings associated with these grammatical constructions are admittedly schematic, but they are nevertheless meaningful. This is an idea that I discuss in more detail in Chapter 10, and further in Parts III and IV of the book.

There are two important caveats which follow from the principle that semantic structure reflects a subpart of conceptual structure. First, cognitive linguists are not claiming that language relates to concepts internal to the mind of the speaker and nothing else. This would lead to an extreme form of subjectivism, in which concepts are divorced from the world that they relate to (see Sinha 1999). Indeed, we have concepts in the first place either because they are useful ways of understanding the world, or because they are inevitable ways of understanding the world, given our cognitive architecture and our physiology – our specifically human embodiment. Cognitive linguistics therefore steers a path between the opposing extremes of subjectivism and the objectivism encapsulated by formal approaches to the study of conceptual structure, discussed in more detail later in the chapter. Figure 8.1 depicts the relationship between embodied experience, conceptual structure and semantic structure, as exemplified by the two guiding principles of the cognitive linguistics approach to conceptual structure.

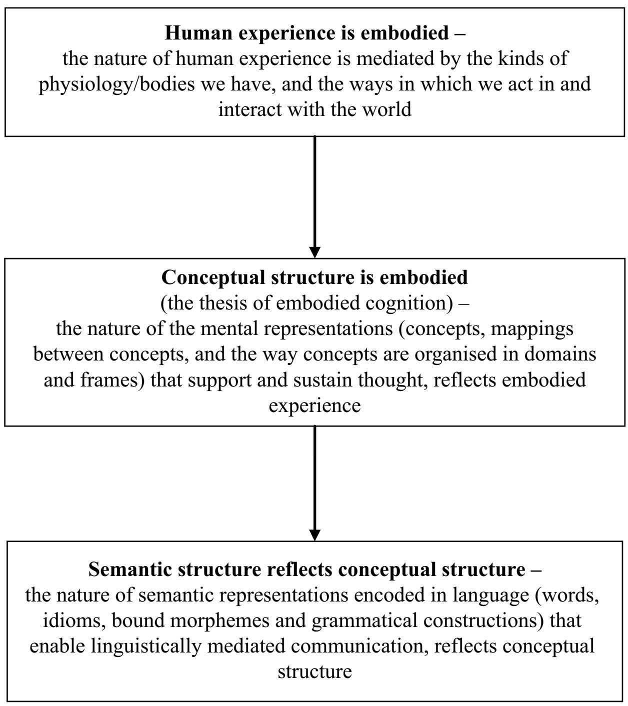


Figure 8.1 The relationship between embodied experience, and conceptual and semantic structure

2 Comparing and contrasting approaches to conceptual structure

In this section I compare and contrast the embodied mind perspective developed within cognitive linguistics, and compare and contrast it with the classic, **computational mind** perspective, also referred to as the disembodied cognition perspective – this perspective arose as part of what has been dubbed **first generation cognitive science** (Lakoff and Johnson 1999), which took the computer as an analogy for modelling the human mind. But in rejecting this analogy, cognitive linguistics, which forms part of **second generation cognitive science**, views conceptual structure as reflecting embodied experience (see Evans 2015b for detailed discussion). Once I've presented what each of these two views amounts to, I consider the evidence in favour of the embodied cognition perspective, before presenting and evaluating alternatives to embodied cognition.

2.1 Two views of concepts and the mind

In simplest terms, a concept is a **representation** of some aspect of human experience and/or thought. For instance, we have concepts for rudimentary experiences, such as ANIMACY, CONTAINMENT and BIOLOGICAL MOTION, which, as we shall see in the next chapter, emerge early in the lifespan (Mandler 2004). We also have concepts for more specific experiences, such as APPLES, DOGS and DOORKNOBS, as well as entities that don't in fact exist, such as UNICORNS and SUPERMAN. And we have concepts for complex ideas such as UNDERWATER–BASKET WEAVING, MEDIEVAL MUSICOLOGY and INFLATION. Any account of the human mind has to have an account of concepts.

Traditionally, a concept was thought of as being made up a **symbol** – a referential vehicle, which indexes or points to an entity in the world, for instance a dog or an apple, or in the mind, such as an idea, feeling or sensation. Of course, the nature of the symbols that constitute concepts would have to be quite different from the linguistic symbols that I introduced in Chapter 1 – for instance, forms such as words, bound morphemes or idioms. Conceptual symbols are internal to the human mind, after all, populating the **conceptual system** – our repository of concepts; hence they don't, in and of themselves, have a ready means of being transmitted from one mind to another – in the absence of telepathy. Hence, concepts have to be encoded into a different format from their internal representation, in order to be externalised and made publicly accessible. In our species, we have developed a **linguistic system** that enables the encoding and transmission of concepts via linguistic symbols, which are specifically designed, being physical referential vehicles – written, spoken or signed symbols – for this task; in Part III of the book we will examine how language externalises concepts, for purposes of meaning construction, when we consider cognitive linguistic approaches to semantics (see especially Chapter 18).

2.1.1 Disembodied cognition

Broadly speaking, there are, within cognitive science, two prevalent views of concepts. The distinction between the two, turns on the nature of the symbols that make up our mind-internal representation for a concept. And this distinction, further turns on how one views the relationship between perception (exteroception and interoception) on the one hand, and our rational thought processes – cognition – on the other.

Recall from Chapter 3 that perception concerns our ability to harvest energy signals from the world 'out there', derived from the various **sensory modalities** – which include visual information, auditory and tactile information, as well as information relating to motion, pressure, weight, balance and so on. Interoception concerns information derived, via nerve signals, as well as information from the bloodstream about the body's internal environment. It concerns information relating to **affect** – various types of emotional experience – temporal experience as well as mental states, amongst others.

The first view, the disembodied or computational cognition perspective, holds that concepts are abstract, disembodied symbols. This perspective assumes a clear distinction between representations arising from perceptual and interoceptive experience on the one hand and cognition on the other. Representatives of the disembodied cognition approach include Dennett (1969), Fodor (1975, 1983, 1998, 2008), Haugeland (1985), Jackendoff (1983, 1987), Newell and Simon (1972), Pinker (1984) and Pylyshyn (1984).

The essential idea is that body-based representations arising from perception – **percepts** – are wholly distinct from the representations – concepts – in the conceptual system; the symbols that make up concepts are quite different from the perceptual representations that arise from body-based experience.

Concepts are different from body-based representations, on this account, in at least two ways. First, concepts do not comprise **substrate** (material and content) from perceptual experience. While concepts, ultimately, must hook up to the experiences in the world and the body that they are representations of, their **semantic substrate** – the stuff of concepts – is not the same, and moreover, is quite distinct from perceptual representations. This means that for disembodyists, concepts are **amodal** – the symbols that make them up are not derived from the sensory – or body-based – modalities that give rise to perceptual experience. Second, concepts, being wholly different from body-based states must, presumably, be stored in a different region of the brain from the brain areas responsible for processing and giving rise to body-based representations – percepts (see Cisek 1999).

According to the disembodied cognition account, as concepts are the instruments of thought, and central to our linguistic capacity to communicate, they must, of necessity, be constituted in a stable, modality-neutral way. After all, a concept is more than merely a representation of a specific experience – which is the stuff of perception – it must also be able to provide us with a theory of what the entity is for: for instance, our concept for DOORKNOB must do more than re-describe the perceptual properties of a doorknob – what it looks and feels like – it must also provide us with an account of what a doorknob is for: its function. And this central property of doorknobs, so the disembodyists contend, cannot be achieved by relying on modality-specific experiences. A concept is an abstract, logical entity, which rises above the multitude of everyday, visceral experiences that the representation – the concept – ultimately, allows us to call to mind.

2.1.2 Embodied cognition

In contrast, the embodied cognition perspective adopted in cognitive linguistics blurs the distinction between perception and cognition. For cognitive linguists, concepts are directly grounded in the perceptual brain states that give rise to them. This embodied cognition perspective takes a **modal** view of concepts: the semantic substrate of concepts is directly grounded in, and arises from, the sorts of modalities that the concept is a representation of (see Barsalou 2008 and Shapiro 2010 for reviews. Notable exemplars of this view include Barsalou, e.g. 1999; Bergen 2012; Chemero 2011; Clark, e.g. 1997; Damasio 1994; Evans 2009; Gallese and Lakoff 2005; Glenberg, e.g. 1997; Lakoff and Johnson, e.g. 1999; Vigliocco et al. 2009; Zwaan, e.g. 2004).

The embodied cognition view assumes that concepts arise directly from the perceptual experiences themselves. Take the example of dogs. When we perceive and interact with dogs, this leads to extraction of perceptual and functional attributes of dogs, which are stored in memory in **analogue** fashion: our concept for DOG, on this view, closely resembles our perception and experience of a dog. When we imagine a dog, this is made possible by reactivating, or to use the technical term, **simulating**, the perceptual and interoceptive experience of interacting with a dog – this includes sensorimotor experiences when we pat and otherwise interact with a dog, as well as affective states, such as the pleasure we experience when a dog responds by wagging its tail and so forth. But while the simulated dog closely resembles our perceptual and interoceptive experience, it is, according to **embodyists**, attenuated.

This means that the concept for DOG is not the same as the vivid experience of perceiving a dog. When we close our eyes and imagine a dog, we are at liberty to simulate an individual dog – perhaps our own pet – or a type of dog, or a dog composed of aspects of our past experiences of and with dogs. But the simulation is attenuated with respect to the perceptual experience of a dog – it doesn't have the same vivid richness that comes with directly perceiving a dog in the flesh.

2.1.3 Embodied versus disembodied cognition perspectives

The claim made by the cognitive linguistics, embodied cognition, perspective is that the simulation is directly grounded in the same brain states – in fact, a reactivation of aspects of the brain states – that are active when we perceive and interact with the dog. The simulation is then available for language and thought processes. As the reactivation of some aspects of the perceptual experiences of a dog is, in part, constitutive of the concept for DOG, the concept is, thus, an analogue of the perceptual experience. It is analogue in the sense that it is very much like our perceptual experience of dogs: the concept must, in part, be constituted of body-based representations – for instance, the sensorimotor experiences that comprise our perceptual experience – and, therefore, must be stored in broadly the same brain regions that process the perceptual experience to begin with. This constitutes an embodied perspective as concepts are made up, in part, of the very same body-based experiences that comprise our perceptual experiences.

In contrast, the disembodied view of concepts and mind assumes that perceptual experiences are re-described into a symbol, which stands for the perceptual experience – it is a marker for the experience, but says nothing about what the experience actually feels or looks like: concepts are **non-analogue**, they don't resemble the thing they represent. It is precisely for this reason that such an account is disembodied.

In some disembodied theories, the symbols are represented using natural language, and the symbols are thought to comprise lists of features or attributes. In others, the concepts are represented in a format that is in some sense language-like: the idea is that the mind features its own operating system, universal to all humans, known as **Mentalese** (e.g. Fodor 1975, 2008; Jackendoff 1983; Pinker 1994), introduced in Chapter 7.

In sum, the key difference between the two perspectives is that the disembodied view of concepts assumes that concepts are mental representations fundamentally unlike what they represent. Thus, critically, perceptual brain states are *not* constitutive of concepts. For cognitive linguists, simulations, in contrast, are analogue representations, in the sense of re-presentations of perceptual experiences – they are directly grounded in the body-based and subjective perceptual states that give rise to them. As such, the embodied cognition view assumes that perceptual brain states *are* constitutive of concepts. Figures 8.2 and 8.3 capture the distinctions between the disembodied and embodied cognition perspectives.

As illustrated in Figure 8.2, on the disembodied account, body-based experiences are recoded into a different format: the symbols that constitute a concept are of a different kind from body-based experience. In contrast, Figure 8.3 shows that for embodyists, the format of a concept is very much like

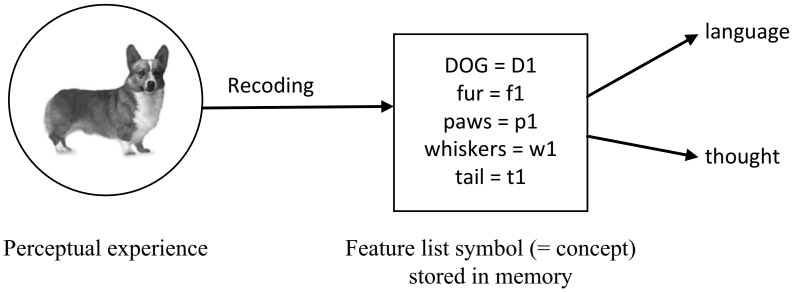


Figure 8.2 Disembodied view of concepts

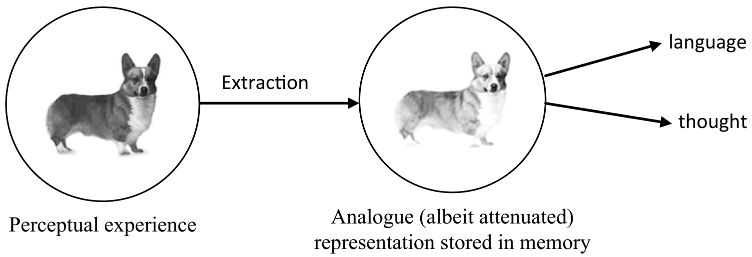


Figure 8.3 Embodied view of concepts

the body-based experience it is a representation of. A concept is extracted from perceptual experience, rather than being recoded.

2.2 The symbol grounding problem

An important reason why cognitive linguists reject the disembodied cognition perspective relates to the **symbol grounding problem** (Harnad 1990). This can be stated as follows: as concepts facilitate thought and language, if concepts are comprised of abstract symbols and are, hence, unlike the perceptual mental states they represent, how then do concepts relate to the states they are supposed to be representative of? In short, the challenge for the disembodied view is to show how concepts can be representations of experiences and ideas, and so facilitate use in thought and language, when they are non-analogue, and hence not directly grounded in the content that they are meant to represent.

One solution to this, in one disembodied theory of concepts, was to assume that concepts are innate – if a concept is innate, then its content is grounded by virtue of being in place to begin with: we are simply born with the concept, including its content. This was the proposal made by philosopher of mind, Jerry Fodor, and his Mentalese hypothesis. Adopting this view, the linguist Ray Jackendoff posited a range of abstract **conceptual primitives** – rudimentary concepts with which we are born – that could be combined using rules of mental syntax, facilitating a fully fledged disembodied conceptual system (recall the discussion in Chapter 7).

In contrast, in embodied cognition, the grounding problem doesn't arise. This follows as concepts are held to be directly grounded in the brain states they are representations of (Cuccio and Gallese 2018). In one specific embodied cognition proposal, the cognitive psychologist, Lawrence Barsalou (1999), for instance, refers to such concepts as **perceptual symbols**; on this view, perceptual symbols are stored traces of prior embodied brain states. These can later be reactivated, or simulated, for purposes of language and thought.

2.3 Evidence for the embodied cognition perspective

Two main lines of empirical evidence suggest that the embodied cognition view of concepts, rather than the disembodied account, is on the right track. These relate to how the brain processes concepts, and how human subjects perform in behavioural tasks, when they must call up conceptual representations. Together, these two lines of evidence strongly suggest that concepts make use of the same brain regions that process the perceptual experiences that the concepts are representations of: it doesn't matter whether you are perceiving a particular experience (percept) or, later, thinking about it after the event (concept), the same brain states are activated in both cases. This suggests that the same mental substrate that underpins perception also underpins cognition, and our representations (or concepts) of perceptual experiences.

Brain-based demonstrations reveal that the brain's sensorimotor and other modal systems – systems that are activated when we perceive a particular experience – are also activated during conceptual processing – when we think about or recall the experience, or even when we use or understand language relating to the experience. For instance, motor regions of the brain that are deployed for perceiving a particular tool, such as a hammer, and the way it is used, are automatically activated during non-perceptual tasks, such as thinking or talking about hammering. In short, a raft of studies provides clear evidence that the same motor processes in the brain are automatically engaged when subjects perform perceptual *and* conceptual tasks (e.g. Barsalou 2008; Barsalou et al. 2003; Boulenger et al. 2008; Gallese and Lakoff 2005; Pulvermüller et al. 2005; Rizzolatti and Craighero 2004).

Behavioural demonstrations involve applying a stimulus of some kind to human subjects, and then observing their behaviour when performing a particular task. Many of the relevant studies have involved sentence comprehension and lexical decision tasks. However, one representative and important study required subjects to perform a lexical decision task employing action verbs relating to either arm or leg actions (Pulvermüller et al. 2005). The experiment made use of a technique, in cognitive neuroscience, known as **transcranial magnetic stimulation (TMS)**. This is a non-invasive technique that involves passing a weak electric current, using electrodes attached to the scalp, to specific brain regions in order to stimulate them. Subjects were asked to read words that related either to arm movement, such as *punch*, or leg movement, like *kick*. Immediately after reading, the TMS pulse was passed through either the leg region of the brain's motor cortex or the arm region. Subjects were then asked to signal when they had understood the word. The experimenters found that when subjects received a pulse to the 'arm' region of the brain, they processed arm words more quickly. And when exposed to an electric current to the leg region, they understood leg words more quickly. What this reveals is that words – which relate to mental representations, concepts – were influenced by activation of the perceptual areas of the brain dedicated to perceiving either leg or arm actions. And consequently, this provides powerful evidence that perceptual experiences underpin conceptual representations, as manifested in semantic structure (language).

In the light of demonstrations such as this, the difficulty for a disembodied view of concepts is this: concepts are supposed to be abstract symbols, which are not constituted by sensorimotor and interoceptive brain states. In short, semantic analysis of concepts – which feeds into language processing – is independent of sensorimotor and other brain states, and, hence, should not result in automatic processing of these self-same brain regions. Although disembodied accounts would not deny that concepts for sensorimotor experience, for instance, will require activation of the relevant region of sensorimotor cortex, the point is that such activations are ancillary to the semantic analysis that the disembodied symbols furnish, for purposes of facilitating language and thought. That is, sensorimotor activation plays no role in semantic analysis during conceptual processing. Hence, this finding – that brain states such as sensorimotor activations *do* appear to play a role in conceptual processing – would appear to falsify disembodied accounts of concepts.

2.4 Experiential realism

An important consequence of the foregoing – of viewing experience and conceptual structure as embodied – is that this affects our view of what reality is. A widely held view in formal approaches to language and mind is that the role of language is to describe states of affairs in the world. This rests on the assumption that there is an objective world 'out there', which language simply reflects.

However, cognitive linguists argue that this **objectivist approach** misses the point that there cannot be a disembodied, objective reality that language reflects directly, because reality is not objectively given. Instead, reality is in large part constructed by the nature of our unique human embodiment. This is not to say that cognitive linguists deny the existence of an objective physical world independent of human beings. After all, gravity exists, and there is a colour spectrum (resulting from light striking surfaces of different kinds and densities), and some entities give off heat, including body heat, which can only be visually detected in the infrared range.

That said, the parts of this external reality to which we have access are largely constrained by the ecological niche we have adapted to and the nature of our embodiment. Put another way, language does not directly reflect the world. Rather, it reflects our unique human construal of the world: our 'worldview' as it appears to us through the lens of our embodiment. In Chapter 1, I referred to human reality as **projected reality**, a term coined by the linguist Ray Jackendoff (1983).

This view of reality has been termed **experientialism** or **experiential realism** by George Lakoff and Mark Johnson. Experiential realism assumes that there is a reality 'out there'. Indeed, the very purpose of our perceptual and cognitive mechanisms is to provide a representation of this reality, and thus to facilitate our survival as a species. After all, if we were unable to navigate our way around the environment we inhabit and avoid dangerous locations such as clifftops, and dangerous animals like wild tigers, our cognitive mechanisms would be of little use to us. Hence, by virtue of being adapted to a particular ecological niche and having a particular form and configuration, our bodies and brains necessarily provide one particular perspective among many possible and equally viable perspectives. In short, experiential realism acknowledges that there is an external reality that is reflected by concepts and by language.

However, this reality is mediated by our uniquely human experience which constrains the nature of this reality 'for us'.

3 Embodiment effects in semantic structure

A key assumption of cognitive linguistics, giving the second guiding principle introduced above, is that meanings encoded by language – namely semantic structure – draw upon and hence reflect concepts, namely conceptual structure. As cognitive linguists contend, following the thesis of embodied cognition that conceptual structure reflects embodied experience, then it stands to reason, if the cognitive linguistic perspective is to be supported, that we should find evidence of embodiment in semantic structure: that we should find evidence of **embodiment effects** in language. An embodiment effect constitutes an observable intrusion of embodied (interoceptive and/or exteroceptive) experience in conceptual and especially linguistic representation and processing. This section reviews the evidence for this.

3.1 Types of embodiment effects

Findings in both psychology and cognitive neuroscience now clearly reveal a series of embodiment effects when we use language (see Table 8.1). First, multimodal brain states are activated when we deploy language. Moreover, these activations are fast – multimodal information is activated instantaneously, automatically and cannot be avoided – and **somatotopic** – they relate to specific functional brain regions; for instance, action words referring to hand actions activate the *hand* area of motor cortex and not the *leg* area (Pulvermüller et al. 2005). Second, psychologists have discovered that human subjects behave as if **immersed** in an embodied state when using or understanding language relating to perceptual experience. Third, embodiment effects show up directly in the nature and structure of language.

I begin by considering the first type of embodiment effect, focusing on the somatotopic aspect of brain activation: brain regions that process our perception of embodied states are also activated when we use the corresponding words, or types of words. The **cortex** is the outer layer of the brain that

Table 8.1 Embodiment effects in language

Automatic activation of brain regions	Brain regions that are specialised for specific types of processing are activated when the corresponding language is processed, and conceptual processes are engaged.
Immersed bodily behaviour	Specialised bodily behaviours are activated by the processing of the corresponding linguistic and conceptual processes.
Structure and organisation of language	Language appears to be structured in terms of embodied brain states, especially representations grounded in sensorimotor experience

processes and stores sensory information: for instance, visual, auditory and tactile experience. Other parts of the cortex process motor information: for instance, information relating to hand or body movements. And finally, **subcortical** structures – brain components below the cortex – such as the amygdala, process and store emotional experience. Recent findings have shown that all of these brain regions are automatically and immediately activated when corresponding body-based language is being processed.

For example, brain regions that are active during the processing of actions, such as using tools like hammers, screwdrivers and saws, are automatically and immediately activated when we hear or read sentences relating to using tools of these kinds (Buccino et al. 2005; Isenberg et al. 1999; Martin and Chao 2001; Pulvermüller 1999; for a review, see Taylor and Zwaan 2009). Put another way, when a human subject understands an expression such as: *He hammered the nail*, there is automatic and immediate activation of that part of the brain that is engaged to produce or to perceive the hammering action.

In addition, regions of the brain that process visual information are activated when we comprehend words and sentences relating to visual information, such as object shape and orientation (Stanfield and Zwaan 2001; Zwaan and Yaxley 2003). For instance, visual areas that process animal recognition shapes are activated when we understand (when hearing or reading) corresponding animal words (Büchel et al. 1998; Martin and Chao 2001). And finally, language involving emotional affect also results in automatic activation of the relevant brain regions. For instance, threat words such as *destroy* and *mutilate* automatically activate parts of the amygdala (Isenberg et al. 1999). This is an evolutionarily older part of the subcortical brain that neurobiologists have established as being involved in emotional processing (LeDoux 1995).

The second type of embodiment effect is behaviour. Human subjects, when using or understanding language, behave in myriad subtle ways, as if they are engaged in the sensorimotor activity that corresponds to the sensorimotor language; it is as if language primes language users for particular actions in the world. For instance, when reading about throwing a dart in a game of darts, human subjects automatically activate muscle systems that ready the hand grip common to dart throwing; when we use or hear language, our eye and hand movements are consistent with the sensorimotor activity being described (Glenberg and Kaschak 2002; Klatzky et al. 1989; Spivey et al. 2000). It is as if (semantic structure encoded in) language facilitates the vicarious experience of the events being described in language.

The psycholinguist, Rolf Zwaan, has described this in terms of language users being **immersed experiencers**. He argues that 'language is a set of cues to the comprehender to construct an experiential (perception plus action) simulation of the described situation' (Zwaan 2004: 36). And this could only be so if semantic structure provides direct access to representations of body-based states: concepts are embodied.

Behavioural evidence for immersion in embodied states, when using language, comes from the psychology lab. In one experiment, subjects were asked to judge whether action sentences such as: *He closed the drawer*, were meaningful or not (Glenberg and Kaschak 2002). Subjects did this by pressing one of two buttons, which were located sequentially in front of the subject. The button signalling that a sentence was meaningful was closer to the subjects and thus involved moving their hand toward their body, the same direction of motor control required to open a drawer. It was found that responses to whether the sentences were correct or not were faster when the direction of motion corresponded to that described in the sentence.

This finding supports the view that bodily motor states are automatically activated when reading a corresponding sentence. An action required by the experiment that is at odds with the motor simulation activated by the sentence provides interference. And this, in turn, slows down the subject's response to the semantic judgement, the ostensible purpose of the experiment.

The third type of grounding effect concerns the nature of semantic structure itself, and the way in which the language for abstract states appears to draw on language from sensorimotor experience in an asymmetric way. Linguistic evidence of this sort is compatible with the embodied cognition view of concepts but not the disembodied perspective. Perhaps the clearest evidence has been highlighted in the work of Lakoff and Johnson (1980, 1999). As noted earlier in the chapter, and as already seen in Chapter 4, conceptual metaphors appear to work by recruiting structure from sensorimotor experience in order to structure more abstract concepts and conceptual domains.

For instance, as we saw in Chapter 4, various aspects of our representations for TIME appear to be systematically structured in terms of representations recruited from the domain of (motion through) SPACE. Consider some linguistic examples, which provide evidence for this:

(4) a. Christmas is fast approaching.
    b. We are moving up on Christmas fast.

These examples suggest the following. The relative imminence of a future event, *Christmas*, is structured in terms of the motion of an event – an event conceptualised as if it were an object capable of motion – toward the ego, or the ego's motion toward Christmas, conceived as a location in space. Lakoff and Johnson posit that we structure our representations of TIME in terms of relative motion of objects or our relative motion with respect to stationary objects (Moore 2011, 2014, 2016). Moreover, the evidence for conceptual metaphors – from language, from psycholinguistic tasks (Boroditsky 2000) and from psychophysical tasks (Casasanto and Boroditsky 2008) – appears to show that the structuring is asymmetric; representations for TIME are systematically structured in terms of representations for SPACE. But the reverse doesn't hold: concepts for SPACE appear not to be productively structured in terms of representations for TIME.

In keeping with the proposals made by Lakoff and Johnson, a range of abstract concepts also appear to exhibit embodiment effects. Lakoff and

Johnson have argued that we conceptualise communication as physical transfer. Evidence for this comes from linguistic examples, as when we say things like the following:

(5) a. I couldn't get my ideas across.
 b. Put it into words.

The same pattern has been found applied to abstract concepts (Glenberg and Kaschak 2002). Consider the following sentence:

(6) I gave him some words of wisdom.

Metaphorically, this involves transferring the *words of wisdom*, some advice, from the speaker to the listener, a pattern of motion away from the body. The processing time to judge whether the sentence was semantically acceptable was quicker when the button that was required to be pressed involved an action away from rather than toward the subjects' bodies. In other words, physical action that accorded with the metaphorical action facilitated faster understanding of the linguistic expression. This reveals an embodiment effect for abstract, as well as literal, language, a finding in keeping with the broad prediction of conceptual metaphor theory.

There is also further evidence for abstract concepts being structured, at least in part, by sensorimotor experience, based on analysis of semantic structure (Casasanto and Dijkstra 2010). In one experiment, investigating abstract concepts such as PRIDE and SHAME, subjects were asked to recount experiences that had either made them proud or ashamed. They did so while simultaneously moving marbles from a lower tray to a higher tray or vice versa.

Lakoff and Johnson argue that positive experiences are metaphorically conceptualised as being up, while negative experiences are experienced as being down. In the experiment it was found that the speed and efficiency of the autobiographical retelling was influenced by whether the direction of the marble movements was **congruent** with the autobiographical memory: upward for pride, downward for shame. This provides compelling evidence that even abstract language appears to involve automatic activation of sensorimotor simulations in the brain: we understand what the words *pride* and *shame* mean, in part, by virtue of the upward and downward trajectories that metaphorically structure them being activated in the brain.

SUMMARY

This chapter has provided an orientation to the cognitive linguistics approach to conceptual structure. I began by introducing the two guiding principles that underpin a cognitive linguistic approach to conceptual structure. The first holds that conceptual structure is embodied, the **embodied cognition** thesis, also known as the **embodied mind**. The second holds that **semantic structure** reflects **conceptual structure**. I then compared and contrasted the embodied cognition perspective with the alternative, **disembodied cognition** view. The disembodied or **computational cognition** perspective holds that **concepts** are abstract, disembodied symbols. This perspective assumes a clear distinction between representations arising from perceptual and interoceptive experience on the one hand, and cognition on the other. Concepts are different from body-based representations, on this account, in at least two ways. First, concepts do not comprise **substrate** (material and content) from perceptual experience. While concepts, ultimately, must hook up to the experiences in the world and the body that they are representations of, their **semantic substrate** – the stuff of concepts – is not the same, and moreover, is quite distinct from perceptual representations. This means that for disembodyists, concepts are **amodal** – the symbols that make them up are not derived from the sensory – or body-based – modalities that give rise to perceptual experience. Second, concepts, being wholly different from body-based states are stored in a different region of the brain from the brain areas responsible for processing and giving rise to body-based representations. In contrast, the embodied cognition perspective adopted in cognitive linguistics blurs the distinction between perception and cognition. For cognitive linguists, concepts are directly grounded in the perceptual brain states that give rise to them. This embodied cognition perspective takes a **modal** view of concepts: the semantic substrate of concepts is directly grounded in, and arises from, the sorts of modalities that the concept is a representation of. The embodied cognition view assumes that concepts arise directly from the perceptual experiences themselves. For instance, when we perceive and interact with dogs, this leads to extraction of perceptual and functional attributes of dogs, which are stored in memory in **analogue** fashion: our concept for dog, I showed, closely resembles our perception and experience of a dog. We saw that when we imagine a dog, this is made possible by reactivating, or to use the technical term, **simulating**, the perceptual and interoceptive experience of interacting with a dog. Finally, the chapter also reviewed the evidence supporting the cognitive linguistics, embodied cognition, perspective. This comes from **embodiment effects**: an observable intrusion of embodied (interoceptive and/or exteroceptive) experience in conceptual and especially linguistic representation and processing. I reviewed three such embodiment effects. First, multimodal brain states are activated when we deploy language. Moreover, these activations are fast – multimodal information is activated instantaneously, automatically, and cannot be avoided – and **somatotopic** – they relate to specific functional brain regions. Second, psychologists have discovered that human subjects behave as if **immersed** in an embodied state when using or understanding language relating to perceptual experience. Third, embodiment effects show up directly in the nature and structure of language.

FURTHER READING

Overview anthology

- **Margolis and Laurence** (2015). A collection of essays by leadings philosophers and cognitive scientists investigating the state of the art in terms of the nature of concepts. The volume provides an excellent primer into both embodied and disembodied approaches to conceptual structure.

Disembodied cognition

- **Fodor (1975, 1983, 2008)**. Three coruscating classics by the late Jerry Fodor. Fodor presents a sustained defence of the computational or disembodied view of mind. The 1975 book develops Fodor's theory of mentalese – the so-called language of thought, which is further developed and updated in the 2008 book. The 1983 book develops the idea of encapsulated modules of mind, as a means of providing a tractable account of the mind as computer.

Embodied cognition

Today there are a large number of works that provide useful overviews of embodied cognition. Below is a selection of some of the most relevant for cognitive linguistics.

- **Clark (1997)**. Drawing on work in robotics, neuroscience, psychology and artificial intelligence, Clark, a leading cognitive scientist, presents a seminal and highly accessible overview of the science of the embodied mind.
- **Damásio (1994)**. A hugely accessible and influential book-length treatment by one of the world's leading neurologists. Damásio argues that the philosophical separation between mind/body, and rationality/emotion is artificial and unfounded. Rather, based on clinical studies, Damásio argues that emotion is central to rational decision-making and reason, proposing his somatic-marker hypothesis.
- **Evans (2015a)**. This highly accessible book introduces many of the core concerns and areas of study in cognitive linguistics. In particular, it centres much of the discussion around the theme of embodied cognition.
- **Gallagher (2006)**. An interdisciplinary treatise by one of the world's leading philosophers of the embodied mind.
- **Gibbs (2006)**. A book-length review of evidence and arguments from neurology, psychology, linguistics and philosophy for the embodied nature of mind.
- **Johnson (2018)**. A selection of papers, from the past two decades or so, from one of the foremost pioneers in cognitive linguistics and philosophy of the embodied nature of the mind.

- **Lakoff and Johnson (1999)**. A comprehensive survey of the cognitive linguistics perspective on embodied cognition, by the two pioneering figures on this subject.
- **Ryle (1949)**. A classic treatise, by one of the twentieth century's leading philosophers of mind. In this book, *The Concept of Mind*, Gilbert Ryle leads a sustained attack on Cartesian dualism, dubbing it the ghost in the machine. Ryle's arguments helped to pave the way for contemporary approaches to the embodied mind.
- **Shapiro (2010)**. An accessible introduction to the questions and issues motivating and arising from embodied cognition, as well as an even-handed overview of the major approaches.
- **Varela et al. (1991)**. An early, highly influential book on embodiment, cognition and human experience by leading cognitive scientists.

DISCUSSION QUESTIONS

1. In your own words, provide a characterisation of the two guiding principles of a cognitive linguistics approach to conceptual structure.
2. How would you say these guiding assumptions reflect two core commitments of cognitive linguistics, which we explored in Chapter 2?
3. What are the key differences between an embodied versus a disembodied view of conceptual structure? What are the arguments deployed to support each of these perspectives?

9

Image schemas and the origin of concepts

In this chapter I consider the theory of **image schemas**, which was first developed within cognitive linguistics by George Lakoff, and especially Mark Johnson. This theory has since come to be highly influential in neighbouring areas of study such as **developmental psychology** – the study of how and why humans change over the lifespan. The notion of an image schema is closely associated with the development of the embodied cognition thesis, proposed by early researchers in cognitive linguistics. One of the central questions raised by Lakoff and Johnson in their (1980) book *Metaphors We Live By* can be stated as follows: Where does the complexity associated with our conceptual representation come from? The answer they offered was that this complexity is, in large measure, due to a correspondence between the kinds of concepts human beings are capable of forming and the nature of the physical bodies we have. From this perspective, our embodiment is directly responsible for structuring concepts. This chapter, therefore, illustrates the first guiding principle of the cognitive linguistics approach to conceptual structure: conceptual structure reflects embodied experience, namely the thesis that the human mind is embodied.

1 The origin of concepts

A key concern of developmental psychology is to understand the nature of cognitive development in infants: how and when young children develop their early concepts. Concepts form the bedrock of human mental life. And a conceptual system of some kind must be in place in order for language to later emerge.

Early research, led by the pioneering Swiss developmental psychologist, Jean Piaget (1896–1980), held that concepts take a significant amount of time to emerge. For Piaget, babies and small children are essentially mindless creatures: they lack concepts, as we usually understand them. A baby, Piaget argued, is a creature that responds to experiences without having a clear understanding of what the entities are to which it is responding (Piaget 1966). Young infants require, so Piaget argued, an extended period – up to two years – of sensorimotor experience before they start to form a more complex understanding of entities in the world, and the relationships between them.

But in fact, more recent research shows that Piaget underestimated the cognitive capabilities of young infants. Children start building a repertoire of simple concepts almost from birth: very young infants are interpreters of the world soon after birth. The developmental psychologist, Jean Mandler (1988, 1992, 1996, 2004), has shown that even newborn babies – infants who cannot yet act upon the world – are nevertheless perceiving and construing it. And, their conceptualisation of objects around them is 'already on the march, perhaps even earlier than 3 months of age' (Mandler 2004: 13). In developing her ground-breaking research on how an infant's conceptual system emerges, Mandler applied the notion of the image schema from cognitive linguistics, to show how first concepts emerge.

1.1 Perceptual meaning analysis

So how do percepts get re-described into concepts: the basis for our mental lives? According to Mandler (2004), this occurs via a process she terms **perceptual meaning analysis**. Starting at an early age, infants attend to objects and spatial displays in their environment. Mandler suggests that by attending closely to such spatial experiences, children are able to abstract across similar kinds of experiences, finding meaningful patterns in the process. Moreover, Mandler contends that it is these spatial displays which give rise to a child's earliest, most rudimentary concepts, including concepts for ANIMACY, BIOLOGICAL MOTION and CONTAINMENT (Mandler 2010).

For instance, the rudimentary CONTAINER concept is more than simply a spatio-geometric representation. It is a 'theory' about a particular kind of configuration in which one entity is supported by another entity that contains it. In short, the concept for CONTAINER is meaningful because containers are meaningful in our everyday experience.

The process of concept formation – perceptual meaning analysis – results from children associating functional consequences with spatial displays. For example, a consequence of milk being located in a bottle is that the milk moves with the bottle: containment has functional consequences in terms of containing, supporting and constraining the location of the entity contained. Thus, the distinction between percepts and early concepts is that early concepts encode **functional information**: meaning (recall the related discussion on this topic, in Chapter 3). As Mandler observes, '[O]ne of the foundations of the conceptualizing capacity is [the way] . . . in which spatial structure is mapped into conceptual structure' (Mandler 1992: 591). She further suggests that 'Basic, recurrent experiences with the world form the bedrock of the child's semantic architecture, which is already established well before the child begins producing language' (Mandler 1992: 597). In short, it is spatial experience, meaningful to us by virtue of our embodiment, which forms the basis of many of our most fundamental concepts.

In sum, Mandler proposes that infants make use of the perceptual cues available to them; very young infants appear to understand the significance and, hence, meaning of the sensorimotor displays they can initially only observe, and later interact with. And in so doing, they perceive humanly relevant consequences – meaning – in the spatial displays they are exposed to.

1.2 The nature of a child's first concepts

Mandler refers to a child's early, rudimentary concepts as image schemas. Such concepts are **schematic**, in the sense that a baby is able to abstract away from specific figural details, and begin to understand the function that similar objects enable. For instance, both a milk bottle and a box are very different: not just in terms of the materials they are made from, but also their dimensions, shape and the sorts of things they habitually contain. But what is common to both is that they locate entities, fixing them in space: the entities contained – the baby's milk versus toys – are supported, transported and so on, by virtue of being contained by a bottle or a box.

In addition to being a schematic notion, an image schema is **imagistic** – not in the sense of being a visual image. But rather, the notion of 'image' refers to the sensorimotor properties common to all entities that might be construed as containers. In essence, Mandler's claim is that a child's earliest concepts are both highly schematic *and* imagistic: they arise from a baby re-describing common aspects of spatial displays into a rudimentary theory of the object's function.

A child's first concepts – image schemas – allow the child to begin to develop a rudimentary conceptual system. Moreover, these early concepts slowly become accessible to conscious thought. They structure and give meaning to the spatial displays the child perceives in everyday encounters and interactions. With the CONTAINER image schema, a child is able to begin, slowly, to identify instances of containers.

From as early as two and a half months after birth, human infants already understand that for something to fit into a container there must be an opening, and that the entity contained moves with the container (Hespos and Baillargeon 2001). Later in the child's cognitive development, image schemas provide the underlying meanings upon which more complex concepts are built. And in time, they undergird the concepts onto which language is mapped, beginning from around a child's first birthday (Mandler 1996, 2004, 2010), as we shall see later in the chapter.

1.3 The embodied basis of conceptual structure

Perceptual meaning analysis works by parsing the structured perceptual cues we experience (Mandler 2004, 2010). Human infants abstract away from points of difference across different entities – for instance, the different shapes, sizes and materials associated with containers in a child's everyday world. What then remains are points of similarity. And this information leads to a schematic representation concerning the nature of a type of entity. Thus, armed with a rudimentary image schema, the young infant is also able to make predictions about the nature of the experiences it perceives, and to begin to form expectations as a consequence.

To illustrate, let's examine how an image schema arises from spatial experience, based on proposals made by Jean Mandler (e.g. 2004). Take the image-schematic concept of BIOLOGICAL MOTION, which forms part of the later-developing and more complex concept, ANIMAL. Infants see many examples of entities undergoing animate motion every day, from siblings to caregivers to the household pet. Due to poor visual acuity in the first month or so of life, a child doesn't obtain very good information about the visual, especially the figural, properties of the entities moving around them. Nevertheless, infants can discriminate between entities moving in space from the background of their world of experience. As we have seen, in Chapter 3, this arises from their ability to perform figure–ground segregation (Kellman and Spelke 1983).

By three months of age – the youngest age studied – children are able to discriminate biological motion, both people and other mammals – from non-biological motion (Arterberry and Bornstein 2001; Berthental 1993). By two months – again the earliest age studied – children recognise entities that interact with them in a reciprocal way: young infants smile at caregivers, but quickly learn not to smile at inanimate entities (Frye et al. 1983; Legerstee 1992). And between four and six months – again the earliest studied – infants are able to perceive the difference between an entity coming towards them of its own volition versus an object that moves towards them when pushed by something else (Leslie 1982, 1984). This reveals an early awareness of a distinction between the animate versus inanimate – an understanding that amounts to more than simply the ability to recognise visual aspects of a scene. By their early months of life, children seem to have an understanding of animals versus non-animals.

The concept for animal most likely consists of combining more fundamental image schemas: PATH, MOTION, SELF-INITIATED MOTION and probably others. And in so doing, a young infant is able to begin to understand that animals are of a different type of entity from, say, a clockwork toy that cannot move without being wound up by a parent or sibling. Early concepts for animal seem to be constructed from visual as well as other sorts of cues, well before the baby can directly interact with and manipulate the entity in question.

2 Image schema theory

In his (1987) book *The Body in the Mind*, Mark Johnson built on his earlier research on conceptual metaphor theory, with George Lakoff, in order to develop a theory of how embodied experience gives rise to conceptual structure. He proposed that embodied experience gives rise to image schemas within the conceptual system – the idea that, as we have just seen, Mandler subsequently drew upon in her work in developmental psychology. In this section, I introduce key facets of Johnson's theory of image schemas.

2.1 What is an image schema?

As we saw in the previous section, image schemas derive from sensorimotor experience, early in the lifespan, as we interact with and move about in the world. For example, given that humans walk upright, and because we have a head at the top of our bodies and feet at the bottom, and given the presence of gravity which attracts unsupported objects, the vertical axis of the human body is functionally asymmetrical. This means that the vertical axis is characterised by an up-down or top-bottom asymmetry: the top and bottom parts of our bodies are different.

Cognitive linguists argue that the asymmetry of the body's vertical axis is meaningful for us because of the way we interact with our environment. For example, gravity ensures that unsupported objects fall to the ground; given the asymmetry of the human vertical axis, we have to stoop to pick up fallen objects and look in one direction (downwards) for fallen objects and in another (upwards) for rising objects. Hence, our physiology ensures that our vertical axis, which interacts with gravity, gives rise to meaning as a result of how we interact with our environment.

According to Johnson, this aspect of our experience gives rise to an image schema: the up-down image schema. Moreover, as shown by Jean Mandler's research (e.g. 2004), image schemas are emergent; because this experience is a function of our bodies and of our interaction in the world, this type of experience arises in conjunction with our physical and psychological development during early infancy. In short, image schemas are not innate knowledge structures.

As we saw earlier, the term 'image' in 'image schema' is equivalent to the use of this term in psychology, where imagistic experience relates to and derives from our experience of the external world. Hence, although the term 'image' is restricted to visual perception in everyday language, it has a broader application in psychology and in cognitive linguistics, where it encompasses all types of sensorimotor experience. Some of the sensorimotor experiences that give rise to image schemas are summarised in Table 9.1.

2.2 An example

By way of illustration, the image schema CONTAINER results from our recurring and ubiquitous experiences with containers as revealed by this extract from Johnson's (1987) book, which describes the start of an ordinary day:

Table 9.1 Some of the sensorimotor experiences that give rise to image schemas

System	Sensory experience	Physical location
Visual system	Vision	Eye, optic nerve
Haptic system	Touch	Beneath the skin
Auditory system	Hearing	Ear/auditory canal
Vestibular system	Movement/balance	Ear/auditory canal

> You wake *out of* a deep sleep and peer *out from* beneath the covers *into* your room. You gradually emerge *out of* your stupor, pull yourself *out from* under the covers, climb *into* your robe, stretch *out* your limbs, and walk *in* a daze *out* of the bedroom and *into* the bathroom. You look *in* the mirror and see your face staring *out* at you. You reach *into* the medicine cabinet, take *out* the toothpaste, squeeze *out* some toothpaste, put the toothbrush *into* your mouth, brush your teeth *in* a hurry, and rinse *out* your mouth. (Johnson 1987: 331; my italics differ from the original)

As this example reveals, the recurrent use of the expressions *in* and *out* shows that a great number of everyday objects and experiences are categorised as specific instances of the image-schematic concept CONTAINER: not only obvious containers such as bathroom cabinets and toothpaste tubes, but also less obvious 'containers' such as bedcovers, clothing and rooms, and also states such as sleep, stupor and daze. The relationship between image schemas and more abstract concepts is an issue to which I shall return later in the chapter.

3 Properties of image schemas

In this section, I further develop the notion of image schema by summarising the main properties associated with these rudimentary concepts.

3.1 Image schemas are pre-conceptual in origin

Image schemas such as the CONTAINER schema are directly grounded in embodied experience: they relate to and derive from sensorimotor experience (Johnson 1987; Lakoff and Johnson 1999). This means that they are pre-conceptual in origin; as we have already seen, they arise from re-descriptions of sensorimotor experience in the early stages of human development, that precede the formation of concepts (Mandler 2004).

However, once the recurrent patterns of sensorimotor information have been extracted and stored as an image schema, sensorimotor experience gives rise to a conceptual representation. This means that image schemas are concepts, but of a special kind: they provide the foundations of the conceptual system, because they are among the earliest concepts to emerge in the human mind. Moreover, precisely because they relate to sensorimotor experiences, they are particularly schematic.

Sometimes it is more difficult to grasp the idea of an image-schematic concept than it is to grasp the idea of a very specific concept such as CAT or BOOK. This is because these specific concepts relate to ideas that we are aware of 'knowing about'. In contrast, image schemas – such as ANIMATE ENTITY (e.g. cat), or PHYSICAL OBJECT (e.g. book) are so fundamental to our way of thinking that we are not consciously aware of them: we take our awareness of what it means to be a physical being, in a physical world, very much for granted because we acquire this knowledge so early in life, certainly before the emergence of language.

3.2 An image schema can give rise to more specific concepts

As we have already seen, the concepts lexicalised by the prepositions *in*, *into*, *out*, *out of* and *out from* in the passage from Mark Johnson, cited earlier, are all claimed to relate to the CONTAINER image schema: an abstract image-schematic concept that underlies all these much more specific **lexical concepts**. As we saw in the previous chapter, a lexical concept is a concept specifically encoded and externalised by a specific lexical form, and thus is a unit of semantic structure.

In cognitive linguistics, words from natural language are used as **mnemonics** – short-hand labels – to represent pre-linguistic elements of meaning, for example image schemas. Hence, the use, in this book, of words in small capitals to represent concepts is an example of this strategy. In addition, cognitive linguists often attempt to support their formal representations of meaning elements by using diagrams. Although concepts are labelled with ordinary words, the advantage of a diagram is that it can represent a concept independently of language.

For example, the CONTAINER image schema is diagrammed in Figure 9.1. This image schema consists of the structural elements **interior**, **boundary** and **exterior**: as we saw in Chapter 3, these are the minimum requirements for a CONTAINER (Lakoff 1987), also known as a **bounded landmark** (Tyler and Evans 2003). The **landmark** (LM), represented by the circle, consists of two structural elements, the interior – the area within the boundary – and the boundary itself. The exterior is the area outside the landmark, contained within the square. The container is represented as the landmark because the boundary and the exterior together possess sufficient **Gestalt properties** (e.g. closure and continuity) to make it the figure, while the exterior is the ground (recall my discussion of Gestalt principles in Chapter 3).

Of course, the reason why this diagram does not resemble any specific type of container (such as a coffee mug or a house) is precisely because of its schematic meaning. The idea behind this type of diagram is that it 'boils down' the image-schematic meaning to its bare essence, representing only those properties that are shared by all instances of the **conceptual category** CONTAINER.

Although Figure 9.1 represents the basic container image schema, there are a number of other image schemas that are related to it, which give rise to distinct concepts related to containment. For instance, let's consider just two variants

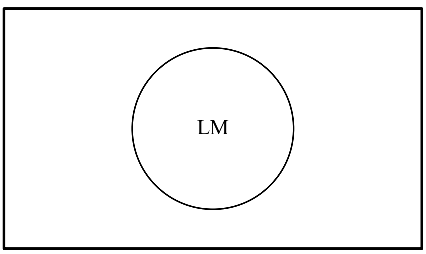


Figure 9.1 Image schema for CONTAINER

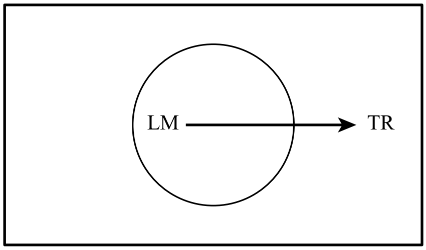


Figure 9.2 Image schema for OUT1

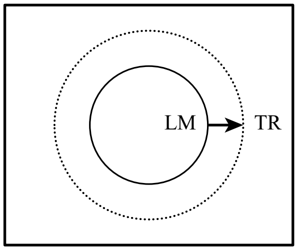


Figure 9.3 Image schema for OUT2

of the CONTAINER image schema lexicalised by *out*. These image schemas are diagrammed in Figures 9.2 and 9.3, and are illustrated with linguistic examples. The diagram in Figure 9.2 corresponds to example (1). The **trajector** (TR) *John*, which is the entity that undergoes motion, moves from a position inside the LM to occupy a location outside the LM. The terms 'TR' and 'LM' are closely related to the notions of figure and reference object or ground that I discussed in Chapter 3. The terms 'TR' and 'LM' derive from the work of Langacker (e.g. 1987), and have been widely employed in cognitive linguistics by scholars including Lakoff and Johnson, among others.

(1) John went out of the room. OUT1

The image schema in Figure 9.3 corresponds to example (2). In this example, the meaning of *out* is **reflexive**, which is a technical way of saying that something refers to itself; we could paraphrase example (2), albeit redundantly, as: *The honey spread itself out*. In other words, liquid substances such as *honey*, because of their physical properties, can simultaneously be the LM and the TR. The LM is the original area occupied by the honey, while the honey is also the TR because it spreads beyond the boundary of its original location.

(2) The honey spread out. OUT2

The image schemas shown in Figures 9.2 and 9.3 represent two concepts that are more specific and detailed than the image schema diagrammed in Figure 9.1, because they involve motion as well as containment. This shows that image schemas can possess varying degrees of schematicity, where more specific image schemas arise from more fundamental or schematic ones.

3.3 Image schemas derive from interaction with and observation of the world

As we have seen, because image schemas derive from embodied experience, they derive from the way in which we interact with the world. To illustrate this idea, consider the image schema for FORCE. This image schema arises from our experience of acting upon other entities, or being acted upon by other entities, resulting in the transfer of motion energy. Johnson illustrates the interactional derivation of this image schema – how it arises from experience – as follows:

> [F]orce is always experienced through interaction. We become aware of force as it affects us or some object in our perceptual field. When you enter an unfamiliar dark room and bump into the edge of the table, you are experiencing the interactional character of force. When you eat too much the ingested food presses outwards on your tautly stretched stomach. There is no schema for force that does not involve interaction or potential interaction. (Johnson 1987: 43)

3.4 Image schemas are inherently meaningful

Because image schemas derive from interaction with the world, they are inherently meaningful, in the sense that embodied experiences have predictable consequences. To illustrate this point, take the quotidian example of a cup of coffee. If you move the cup slowly up and down, or from side to side, you expect the coffee to move with it. This is because a consequence of containment, given that a container is defined by boundaries, is that the container constrains the location of any entity within these boundaries. And hence, in the coffee cup example, the cup exerts force-dynamic control over the coffee. Of course, this seems rather obvious, but this kind of knowledge, which we take for granted, is acquired as a consequence of our interaction with our physical environment. For example, walking across a room holding a cup of coffee without spilling it actually involves highly sophisticated motor control that we also acquire from experience: we would be unlikely to ask a two year old to perform the same task. This experience gives rise to knowledge structures that enable us to make predictions: if we tip the coffee cup upside down, the coffee will pour out.

3.5 Image schemas are analogue representations

Image schemas, like other sorts of concepts, are analogue representations deriving from experience. In this context, and as discussed in the previous chapter, the term 'analogue' means that image schemas take a form in the conceptual system that mirrors the sensorimotor experience being represented. Although we can try to describe image schemas using words and pictures, they are not represented in the mind in these kinds of symbolic forms. Instead, image-schematic concepts are represented in the mind in terms of holistic sensorimotor experiences, rather like the memory of a physical experience.

To illustrate, consider, by way of analogy, learning to drive a car. This cannot properly be achieved by reading a driving manual, or even by listening to a driving instructor explain the 'rules' of driving. At best, these provide very rough clues. Instead, we have to 'learn' how it 'feels' to drive a car by experiencing it at first hand. This is a complex process, during which we master an array of interrelated sensorimotor routines. Because image schemas derive from embodied experience, they are represented as summaries of perceptual, **multimodal states** which are recorded in memory. However, what makes them conceptual rather than purely perceptual in nature is that they give rise to concepts that are consciously accessible (Mandler 2004). And accordingly, image schemas can then provide more complex concepts with rudimentary structure.

3.6 Image schemas can be internally complex

Image schemas are often, perhaps typically, comprised of more complex aspects that can be analysed separately. For example, the CONTAINER image schema is a concept that consists of interior, boundary and exterior elements. Another example of a complex image schema is the SOURCE–PATH–GOAL or simply PATH image schema, represented in Figure 9.4. Because a path represents a means of moving from one location to another, it consists of a starting point or SOURCE, a destination or GOAL and a series of contiguous locations in between which relate the source and goal. Like all complex image schemas, the PATH image schema constitutes an experiential Gestalt: it has internal structure but emerges as a coherent whole.

One consequence of internal complexity is that different components of the PATH image schema can be referred to. This is illustrated in example (3), where the relevant linguistic units are bracketed. In each of these examples, different components of the path are profiled by the use of different lexical items.

(3) a. SOURCE
John left [England].
b. GOAL
John travelled [to France].
c. SOURCE–GOAL
John travelled [from England] [to France].
d. PATH–GOAL
John travelled [through the Chunnel] [to France].
e. SOURCE–PATH–GOAL
John travelled [from England] [through the Chunnel] [to France].

Figure 9.4 The PATH image schema

3.7 Image schemas are not the same as mental images

Close your eyes and imagine the face of your mother or father, child or close friend. This is a mental image, relatively rich in detail. Image schemas are not the same as mental images. Mental images are detailed and result from an effortful and partly conscious cognitive process that involves recalling visual memory. Image schemas are schematic and therefore more abstract in nature, emerging from ongoing embodied experience. This means that you can't close your eyes and 'think up' an image schema in the same way that you can 'think up' the sight of someone's face or the feeling of a particular object in your hand.

3.8 Image schemas are multimodal

One of the reasons why we are not able to close our eyes and 'think up' an image schema is because image schemas derive from experiences across different modalities (different types of sensorimotor experience; recall the discussion in Chapter 3), and hence are not specific to a particular sense. Accordingly, image schemas are buried 'deeper' within the conceptual system, being abstract patterns arising from a vast range of perceptual experiences; as such, they are not available to conscious introspection. For instance, blind people have access to image schemas for CONTAINERS, PATHS and so on, precisely because the kinds of experiences that give rise to these image schemas rely on a range of sensorimotor experiences in addition to vision. These include hearing, touch and our experience of movement and balance, to name but a few.

3.9 Image schemas are subject to transformations

Because image schemas arise from embodied experience, which is ongoing, they can undergo transformations from one image schema into another. In order to get a sense of what this means, consider the following example from Lakoff:

> Imagine a herd of cows up close – close enough to pick out the individual cows. Now imagine yourself moving back until you can no longer pick out individual cows. What you perceive is a mass. There is a point at which you cease making out individuals and start perceiving a mass. (Lakoff 1987: 428)

According to Lakoff, perceptual experiences of this kind mediate a transformation between the COUNT image schema, which relates to a grouping of individual entities that can be individuated and counted, and the MASS image schema, which relates to an entity that is perceived as internally homogenous. The COUNT and MASS image schemas are reflected in the grammatical behaviour of nouns, relating to the distinction between count and mass nouns. Count but not mass nouns can be determined by the indefinite article:

(4) a. He gave me a pen/crayon/ruler/glass of water.
b. *He gave me a sand/money/gold.

However, count nouns can be transformed into mass nouns and vice versa, providing linguistic evidence for the count–mass image-schematic transformation. If a count noun, like *tomato* in example (5), is conceived as a mass, it takes on the grammatical properties of a mass noun, as shown in (6).

(5) Count noun
a. I have a tomato.
b. *I have tomato

(6) Mass noun
a. After my fall there was tomato all over my face.
b. *After my fall there was a tomato all over my face.

In essence, the grammatical transformation from count to mass, which Talmy (2000a) calls **debounding** (see Chapter 10), and the transformation from mass to count, which he calls **excerpting**, is held to be motivated by an image-schematic transformation that underpins our ability to grammatically encode entities in terms of count or mass. As we will see, this distinction is also important in Lakoff's theory of radial categories, which I examine in Chapter 17 (in Part III of the book).

3.10 Image schemas can occur in clusters

Image schemas can occur in **clusters**, or **networks** of related image schemas. To illustrate this, consider again the FORCE image schema; this, in fact, actually comprises a series of related image schemas. FORCE image schemas share a number of properties (proposed by Johnson 1987), which I summarise in Table 9.2.

Johnson identifies no fewer than seven FORCE image schemas that share the properties detailed in Table 9.2. These image schemas are illustrated in Figures 9.5 to 9.11 (adapted from Johnson 1987: 45–8). The small dark circle represents the source of the force, while the square represents an obstruction of some kind. An unbroken arrow represents the **force vector** (the course taken by the force), while a broken arrow represents a potential force vector.

Table 9.2 Shared characteristics of FORCE schemas

Force image schemas are always experienced through interaction
Force image schemas involve a force vector, i.e. a directionality
Force image schemas typically involve a single path of motion
Force image schemas have sources for the force and targets that are acted upon
Forces image schemas involve degrees of intensity
Forces image schemas involve a chain of causality, a consequence of having a source, target, force vector and path of motion, e.g. a child throwing a ball at a coconut

The first FORCE image schema is the COMPULSION image schema (Figure 9.5). This emerges from the experience of being moved by an external force, for example being pushed along helplessly in a large dense crowd, being blown along in a very strong wind and so on.

The second force-related image schema is BLOCKAGE (Figure 9.6). This image schema derives from encounters in which obstacles resist force, for example when a car crashes into an obstacle such as a tree.

The third force-related image schema is the COUNTERFORCE image schema (Figure 9.7). This derives from the experience of two entities meeting with equal force, as when we bump into someone in the street. F_1 and F_2 represent the two counterforces.

The fourth force-related image schema is DIVERSION (Figure 9.8). This occurs when one entity in motion meets another entity and this results in diversion. Examples include a swimmer swimming against a strong current so that he or she is gradually pushed along the shoreline, or the ricochet of a bullet.

The fifth force-related image schema is REMOVAL OF RESTRAINT (Figure 9.9). This captures a situation in which an obstruction to force is removed, allowing the energy to be released. This describes a situation such as leaning on a door that suddenly opens.

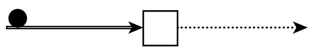


Figure 9.5 The COMPULSION image schema

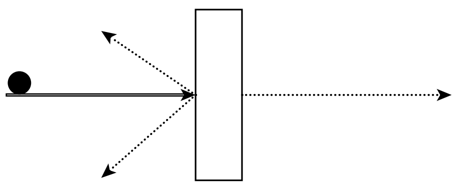


Figure 9.6 The BLOCKAGE image schema

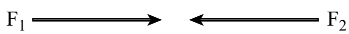


Figure 9.7 The COUNTERFORCE image schema

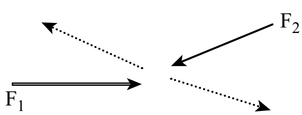


Figure 9.8 The DIVERSION image schema

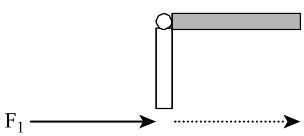


Figure 9.9 The REMOVAL OF RESTRAINT image schema

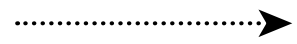


Figure 9.10 The ENABLEMENT image schema

Figure 9.11 The ATTRACTION image schema

The sixth force-related image schema is ENABLEMENT (Figure 9.10). This image schema derives from our sense of potential energy, or lack of it, in relation to the performance of a specific task. While most people who are fit and well feel able to pick up a bag of grocery shopping, for example, few people feel able to lift up a car. Observe that while this image schema does not involve an actual force vector, it does involve a potential force vector. According to Johnson, it is this property that marks ENABLEMENT as a distinct image schema.

Finally, the ATTRACTION schema (Figure 9.11) derives from experiences in which one entity is drawn towards another entity due to the force exerted upon it. Examples include magnets, vacuum cleaners and gravity.

3.11 Image schemas underlie linguistic meaning

As we have begun to see in our discussions of the preposition *out* (recall examples (1)–(2)) and the distinction between count and mass nouns (recall examples (4)–(6)), image schemas can serve as the conceptual representation that underpins the semantic structure encoded by lexical forms. To illustrate this point, I briefly examine the relationship between the FORCE image schemas we have just considered and the English **modal auxiliary verbs** (e.g. *must*, *may*, *can*). Johnson suggests that certain force image schemas may underlie the basic or **root meanings** of these verbs: these meanings relate to socio-physical experience, as illustrated in the following sentences:

(7) a. You must move your foot or the car will crush it.
[PHYSICAL NECESSITY]
b. You may now kiss the bride.
[NO PARENTAL, SOCIAL OR INSTITUTIONAL BARRIER NOW PREVENTS THE BRIDE FROM BEING KISSED BY THE GROOM]
c. John can throw a javelin over 20 metres.
[HE IS PHYSICALLY CAPABLE OF DOING THIS]

Johnson argues that the root meaning of *must* (physical necessity) derives from the COMPULSION image schema, while the root meaning of *may* (permission), relates to the REMOVAL OF RESTRAINT image schema and the root meaning of *can* (physical capacity) derives from the ENABLEMENT image schema. Thus, his claim is that the meanings associated with the modal verbs have an image-schematic basis which arises from embodied experience.

3.12 Image schemas give rise to abstract thought

One of the most striking claims made by cognitive linguists is that abstract thought has a bodily basis. In their influential research on conceptual metaphors, George Lakoff and Mark Johnson (1980) have argued that conceptual structure is, in part, organised in terms of a metaphor system, which is characterised by related sets of conventional associations or mappings between concrete and abstract domains. A **domain** in conceptual metaphor theory (see Chapter 12) is a body of knowledge that organises related concepts. The importance of image schemas is that they can provide the concrete basis for these metaphoric mappings. We have seen some examples of this in earlier chapters: for example, recall my discussion of the conceptualisation of TIME in terms of MOTION THROUGH SPACE, in Chapter 4.

To illustrate the way in which image schemas underpin abstract thought, consider the OBJECT image schema. This is based on our everyday interaction with concrete objects such as desks, chairs, tables, cars and so on. The image schema is a schematic representation emerging from embodied experience, which generalises over what is common to objects: for example, that they have physical attributes such as colour, weight and shape, that they occupy a particular bounded region of space and so forth. This image schema can be 'mapped onto' an abstract entity such as INFLATION, which lacks these physical properties. The consequence of this metaphoric mapping is that we now understand an abstract entity like INFLATION in terms of a physical object. This is illustrated by the examples in (8).

(8) a. If there's much more inflation we'll never survive.
 b. Inflation is giving the government a headache.
 c. Inflation makes me sick.
 d. Lowering interest rates may help to reduce the effects of inflation.

Notice that it is only by understanding INFLATION in terms of something with physical attributes that we can quantify it and talk about its effects. Thus, image schemas which relate to and derive ultimately from pre-conceptual embodied experience can serve to structure more abstract entities such as INFLATION.

3.13 A partial list of image schemas

To consolidate the discussion of image schemas presented in this section, I provide in Table 9.3 a selected listing of image schemas. These have been drawn from Cienki (1998a), Gibbs and Colston (1995), Hampe (2005), Johnson (1987), Lakoff (1987) and Lakoff and Turner (1989). While not meant to be exhaustive, this list provides a representative idea of the range of image schemas that have been proposed in the literature. Following suggestions by Clausner and Croft (1999), I have grouped the image schemas according to the nature of their experiential grounding, although my listing is arranged slightly differently.

Table 9.3 A partial list of image schemas

SPACE	UP–DOWN, FRONT–BACK, LEFT–RIGHT, NEAR–FAR, CENTRE–PERIPHERY, CONTACT, STRAIGHT, VERTICALITY
CONTAINMENT	CONTAINER, IN–OUT, SURFACE, FULL–EMPTY, CONTENT
LOCOMOTION	MOMENTUM, SOURCE–PATH–GOAL
BALANCE	AXIS, BALANCE, TWIN-PAN BALANCE, POINT BALANCE, EQUILIBRIUM
FORCE	COMPULSION, BLOCKAGE, COUNTERFORCE, DIVERSION, REMOVAL OF RESTRAINT, ENABLEMENT, ATTRACTION, RESISTANCE
UNITY/MULTIPLICITY	MERGING, COLLECTION, SPLITTING, ITERATION, PART–WHOLE, COUNT–MASS, LINK(AGE)
IDENTITY	MATCHING, SUPERIMPOSITION
EXISTENCE	REMOVAL, BOUNDED SPACE, CYCLE, OBJECT, PROCESS

4 Refining image schema theory

In more recent work, Mandler and Pagán Cánovas (2014) have refined image schema theory. They argue that what have traditionally been considered to be image schemas amounts to a more complex category. They propose that what have been identified as image schemas can, more accurately, be divided into three distinct categories, based on the point at which they emerge in cognitive development, their content, and their role in language and thought. They identify these basic building blocks of the conceptual system as **spatial primitives**, **image schemas** and **schematic integrations**. In short, Mandler and Pagán Cánovas make a distinction between different types of early concept, and separate out spatial primitives and schematic integrations, as they dub them, from image schemas proper. In this section, I briefly introduce this revised taxonomy.

4.1 Spatial primitives

Mandler and Pagán Cánovas, based on a review of the experimental findings on child development, argue that spatial primitives are the very first building blocks of a child's emerging conceptual system. These are primarily spatial concepts, which by the age of six or seven or months provide the bedrock of the conceptual system. Spatial primitives involve re-described perceptual arrays of components of spatial scenes. By virtue of being subject to perceptual meaning analysis, the spatial primitives go beyond being a re-description of a component of a spatial array, and provide a rudimentary understanding and 'theory' as to the spatial display, with an awareness of the functional consequence of the spatial component. For instance, spatial primitives include PATH, MOVE, as well as EYES and LINK. For instance, by around seven months, infants appear to understand that it is the eyes of an animate being that does the seeing. Similarly, the CONTAINER spatial primitive provides the child with an awareness not just of what the geometric properties of a container is, but, in addition, what a container is for: young children express surprise when what

Table 9.4 Proposed spatial primitives (adapted from Mandler and Pagán Cánovas 2014: 9)

PATH	+/–MOVE
START PATH	ANIMATE MOVE
END PATH	BLOCKED MOVE
PATH TO	INTO
LINK	OUT OF
THING	BEHIND
+/–CONTACT	APPEAR
CONTAINER	DISAPPEAR
OPEN	EYES
LOCATION	

appears to be a container fails to support entities, such as dolls, placed in the container. Table 9.4 provides a listing of spatial primitives, following Mandler and Pagán Cánovas, although, as they observe, there may be others including spatial concepts such as UP and DOWN.

4.2 Image schemas

In the revised taxonomy, proposed by Mandler and Pagán Cánovas, an image schema is defined not in terms of a primitive spatial concept, but rather as a concept of a spatial event. On this account, an image schema is more complex, consisting of a representation of a spatial event, with more than one primitive spatial concept. Examples of image schemas include PATH TO THING and THING INTO CONTAINER. Hence, a motion trajectory towards an endpoint would be underpinned by the PATH TO THING image schema, while placing an object in a box is claimed to be underpinned by the THING INTO CONTAINER image schema.

4.3 Schematic integrations

These are more complex concepts still. In essence, a schematic integration is based on an image schema, but includes non-spatial elements. Hence, a schematic integration is still a relatively primitive and developmentally early concept – being schematic in nature – but provides the underpinnings of more complex conceptualisation, by including other dimensions of embodied experience, such as the experiences of force, emotion and time. For instance, when an infant comes to understand sequential relationships, and adds this temporal understanding to the MOVE INTO image schema, this results in a schematic integration, an enriched image schema that now also contains a temporal element. Mandler and Pagán Cánovas suggest that the embodied experience of force may come to be combined with image schemas relatively early in the lifespan, with temporal dimensions emerging perhaps as early as nine months of age. Emotional awareness seems to develop slightly later, suggesting that the emotional elements of image schemas may not be fully in place until three or four years of age.

5 Mimetic schemas

The second guiding principle of a cognitive linguistic approach to conceptual structure holds that semantic structure – recall, the nature of meaning encoded in language – reflects conceptual structure. Given the first guiding principle – the thesis of embodied cognition, that conceptual structure reflects embodied experience – then it stands to reason that image schemas, which are embodied representations, should be reflected in, and underpin, linguistic expression. And that is indeed the claim made by cognitive linguists, as we have seen with discussion of the linguistic examples earlier. For instance, an expression such as that in (9) would, according to image schema theory, be held to be underpinned by the SOURCE–PATH–GOAL image schema:

(9) Mark travelled from Manchester to London.

But one of the potential drawbacks concerning image schema theory is that it is silent on how image schemas become 'hooked up' to semantic structure. In short, how does something that has conceptual content – an image schema – come to have a communicative function, such that it can be used as a semantic unit, in language, in order to signal a communicative intention?

Jordan Zlatev has proposed the notion of the **mimetic schema**, in order to account for the way in which image schemas interface with other aspects of thought, including semantic structure, during the course of linguistically mediated communication (2005; see also 2007b, 2013, 2014).

Zlatev conceives of a mimetic schema as arising from what he terms **bodily mimesis**. While **mimesis** concerns deliberate imitation for some purpose, for Zlatev, bodily mimesis can be characterised as re-enacting a bodily gesture for some communicative purpose, when the mimetic act is not a conventional symbol. For instance, pursing the lips as if blowing a kiss is an act of bodily mimesis, as it conveys the act of kissing, in order to signal that you wish someone to consider themselves kissed; it does so by mimetically representing the act of kissing: to kiss someone you must purse your lips a particular way. In contrast, showing the 'thumbs up' gesture in order to convey 'well done' is not an act of bodily mimesis, as putting your thumb in an upward position with the fingers closed is not physically required to signal 'well done'. It just so happens that the 'thumbs up' symbol is a conventional gesture used to signal 'well done'.

Zlatev proposes a number of characteristics of bodily mimesis. First, it involves a **cross-modal** association between proprioception and exteroception (recall the introduction to these modalities in Chapter 3): the **cross-modality characteristic**. Second, it involves an action that is under voluntary control: the **volitional characteristic**. Third, the mimetic act forms part of, or is associated with, a bodily act, but the act is recognised as being imitative and hence mimetic: the **representational characteristic**. And finally, it is intended that the mimetic act serves as an intentional signal, in order to evoke, in the mind of an addressee, the act it is a mimetic representation of: the **communicative sign function characteristic**. Table 9.5 summarises

Table 9.5 Characteristics of a mimetic schema (adapted from Zlatev 2005)

Characteristic 1	Cross-modality
Characteristic 2	Volitional
Characteristic 3	Representational
Characteristic 4	Communicative sign function

the four characteristics of a mimetic schema. According to Zlatev, examples of mimetic schemas include what he terms **action concepts**, including, but not limited to the following: EAT, SIT, KISS, HIT, PUT IN, TAKE OUT, RUN, CRAWL, FLY, FALL.

While mimetic schemas may be more complex than image schemas, the rationale for proposing them is clear; Zlatev argues that they are directly grounded in embodied experience and yet provide a clear basis for representation in semantic structure. As such, mimetic schemas may provide the key link between embodiment and language: they provide the embodied grounding for linguistic meaning. After all, bodily mimesis is inherently meaningful, and can be deployed to provide the grounding for linguistic meaning.

SUMMARY

This chapter considered the theory of **image schemas**, which was first developed by George Lakoff, and especially Mark Johnson. The theory has since come to be highly influential in **developmental psychology** – the study of how and why humans change over the lifespan. The notion of an image schema is closely associated with the development of the embodied cognition thesis: the kinds of concepts human beings are capable of forming are constrained by the nature of the physical bodies we have. From this perspective, our embodiment is directly responsible for structuring concepts. This chapter, therefore, has illustrated the first guiding principle of the cognitive linguistics approach to conceptual structure: **conceptual structure reflects embodied experience**, namely the thesis that the human mind is embodied. Image schemas derive from sensorimotor experience, early in the lifespan, as we interact with and move about in the world. It has been proposed by Jean Mandler that they form the building block of an infant's conceptual system, arising via a process termed **perceptual meaning analysis**. Image schemas have a number of key characteristics: they are pre-conceptual in origin; they give rise to more specific concepts; they derive from interaction with and observation of the world; they are inherently meaningful; they are analogue in nature; they are multimodal; they are subject to transformations; they occur in clusters; they underlie linguistic meaning; and they give rise to abstract thought. More recently, it has been proposed that the notion of an image schema, as classically formulated, might actually subsume finer types of rudimentary concepts. These have been identified as **spatial primitives**, image schemas and **schematic**

integrations. Finally, I also considered the related notion of the **mimetic schema**, which may provide a clearer basis for the embodied grounding for semantic representation in language.

FURTHER READING

- **Hampe (2005)**. A collection of important perspectives on image schemas by a number of leading figures in cognitive linguistics, and cognitive and developmental psychology.
- **Johnson (1987)**. A classic in cognitive linguistics. The earliest book-length development of image schema theory.
- **Lakoff (1987)**. Another classic. In this book Lakoff provides some of the philosophical foundations for image schemas, and an influential perspective on embodied cognition.
- **Mandler (2004)**. In this award-winning book, Mandler draws together decades of pioneering research on early cognitive development, and makes the case for image schemas providing the basis for an infant's emerging conceptual system.

DISCUSSION QUESTIONS

1. What are the main claims as to the nature of image schemas, according to image schema theory, and what lines of evidence support each of these claims?
2. What do you think it means to say that language has an embodied basis? Give examples.
3. What do you see as the main differences between image schemas and mimetic schemas?
4. In terms of the embodied basis of language, do you see image schemas or mimetic schemas as being equally or differentially useful, in terms of their explanatory power? And why?

10

Cognitive Semantics

In this chapter I explore the second guiding principle, introduced in Chapter 8: that semantic structure reflects, encodes and externalises conceptual structure. This issue follows on from the investigation of the embodied cognition thesis: the thesis that conceptual structure reflects embodied experience. Accordingly, cognitive linguists study both semantic structure for its own end, *and* they deploy semantic structure, which they take to reflect conceptual structure, in order to study the embodied nature of conceptual structure. They do so by examining patterns of embodiment in semantic structure, and deploy such patterns in order to infer the way in which conceptual structure reflects embodied experience. In this chapter, I present the theory of **Cognitive Semantics**, developed by Leonard Talmy (e.g. 2000a, 2000b), to illustrate this approach.

Talmy has argued that one of the ways that semantic structure in language reflects conceptual structure is by providing **structural meaning**, also known as **schematic meaning**. This kind of semantic structure relates to structural properties of referents (the entities that language describes) and scenes (the situations that these entities are involved in). Talmy also argues that schematic meaning is directly related to fundamental aspects of embodiment. As we saw in Chapter 3, Talmy focuses on structural meaning, rather than contentful meaning, as it is possible, he contends, to provide a fairly complete description of semantic structure for this subsystem: linguistic representations of this type of meaning are broadly constrained, cross-linguistically, which makes a thorough account more practicable than attempting to describe semantic structure of the richer, contentful kind (for instance, as encoded by open-class semantics).

I begin, in this chapter, by providing a brief overview of semantic structure. I then consider Talmy's approach to the schematic properties of the two foundational domains of human experience, SPACE and TIME, as manifested in semantic structure. I then present a fairly detailed overview of Talmy's cognitive semantic taxonomy, what he refers to as **schematic systems**, which serve to encode conceptual structure in language (namely in semantic structure).

Talmy accordingly dubs his approach to studying conceptual structure, by examining the schematic systems that populate semantic structure, Cognitive Semantics.

1 Semantic structure

Linguistic expressions are deployed in order to refer to entities or to describe situations or scenes. Entities and scenes can be relatively concrete objects or events, or they can relate to more subjective experiences, such as feeling remorse or joy or experiencing unrequited love. According to Talmy, the way language conveys entities and scenes is by conveying a **cognitive representation (CR)**, drawn from the conceptual resources residing in a language user's conceptual system. Although the conceptual system is not open to direct investigation, the properties of language allow us to reconstruct the properties of the conceptual structure it reflects, and to build a model of that system which, among other things, explains the observable properties of language.

Talmy suggests that the CR, as conveyed by language, is made up of two systems, each of which brings equally important but very different dimensions to the scene that they construct together. These systems are the **conceptual structuring system** and the **conceptual content system**. While the conceptual structuring system, as its name suggests, provides the structure, skeleton or 'scaffolding' for a given scene, giving rise to the schematic meaning that is the primary descriptive focus of Talmy's research programme, the content system provides the majority of rich substantive detail. It follows from this view that the meaning associated with the conceptual structuring system is highly schematic in nature, while the meaning associated with the conceptual content system is rich and highly detailed. This distinction is captured in Figure 10.1. The systems, represented in Figure 10.1, relate to conceptual structure.

Given the cognitive linguistics thesis that semantic structure reflects conceptual structure, the system of semantic structure, on Talmy's account, is also divided into two subsystems, reflecting the bifurcation in the CR. These two systems are the **open-class semantic system** of language and the **closed-class semantic system**, as first introduced in Chapter 1. These semantic subsystems correspond to the formal distinction between open-class elements (for example, nouns such as *man*, *cat*, *table*; verbs such as *kick*, *run*, *eat*; and adjectives

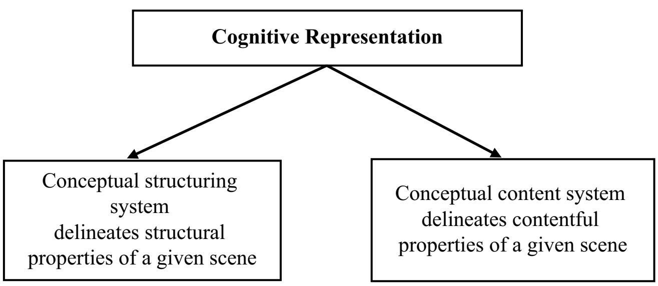


Figure 10.1 The bifurcation in depicting a given cognitive representation

such as *happy*, *sad*) and closed-class elements (idioms such as *kick the bucket*, grammatical patterns like declarative or interrogative constructions, grammatical relations such as subject or object, word classes like the category verb, grammatical words like *in* or *the*, and bound morphemes such as *-er* in *singer*).

As we have already seen, the crucial difference between open-class and closed-class semantics is that while open-class elements provide rich content, closed-class elements contribute primarily to the structural content. However, a caveat is in order here. Given the view within cognitive linguistics that meaning and form (or grammar) cannot be divorced (recall the discussion in Chapters 1 and 5), the division of semantic structure into two subsystems sets up a somewhat artificial boundary. After all, free morphemes such as prepositions (*in*, *on*, *under* and so on), which belong to the closed-class system, exhibit relatively rich semantic distinctions, at least compared to somewhat more sparse semantics of grammatical constructions such as the ditransitive construction (discussed in Chapter 2) . Therefore, the distinction between the closed-class and open-class semantic subsystems might be more insightfully viewed in terms of distinct points on a continuum rather than in terms of a clear dividing line.

Indeed, we first began to see, in Chapter 5, where I presented the arguments put forward by cognitive grammarian Ronald Langacker, that while there is no principled distinction between the lexicon and the grammar, there are nevertheless qualitatively distinct kinds of phenomena that can be identified at the two ends of the continuum. The idea of a **lexicon–grammar continuum** is represented in Figure 10.2. We might place a lexical concept like SQUISHY – the unit of semantic structure conventionally associated with the English lexical form *squishy* – at the open-class end, and the lexical concept PAST encoded by an English grammatical morpheme such as *-ed* at the closed-class end, while the lexical concept relating to the lexical form *in* might be somewhere in the middle of the continuum.

In his theory of Cognitive Semantics, Talmy has examined the way in which both the open-class and closed-class semantic systems encode the CR, as depicted in Figure 10.3. The dashed line signals the distinction between conceptual structure (the conceptual structuring and conceptual content systems) on the one hand, and semantic structure (the open and closed-class semantic systems) on the other. But given Talmy's focus on schematic or structural meaning, his research effort has primarily focused on the way in which the structural content system is encoded in language, in terms of the open-class semantic system, and especially the closed-class semantic system. This reflects the fact, as we shall see shortly, that closed-class elements are specialised for encoding schematic meaning, while open-class elements additionally encode rich or encyclopaedic meaning – the latter is not the primary focus of Talmy's theory.

Figure 10.2 The lexicon–grammar continuum

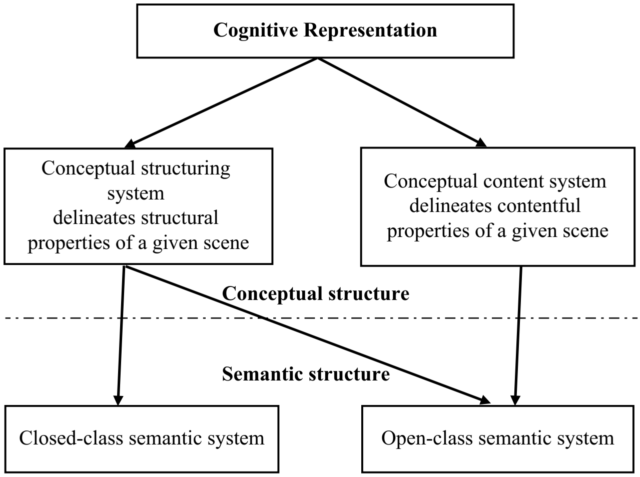


Figure 10.3 The relationship between conceptual and semantic structure, in Talmy's theory of Cognitive Semantics

Hence, Talmy has been primarily concerned with elaborating the semantics of the conceptual structuring system. While both open and closed-class semantic systems encode structural (or schematic) meaning (as reflected by the arrows in Figure 10.3), the closed-class subsystem – the part of semantic structure that is at the grammar 'end' of the continuum shown in Figure 10.2 – is specialised for encoding this aspect of conceptual structure.

Indeed, Talmy's findings show that the closed-class semantic subsystem encodes semantic structure that relates to key aspects of embodied experience, such as the way SPACE and TIME are configured in language; and they demonstrate the way in which the closed-class system encodes experiential meaning arising from phenomena such as attention, perspective and force-dynamics. For this reason, Talmy's research both illustrates and supports the position adopted in cognitive linguistics that semantic structure reflects conceptual structure, which in turn reflects embodied experience.

2 The configuration of SPACE and TIME

In this section I revisit the domains of SPACE and TIME, introduced in Chapters 3 and 4. In his theory of Cognitive Semantics, Talmy views these as the primary domains for semantic structure. Hence, this section introduces the Cognitive Semantics conception of these.

2.1 TIME versus SPACE

Talmy deploys the neutral term **quantity** to refer to the content of the conceptual domains TIME and SPACE. The quantity that exists in the domain of SPACE is matter, which may be either **continuous** or **discrete**. I return to these terms in due course; but for the time being we can think of **continuous matter** as having no inherent 'segmentation' in its composition; this type of matter is mass, illustrated by AIR. **Discrete matter**, on the other hand, does have inherent 'segmentation', and this type of matter characterises objects which can be divided into parts, such as the entity BIKE. The quantity that exists in the domain of TIME is **action**, which can also be continuous or discrete. **Continuous action**, such as (TO) SLEEP, is called activity. **Discrete action**, like (TO) BREATHE, is described as an act. The difference between these two types of action is that it is not (normally) possible to describe the subparts of sleeping (unless you are a sleep specialist), while breathing is characterised by a series of distinct subparts (inhaling and exhaling). This partition of the domains of SPACE and TIME is summarised in Table 10.1.

The domains of TIME and SPACE also differ in another way: in terms of the property associated with their divergent quantities (matter versus action). While TIME consists of action, its property is that of **progression**. In contrast, the domain SPACE consists of matter, and its property is that of being **static**. Put in slightly different terms, by virtue of exhibiting progression, the quantity within the domain of TIME is made up of a sequence of distinct representations because it changes from one instance to the next. By way of illustration, imagine photographing someone engaged in an activity like stroking a cat. Each of the photographs you take will be different from the previous one, and together they portray the activity. In contrast, change is not an inherent property of matter, in the domain SPACE, although, of course, objects that consist of matter can be involved in processes of change.

According to Talmy, these two conceptual domains are reflected in the way the conceptual structuring system, as manifested in open and closed-class semantic structure, encodes and externalises patterns of conceptual structure. But as closed-class semantics is specialised for encoding structural meaning, the distinction between the domains of SPACE and TIME is reflected in the grammatical structure of the closed-class semantic system. For instance, and in the most general terms, verbs or verb phrases prototypically encode entities from the domain of TIME (activity and acts), while nouns or noun phrases prototypically encode entities from the domain of SPACE (masses and objects). This is illustrated by the examples in Table 10.2.

Table 10.1 Matter and action (adapted from Talmy 2000a: 42)

Domain	Continuous	Discrete
SPACE (matter)	Mass	Objects
TIME (action)	Activity	Acts

Table 10.2 Linguistic expressions relating to matter and action

Domain	Continuous	Discrete
SPACE (matter)	Mass: *(the) air*	Objects: *(a/the) cat(s)*
TIME (action)	Activity: *(to) sleep*	Acts: *(to) breathe*

2.2 Conceptual alternativity

The membership of concepts within the domains of SPACE and TIME, as reflected in semantic structure, are not fixed, however. This is because TIME and SPACE are what Talmy describes as **homologous categories**, which means that they appear to share certain structural principles. As already seen, one of these relates to quantity: both SPACE and TIME can be conceived in terms of quantity. For example, in response to following question: *How far is London from Manchester?* one could legitimately answer either *About 200 miles* (SPACE) or *About four hours* (TIME).

Talmy terms the ability to conceptualise quantity from one domain in terms of another: **conceptual alternativity**. Conceptual alternativity is reflected in the closed-class semantic subsystem by grammatical categories. Moreover, conceptual alternativity is facilitated by a number of **conceptual conversion operations**. For example, **reification** is the conversion operation that converts our conceptualisation of TIME (or action) into SPACE (or matter): an act can be converted into an object, or an activity into a mass. When a temporal concept is reified, in semantic structure, it is expressed by a nominal expression (a noun phrase). Compare the examples in (1) and (2).

An act	*reified as a mass*	*(discrete)*
(1) John washed her	John gave her a wash	
Activity	*reified as a mass*	*(continuous)*
(2) John helped her	John gave her some help.	

In example (1), *washed* is a verb and encodes an act, while *a wash* is a noun phrase and encodes an act conceptualised as an object. In example (2), *helped* is a verb and encodes an activity, while *some help* is a noun phrase and encodes an activity conceptualised as a mass. When an act is construed as an object, it can be described in terms consistent with the properties of objects. For example, physical objects can be transferred: *to call (on the phone)* becomes *he gave me a call*. Physical objects can also be quantified: *to slap* becomes *she gave him two slaps*. As Talmy observes, however, there are constraints upon this process of reification. For example, a reified act or activity cannot be expressed in the same way that prototypical physical objects can. Example (3) illustrates that the reified act *a call* is incompatible with verbs that are prototypically physical.

(3) *John pushed/threw/thrust/slid her a call

The converse operation, which converts matter to action, is called **actionalisation**. When concepts relating to matter are actionalised, they are expressed by verb phrases. This operation is illustrated by the following examples adapted from Talmy (2000a: 45).

	An object	*actionalised as an act*	*(discrete)*
(4)	Susan removed the pit from the olive.	Susan pitted the olive.	
(5)	*A mass*	*actionalised as an activity*	*(continuous)*
	John has a nosebleed.	John is bleeding from the nose.	

3 Schematic systems

In his theory of Cognitive Semantics (e.g. 2000a, 2000b), Talmy primarily focuses on describing the way in which semantic structure encodes schematic or structural meaning. This is achieved, Talmy argues, primarily through a series of **schematic systems**, which provide the form that the conceptual structuring system takes for being encoded in semantic structure. By positing these systems, Talmy provides a way of modelling the different kinds of structural or schematic meanings associated with both open and closed-class elements. Talmy elaborates four distinct schematic systems, although he notes there are likely to be others. The division into the four schematic systems, and their relationship to conceptual structure, is represented in Figure 10.4.

3.1 The Configurational Structure system

The first schematic system I consider is the **Configurational Structure System**. This imposes structure upon the contents of the domains of SPACE

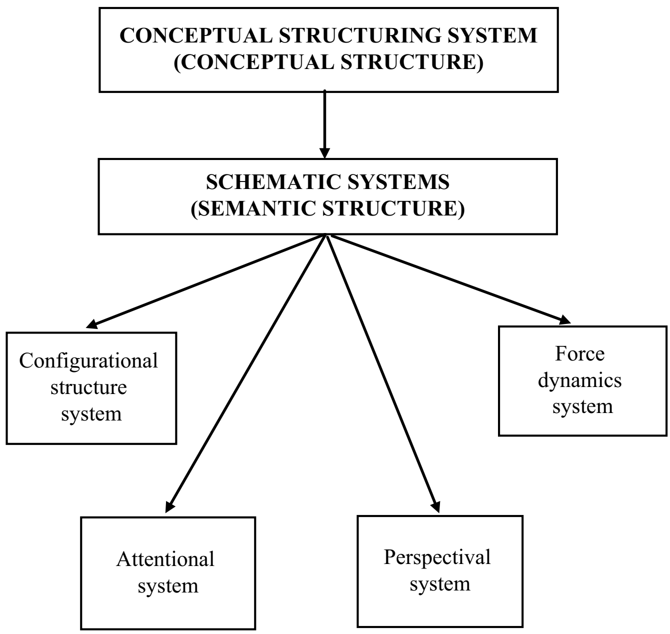


Figure 10.4 The four schematic systems that encode the conceptual structuring system, for semantic representation in language

and TIME. We have already begun to see how this system works in my discussion of 'continuous' versus 'discrete' quantities of SPACE and TIME.

3.1.1 Overview

The Configurational Structure System provides the temporal and spatial properties associated with a scene with their structure, for instance the division of a scene into parts and participants. Moreover, Talmy argues that the Configurational Structure System can be divided into a further set of **schematic categories**, which relates to different aspects of configurational structure.

In order to obtain an immediate sense of how both open-class and closed-class semantic systems encode configurational structure, I briefly consider one example of a schematic category within this system: the category **degree of extension**. Degree of extension relates to the degree to which matter (SPACE) or action (TIME) are extended.

For instance, the open-class words *speck*, *ladder* and *river* exemplify this category as it relates to matter. The degree of extension of each of these is illustrated in Figure 10.5.

Lexical items such as these include, in their semantic specification, information relating to degree of extension (which reflects conceptual structure deriving from the conceptual content system – recall Figure 10.3). For example, the rich encyclopaedic meaning associated with the lexical item *river* relates to its specific properties such as an entity involving water, which occupies a channel of certain dimensions, and which flows under the force of gravity from higher ground sometimes over many miles to the sea and so on.

In contrast to this rich and detailed content meaning, its schematic meaning – the main focus of Talmy's descriptive effort – concerns the degree of extension associated with this entity. According to Talmy, the schematic category degree of extension has three values: a **point**, a **bounded extent** and an **unbounded extent** (Figure 10.5). Rivers are typically unbounded within the perceptual field of a human experiencer. Hence, while we may know from looking at maps that rivers have beginnings and ends and are thus bounded, our 'real' experience of rivers is usually that they are unbounded because we cannot see the beginning and end.

The examples in (6)–(8) relate to action rather than matter, and employ closed-class elements in order to specify the degree of extension involved. (Note: 'NP' stands for noun phrase; the relevant NP is bracketed.)

(6) Point: *at* + $NP_{\text{point-of-time}}$
The train passed through at [noon].

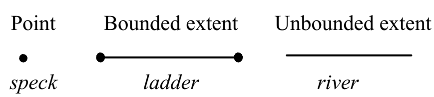


Figure 10.5 Degree of extension for matter (adapted from Talmy 2000a: 61)

(7) Bounded extent: *in* + $\text{NP}_{\text{extent-of-time}}$
She went through the training circuit in [five minutes flat].

(8) Unbounded extent: '*keep -ing*' + '*-er and -er*'
The plane kept going higher and higher.

As these examples illustrate, some closed-class elements encode a particular degree of extension. For instance, in (6) the preposition *at*, together with an NP that encodes a temporal point, encodes a point-like degree of extension. The NP does not achieve this meaning by itself: if we substitute a different preposition, a construction containing the same NP *noon* can encode a bounded extent (e.g. *The train arrives between noon and 1 pm*). The punctual nature of the temporal experience in example (6) forms part of the conceptual structuring system, and is conveyed in this example by the closed-class semantic system. In contrast, the precise nature of the punctual event, that is the passage of a train through a station rather than, say, the flight of a flock of birds overhead, relates to the conceptual content system.

In the example in (7), the preposition *in*, together with an NP that encodes a bounded extent, encodes a bounded degree of extension. In (8), the closed-class elements, *keep -ing* + *-er and -er*, encodes an unbounded degree of extension. Each of these closed-class constructions provides a grammatical 'skeleton' specialised for encoding a particular value within the schematic category degree of extension. Semantic structure that relates to the conceptual content system can add dramatically different content meaning to this frame (e.g. *keep singing louder and louder*; *keep swimming faster and faster; keep getting weaker and weaker*), but the schematic meaning relating to the conceptual structuring system remains constant: in all these examples, time has an unbounded degree of extension.

Talmy proposes that the Configurational Structure System is made up of six schematic categories. These are captured in Figure 10.6. In the remainder of this section, I present each of these, briefly illustrating the nature of the schematic meaning emerging from each category and establishing which kinds of closed-class elements encode each schematic category.

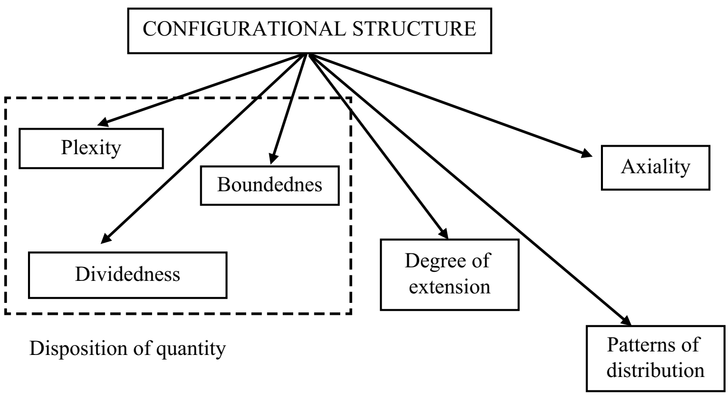


Figure 10.6 Schematic categories of the Configurational Structure System

3.1.2 Plexity

Plexity relates to whether a quantity of time or space consists of one (**uniplex**) or more than one (**multiplex**) equivalent elements. When related to space (or matter), this is the basis of the grammatical category **number**. For instance, the singular **count noun** *slipper* represents uniplex structure, while the plural count noun *slippers* represents multiplex structure. **Mass nouns** like *champagne* also have multiplex structure. When related to the domain of time (or action), plexity forms part of the basis for the distinction between **semelfactive** versus **iterative** lexical aspect. **Lexical aspect** relates to the internal 'structure' of an event; it can be linguistically encoded in a number of ways. Consider example (9).

(9) a. John coughed. SEMELFACTIVE
b. George coughed for ten minutes. ITERATIVE

The verb *cough* encodes a punctual event: it is over almost as soon as it has begun. In the absence of any context, indicating that this event was drawn out over a period of time, we interpret the event as semelfactive: it happened only once. This is the interpretation in (9a). When a punctual event is drawn out over a period of time, as in (9b), it becomes iterative; it happens repeatedly. Clearly, semelfactive aspect has uniplex structure, while iterative aspect has multiplex structure.

3.1.3 Boundedness

The schematic category **boundedness** relates to whether a quantity is understood as having inherent boundaries (**bounded**) or not (**unbounded**). In the domain of SPACE, this is the basis of the count/mass noun distinction. For example, count nouns like *slipper* and *canapé* have bounded structure, in that each designates an entity with inherent 'edges' which can thus be individuated and counted. On the other hand, mass nouns like *champagne* and *oxygen* do not have inherent 'edges' and therefore cannot be individuated and counted.

In the domain of TIME, boundedness is the basis of the distinction between perfect and imperfect **grammatical aspect**: this differs from lexical aspect as it relates to the way in which the speaker 'views' the contour of the event. Consider example (10):

(10) a. John has left the party.
b. John is leaving the party.

Example (10a) is grammatically marked for perfect aspect by the presence of the perfect auxiliary *have* followed by the past participle *left*. Perfect aspect encodes an event that is completed and can thus be thought of as bounded. Example (10b), on the other hand, is grammatically marked for imperfect (progressive) aspect by the progressive auxiliary *be* followed by the progressive participle *leaving*. Imperfect aspect encodes an event that is 'ongoing' and can thus be thought of as unbounded.

As an aside: verbs can also be inherently bounded or unbounded in terms of their lexical aspect, which is traditionally described as **telicity**. **Telic verbs** like *win* entail what we can think of as an inherent 'endpoint' or 'goal', while **atelic verbs**, such as *sleep*, do not. For our purposes, telicity can be thought of as boundedness and **atelicity** as unboundedness. Compare the following examples:

(11) a. Susan won the race in four minutes.
b. *Susan slept in four minutes.

In his account, Talmy points out that verbs that are inherently bounded are compatible with **adverbial expressions**, as *in four minutes*, which denote a bounded period of time. This is illustrated by (11a). In contrast, verbs that are inherently unbounded are not compatible with this type of adverbial expression, as in (11b).

As with the conversion operations that mediate between the domains of SPACE and TIME, Talmy observes that it is possible to convert unbounded quantity (for example, *water* or *sleep*) into a bounded portion (for example *some water* or *some sleep*). This process is termed **excerpting**; it underlies expressions such as: *two champagnes* or *three sands and two cements*. Here, we rely upon the division of mass into bounded portions, for instance, glasses of champagne, and sacks of sand and cement. The converse operation is called **debounding**. For example, the count noun *shrub* designates a bounded quantity, while the mass noun *shrubbery* construes this as unbounded.

3.1.4 Dividedness

Dividedness relates to the internal segmentation of a quantity and underlies the distinction I introduced, earlier, between discrete and continuous matter: if matter can be broken down into distinct parts, it is discrete. If it cannot, it is continuous.

It is important to emphasise that the properties 'unbounded' and 'continuous' are not the same, although they can correlate. For example, the mass noun *oxygen* is both continuous and unbounded. In contrast, the mass nouns *timber* and *furniture* are unbounded but have internally discrete structure. The property 'discrete' is not reflected in closed-class elements (in English), unlike boundedness. As we have seen, though, Talmy relies upon this parameter for the broad division of the domains of SPACE and TIME, into two subcategories.

3.1.5 Disposition of quantity

Thus far, we have seen that quantities of SPACE and TIME can be encoded, in terms of the schematic categories of plexity, boundedness and dividedness. Talmy describes the intersection between these three schematic categories as relating terms of **disposition of quantity**, as illustrated by the dotted box in Figure 10.6.

We might think of disposition of quantity as a 'bundle' of attributes that characterises certain aspects of schematic categories, and one that is reflected in the closed-class semantic subsystem. For example, the mass noun *furniture* is made up of matter, and is multiplex, unbounded and discrete, while the mass noun *water* is made up of matter, and is multiplex, unbounded and continuous.

Disposition of quantity is illustrated by Table 10.3. In this table, the two central columns represent the intersection of the three categories: plexity, dividedness and boundedness. The cell labelled A represents quantity that is [multiplex, discrete, unbounded]; cell B represents quantity that is [multiplex, discrete, bounded]; cell C represents quantity that is [uniplex, discrete, bounded]; cell 1 represents quantity that is [multiplex, continuous, unbounded]; and cell 2 represents quantity that is [multiplex, continuous, bounded]. Because a uniplex quantity consists of a single element, it is inherently bounded and discrete, which explains why cell 3 is labelled 'not applicable' and why there is no fourth row in the table illustrating the intersection of plexity with unboundedness.

Table 10.4 provides examples of linguistic expressions that provide evidence for the 'bundles' of schematic properties represented in Table 10.3. The first example in each cell relates to matter (SPACE) and the second example to action (TIME).

Closed-class elements provide a key line of evidence, in Talmy's Cognitive Semantics, for the way semantic structure encodes conversion of quantity from

Table 10.3 Illustrating the schematic category: disposition of quantity (adapted from Talmy 2000a: 59)

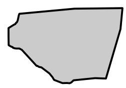
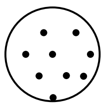
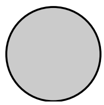
	Discrete	Continuous	
Multiplex	A	1 	Unbounded
Multiplex	B 	2 	Bounded
Uniplex	C	3 N/A	Bounded

Table 10.4 Illustration of lexical items that relate to disposition of quantity

	Discrete	Continuous	
Multiplex	*furniture* *(to) breathe*	*water* *(to sleep)*	**Unbounded**
Multiplex	*(a) family* *(to) molt*	*(a) sea* *(to) empty*	**Bounded**
Uniplex	*(a) slipper* *(to) sigh*	*N/A*	**Bounded**

one state to another. Examples (12)–(15) illustrate some of the possibilities. In examples (12) and (13) it is the presence of the (plural/mass indefinite) determiner *some* that serves to convert unbounded matter to bounded matter. In example (14) it is the plural noun suffix *-s* that converts uniplex matter to multiplex matter. In example (15), it is grammatical aspect, introduced by the progressive auxiliary *be* and the participial suffix-*ing*, that converts uniplex bounded action to multiplex unbounded action.

(12)	[multiplex, discrete, unbounded] *furniture*	→	[multiplex, discrete, bounded] *some furniture*
(13)	[multiplex, continuous, unbounded] *water*	→	[multiplex, continuous, bounded] *some water*
(14)	[uniplex, discrete, bounded] *slipper*	→	[multiplex, discrete, bounded] *slippers*
(15)	[uniplex, discrete, bounded] *(to) sigh*	→	[multiplex, discrete, unbounded] *be sighing*

3.1.6 Degree of extension

As we saw earlier, degree of extension relates to how far quantities of SPACE or TIME 'stretch' over distance. This category interacts with boundedness, but introduces a more detailed structure that we can think of in terms of points on a continuum between bounded and unbounded. For example, SPACE or TIME can be encoded, in semantic structure, either as point (*speck*, *die*), a bounded extent (*ladder*, *wash up*) or an unbounded extent (*river*, *sleep*).

Take the domain of TIME. In (16), the examples illustrate that each of these degrees of extension (encoded by the verb) is compatible with different types of adverbial expressions (which I've placed in brackets).

(16)	a.	John's grandmother died [at four o'clock].	POINT
	b.	John washed up [in ten minutes].	BOUNDED EXTENT
	c.	Susan slept [for an hour].	UNBOUNDED EXTENT
	d.	*Susan slept [in an hour].	
	e.	*George's grandmother died [for an hour].	

The differences between these verbs, as they relate to degree of extension, is once more a matter of lexical aspect. The verb *die* encodes a punctual event; as we saw earlier, this means that it is over almost as soon as it has begun. In contrast, *wash up* and *sleep* are durative events, which means that they extend over time. However, while *wash up* is telic (it has an inherent endpoint), *sleep* is atelic. Observe that the adverbial expressions in (16) are prepositional phrases, headed by closed-class elements like *at*, *in*, *for* and so on. Although these prepositional phrases also contain noun phrases that encode the 'stretch' of time (*four o'clock*, *ten minutes*, *an hour*), it is the preposition that determines the compatibility of the adverbial expression as a whole with the meaning encoded by the verb, as illustrated by examples (16d) and (16e), which are ungrammatical.

However, these adverbial expressions can sometimes modify the degree of extension encoded by a verb. In example (17a), the verb *die* is **construed** in terms of a bounded extent (it took her an hour to die), and in (17b) it is construed in terms of an unbounded extent (I will have more to say about the notion of **construal** in Part III of the book, especially in Chapter 16).

(17)	a.	George's grandmother died in an hour.	[bounded extent]
	b.	George's grandmother has been dying for years.	[unbounded extent]

3.1.7 Patterns of distribution

Patterns of distribution is a schematic category that relates to how matter is distributed through SPACE or how action is distributed through TIME. I illustrate this schematic category by focusing on action through TIME, encoded by verbs. Table 10.5 provides examples of the various patterns of distribution.

These patterns can be explained as follows. While dying represents a change of state from which its participant cannot emerge, falling represents a change of state from which its participant can emerge (if you fall you can get up again, but getting up again is not a necessary part of falling). When a light flashes, it goes from dark to light, and back to dark again, which represents a cyclical change of state. Repeating the cycle is not an intrinsic part of flashing (because a light can flash only once), while it is an intrinsic part of breathing. In contrast to all of these, which involve some internal change, sleep represents a steady or unchanging state.

As with degree of extension, this schematic category determines aspect, as reflected in the compatibility or incompatibility of certain verbs with certain grammatical constructions. Accordingly, the various patterns of distribution, evident in Table 10.5, account for the semantic oddness of the examples below:

(18) a. #Susan's grandmother kept dying.
b. #Susan fell out of bed for an hour.

Table 10.5 Patterns of distribution

Patterns of distribution	Example
One-way non-resettable	*(to) die*
One-way resettable	*(to) fall*
Full cycle	*(to) flash*
Multiplex	*(to) breathe*
Steady state	*(to) sleep*

As *die* is one-way non-resettable (at least under normal circumstances), it is only possible to die once. This semantic encoding is incompatible with the *keep* V-*ing* construction, which is restricted to events that either can be repeated (*Susan kept falling out of bed*, *Tommy kept breathing*) or involve a steady state (*Susan kept sleeping*).

As with the verb *die*, the semantic structure encoded by *fall* is also one-way in the sense that it is unidirectional rather than cyclic; but unlike *die*, it is resettable: it is possible to do it more than once. Nevertheless, as *fall* is one-way rather than cyclic, it involves stopping and starting (you are not still falling while you are getting up again). Hence, *fall* cannot be done continually for an extended period of time (*for an hour*), unless it happens repeatedly.

3.1.8 Axiality

The final schematic category of the Configurational Structure System is **axiality**. This relates to the way a quantity of SPACE or TIME is structured according to a directed axis. For example, Talmy argues that the adjectives *well* and *sick* are points on an axis relating to HEALTH. On the axis, *well* is the endpoint, whereas *sick* occupies the remainder of the axis. This explains the different distribution of the closed-class degree modifiers, *almost* and *slightly*, in relation to these adjectives. For example, while it is possible to be *slightly sick* or *almost well*, it is not possible to be **slightly well* or **almost sick*. This follows from Talmy's axiality category, as it is not possible to be 'slightly' at an endpoint, nor 'almost' on the journey towards that endpoint. Axiality is illustrated in Figure 10.7.

3.2 The Attentional System

The Configurational Structure System, we have seen, encodes the distribution of the embodied notions of matter and action in semantic structure. In contrast, the **Attentional System** encodes the way attention is distributed over matter and action (scenes and their participants), in semantic structure.

3.2.1 Overview

The Attentional System specifies how the speaker intends the hearer to direct his or her attention towards the entities that participate in a particular scene. According to Talmy, it is governed by three main factors.

The first factor is **strength**, which relates to the relative prominence of referents: whether they are either backgrounded or foregrounded. The second factor is **pattern**, which concerns how patterns of attention are organised. For example, a **focus of attention** pattern gives rise to figure–ground organisation.

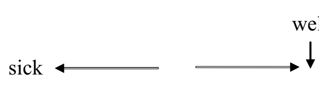


Figure 10.7 Axiality (adapted from Talmy 2000a: 65)

Table 10.6 Factors in the Attentional System

Strength of attention	
Pattern of attention	Focus of attention Window of attention Level of attention
Mapping of attention onto parts of a scene	

Other patterns are **window of attention** and **level of attention**. The third factor is **mapping**; this governs the way in which parts of an attention pattern are mapped onto parts of the scene described. Table 10.6 summarises the three factors that govern the Attentional System.

As we saw in Chapter 3, figure–ground organisation, an embodied attentional phenomenon, is fundamental to the nature of human perception. According to Talmy's theory of Cognitive Semantics, attention is also reflected in semantic structure, as encoded by the open-class, and especially the closed-class, semantic systems. It is important to emphasise that the factors strength, pattern and mapping of attention should not be viewed as distinct types of semantically encoded attention. Instead, these are factors that interact to focus attention: prominence gives rise to patterns of attention which are then mapped onto scenes. Hence, I now, briefly, illustrate the interaction of these factors here with examples of the three patterns of attention types: focus, window and level of attention.

3.2.2 Focus of attention pattern

Example (19) involves a **COMMERCIAL EVENT frame**. A **frame**, in this sense, arises from cultural knowledge, and is stored in the mind of a language user as part of the encyclopaedic knowledge to which words have access. In particular, the COMMERCIAL EVENT frame concerns our knowledge about financial transactions involving the exchange of goods or services for money, involving **roles** for customers and sellers. In (19a) *the wine merchant*, corresponding to the SELLER role, is foregrounded, serving as the figure. In contrast, the BUYER (*John*) and GOODS (*champagne*) roles are backgrounded and together make up the ground (I will have more to say about frames in Chapter 16). In (19b), *John*, which corresponds to the BUYER role, is the figure, and the SELLER and GOODS roles make up the ground.

(19) a. The wine merchant sold the champagne to John.
b. John bought the champagne from the wine merchant.

This example illustrates a focus of attention pattern. In terms of strength of attention, the foregrounding results from the mapping of attention onto a particular entity in the scene. The grammatical system encodes this in two ways: first, by the selection of one of several verbs relating to the COMMERCIAL EVENT frame (*buy* versus *sell*, for example); and second, by the associated word order. The prominence of the clause-initial position illustrates the phenomenon referred to as **grammatical iconicity**, whereby some aspect of conceptual structure is 'mirrored' in language. In this case, conceptual prominence is mirrored by grammatical prominence. The choice over which participant in the event is placed in this position is linked in part to the choice of verb and in part to the type of grammatical construction selected (e.g. active versus passive voice), (19a) and (19b), respectively.

3.2.3 Windowing pattern

The windowing pattern involves the explicit mention of some part or parts of a scene (**windowing**), while other parts may be omitted (**gapping**). The windowing pattern differs from the focus of attention (figure–ground) pattern because the figure–ground pattern concerns the organisation of aspects of the conceptual representation that are present in the linguistic representation. Analogous to the figure–ground pattern, however, the windowing pattern represents a strategy for foregrounding (strength) and involves mapping.

For example, a **path of motion** can exhibit a windowing pattern, as it consists of a beginning, a middle and an end. In example (20), the whole path of motion is windowed whereas in the examples in (21) only the **initial**, **medial** or **final** portion of the path is windowed, respectively:

(20) The champagne cork shot out of the bottle, through the air and into Susan's eye.

(21) a. The champagne cork shot out of the bottle. INITIAL
b. The champagne cork shot through the air. MEDIAL
c. The champagne cork shot into Susan's eye. FINAL

Talmy proposes that the windowing pattern also accounts for grammatical behaviour, such as the division of the **complement category** into obligatory and optional complements. For example, one of the verbs relating to the COMMERCIAL EVENT frame, *spend*, only requires the MONEY role as an obligatory complement (together with BUYER). This is illustrated in (22a). The GOODS role can be realised as an optional complement (22b). However, the SELLER role is 'blocked' as a complement if *spend* is selected (22c). This follows as a given verb windows some roles in a given frame, rather than others: *spend* doesn't window the SELLER role, for instance, in the COMMERCIAL EVENT frame.

(22) a. George spent £100.
b. George spent £100 on that champagne.
c. *George spent £100 on that champagne to the wine merchant.

3.2.4 Level of attention pattern

The examples in (23) illustrate two different levels of attention patterns. As these examples show, the level of attention pattern relates to whether the focus of attention is upon the group of friends as a whole, also known as a Gestalt representation (23a), or upon the internal structure, or components, of the group (23b):

(23) a. the group of friends
b. the friends in the group

3.3 The Perspectival System

We have seen that the Configurational Structure System structures participants and scenes in space and time, while the Attentional System governs the distribution of attention over those referents. The Perspectival System establishes a viewpoint from which participants and scenes are viewed.

3.3.1 Overview

In contrast to the Configurational Structure System, which partitions a scene into actions and participants, the Perspectival System specifies the perspective from which one 'views' a scene. This system includes schematic categories that relate to the spatial or temporal perspective point from which a scene is viewed, the distance of the perspective point from the entity viewed, the change of perspective point over time and so on. This system relates to the conceptual 'perspective point' from which we view an entity or a scene and involves the four schematic categories: **location**, **distance**, **mode** and **direction** (Figure 10.8).

3.3.2 Perspectival location

The schematic perspectival category of location relates to the location that a perspective point occupies relative to a given utterance (traditionally called **deixis**, from the Greek meaning 'reference'). This concerns the position of a perspective point (or **deictic centre**), from which a scene is 'viewed'. In intuitive terms, the deictic centre corresponds to the 'narrator', from whose perspective you can imagine the scene being described. In spoken language, the 'narrator' is the speaker. In semantic structure, deixis works by signalling perspective relative to the speaker's location, and deictic expressions are then interpreted with respect to that point of reference.

To illustrate this schematic category, consider the following examples. In each, the perspective point from which the scene is described is different. In

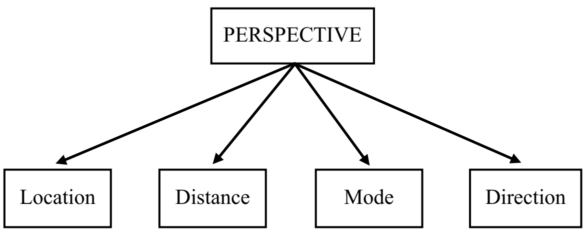


Figure 10.8 Schematic categories of the Perspectival System

(24), the perspective point is located inside the room, while in (25) the perspective point is located outside the room.

(24) Interior perspective point
The door slowly opened and two men walked in.

(25) Exterior perspective point
Two men slowly opened the door and walked in. (Talmy 2000a: 69)

Examples like these raise the following question: how do we know where the perspective point is located? After all, there does not appear to be anything in these sentences that explicitly tells us where it is. However, it is not the case that there is no explicit encoding that conveys the perspective point. It is simply that the perspective point is encoded in semantic structure via the closed-class semantic system. In the example in (24), the subject of the sentence is *the door*, which is the THEME: a passive entity whose location or state is described. In this example, *open* is an intransitive verb: it requires no object. In example (25), the subject of the sentence is *two men*, which is the AGENT: the entity that intentionally performs the action of opening the door. In this example, *open* is transitive (it requires an object: *the door*).

Why, then, does changing the semantic structure of the sentence, and thus the subject, affect our understanding of the perspective point? The reason is that what comes first in the sentence (the subject) corresponds to what is viewed first by the speaker/narrator, and this provides us with clues for reconstructing the perspective point. In the first clause of example (24), the initiator(s) of the action are not mentioned, so we deduce that the initiators of the action are not visible. From this we conclude that the perspective point must be inside the room.

In example (25) the initiators of the event are mentioned first, so we deduce that the perspective point is exterior to the room. As I mentioned earlier, the way in which semantic structure mirrors conceptual structure concerns (grammatical) iconicity. In (24), the fact that the door being opened is mentioned first, implies that the perspective point is located inside the room, which views the door being opened first, before the initiators of the door-opening action can be viewed. In contrast, in (25), the fact that the agent is mentioned first, reflects, iconically, that the perspective point is located outside the room and hence the men initiating the door-opening action can be seen. In short, these examples illustrate that the grammatical organisation of the sentence, namely word order, conveys schematic meaning, and hence encodes semantic structure – this follows the more general claim, made by cognitive linguists, that grammar cannot be separated from meaning (as we shall in detail in Part IV of the book).

3.3.3 Perspectival distance

In some languages, open or closed-class expressions can signal **proximal**, **medial** or **distal distance** of a referent relative to speaker or hearer. This phenomenon, which also, therefore, relates to deixis, is subsumed by Talmy under the perspectival distance schematic category.

I illustrate this, using the following examples from Hausa, a West African language (Buba 2000). In this language, demonstrative determiners, pronouns and adverbs show a four-way deictic distinction, where distance interacts with location. The examples in (26) illustrate the behaviour of the pre-nominal demonstrative determiners:

(26) a. SPEAKER PROXIMAL
wannàn yārṑ
'this boy [near me]'
b. ADDRESSEE PROXIMAL
wànnan yārṑ
'that boy [near you]'
c. SPEAKER/ADDRESSEE MEDIAL
wancàn yārṑ
'that boy [over there]'
d. SPEAKER/ADDRESSEE DISTAL
wàncan yārṑ
'that boy [way over there]'

In these examples, the grave accent (e.g. '*à*'), represents a low tone vowel whereas a vowel unmarked for tone is high. A macron (e.g. '*ā*'), indicates a long vowel whereas a vowel unmarked for length is short. As these examples demonstrate, Hausa is a **tone language**, where the relative pitch of the vowels can give rise to differences in meaning, both in terms of content and in terms of marking grammatical differences.

3.3.4 Perspectival mode

This schematic category relates to whether a perspective point is in motion or not. It has two parameters: **synoptic** and **sequential**. If the perspective point is stationary, it is in synoptic mode. If the perspective point is moving, it is in sequential mode. This category interacts with perspectival distance, where the parameter distal tends to correlate with synoptic (stationariness) and proximal with sequential (motion).

Talmy argues that this schematic category is also relevant for aspect. Perfect aspect encodes a perspective that is distal and stationary, because the event depicted is viewed as a completed whole. Progressive aspect, on the other hand, encodes an event that is proximal and 'moving', because the event is viewed as immediate and 'ongoing'. This is illustrated by the examples in (27).

(27) a. SYNOPTIC
Susan had seen some houses through the window of the train.
b. SEQUENTIAL
Susan kept seeing houses through the window of the train.

Example (27a) invokes the perspective of a fixed vantage point. In contrast, example (27b) invokes a motion perspective, as a result of which the houses are seen one or some at a time.

3.3.5 Perspectival direction

The final schematic category relating to perspective point is perspectival direction. This category also interacts closely with attention and concerns the 'direction' in which an event is viewed relative to a given temporal perspective point. The direction can be **prospective** or **retrospective**. Consider the examples in (28):

(28) a. PROSPECTIVE
Susan finished the champagne before she went home.
b. RETROSPECTIVE
Before she went home, Susan finished the champagne.

Observe that that it is not the order of the events themselves that distinguishes the two examples; in both cases, Susan first finishes the champagne and then goes home. The difference relates to the perspectival direction from which the two events are viewed, which is illustrated in Figures 10.9 and 10.10.

In Figure 10.9, the event sequence is viewed from the perspective of the first event, event A. This is called a prospective direction because the perspective point is fixed at the temporally earlier event, from which the speaker looks 'forward' to the later event.

In Figure 10.10, the event sequence is viewed from the perspective of the second event, event B (going home). This is called a retrospective direction because the perspective point is located at the temporally later event (going home) and the viewing direction is 'backwards', towards the earlier event.

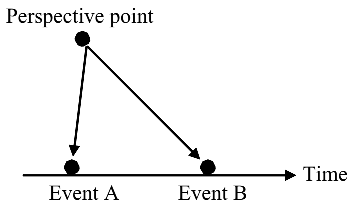


Figure 10.9 Prospective direction (adapted from Talmy 2000a: 74)

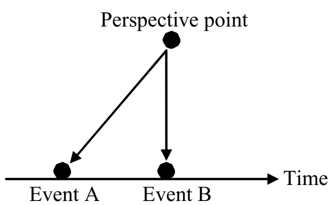


Figure 10.10 Retrospective direction (adapted from Talmy 2000a: 75)

3.4 The Force-Dynamics System

The fourth schematic system encoded in semantic structure, proposed by Talmy, is that of Force-Dynamics. This system relates to our embodied experience of how physical entities interact with respect to force, including the exertion and resistance of force, the blockage of force and the removal of such blockage. The Force-Dynamics System encodes the 'naive physics' of our conceptual system (our intuitive rather than scientific understanding of force dynamics), and has implications not only for the expression of relationships between physical entities, but also for abstract concepts such as permission and obligation (**modal categories**).

3.4.1 Overview

Talmy argues that this system, as it is manifested in semantic structure, relates to the way in which objects are conceived relative to the exertion of force. While the other schematic systems we have discussed so far relate primarily to information derived from exteroception, such as visual perception, the Force-Dynamics System derives from kinaesthesia. Recall that in Chapter 3, I defined kinaesthesia as the felt sense of movement, deriving from the multimodal integration of sensorimotor information arising from proprioception and the vestibular modality.

3.4.2 Types of force

There are a number of different types of force, deriving from conceptual structure, that are encoded in semantic structure (via the open and closed-class semantic systems). To illustrate, I begin with **physical force**. Consider the following examples, drawn or adapted from Talmy (2000a: 412):

(29) PHYSICAL FORCE
  a. The ball <u>was rolling</u> along the beach.
  b. The ball <u>kept rolling</u> along the beach.

The examples in (29) highlight a contrast in physical force. The expression in (29a) depicts a scene that is neutral with respect to force, in the sense that, while something or someone must have caused the motion of the ball, the sentence does not refer to the cause of motion.

In contrast, to the *be* V-*ing* construction, underlined in (29a), the use of the *keep* V-*ing* construction, underlined in (29b), conveys a scene in which we understand that the ball's natural tendency towards rest is overcome by some external force, perhaps the wind, which ensures that the ball remains in a state of motion. Again, the only difference between these two examples is in the grammatical constructions: specifically, the auxiliary verb *be* versus the quasi-auxiliary *keep*, together with the progressive participle V-*ing*. In short, our embodied experience of physical force forms part of conceptual structure. And via, in this case, the closed-class system, it is encoded in semantic structure, and thereby can be externalised via language, as captured in Talmy's theory of Cognitive Semantics.

The Force-Dynamics System doesn't just relate to physical force, but can also relate to **psychological force**.

(30) PSYCHOLOGICAL FORCE
- a. He didn't close the door.
- b. He refrained from closing the door.

In this example, the contrast is between an AGENT's non-action, as in (30a), and the AGENT's resistance to action, as in (30b). As with the example in (29a), the construction *did not VP* in (30a) is neutral with respect to force. In contrast, the construction *refrain from* VP*ing* encodes a force-dynamics conflict internal to the agent.

Finally, consider example (31), which illustrates **social force**.

(31) SOCIAL FORCE
- a. She's got to go to the park.
- b. She gets to go to the park.

The *have (got) to* VP construction in (31a) encodes a scene in which the subject's desire not to act is overcome by an external force so that she is forced to act. Our knowledge of the world tells us that the force that obliges someone to go to the park is likely to be of a social rather than a physical nature: this construction therefore expresses obligation. The *get to VP* construction in (31b), in contrast, encodes a scene in which the subject's desire to act is unimpeded by any external inhibiting force so that she is able to act. Thus, the construction underlined in (31b) expresses permission. Both scenes depict the same end result, but the grammatical constructions encode different force dynamics of a social nature that lead to this result.

3.4.3 Antagonist versus agonist

Talmy's presentation of the Force-Dynamics System assumes two entities that exert force: the **antagonist** and the **agonist**. The agonist is the entity that receives focal attention and the antagonist is the entity that opposes the agonist, either overcoming the force of the agonist or failing to overcome it. The force intrinsic to the agonist is either 'towards action' or 'towards rest', and the force intrinsic to the antagonist is the opposite.

I illustrate this system with a set of examples that encode physical entities. The subscripts AGO and ANT represent 'agonist' and 'antagonist', respectively:

(32)
- a. [the cork]$_{\text{AGO}}$ kept rolling because of [the breeze]$_{\text{ANT}}$
- b. [Susan]$_{\text{AGO}}$ kept standing despite [the gale]$_{\text{ANT}}$

c. [the cork]$_{AGO}$ kept rolling despite [the mud]$_{ANT}$
d. [the cork]$_{AGO}$ remained lying on the slope because of [the grass]$_{ANT}$

In (32a), the force tendency of the agonist, *the cork*, is towards rest; but this is overcome by the greater force of the antagonist *the breeze*, which is towards motion and thus stands in a causal relationship with the agonist. In (32b), the force tendency of the agonist *Susan* is also towards rest. In this case, the agonist's force is greater. In (32c), the force tendency of the agonist, *the cork*, is towards motion, and the agonist's force is greater than the opposing force of the antagonist, *the mud*. Finally, in (32d), the force tendency of the agonist, *the cork*, is also towards motion, but this time the opposing force of the antagonist, *the grass*, is greater and prevents the motion. Observe that the force dynamics of the interaction are expressed here by closed-class elements: the conjunctions *because of* or *despite*. While the semantic structure associated with *because of* encodes the greater force of the antagonist, which overcomes the force of the agonist and thus entails causality, *despite* encodes the greater force of the agonist.

Talmy represents force dynamics with diagrams akin to Figure 10.11. The circle represents the agonist and the concave shape represents the antagonist. The symbol • represents the tendency towards rest, and the symbol > represents the tendency towards action. Finally, the symbol + represents the stronger of the two forces. This diagram represents the force-dynamics pattern in example (32a), where the inherent tendency of the agonist is towards rest but the greater force of the antagonist causes motion.

According to Talmy, the Force-Dynamics System also underlies the behaviour of another major closed-class category: the **modal auxiliaries**. For example, *can* (in the capacity sense) encodes a tendency towards action (e.g. *John can run a mile in four minutes*). In contrast, *must* encodes a tendency towards rest that is overcome by the force of the antagonist (e.g. *You must pay your income tax*). In this example, the **deontic** (duty or obligation) reading encodes legal or social obligation, and this obligation represents the antagonist.

The discussion in this chapter has provided only an introduction to the conceptual structuring system, and a number of extremely complex schematic systems proposed by Talmy, each of which consists of a number of schematic categories. It is important to point out that the systems described here do not, in all likelihood, represent an exhaustive list of the systems that make up the conceptual structuring system, as Talmy himself acknowledges. That said, this presentation nevertheless reveals that systematic patterns in language, both in the open-class and the closed-class semantic systems, represent evidence

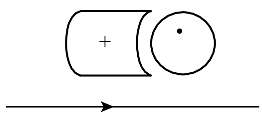


Figure 10.11 Force dynamics encoded in sentences such as (32a) (adapted from Talmy 2000a: 415)

for a conceptual system that structures knowledge according to embodied experience.

SUMMARY

This chapter has outlined key elements of Talmy's theory of **Cognitive Semantics**. And in so doing, it has illustrated the guiding principle of cognitive linguistics that **semantic structure** reflects **conceptual structure** and, hence, the semantic structure encoded by language can be used to study the nature of conceptual structure. We have seen that in his account of semantic structure, Talmy has proposed that conceptual structure is represented, in semantic structure, via two systems: a **conceptual content system** and a **conceptual structuring system**. While the conceptual content system is encoded, in semantic structure, via the **open-class semantic system** of language, the conceptual structuring system is encoded by open-class elements, and in particular, by the **closed-class semantic system**, which is specialised to encode it in language. The conceptual structuring system coveys **structural** or **schematic meaning**, and is made up of a series of four **schematic systems**, derived from embodied experience, which are encoded in the semantic structure of language. While the first three schematic systems – the **Configurational Structure System**, the **Attentional System** and the **Perspectival System** – relate most prominently to visual perception, the **Force-Dynamics System** relates most prominently to kinaesthetic (motor) perception. In this respect, Talmy's theory has illustrated the thesis of **embodied cognition**: that conceptual structure reflects **embodied experience**. The first schematic system, the **Configurational Structure System** partitions quantities from the domains of SPACE and TIME according to the internal structural properties of those quantities, as well as in terms of how they are distributed within SPACE and TIME. We also saw that the processes of **reification** and **actualisation** can convert **quantity** from TIME to SPACE and vice versa. The second system is the **Attentional System**. This relates to the distribution of attention over **matter** and **action** – scenes and their participants. It is governed by three main factors: **strength**, the relative prominence of referents, **pattern**, which concerns how patterns of attention are organised and **mapping,** which governs the way in which parts of an attention pattern are mapped onto parts of the scene described. The third system is the **Perspectival System**. This establishes a viewpoint from which participants and scenes are viewed. This system relates to the conceptual 'perspective point' from which we view an entity or a scene and involves the four schematic categories: **location**, **distance**, **mode** and **direction**. The fourth schematic system is the **Force-Dynamics System**. This relates to our experience of how physical entities interact with respect to force, including the exertion and resistance of force, the blockage of force and the removal of such blockage. The Force-Dynamics System assumes two entities that exert force. The **agonist** is the entity that receives focal attention and the **antagonist** is the entity that opposes the agonist, either overcoming the force of the agonist or failing to overcome it.

FURTHER READING

- **Talmy (2000a, 2000b)**. In this two-volume set, Talmy revises and brings together, in one venue, his classic papers on Cognitive Semantics. Volume 1 focuses on the nature of the Conceptual Structuring System. In Volume 2, Talmy extends his scope, and considers typological variation in the Conceptual Structuring System, as well as considering the structure of other cognitive domains including narrative and culture.
- **Talmy (2018a)**. In 2007 Talmy gave a series of ten lectures at Beihang University, Beijing. These lectures, now available as a book and an accompanying DVD, provide a useful overview of Talmy's Cognitive Semantics, and specifically how language encodes conceptual structure.
- **Talmy (2018b)**. In this book, Talmy develops an account of reference in semantic structure. He proposes that there is a single system, which he dubs targeting, that underlies two types of reference: language-internal (anaphora) and language external (deixis).

DISCUSSION QUESTIONS

1. What does it mean to say that semantic structure reflects conceptual structure? And how does Talmy's theory of Cognitive Semantics provide evidence for this contention?
2. Talmy focuses on what he refers to as the conceptual structuring system, and provides a taxonomy of the schematic systems that make this up. Provide a brief characterisation of the hallmark of each of these schematic systems, with supporting examples.
3. In what way does Talmy's account provide evidence for the embodied nature of language?

11

Categorisation and idealised cognitive models

In this chapter, I continue our exploration of the cognitive linguistics approach to conceptual structure. I do so by focusing on **categorisation**: our ability to identify perceived similarities (and differences) between entities and thus group them together as related concepts in the mind. Thus, categorisation both relies upon and gives rise to concepts. It is a central organising principle of the human conceptual system, because it accounts, in part, for the nature and organisation of concepts. Categorisation is of fundamental importance for both cognitive psychologists and linguists, as both disciplines require a theory of categorisation in order to account for knowledge representation and indeed for linguistic meaning (as we shall see in Part III of the book).

A central feature of this chapter is the discussion of findings that emerged from the work of cognitive psychologist Eleanor Rosch and her colleagues in the 1970s, and the impact of these findings on the theoretical developments in early, pioneering research in cognitive linguistics. In particular, I shall be concerned with the work of George Lakoff, who addressed findings relating to **prototype structure** and **basic-level categories** revealed by research in cognitive psychology, and who developed a cognitive linguistics theory of **idealised cognitive models** (or **ICMs** for short) in order to account for these phenomena. The influence of Lakoff's research, and of his book *Women, Fire and Dangerous Things* (1987), was important for the development of different aspects of cognitive linguistics, not least the development of conceptual metaphor theory (Chapter 12), as well as approaches to word meaning, notably Lakoff's **radial categories account** of word meaning (Chapter 17), and even **Construction Grammar** (Chapter 26).

I begin the chapter by explaining how Rosch's research on categorisation was important in the development of cognitive linguistics, setting this discussion against the context of the classical view of categorisation that was superseded by Rosch's findings. I then examine, in detail, the findings that emerged from Rosch's research, and explore the development of Lakoff's theory of ICMs, in response to this research. Finally, I briefly explore the issue of linguistic categorisation in the light of the empirical findings and theoretical explanations presented in this chapter.

1 A new approach to categorisation and the development of cognitive linguistics

In the 1970s the **definitional** or **classical theory** of human categorisation – so called because it had endured since the time of the ancient Greek philosophers over 2,000 years ago – was finally called into question. The new ideas that contributed most significantly to this development are grouped together under the term **prototype theory**, which emerged from the research of Eleanor Rosch and her colleagues.

In fact, prototype theory was less a theory of knowledge representation than a series of findings that provided startling new insights into human categorisation. In so far as the findings led to a theory, Rosch proposed in her early work that humans categorise not by means of the **necessary and sufficient conditions** assumed by the classical theory (to which I return below), but with reference to a **prototype**: a relatively abstract mental representation that assembles the key attributes or features that best represent instances of a given category. The prototype was therefore conceived as a schematic representation of the most salient or central characteristics associated with members of the category in question.

A problem that later emerged was that the view of prototypes as mental representations failed to model the **relational knowledge** that humans appear to have access to. This criticism led to further developments in prototype theory. Some scholars argued for a revised view of the prototype, suggesting that the mental representation might correspond to an **exemplar**: a specific category member or 'best example' of a category, rather than a schematic group of attributes that characterise the category as a whole.

However, **exemplar-based models** of knowledge representation were also problematic because they failed to represent the **generic information** that humans have access to when they use concepts in order to perform a host of conceptual operations, including categorisation. Indeed, the most recent theories of categorisation assert that a key aspect of knowledge representation is the dynamic ability to form simulations, (an idea that I introduced in Chapter 8). Thus, in a number of respects, prototype theory has been superseded by more recent empirical findings and theories. Despite this, there are a number of reasons why a chapter on categorisation in general, and prototype theory in particular, is essential for a thorough understanding of cognitive linguistics.

First, an investigation of prototype theory provides a picture of the historical context against which cognitive linguistics emerged as a distinct theoretical and empirical enterprise. The development of prototype theory in the 1970s resonated in important ways with linguists whose research would eventually contribute to defining the field of cognitive linguistics. Charles Fillmore and George Lakoff were both members of faculty at the University of California at Berkeley where Eleanor Rosch was also conducting her research, and both were influenced by this new approach to categorisation – we will come to Fillmore's research later, when I examine **Frame Semantics** in Chapter 16. For Lakoff in particular, Rosch's discovery that psychological categories did not have clearly definable boundaries but could, instead, be described as having **fuzzy boundaries** reflected his own views about language: Lakoff thought that lexical and grammatical categories might also be most insightfully conceived as categories with rather fluid membership. This led Lakoff to apply this new view of psychological categories to linguistic categories. In this way, prototype theory inspired some of the early research in cognitive linguistics.

Second, and perhaps more importantly, although it now seems that prototype theory cannot be straightforwardly interpreted as a theory of knowledge representation, the empirical findings that emerged from this research demand to be accounted for by any theory of categorisation; the **prototype effects** or **typicality effects** that Rosch discovered are psychologically real, even if the early theories of knowledge representation that were proposed to account for these effects have been shown to be problematic. Indeed, a central concern in Lakoff's (1987) book was to address the problems that early prototype theory entailed, and to propose in its place a theory of ICMs.

Third, as I have already intimated, Lakoff's (1987) book set the scene for the development of three important strands of research within cognitive linguistics: i) conceptual metaphor theory (the next chapter); ii) **network approaches to semantic structure** (Chapter 17); and iii) a cognitive approach to grammar that influenced the well-known constructional approach developed by his former PhD student, Adele Goldberg (to which I return in Part IV of this book).

Finally, *Women, Fire and Dangerous Things* in many ways defines the two key commitments of cognitive linguistics that I introduced in Chapter 2: the Generalisation Commitment and the Cognitive Commitment. Lakoff's book took what was then a relatively new set of findings from cognitive psychology and sought to develop a model of language that was compatible with these findings. In attempting to model principles of language in terms of findings from cognitive psychology, Lakoff found himself devising and applying principles that were common both to linguistic and conceptual phenomena, which thus laid important foundations for the cognitive approach to language.

2 The classical theory

Before presenting Rosch's findings concerning categorisation, it is important to set her research in its historical context. The classical theory of categorisation was the prevalent model since the time of Aristotle and holds that conceptual and linguistic categories have **definitional structure**. This means that an entity represents a category member by virtue of fulfilling a set of necessary and (jointly) sufficient conditions for category membership. These conditions are called 'necessary and sufficient' because they are individually necessary but only collectively sufficient to define a category. Traditionally, the conditions were thought to be sensorimotor (exteroceptive) in nature.

To illustrate, consider the lexical concept BACHELOR. For an entity to belong to this category, it must adhere to the following conditions: 'is not married'; 'is male'; 'is an adult'. Each of these conditions is necessary for defining the category, but none of them is individually suffcient because 'is not married' could equally hold for SPINSTER, while 'is male' could equally hold for HUSBAND and so on. In theories of linguistic meaning, necessary and suffcient conditions have taken the form of semantic primitives or componential features, an idea that I introduced in Chapter 7).

As we have seen, the idea of semantic primitives has been influential in theories of philosophy of language and mind that adopt the formal 'mentalist' view proposed by Chomsky, which is primarily concerned with modelling an innate and specialised system of linguistic knowledge. This is because, in principle at least, semantic primitives suggest the possibility of a set of universal semantic features that can be combined and recombined in order to give rise to an infinite number of complex units (word meanings). This approach is reminiscent of the characterisation of human speech sounds in phonetics and phonology, where a bundle of articulatory features makes up each speech sound. It is also reminiscent of the characterisation of sentence structure in terms of strings of words that combine to make phrases, which then combine to make sentences.

The influence of the semantic decomposition approach reflects the influence of structural approaches to sound and grammar upon the development of theories of word meaning. This kind of approach is attractive for a formal theory because it enables the formulation of precise statements which are crucial to the workings of the 'algorithmic' or 'computational' model favoured by these approaches. For example, Katz (1972) argued that the English noun *chair* names a category that can be decomposed into the set of semantic features or markers shown in Table 11.1.

However, while many (usually formal) linguists and cognitive scientists would argue that decompositional approaches have worked rather well for modelling the structural aspects of language such as phonology or syntax, many linguists (both formal and cognitive) also recognise that the classical decompositional theory of semantics suffers from a number of problems. I discuss here three of the most serious problems with this approach.

2.1 The definitional problem

While the classical theory holds that categories have definitional structure, in practice it is remarkably difficult to identify a precise set of conditions that are

Table 11.1 Semantic features or markers for the category CHAIR (adapted from Katz 1972)

OBJECT	PHYSICAL
NON-LIVING	ARTEFACT
FURNITURE	PORTABLE
SOMETHING WITH LEGS	SOMETHING WITH A BACK
SOMETHING WITH A SEAT	SEAT FOR ONE

necessary and sufficient to define a category. This requires the identification of all those features that are shared by all members of a category (necessary features) and that together are sufficient to define that category (no more features are required). The following famous passage from the philosopher Wittgenstein's discussion of the category GAME illustrates the difficulty inherent in this approach:

> Consider for example the proceedings that we call 'games'. I mean board-games, card-games, ball-games, Olympic games and so on. What is common to them all? – Don't say: 'There must be something common, or they would not be called "games"' – but look and see whether there is anything common to all. – For if you look at them you will not see something that is common to all, but similarities, relationships, and a whole series of them at that. To repeat: don't think, but look! – For example at board-games, with their multifarious relationships. Now pass to card-games; here you find many correspondences with the first group, but many common features drop out, and others appear. When we pass next to ball-games, much that is common is retained, but much is lost. – Are they all 'amusing'? Compare chess with noughts and crosses. Or is there always winning and losing, or competition between players? Think of patience. In ball-games there is winning and losing; but when a child throws his ball at the wall and catches it again, this feature has disappeared. Look at the parts played by skill and luck; and at the difference between skill in chess and skill in tennis. Think now of games like ring-a-ring-a-roses; here is the element of amusement, but how many other characteristic features have disappeared! And we can go through the many, many other groups in the same way; we see how similarities crop up and disappear. (Wittgenstein 1953: 66)

This passage reveals that there is no single set of conditions that is shared by every member of the category GAME. While some games are characterised by AMUSEMENT, such as tiddlywinks, others are characterised by LUCK, such as dice games; still others are characterised by SKILL or by COMPETITION, such as chess. In short, it appears to be nigh on impossible to identify a definitional structure that neatly defines this category.

To present a simpler example, consider the category CAT. We might define this category as follows: 'is a mammal'; 'has four legs'; 'is furry'; 'has a long tail'; 'has pointy ears'. What happens if your cat gets into a fight and loses an ear? Or gets ill and loses its fur? Does it then stop being a member of the category CAT? The definitional approach therefore suffers not only from the problem that the definitions are often impossible to identify in the first place, but also from the problem that definitions are, in reality, subject to exceptions. A three-legged one-eared hairless cat is still a cat. It seems, then, that a category need not have a set of conditions shared by all members in order to 'count' as a meaningful category in the human mind.

It is important to emphasise here that we are not dealing with scientific categories, but with the everyday process of categorisation that takes place in the human mind on the basis of perceptual features. While a biologist might be able to explain why a three-legged, one-eared hairless cat still counts as a member of that species, what cognitive psychologists and linguists seek to explain is how the human mind goes about making these kinds of everyday judgements in the absence of such scientific knowledge.

2.2 The problem of conceptual fuzziness

A second problem with the classical view is that definitional structure entails that categories have definite and distinct boundaries. An entity either will or will not possess the correct properties for category membership. Indeed, this appears to be the case for many categories. Consider the category ODD NUMBER. Members of this category are all those numbers that cannot be divided by 2 without leaving a remainder: 1, 3, 5, 7, 9 and so on. This category has clearly defined boundaries, because number is either odd or even: there is no point in between.

However, many categories are not so clearly defined but instead have fuzzy boundaries. Consider the category FURNITURE. While TABLE and CHAIR are clearly instances of this category, it is less clear whether CARPET should be considered a member. Now take the category BIRD. While it is obvious that birds like ROBIN and SPARROW belong to this category, it is less obvious that animals such as PENGUIN and OSTRICH do: neither can fly. The difficulty in deciding to set the boundary for certain categories amounts to the problem of conceptual fuzziness. If the classical theory of categorisation is correct, this problem should not arise.

2.3 The problem of prototypicality

The third problem with the definitional view of categories is related to the problem of conceptual fuzziness; while the problem of conceptual fuzziness concerns what happens at the boundaries of a category, the problem of prototypicality concerns what happens at the centre of a category. As we shall see in the next section, findings from experimental cognitive psychology reveal that categories give rise to prototype or typicality effects. For example, while people judge TABLE or CHAIR as **good examples** or **typical examples** of the category FURNITURE, CARPET is judged as a less good example. These asymmetries between category members are called typicality effects. While we might expect this to happen in the case of categories that have fuzzy boundaries, experiments have revealed that categories with distinct boundaries also show typicality effects. For example, Armstrong et al. (1983) found that the category EVEN NUMBERS exhibits typicality effects: participants in their experiments consistently rated certain members of the category including ‘2’, ‘4’, ‘6’ and ‘8’ as ‘better’ examples of the category than, say, ‘98’ or ‘10,002’. Categories that exhibit typicality effects are called **graded categories**. Typicality effects

Table 11.2 Problems for the classical theory of categorisation

Problem	Description
Definitional problem	Difficult or impossible to identify the set of necessary and sufficient conditions to define a category
The problem of conceptual fuzziness	Not all categories have clear boundaries
The problem of typicality	Many categories, including some with clear boundaries, exhibit typicality effects

represent a serious challenge for the classical theory, because if each member of a category shares the same definitional structure, then each member should be equally typical. These problems with the classical theory of categorisation are summarised in Table 11.2.

2.4 Further problems

Laurence and Margolis (1999) discuss further problems with this approach which I briefly review here. These are what they call the **problem of psychological reality** and the **problem of ignorance and error**.

The problem of psychological reality relates to the fact that there is no evidence for definitional structure in psychological experiments. For example, we might expect words with a relatively simple definitional structure or small set of features (e.g. *man*) to be recognised more rapidly in word-recognition experiments than words with a more complex definitional structure, or greater number of features (such as *cousin*). This expectation is not borne out by experimental evidence.

The problem of ignorance and error relates to the fact that it is possible to possess a concept without knowing its properties; possessing a concept is not dependent upon knowing its definition. For example, it is possible to have the concept WHALE while mistakenly believing that it belongs to the category FISH rather than the category MAMMAL.

3 Prototype theory

Prototype theory is most closely associated with the experimental research of cognitive psychologist Eleanor Rosch and her colleagues. In this section, I provide an overview and discussion of Rosch's research, which is largely based on experimental findings.

3.1 Principles of categorisation

Prototype theory posits that there are two basic principles that guide the formation of categories in the human mind: i) the **principle of cognitive economy**, and ii) the **principle of perceived world structure**. These principles together give rise to the **human categorisation system**.

3.1.1 Principle of cognitive economy

This principle states that an organism, like a human being, attempts to gain as much information as possible about its environment while minimising cognitive effort and resources. This cost–benefit balance drives **category formation**. Rather than storing separate information about every individual stimulus experienced, humans can group similar stimuli into categories, which maintains **economy in cognitive representation**.

3.1.2 Principle of perceived world structure

The world around us has **correlational structure**. For instance, it is a fact about the world that wings most frequently co-occur with feathers and the ability to fly (as in birds), rather than with fur or the ability to breathe underwater. This principle states that humans rely upon correlational structure of this kind in order to form and organise categories.

3.2 The categorisation system

These two principles give rise to the human categorisation system. While the principle of cognitive economy has implications for the level of detail or **level of inclusiveness** with which categories are formed, the principle of correlational structure has implications for the representativeness or **prototype structure** of the categories formed (Rosch 1977, 1978). Rosch (1978) suggests that this gives rise to a categorisation system that has two dimensions: a **horizontal dimension** and a **vertical dimension**. This idea is represented in Figure 11.1.

The vertical dimension relates to the level of inclusiveness of a particular category: the higher up the vertical axis a particular category is, the more inclusive it is. Consider the category DOG in Figure 11.1. Relative to this category, the category MAMMAL is higher up the vertical axis and includes more members than the category DOG. The category MAMMAL is therefore more inclusive than

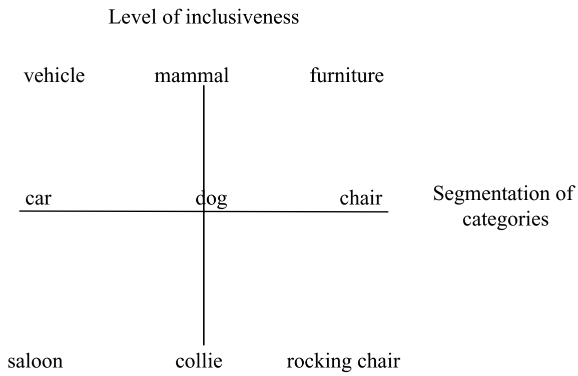


Figure 11.1 The human categorisation system

the category DOG. The category COLLIE, however, is lower on the vertical axis and has fewer members; this category is less inclusive than the category DOG. In contrast, the horizontal dimension relates to the category distinctions at the same level of inclusiveness. Hence, while DOG and CAR are distinct categories, they operate at the same level of detail.

3.3 The vertical dimension

The vertical dimension derives from the discovery by Rosch and her colleagues (Rosch et al. 1976) that categories can be distinguished according to level of inclusiveness. Inclusiveness relates to what is subsumed within a particular category. As we have seen, the category FURNITURE is more inclusive than the category CHAIR because it includes entities such as DESK and TABLE in addition to CHAIR. In turn, CHAIR is more inclusive than ROCKING CHAIR because it includes other types of chairs in addition to rocking chairs. The category ROCKING CHAIR only includes rocking chairs, and therefore represents the least inclusive level of this category.

Rosch and her colleagues found that there is a level of inclusiveness that is optimal for human beings in terms of providing optimum cognitive economy. This level of inclusiveness was found to be at the mid-level of detail, between the most inclusive and least inclusive levels: the level associated with categories such as CAR, DOG and CHAIR. This level of inclusiveness is called the **basic level**; categories at this level are called **basic-level categories**.

Categories higher up the vertical axis, which provide less detail, are called **superordinate categories**. Those lower down the vertical axis, which provide more detail, are called **subordinate categories**. This is illustrated in Table 11.3.

In a remarkable series of experiments, Rosch found that basic-level categories provided the most inclusive level of detail at which members of a particular category share features in common. While the superordinate level (e.g. MAMMAL) is the most inclusive level, members of categories at this level of inclusiveness share relatively little in common when compared to members of categories located at the basic level of inclusiveness (e.g. DOG).

Table 11.3 Example of a taxonomy used by Rosch et al. (1976) in basic-level category research

Superordinate level	Basic level	Subordinate level
	CHAIR	KITCHEN CHAIR
		LIVING ROOM CHAIR
	TABLE	KITCHEN TABLE
FURNITURE		DINING ROOM TABLE
	LAMP	FLOOR LAMP
		DESK LAMP

3.3.1 Attributes

Rosch et al. (1976) found that the basic level is the level at which humans are best able to list a cluster of common attributes for a category. To investigate this, Rosch and her colleagues gave subjects ninety seconds to list all the attributes they could think of for each of the individual items listed in a particular taxonomy. Six of the taxonomies used by Rosch et al. are presented in Table 11.4. (It is worth pointing out to British English readers that because Rosch's experiments were carried out in the United States, some of the American English expressions may be unfamiliar.)

Table 11.5 lists common attributes found for three of these taxonomies. In the table, lower levels are assumed to have all the attributes listed for higher levels and are therefore not repeated. Table 11.5 illustrates the fact that subjects were only able to provide a minimal number of shared attributes for superordinate categories. In contrast, a large number of attributes were listed as being shared by basic-level categories, while just one or two more specific attributes were added for subordinate categories. Hence, while subordinate categories have slightly more attributes, the basic level is the most inclusive level at which there is a cluster of shared attributes.

3.3.2 Motor movements

In this experiment, Rosch et al. set out to establish the most inclusive level at which properties of human physical interaction with a category are found to cluster. This experiment also revealed that basic-level categories were the most inclusive level at which members of categories share **motor movements**. To demonstrate this, subjects were asked to describe the nature of their physical interaction with the objects listed. It was found that while there are few motor movements common to members of a superordinate category, there are several specific motor movements listed for entities at the basic level, while entities at the subordinate level make use of essentially the same motor movements. This provides further evidence that the basic level is the most inclusive level, this time with respect to common interactional experiences. This is illustrated in Table 11.6.

3.3.3 Similarity of shapes

For this experiment, Rosch et al. sought to establish the most inclusive level of categorisation at which shapes of objects in a given category are most similar. In order to investigate this, the researchers collected around 100 images from sources such as magazines and books representing each object at each level in the taxonomies listed in Table 11.4. The shapes were scaled to the same size and then superimposed upon one another. Areas of overlap ratios were then measured, which allowed the experimenters to determine the degree of similarity in shape. While objects at the superordinate level are not very similar in terms of shape (compare the outline shapes of car, bus and motorcycle,

Table 11.4 Six of the taxonomies used by Rosch et al. (1976) as stimuli

Superordinate	Basic level	Subordinate level	
MUSICAL INSTRUMENT	GUITAR	FOLK GUITAR	CLASSICAL GUITAR
	PIANO	GRAND PIANO	UPRIGHT PIANO
	DRUM	KETTLE DRUM	BASE DRUM
FRUIT	APPLE	DELICIOUS APPLE	MACKINTOSH APPLE
	PEACH	FREESTONE PEACH	CLING PEACH
	GRAPES	CONCORD GRAPES	GREEN SEEDLESS GRAPES
TOOL	HAMMER	BALL-PEEN HAMMER	CLAW HAMMER
	SAW	HACK HAND SAW	CROSS-CUTTING HAND SAW
	SCREWDRIVER	PHILLIPS SCREWDRIVER	REGULAR SCREWDRIVER
CLOTHING	PANTS	LEVIS	DOUBLE KNIT PANTS
	SOCKS	KNEE SOCKS	ANKLE SOCKS
	SHIRT	DRESS SHIRT	KNIT SHIRT
FURNITURE	TABLE	KITCHEN TABLE	DINING-ROOM TABLE
	LAMP	FLOOR LAMP	DESK LAMP
	CHAIR	KITCHEN CHAIR	LIVING ROOM CHAIR
VEHICLE	CAR	SPORTS CAR	FOUR-DOOR SEDAN CAR
	BUS	CITY BUS	CROSS-COUNTRY BUS
	TRUCK	PICK-UP TRUCK	TRACTOR-TRAILER TRUCK

Table 11.5 Examples of attribute lists (adapted from Rosch et al. 1976: Appendix I)

TOOL	CLOTHING	FURNITURE
make things	you wear it	no attributes
fix things	keeps you warm	**CHAIR**
SAW	**PANTS**	seat
metal	buttons	arms
handle	belt loops	comfortable
back teeth	pockets	four legs
blade	cloth	wood
sharp	two legs	holds people – you sit on it
cuts	**LEVIS**	**KITCHEN CHAIR**
edge	blue	no additional
wooden handle	**DOUBLE KNIT PANTS**	**LIVING-ROOM CHAIR**
CROSS-CUTTING HAND SAW	comfortable	large
used in construction	stretchy	soft
HACK HAND SAW		cushion
no additional		

for example, as instances of the category VEHICLE), and while objects at the subordinate level are extremely similar, the basic level was shown to the most inclusive level at which object shapes are similar. Put in a slightly different way, the basic level includes a much greater number of instances of a category than the superordinate level (for example, DOG versus COLLIE) that can be identified on the basis of shape similarity.

Table 11.6 Motor movements for categories at three levels of inclusiveness (adapted from Rosch et al. 1976: Appendix II)

Movement for superordinate categories	FURNITURE	
	eyes:	Scan
Additional movements for basic-level categories	CHAIR	
	head:	turn
	body:	turn, move back, position
	knees:	bend
	arm:	extend-touch
	waist:	bend
	butt:	touch
	body-legs	release weight
	back-torso:	straighten, lean
Additional movements for subordinate categories	LIVING-ROOM CHAIR	
	body:	Sink

3.3.4 Identification based on averaged shapes

In a fourth experiment, Rosch and her team devised averaged shapes of particular objects. They did this by overlapping outlines of entities belonging to a particular category. For all points where the two outlines did not coincide, the central point between the two lines was taken. Subjects were then shown the shapes and provided with superordinate, basic-level and subordinate terms to which they were asked to match the shapes. The success rate of matching shapes with superordinate terms was no better than chance, while subjects proved to be equally successful in matching averaged shapes with basic-level and subordinate terms.

For example, the superordinate category VEHICLE consisted of overlapped shapes for car, bus and motorcycle, which are significantly different in shape and therefore less recognisable. On the other hand, the basic-level category CAR, represented by overlapping shapes of different types of cars, did not involve significant differences in shape, and was easily identifiable. Again, although there is a greater degree of similarity at the subordinate level, the basic level is more inclusive. The absence of shape similarity at the superordinate level compared to the evident shape similarity at the basic level goes some way towards explaining why the basic level is the optimum categorisation level for the human categorisation system, which is based, among other things, on perceptual similarity.

3.3.5 Cognitive economy versus level of detail

The major finding to emerge from Rosch's research on basic-level categorisation is that this level is the most important level for human categorisation because it is the most inclusive and thus most informative level. It is worth emphasising why this should be the case. After all, Rosch et al.'s findings seem to show that the subordinate level is at least as informative as the basic level, if not more so, given that it provides more detailed information in addition to the information represented at the basic level. Indeed, Rosch et al. found that when asked to list attributes of CAR and SPORTS CAR, subjects typically listed more attributes for SPORTS CAR than for CAR. This is because the subordinate category SPORTS CAR is likely to be identified with the same attributes as CAR, plus some extra attributes specific to SPORTS CAR.

The reason why the basic level is the most salient level of categorisation relates to the tension between similarity of members of a category and the principle of cognitive economy. While entities at the subordinate level are most alike (rocking chairs have most in common with other rocking chairs), different categories at the subordinate level are also very similar (rocking chairs are pretty similar to kitchen chairs). At the basic level, on the other hand, while there are also similarities within a particular category (all chairs are fairly similar to one another), there are far fewer between-category similarities (a chair is not that similar to a table). To illustrate this point, let's compare and contrast the basic-level and subordinate level categories given in Table 11.7.

Crucially, for a category to achieve cognitive economy (to provide the greatest amount of information at the lowest processing cost), it must share as many common within-category attributes as possible, while maintaining the highest possible level of between-category difference. In intuitive terms, it is easier to spot the differences between a chair and a lamp than between a desk lamp and a floor lamp. This demonstrates why the basic level of categorisation is 'special': it is the level which best reconciles the conflicting demands of cognitive economy. Therefore the basic level is the most informative level of categorisation.

This notion of cognitive economy has been described in terms of **cue validity**. According to Rosch (1977: 29): 'cue validity is a probabilistic concept' which predicts that a particular cue – or attribute – becomes more valid or relevant to a given category the more frequently it is associated with members of that category. Conversely, a particular attribute becomes less valid or relevant to a category the more frequently it is associated with members of other categories. Thus 'is used for sitting on' has **high cue validity** for the category CHAIR, but 'is found in the home' has **low cue validity** for the category CHAIR because many other different categories of object can be found in the home in addition to chairs.

Table 11.7 Comparison between levels of categorisation

Basic level	Subordinate level
TABLE	DINING TABLE
	KITCHEN TABLE
CHAIR	DINING CHAIR
	LOUNGE CHAIR

Cue validity is maximised at the basic level, because basic-level categories share the largest number of attributes possible while minimising the extent to which these features are shared by other categories. This means that basic-level categories simultaneously maximise their inclusiveness (the vertical dimension) and their distinctiveness (the horizontal dimension) which results in optimal cognitive economy by providing a maximally efficient way of representing information about frequently encountered objects.

3.3.6 Perceptual salience

It is clear from Rosch's findings that categorisation arises from perceptual stimuli. When we categorise objects, we do so according to various types of sensorimotor input, including shape, size, colour and texture, as well as kinaesthetic input representing how we interact physically with objects. Another way of describing the importance of the basic level, then, is by relating it to perceptual salience. There are a number of additional lines of evidence that support the position that the basic level represents the most salient level of categorisation.

The basic level appears to be the most abstract (that is, the most inclusive and thus the least specific) level at which it is possible to form a mental image. After all, we are unable to form an image of the category FURNITURE without imagining a specific item like a chair or a table: a basic-level object. This is consistent with the finding that averaged shapes cannot be identified at the superordinate level as there are insufficient similarities between entities at this very high level of inclusiveness. This is also consistent with the fact that Rosch's subjects often struggled to list attributes for the superordinate level. You can try this experiment yourself: if you ask a friend to draw you a picture of 'fruit' or 'furniture' they will draw you apples and bananas or tables and chairs. These are all basic-level categories. There is no recognisable or meaningful shape that represents the superordinate level of categorisation.

Based on a picture verification task, Rosch et al. (1976) also found that objects are perceived as members of basic-level categories more rapidly than as members of superordinate or subordinate categories. In this experiment, subjects heard a word such as *chair*. Immediately afterwards, they were presented with a visual image. If the word matched the image, subjects pressed a 'match' response key. If the word did not match the image, they pressed a different response key. This enabled experimenters to measure the reaction times of the subjects. It emerged that subjects were consistently faster at identifying whether an object matched or failed to match a basic-level word than they were when verifying images against a superordinate or subordinate level word. This suggests that in terms of perceptual verification, objects are recognised more rapidly as members of basic-level categories than other sorts of categories.

3.3.7 Language acquisition

Rosch et al. (1976) found that basic-level terms are among the first concrete nouns to emerge in child language acquisition. This investigation was based on a case study of a single child, consisting of weekly two-hour recordings dating from the initial period of language production. All relevant utterances were independently rated by two assessors in order to determine whether they were superordinate, basic or subordinate level terms. The study revealed that the individual noun-like utterances were overwhelmingly situated at the basic level. Rosch et al. argued that this finding provided further support for the primacy of the basic level of categorisation.

3.3.8 Basic-level terms in language

The language system itself also reveals the primacy of the basic level in a number of ways. First, basic-level terms are typically **monolexemic**: comprised of a single word-like unit. This contrasts with terms for subordinate level categories which are often comprised of two or more lexemes – compare *chair* (basic-level object) with *rocking chair* (subordinate level object).

Second, basic-level terms appear to occur more frequently in language use than superordinate or subordinate level expressions. More speculatively, Rosch (1978) has even suggested basic-level terms may have emerged prior to superordinate and subordinate level terms in the process of language evolution. Of course, given that evidence for the primacy of the basic level is so overwhelming, we might wonder why we need the other levels of categorisation at all. In fact, the superordinate and subordinate levels, while they may not be cognitively salient, have extremely useful functions. As Ungerer and Schmid (1996) observe, the superordinate level (for example, VEHICLE) highlights the **functional attributes** of the category (vehicles are for moving people around), while also performing a collecting function (grouping together categories that are closely linked in our knowledge representation system). Subordinate categories, on the other hand, fulfil a **specificity function**.

3.3.9 Are basic-level categories universal?

Of course, if we can find evidence for basic-level categories among English speakers, two questions naturally arise. First, do members of all cultures or speech communities categorise in this way? Given that all humans share the same cognitive apparatus, it would be surprising if the answer to this question were 'no'. This being so, the second question that arises is whether the same basic-level categories are evident in all cultures or speech communities. Clearly, this question relates to 'the extent to which structure is "given" by the world versus created by the perceiving organism' (Rosch et al. 1976: 429). Put another way: '[B]asic objects for an individual, subculture, or culture must result from *interaction* between potential structure provided by the world and the particular emphases and state of knowledge of the people who are categorizing. However, the environment places constraints on categorizations' (Rosch et al. 1976: 430).

It follows that while the environment partly delimits and thus determines the nature of the categories we create, these categories are also partly determined by the nature of the interaction between human experiencers and their environment. This finding, of course, is consonant with the thesis of embodied cognition.

This view of categorisation entails that while the organisation of conceptual categories into basic, superordinate and subordinate levels may be universal, the level at which particular categories appear may not be. This relates not only to cross-linguistic or cross-cultural variation in the broader sense, but is also reflected within a single speech community or culture where acquired specialist knowledge may influence an individual's taxonomy of categories. For instance, Rosch et al. (1976) found that for most of their North American subjects the category AIRPLANE was situated at the basic level.

However, for one of their subjects, a former aircraft mechanic, this category was situated at the superordinate level, with specific models of aircraft being situated at the basic level. This reveals how specialist knowledge in a particular field may influence an individual's categorisation system. At the cross-cultural level, the cultural salience of certain objects may result in taxonomic differences.

For example, the anthropologist Berlin and his colleagues (1974) investigated plant naming within the Mayan-speaking Tzeltal community in Southern Mexico. They found that in basic naming tasks members of this community most frequently named plants and trees at the (scientific) level of genus or kind (for example, *pine* versus *willow*) rather than at the (scientific) level of class (for example, *tree* versus *grass*). When Rosch et al. (1976) asked their North American students to list attributes for TREE, FISH and BIRD as well as subordinate instances of these categories, they found that, on average, the same number of attributes were listed for TREE, FISH and BIRD as for the subordinate examples, suggesting that for many speakers TREE, FISH and BIRD may be recognised as a basic-level category. The differences between the Tzeltal and North American speakers indicates that aspects of culture (for example, familiarity with the natural environment) can affect what 'counts' as the basic level of categorisation from one speech community to another.

However, it does not follow from this kind of variation that any category can be located at any level. While our interaction with the world is one determinant of level of categorisation, the world itself provides structure that also partly determines categorisation, an issue to which I now turn.

3.4 The horizontal dimension

The horizontal dimension of the categorisation system (recall Figure 11.1) relates in particular to the principle of perceived world structure which I introduced earlier. This principle states that the world is not unstructured, but possesses correlational structure. As Rosch points out, wings tend to correlate with feathers, rather than fur. The idea is this: the world does not consist of sets of attributes with an equally probable chance of co-occurring. Instead, the world itself has structure, which provides constraints on the kinds of categories that humans represent within their conceptual systems.

One consequence of the existence of correlational structure in the world is that conceptual categories themselves reflect this structure: the category prototype reflects the greater number of correlational features. Recall that categories often exhibit typicality effects, where certain members of the category are judged as 'better' or more representative examples of that category than other members. Members of a category that are judged as highly **prototypical** (most representative of that category) can be described as **category prototypes**.

This feature of category structure was investigated in a series of experiments reported in Rosch (1975b), which established that prototypical members of a category were found to exhibit a large number of attributes common to many members in the category, while less prototypical members were found to exhibit fewer attributes common to other members of the category. Not only do categories exhibit typicality effects (having more or less prototypical members), category members also exhibit family resemblance relations. While, for many categories, there are no attributes common to all members (not all members of a family are identical in appearance), there is sufficient similarity between members that they can be said to resemble one another to varying degrees (each having some, but not all, features in common).

3.4.1 Goodness-of-example ratings

In order to investigate the prototype structure of categories, Rosch (1975b) conducted a series of experiments in which subjects were asked to provide goodness-of-example ratings for between fifty and sixty members of each category, based on the extent to which each member was representative of the category. Typically, subjects were provided with a seven-point scale. They were asked to rate a particular member of the category along this scale, with a rating of 1 indicating that the member is highly representative, and a rating of 7 indicating that the entity was not very representative.

Table 11.8 presents the highest and lowest-ranked ten examples for some of the categories rated by American undergraduate students. It is worth observing that the experiments Rosch employed in order to obtain goodness-of-example rating were 'linguistic' experiments: subjects were presented with word lists rather than visual images.

3.4.2 Family resemblance

Rosch argues that prototype structure, as exhibited by goodness-of-example ratings, serves to maximise shared information contained within a category. As Rosch puts it, 'prototypes appear to be those members of a category that most reflect the redundancy structure of the category as a whole' (Rosch 1978: 37). In short, the more frequent a particular attribute is among members of a particular category, the more representative it is. The prototype structure of the category reflects this **redundancy structure** in terms of repeated attributes across distinct members, or exemplars. This entails that another way of assessing

Table 11.8 A selection of goodness-of-example ratings (adapted from Rosch 1975b: Appendix)

Rank	BIRD	FRUIT	VEHICLE	FURNITURE	WEAPON
1	Robin	Orange	Automobile	Chair	Gun
2	Sparrow	Apple	Station wagon	Sofa	Pistol
3	Bluejay	Banana	Truck	Couch	Revolver
4	Bluebird	Peach	Car	Table	Machine gun
5	Canary	Pear	Bus	Easy chair	Rifle
6	Blackbird	Apricot	Taxi	Dresser	Switchblade
7	Dove	Tangerine	Jeep	Rocking chair	Knife
8	Lark	Plum	Ambulance	Coffee table	Dagger
9	Swallow	Grapes	Motorcycle	Rocker	Shotgun
10	Parakeet	Nectarine	Streetcar	Love seat	Sword
Bottom ten (from more to less representative)					
10	Duck	Pawpaw	Rocket	Counter	Words
9	Peacock	Coconut	Blimp	Clock	Hand
8	Egret	Avocado	Skates	Drapes	Pipe
7	Chicken	Pumpkin	Camel	Refrigerator	Robe
6	Turkey	Tomato	Feet	Picture	Airplane
5	Ostrich	Nut	Skis	Closet	Foot
4	Titmouse	Gourd	Skateboard	Vase	Car
3	Emu	Olive	Wheelbarrow	Ashtray	Screwdriver
2	Penguin	Pickle	Surfboard	Fan	Glass
1	Bat	Squash	Elevator	Telephone	Shoes

prototype structure is by establishing the set of attributes that a particular entity has (Rosch and Mervis 1975). The more category-relevant attributes a particular entity has, the more representative it is.

In order to investigate this idea, Rosch and Mervis (1975) presented twenty subjects with six categories: FURNITURE, VEHICLE, FRUIT, WEAPON, VEGETABLE and CLOTHING. For each category, the experimenters collected twenty items that were selected to represent the full goodness-of-example scale for each category, from most to least representative. The subjects were each given six items from each category and asked to list all the attributes they could think of for each item. Each attribute then received a score on a scale of 1–20, depending on how many items in a category that attribute had been listed for: the attributes that were listed most frequently were allocated more points than those listed less frequently.

The degree of family resemblance of a particular item (e.g. CHAIR in the category FURNITURE) was the sum of the score for each of the attributes listed for that item: the higher the total score, the greater the family resemblance. Rosch and Mervis' findings showed a high degree of correlation between items that received a high score and their goodness-of-example ratings.

Table 11.9 illustrates these ideas by comparing some of the attributes common across the category BIRD against two members of the category: ROBIN (judged

Table 11.9 Comparison of some attributes for ROBIN and OSTRICH

Attributes	ROBIN	OSTRICH
Lays eggs	Yes	Yes
Beak	Yes	Yes
Two wings	Yes	Yes
Two legs	Yes	Yes
Feathers	Yes	Yes
Small	Yes	No
Can fly	Yes	No
Chirps/sings	Yes	No
Thin/short legs	Yes	No
Short tail	Yes	No
Short neck	Yes	No
Moves on the ground by hopping	Yes	No

to be highly representative) and OSTRICH (judged to be much less representative). This table illustrates that the number of relevant attributes possessed by a particular category member correlates with how representative that member is judged to be. Robins are judged to be highly prototypical: they possess a large number of attributes found across other members of the BIRD category. Conversely, ostriches, which are judged not to be very good examples of the category BIRD, are found to have considerably fewer of the common attributes found among members of the category. Therefore, while OSTRICH and ROBIN are representative to different degrees, they nonetheless share a number of attributes and thus exhibit a degree of family resemblance.

The claim that category members are related by family resemblance relations rather than by necessary and sufficient conditions entails that categories are predicted to have fuzzy boundaries. We expect to reach a point at which, due to the absence of a significant number of shared characteristics, it becomes unclear whether a given entity can be judged as a member of a given category or not.

3.5 Problems with prototype theory

As observed at the outset of this chapter, it has been argued that prototype theory is inadequate as a theory of knowledge representation. In this section, I briefly review some of the objections, as well as consider whether Rosch and her colleagues intended their findings to be interpreted directly as a model of knowledge representation.

I begin with a number of criticisms discussed by Laurence and Margolis (1999), who present a survey of the criticisms that have been levelled against prototype theory in the literature. The first criticism, the **problem of prototypical primes**, concerns the study of odd numbers discussed earlier (Armstrong et al. 1983). Recall that this study found that even a classical category of this nature exhibits typicality effects. Armstrong et al. argue that this poses potentially serious problems for prototype theory since such effects are not predicted for classical categories.

The second criticism is that, as with the classical theory, prototype theory also suffers from the **problem of ignorance and error**: it fails to explain how we can possess a concept while not knowing or being mistaken about its properties. The basis of this criticism is that a concept with prototype structure might incorrectly include an instance that is not in fact a member of that category.

Laurence and Margolis illustrate with the example of the prototypical GRANDMOTHER, who is elderly with grey hair and glasses. According to this model, any elderly grey-haired woman with glasses might be incorrectly predicted to be a member of this category. Conversely, concepts with a prototype structure may incorrectly exclude instances that fail to display any of the attributes that characterise the prototype (for example, a cat is still a cat without having any of the prototypical attributes of a cat).

The third criticism is the **missing prototypes problem**: the fact that it is not possible to describe a prototype for some categories. These categories include 'unsubstantiated' (non-existent) categories such as UNITED STATES MONARCH, and heterogeneous categories such as OBJECTS THAT WEIGH MORE THAN A GRAM. The fact that we can describe and understand such categories suggests that they have meaning, yet prototype theory as a model of knowledge representation fails to account for such categories.

The final criticism concerns the **problem of compositionality**, which was originally put forward by Fodor and Lepore (1996). This concerns the lack of an adequate explanation for the fact that complex categories do not reflect prototypical features of the concepts that contribute to them. To illustrate this point, Laurence and Margolis cite Fodor and Lepore's example of the category PET FISH. Assuming a prototypical PET to be fluffy and affectionate, and a prototypical FISH is grey in colour, and medium-sized (for instance, a mackerel), this does not predict that a prototypical PET FISH is small and orange rather than medium-sized, grey, fluffy and affectionate.

As this brief discussion of the criticisms levelled against prototype theory indicates, Rosch's findings have often been interpreted directly as a theory of knowledge representation (a theory about the structure of categories as they are represented in our minds). Indeed, Rosch explored this idea in her early work (albeit rather speculatively). Consider the following passage:

> [A prototype can be thought of] as the abstract representation of a category, or as those category members to which subjects compare items when judging category membership, or as the internal structure of the category defined by subjects' judgments of the degree to which members fit their 'idea' or 'image' of the category. (Rosch and Mervis 1975: 575)

Rosch retreats from this position in her later writings. As she later makes explicit: 'The fact that prototypicality is reliably rated and is correlated with category structure does not have clear implications for particular processing models nor for a theory of cognitive representations of categories' (Rosch 1978: 30). While typicality effects are cognitively real, in the sense that they amount to empirical findings, it does not follow that these findings can be directly 'translated' into a theory of how categories are represented in the human mind. As such, experiments that investigate typicality effects only investigate the categorisation judgements that people make rather than the cognitive representations that give rise to these judgements.

This point is central to Lakoff's (1987) discussion of Rosch's findings. Lakoff argues that it is mistaken to equate prototype or typicality effects with conceptual structure per se. Rather, typicality effects are 'surface phenomena'. This means that they are a consequence of complex conceptual models that combine to give rise to typicality effects in a number of ways. Typicality effects might therefore be described in intuitive terms as a superficial 'symptom' of the way our minds work, rather than a direct reflection of conceptual structure and organisation.

In light of this, Lakoff (1987) attempts to develop a theory of **cognitive models** that might plausibly explain the typicality effects uncovered by Rosch and her colleagues. As we will see in the next section, Lakoff's theory of idealised cognitive models avoids the problems that I have touched upon here, which follow from assuming prototype theory as a model of knowledge representation.

4 The theory of idealised cognitive models

In his book, *Women, Fire and Dangerous Things* (1987), George Lakoff set out to develop a theory of category structure at the cognitive level that could account for the empirical findings presented by Rosch and her colleagues. This theory is termed the theory of idealised cognitive models (ICMs).

Lakoff argued that conceptual categories are structured in terms of ICMs. These are relatively stable mental representations that represent theories about the world. As we shall see later in the book (Chapter 16), in this respect, ICMs are similar to semantic frames, associated with the work of Charles Fillmore, since both relate to relatively complex knowledge structures. While ICMs are rich in detail, they are 'idealised' because they abstract across a range of experiences rather than representing specific instances of a given experience. In Lakoff's theory, ICMs guide cognitive processes like categorisation and reasoning.

For example, Barsalou (1983) argues that **ad hoc categories** such as WHAT TO TAKE FROM ONE'S HOME DURING A FIRE also exhibit typicality effects. Lakoff argues that categories of this kind, which are constructed 'on-line' for local reasoning, are constructed on the basis of pre-existing ICMs. That is, faced with a house fire, our ability to construct a category of items to be saved relies on pre-existing knowledge relating to the monetary and sentimental value attached to various entities, together with knowledge of their whereabouts in the house, the amount of time likely to be available and so on. In the next two subsections, I examine, in more detail, the properties of ICMs.

4.1 Sources of typicality effects

Lakoff argues that typicality effects can arise in a range of ways from a number of different sources. In this section, I present some of the ICMs proposed by Lakoff, and show how these are argued to give rise to typicality effects.

4.1.1 The simplest type of typicality effects

Typicality effects can arise due to a **mismatch** between ICMs that particular concepts are understood in terms of. To illustrate, consider the ICM in terms of which the category BACHELOR is understood. This ICM is likely to include information relating to a monogamous society, the institution of marriage and a standard marriageable age. It is with respect to this ICM, Lakoff argues, that the category of BACHELOR is understood. Furthermore, because the **background frame** thereby created by an ICM is idealised, it may only partially match up with other ICMs. Crucially this can lead to mismatches, giving rise to typicality effects.

Consider the Pope, who is judged to be a poor example of the category BACHELOR. From the perspective of the ICM relating to MARRIAGE, an individual's status as a bachelor is an 'all or nothing' affair: the moment the marriage vows have been taken, a bachelor ceases to be a bachelor. The concept pope, on the other hand, is primarily understood with respect to the ICM of the CATHOLIC CHURCH whose clergy are unable to marry. Clearly, there is a mismatch between these two ICMs: in the MARRIAGE ICM against which BACHELOR is understood, the Pope is 'strictly speaking' a bachelor because he is unmarried. However, the Pope is not a prototypical bachelor precisely because the Pope is primarily understood with respect to the CATHOLIC CHURCH ICM in which marriage of Catholic clergy is prohibited. This mismatch leads to the typicality effect: while the Pope is 'strictly speaking' a bachelor, our intuition is that he is not a very good example of the category: BACHELOR. In short, Lakoff's insight was to observe that typicality effects of this kind can be explained by a mismatch between ICMs that are, in some sense, in conflict.

4.1.2 Typicality effects due to cluster models

According to Lakoff, there is a second way in which typicality effects can arise. This relates to a **cluster model**, which consists of a number of converging ICMs. The converging ICMs collectively give rise to a complex cluster, which 'is psychologically more complex than the models taken individually' (Lakoff 1987: 74). Lakoff illustrates this type of phenomenon with the example of the category MOTHER. He argues that this is structured by a cluster model consisting of a number of different ICM subcategories. These are listed below.

i) THE BIRTH MODEL: a mother is the person who gives birth to the child.
ii) THE GENETIC MODEL: a mother is the person who provides the genetic material for the child.

iii) THE NURTURANCE MODEL: a mother is the person who brings up and looks after the child.
iv) THE MARITAL MODEL: a mother is married to the child's father.
v) THE GENEALOGICAL MODEL: a mother is a particular female ancestor.

The category MOTHER arises as a composite of these distinct sub-models, which create a cluster ICM with respect to which the category is understood. Nevertheless, Lakoff argues that we can, and often do, invoke the individual ICMs that contribute to the larger cluster model. The following examples reveal that we can employ different ICMs for MOTHER in stipulating what counts as a 'real mother' (Lakoff 1987: 75). Consider some examples:

(1) a. BIRTH MODEL
I was adopted and I don't know who my real mother is.
b. GENETIC MODEL
My real mother died when I was an embryo, and I was later frozen and implanted in the womb of the woman who gave birth to me.
c. NURTURANCE MODEL
I am not a nurturant person, so I don't think I could ever be a real mother to my child.
d. MARITAL MODEL
My step-mum raised me, with my father from the age of one. She is the only mother I've ever known.
e. GENEALOGICAL MOTHER
Queen Victoria is the mother of the House of Windsor.

Lakoff argues that a cluster model gives rise to typicality effects when one of the ICMs that contributes to the cluster is viewed as primary. This results in the other ICMs being ranked as less important: 'When the cluster of models that jointly characterize a concept diverge, there is still a strong pull to view one as the most important' (Lakoff 1987: 75). This is reflected in dictionary definitions, for example, which often privilege one of the ICMs with respect to which MOTHER is defined over the others. Although many dictionaries treat the BIRTH MODEL as primary, Lakoff found that *Funk and Wagnall's Standard Dictionary* selected the NURTURANCE MODEL, while the *American College Dictionary* chose the GENEALOGICAL MODEL.

4.1.3 Typicality effects due to metonymy

Lakoff argues that a third kind of typicality effect arises when an exemplar (an individual instance) stands for an entire category. The phenomenon whereby one conceptual entity stands for another is termed **metonymy** and is explored in much more detail in Chapter 13. To illustrate metonymy consider example (2):

(2) Downing Street refused comment.

In this example, the official residence of the British Prime Minister stands for the Prime Minister. In other words, it is the Prime Minister (or his or her press officer) who refuses to comment. Similarly, in example (3) it is the vehicle owner who is standing for the car.

(3) I'm parked out the back.

A **metonymic ICM** can be a subcategory, as in the case of one of the subcategories of a cluster model, or an individual member of a category that comes to stand for the category as a whole. An important consequence of this is that the metonymic ICM, by standing for the whole category, serves as a **cognitive reference point**, setting up norms and expectations against which other members of the category are evaluated and assessed. It follows that metonymic ICMs give rise to typicality effects, as other members of the category are judged as atypical relative to the metonymic model.

An example of a metonymic ICM is the cultural stereotype HOUSEWIFE, in which a married woman does not have paid work but stays at home and looks after the house and family. The HOUSEWIFE stereotype can give rise to typicality effects when it stands for, or represents, the category MOTHER as a whole. Typicality effects arise from resulting expectations associated with members of the category MOTHER. According to the HOUSEWIFE stereotype, mothers nurture their children, and in order to do this they stay at home and take care of them. A WORKING MOTHER, in contrast, is not simply a mother who has a job, but also one who does not stay at home to look after her children. Hence the HOUSEWIFE ICM model, by metonymically representing the category MOTHER as a whole, serves in part to define other instances of the category such as WORKING MOTHER, which thus emerges as a non-prototypical member of the category.

Lakoff proposes a number of different kinds of metonymic models, any of which can in principle serve as a cognitive reference point and can thus give rise to typicality effects. I briefly outline some of these below.

Social stereotypes

The housewife ICM is an example of a **social stereotype**. These are conscious ICMs which emerge from public discussion. Against this background, we can re-evaluate the category BACHELOR. The stereotypical bachelor in our culture may be a womaniser who lacks domestic skills. Typicality effects can arise if a particular bachelor contrasts with this stereotype. For instance, an unmarried man with one sexual partner who enjoys staying at home cooking and takes pride in his housework may be judged atypical with respect to the social stereotype for bachelors. This shows how the social stereotype bachelor, which represents an idealisation, rather than all exemplars in the category, can stand for the category as a whole thus giving rise to typicality effects.

Typical examples

Typicality effects can also arise in relation to **typical examples** of a particular category. For instance, in some cultures ROBIN and SPARROW are typical members of the category BIRD. This is because in some parts of the world these birds are very common. In this respect, our environment has consequences for what we judge as good examples of a category. Furthermore, Lakoff argues that we may evaluate a member of the category BIRD with respect to a typical example. In this way, typicality effects arise when the typical example stands for the entire category.

Ideals

Lakoff suggests that some categories are understood in terms of **ideals**, which may contrast with typical or stereotypical instances. For example, we might have an ideal for the category POLITICIAN: someone who is public-spirited, altruistic, hardworking and so on. This may contrast with our stereotype of politicians as egotistical, power-hungry and obsessed with 'spin'. Once more, typicality effects occur when the ideal stands metonymically for the entire category. For instance, with respect to our ideal, the utterance *She's a great politician* might be interpreted as a positive evaluation. However, with respect to our social stereotype, the same utterance would be interpreted as a negative evaluation.

Paragons

Individual category members that represent ideals are **paragons**. For instance, Rolls Royce represents a paragon in terms of LUXURY CARS, Nelson Mandela represents a paragon in terms of POLITICAL LEADERS, Winston Churchill in terms of WAR LEADERS and so on. Because paragons stand for an entire category, they set up norms and expectations against which other members of the category may be evaluated. For instance, the comment, *He's no Nelson Mandela* about a particular political leader may represent a negative assessment as to the leader's altruism and so forth. In this way, paragons give rise to typicality effects.

Generators

According to Lakoff, members of some categories are generated by a core subset of category members called **generators**. These generators are judged to be more prototypical than the other category members that they generate. For example, the natural numbers are represented by the set of integers between zero and nine, which are combined in various ways in order to produce higher natural numbers. For instance, the number 10 combines the integers 1 and 0. Thus the entire category NATURAL NUMBERS is generated from a small subset of single-digit integers. Lakoff argues that this is why the numbers 1 to 9 are judged as prototypical members of the category NATURAL NUMBERS than much larger numbers. Another example of a set of generators is Morse code. In this system the generators are the 'dot' and the 'dash'. While the 'dot' represents the letter 'E', the 'dash' represents the letter 'T'. Because all other letters represent combinations of dots and/or dashes, the 'letters' 'E' and 'T' are likely to be more prototypical than the others for regular Morse code users.

Salient examples
Finally, memorable or **salient examples** can also give rise to a type of metonymic ICM. For instance, Oxford University is a salient example of a university, in part due to its history (it received its royal charter in the thirteenth century), in part due to the esteem in which its teaching and scholarship have traditionally been held and in part due to the nature of the colleges that make up the university, both in terms of the structure of the institution and its architecture. Although in many ways atypical in terms of British and other international higher education institutions, people, particularly in the United Kingdom, often rely upon Oxford as a point of comparison for other universities. Typicality effects occur when Oxford serves to establish a means of evaluating and assessing another university.

Hence, salient examples, much like prototypes in general, provide cognitive reference points that not only structure a category metonymically, but can influence the decisions we make, for instance whether we decide to go to a particular university based on how similar it is to a salient example like Oxford. Table 11.10 provides a summary of some of the types of metonymic ICMs proposed by Lakoff.

In sum, Lakoff argues that cluster models and metonymic ICMs can give rise to typicality effects in different ways. While the cluster model provides a converging cluster of cognitive models which gives rise to typicality effects by ranking one of the subcategories as more important than the others in the cluster, a metonymic model can stand for the category as a whole and gives rise to typicality effects by defining cultural expectations relating to this category.

4.1.4 Radial ICMs as a further source of typicality effects

Lakoff proposes that the cluster model for MOTHER and the metonymic HOUSEWIFE stereotype taken together contribute to a composite prototype for MOTHER: a prototype derived from two models. This prototype provides representative structure for the category.

For example, the composite prototype for the category MOTHER includes a female who gave birth to the child, was supplier of 50 per cent of the genetic

Table 11.10 Summary of some metonymic ICMs

Stereotypes	Represent cultural norms and expectations regarding instances of the category
Typical examples	Represent the most frequent or commonly encountered instances of the category
Ideals	Combine the ideal properties of the category
Paragons	Represent actual instances of an ideal
Generators	Members of a category are 'generated' by a core subset of members
Salient examples	Represent memorable or well-known actual instances of a category

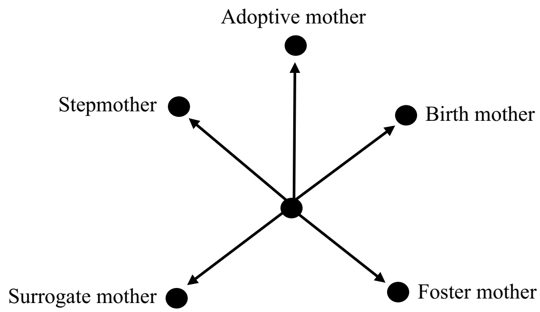


Figure 11.2 Radial network MOTHER

material, stayed at home in order to nurture the child, is married to the child's father, is one generation older than the child and is also the child's legal guardian. In short, the composite prototype draws upon information from the BIRTH MODEL, the GENETIC MODEL, the NURTURANCE MODEL, the MARITAL MODEL, the GENEALOGICAL MODEL and the HOUSEWIFE MODEL, which is a social stereotype. This type of prototype is an idealisation which provides schematic information. Importantly, further models can be derived from this composite prototype. These models include ADOPTIVE MOTHER, FOSTER MOTHER, BIRTH MOTHER and SURROGATE MOTHER. As Lakoff points out:

> These variants are not generated from the central model by general rules; instead, they are extended by convention and must be learned one by one. But the extensions are by no means random. The central model determines the possibilities for extensions, together with the possible relations between the central model and the extension models. (Lakoff 1987: 91)

A composite prototype, and extensions of this kind, are modelled in terms of a radiating lattice structure known as a **radial category** or **radial ICM**. When diagrammed, the composite prototype is positioned centrally in with other subcategories represented as extending from the central case forming a **radial network** (see Figure 11.2). Crucially, the non-central cases in such radial ICMs are not strictly predictable from the central case but are cultural products. For instance, the subcategories of MOTHER listed below are all understood in terms of how they diverge from the central case:

i) STEPMOTHER – married to the father but didn't supply genetic material or give birth.
ii) ADOPTIVE MOTHER – provides nurturance and is the legal guardian.
iii) BIRTH MOTHER – gave birth and supplied genetic material but put the child up for adoption hence does not nurture the child and has no legal responsibilities.
iv) FOSTER MOTHER – charged by the state to nurture the child but is not the child's legal guardian.

v) SURROGATE MOTHER – gives birth to the child, typically does not supply the genetic material and has no other obligations to the child.

Thus, radial categories of this kind provide a fourth way in which typicality effects can arise. These effects occur when the subcategories are seen to deviate from the composite prototype. Moreover, as particular categories can become more conventionalised than others, different subcategories in a radial category can develop different degrees of prototypicality.

Crucially, however, radial categories are not 'generators'. The central case does not productively generate new subcategories of the MOTHER radial ICM. While the subcategories are motivated in the sense that they are licensed by the prototype, this is a consequence of our cultural experience. For instance, the subcategory SURROGATE is a consequence of recent achievements in medicine and cultural trends and appeared in the second half of the twentieth century. Thus, radial ICMs are motivated, but knowing a prototype does not predict which subcategories will become conventionally adopted in the culture.

To summarise this section, there are four ways in which Lakoff accounts for typicality effects. The first kind of typicality effect arises from mismatches between ICMs. The second kind of typicality effect arises from more complex cognitive models which Lakoff calls cluster models. These consist of a number of distinct subcategory models. Typicality effects occur when one subcategory is deemed to be more salient than the others. The third kind of typicality effect relates to metonymic ICMs. These are essentially exemplar-based ICMs in which a particular member of a given category stands for the category as a whole. Assessed with respect to the metonymic ICMs, other members of a category may be evaluated as being atypical. The fourth kind of typicality effect arises from radial ICMs, in which members of a radial category exhibit degrees of typicality depending on how close to the composite prototype they are.

4.2 How the theory of ICMs resolves problems with prototype theory

In section 3.5, I reviewed a number of problems that have been claimed to undermine the validity of prototype theory as a model of knowledge representation. In this section, I consider how Lakoff's theory of ICMs addresses these problems.

The first problem I examined was the problem of prototypical primes, which relates to the unexpected typicality effects exhibited by classical categories. Lakoff argues that this finding is not problematic for a prototype-based theory of ICMs as these effects can be explained by the nature of the ICM that underlies them. Recall that the integers 0–9 are generators: they have a privileged place in the category REAL NUMBER precisely because they form the basis of the category. Within this set, there is a sub-model EVEN NUMBERS, which consists of numbers that can be divided by 2, and a sub-model ODD NUMBERS, for those that cannot. Lakoff argues that because a set of generators can metonymically stand for the category or model as a whole, then the generators included in the sub-model ODD NUMBERS (the numbers 1, 3, 5, 7, 9) can stand for the entire category. Against this metonymic model, other odd numbers appear to be less representative of the category, resulting in typicality effects.

Although the category ODD NUMBER remains a classical category in the sense that it has definite rather than fuzzy boundaries, it still exhibits typicality effects. Lakoff argues these can be accounted for by the ICMs. Of course, if typicality effects were interpreted as a direct reflection of cognitive representation of categories, the findings of Armstrong et al.'s study would certainly be unexpected. This example goes some way towards explaining why prototype theory cannot be straightforwardly translated into an account of conceptual structure.

The second problem I discussed was the problem of ignorance and error. This relates to the idea that it is possible to possess a concept while not knowing or being mistaken about its properties. For example, a concept with prototype structure might incorrectly include an instance that is not in fact a member of that category, or incorrectly exclude instances that are members of the category but fail to display any of the attributes that characterise the prototype.

However, this problem only arises on the assumption that typicality effects are equivalent to conceptual representations. For instance, tendencies to categorise elderly women with grey hair and spectacles as members of the category GRANDMOTHER (when they might not be), or the failure to categorise sprightly blonde women as members of the category GRANDMOTHER (when they might be), arise from the social stereotype for grandmother which can stand for the category as a whole. On Lakoff's account, this is only one ICM among several for the category GRANDMOTHER, which means that both 'correct' and 'incorrect' instances of categorisation can be accounted for. Equally, it is possible to possess the concept WHALE while believing it is an instance of the category FISH rather than MAMMAL. Again, this can be accounted for on the basis of metonymic ICMs. A typical property of fish is that they have fins and live in the sea while a typical property of mammals is that they have legs and live on land. Thus, based on the typicality of attributes within the ICM, a whale might be 'miscategorised' as a fish.

The third problem we saw relates to so-called missing prototypes. According to this criticism, it should be possible to describe a prototype for any category we can conceive, yet it is not possible to describe a prototype for unsubstantiated (which is to say, non-existent) categories, for instance UNITED STATES MONARCH, or heterogeneous categories such as OBJECTS THAT WEIGH MORE THAN A GRAM. Once more, this problem only arises on the assumption that typicality effects equate to established categories that are stable patterns of conceptual structure.

According to the theory of ICMs, categories such as these are constructed 'on-line' from pre-existing ICMs. Such dynamic ICMs include so-called ad hoc categories, as discussed earlier. Recall that ICMs are relatively stable knowledge structures that are built up on the basis of repeated experience: it is the non-conventional status of non-existent and heterogeneous categories that predicts that such categories would be unlikely to exhibit typicality effects.

The final problem we saw related to compositionality: the criticism that prototype theory fails to provide an adequate explanation for the fact that complex categories do not reflect prototypical features of the concepts that contribute to them. For example, we saw that the category PET FISH does not represent prototypical attributes of the categories PET and FISH. Observe, however, that this criticism assumes that PET FISH is a straightforward composite of the meanings of the two conceptual categories PET and FISH. According to the ICM, this concept has category structure independently of the two categories to which it is related. Although a pet fish is a type of pet and a type of fish, experience of pet fish gives rise to an independently structured ICM in which the prototypical pet fish is the goldfish. The experiential basis of the ICM therefore explains why the attributes of this category differ from those that inhabit the intersection of PET and FISH.

4.3 The structure of ICMs

In this section, I explore in more detail the structure of ICMs. In the foregoing I have shown how ICMs can give rise to typicality effects of various kinds. However, while Lakoff's ICMs have some similarities with the notion of the semantic frame (see Chapter 16), ICMs encompass a wider range of conceptual phenomena than frames: frames are just one kind of ICM. In Lakoff's theory, ICMs are complex structured systems of knowledge that can serve to provide structure to ongoing thought, and ongoing discourse construction. To this end, the role of ICMs is to provide the background knowledge that can be recruited in order to structure **mental spaces**, the dynamically constructed units of thought that underpin language use – an idea to which I shall return in Chapter 19.

Lakoff claims that ICMs depend upon (at least) five sorts of structuring principles for their composition: i) image schemas, ii) propositions, iii) metaphor, iv) metonymy and v) symbolism. I briefly consider each of these structuring principles in turn.

4.3.1 Image schematic ICMs

For Lakoff, a fundamental 'building-block' of conceptual structure is the image schema (recall my discussion of these in Chapter 9). Lakoff argues that, in many respects, image schemas serve as the foundation for conceptual structure. He suggests that our experience of, and conceptual representation of, SPACE is structured, in large part, in terms of image schemas, such as container, SOURCE–PATH–GOAL, PART–WHOLE, UP–DOWN, FRONT–BACK and so on. From this it follows that image schemas structure our ICM (or overarching mental model) for SPACE itself. Hence, **image schematic ICMs** are directly grounded in our embodied experience.

4.3.2 Propositional ICMs

Lakoff uses the term **propositional** in the sense that ICMs of this kind are not structured by 'imaginative devices' (1987: 285) such as metaphor and metonymy. Instead, **propositional ICMs** consist of elements with properties and relations that hold between those elements. An ICM of this kind consists of propositional (or factual) knowledge. For example, our knowledge of the cultural 'rules' involved in requesting a table and ordering food in a restaurant emerges from a propositional ICM. Another sort of propositional ICM might be a taxonomic classification system, for example the biological systems that classify plants and animals.

4.3.3 Metaphoric ICMs

Metaphoric ICMs are structured by the projection or mapping of structure from a source domain to a target domain. For example, when the domain or ICM of LOVE is metaphorically structured in terms of a JOURNEY, as illustrated by expressions such as: *Their relationship has come a long way*, the ICM for LOVE is metaphorically structured.

4.3.4 Metonymic ICMs

I have already examined metonymic ICMs in some detail. As we saw above, ICMs like stereotypes, paragons and ideals are metonymic in the sense that a single type or individual stands for the entire category.

4.3.5 Symbolic ICMs

ICMs of this kind represent the knowledge structures that Charles Fillmore described in terms of semantic frames. Semantic frames involve lexical items (and grammatical constructions), which cannot be understood independently of the the semantic frame with respect to which they are relativised. Consequently, the lexical items themselves cannot be understood independently of the other words relativised to the same semantic frame. For instance, the verbs *buy*, *sell* and so on are understood with respect to the COMMERCIAL EVENT frame that I briefly introduced in the previous chapter (and which will be discussed in more detail in Chapter 16). Because this kind of ICM (or semantic frame) is explicitly structured by a system of knowledge that underpins a related set of lexical items, its structure contains symbolic units; this is why Lakoff describes it as symbolic.

SUMMARY

In this chapter I outlined the **classical theory** of **categorisation**, which assumes **necessary and sufficient conditions**, and identified the problems inherent in this approach. I then examined in detail **prototype theory**, the model of categorisation that emerged from research carried out by cognitive psychologist Eleanor Rosch and her colleagues. This research revealed that many categories have **prototype structure** rather than **definitional structure**. In addition, Rosch found that categories for concrete objects are most informative at the **basic level**. However, we saw that assumptions concerning the direct 'translation' of Rosch's findings into a model of knowledge representation gave rise to a number of problems. I then looked at how the empirical findings from this research inspired the development of Lakoff's theory of **idealised cognitive models (ICMs)**. The main claim to emerge from this research was that **typicality effects** are surface phenomena, arising from underlying ICMs of various kinds. Lakoff argues that prototype structure is not to be directly equated with conceptual structure and organisation, but that typicality effects emerge from three sources: **mismatches** between ICMs; one subcategory becoming primary in **a cluster model**; and **metonymic ICMs**. The latter two types of ICM additionally give rise to **radial categories** which give rise to a fourth source of typicality effect. Finally, I examined the nature of ICMs in more detail and looked at the various ways in which these are structured. Lakoff argues that ICMs serve as the locus for on-line conceptualisation, by providing the background knowledge that structures language and thought. ICMs can be structured in a range of ways. I briefly reviewed **image schematic ICMs**, **propositional ICMs**, **metaphoric ICMs**, **metonymic ICMs** and **symbolic ICMs**.

FURTHER READING

Prototypes and basic-level categories

- **Rosch (1975b, 1977, 1978); Rosch and Mervis (1975); Rosch et al. (1976)**. These are among the key articles by Rosch and her collaborators which present their findings concerning prototypes and basic-level categories. The two 1975 papers deal with experimental evidence for prototype effects. The 1976 paper is concerned with basic-level categories. The 1977 and 1978 papers provide summaries and overviews of key developments based on the earlier findings. The 1978 paper is particularly important because Rosch explicitly distances herself from earlier suggestions that experimental findings can be considered a direct reflection of cognitive organisation of category structure.

The theory of idealised cognitive models

- **Lakoff (1987)**. One of the seminal volumes that sets out the cognitive linguistics framework. It introduces and develops the theory of ICMs.
- **Taylor (2003)**. Taylor's book, first published in 1989 and now in its third edition, is an excellent introduction to Rosch's research and the interpretation of these findings within cognitive linguistics. Moreover,

Taylor elaborates on and extends many of the issues first addressed by Lakoff, particularly as they apply to language.

Other views of categorisation and conceptual structure

- **Komatsu (1992)**. Provides a succinct and accessible overview of prototype theory, comparing and contrasting it to other approaches.
- **Margolis and Laurence (1999)**. A volume of collected papers by the foremost researchers in the field, including cognitive linguists, formal linguists, philosophers and psychologists. Presents a range of approaches to conceptual structure, including prototype theory.

DISCUSSION QUESTIONS

1. What are the main findings that emerged from Rosch's classic experiments on categorisation? And what was the evidence for each of these findings?
2. What are the drawbacks with assuming that categorisation proceeds on the basis of a mental prototype? And how did Lakoff account for these drawbacks, in terms of his account of categorisation?
3. What specific types of ICMs did Lakoff propose? And, on his account, how did these give rise to observable typicality effects?

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Conceptual metaphor theory

In this chapter, I introduce the central claims associated with **conceptual metaphor theory**, before considering, in the next chapter, research that has been subsequently inspired by it. The conceptual metaphor approach was first proposed by George Lakoff and Mark Johnson in their 1980 book *Metaphors We Live By* and has been developed in a number of subsequent publications. Conceptual metaphor theory was one of the earliest theoretical frameworks identified as part of the cognitive linguistics enterprise (alongside Langacker's theory of Cognitive Grammar, and Leonard Talmy's theory of Cognitive Semantics); and as such it provided much of the early theoretical impetus for the development of cognitive linguistics.

The basic premise of conceptual metaphor theory is that figurative language – especially metaphor, but also other types such as metonymy – is not simply a stylistic feature of language; rather, thought itself is fundamentally metaphoric in nature. According to this view, conceptual structure is organised by virtue of **cross-domain mappings** which give rise to what are dubbed **conceptual metaphors**: correspondences between conceptual domains (an idea I first introduced in Chapter 4 with respect to the domain of TIME). Some of these mappings are due to pre-conceptual embodied experiences, arising from what, in later research, came to be dubbed **primary scenes** (e.g. Grady 1997a) or **grounding scenarios** (e.g. Moore 2000), while others build on these experiences in order to form more complex conceptual structures.

For instance, we can think and talk about QUANTITY in terms of VERTICAL ELEVATION, as in *She got a really high mark in the test*, where *high* relates not literally to physical height, but to a good mark. According to conceptual metaphor theory, this is because the conceptual domain QUANTITY is conventionally structured and therefore understood in terms of the conceptual domain VERTICAL ELEVATION. Conceptual operations involving mappings, such as conceptual metaphor, and **conceptual metonymy** (discussed in the next chapter), are known more generally as **conceptual projection**.

1 Literal versus figurative language

Before getting to conceptual metaphor theory, I begin by considering the distinction between **literal language** and **figurative language**. The traditional position, both in philosophy and in linguistics – and indeed the everyday view – is that i) there is a stable and unambiguous notion of **literality**, and ii) that there is a sharp distinction to be made between literal language, on the one hand, and non-literal or figurative language on the other. According to this view, while literal language is precise and lucid, figurative language is imprecise, and is largely the domain of poets and novelists. In his 1994 book *The Poetics of Mind*, cognitive psychologist and cognitive linguist Raymond Gibbs examined this issue. Based on a close examination of the key features that are held to distinguish literal and figurative language, and based on a wide-ranging survey of different kinds of psycholinguistic experiments aimed at uncovering such a distinction, Gibbs found that there is no evidence for a principled distinction between literal and figurative language.

1.1 Literal and figurative language as complex concepts

The basic assumption made by the traditional view is there are two kinds of meaning that can be straightforwardly distinguished: literal and figurative meaning. However, as Gibbs shows, there are many different kinds of literal and figurative meaning.

1.1.1 Definitions of literal language

Gibbs identifies a number of different definitions of literal meaning assumed within the cognitive science literature, four of which are presented in the following excerpt (Gibbs 1994: 75):

> *Conventional literality*, in which literal usage is contrasted with poetic usage, exaggeration, embellishment, indirectness, and so on.
>
> *Nonmetaphorical literality*, or directly meaningful language, in which one word (concept) is never understood in terms of a second word (or concept).
>
> *Truth conditional literality*, or language that is capable of 'fitting the world' (that is, referring to objectively existing objects or of being objectively true or false).
>
> *Context-free literality*, in which the literal meaning of an expression is its meaning [independent of any communicative situation].

I return, below, to examine each of these in turn; for the time being, I note that there is more than one idea about what defines literality in language.

1.1.2 Definitions of non-literal language

Not only have different scholars assumed different definitions of literal language, there are many definitions of non-literal language. I now briefly consider three categories of non-literal language use: **irony**, **zeugma** and **metonymy**.

An expression is ironic when what is meant is the opposite of what is said. This is illustrated by the response of 'Teenage son' to his mother in example (1):

(1) Mother: Time for bed . . . You have a BIG exam in the morning!
Teenage son: I can't wait (uttered without enthusiasm).

Zeugma is a kind of **ellipsis**, in which a lexical item is understood, but 'left out' in subsequent clauses within a sentence, and where this lexical item has a different semantic or grammatical status in each case. One consequence is that when a lexical item has more than one meaning, a different meaning can be invoked in each clause. This can result in a humorous effect, as in example (2), where two different meanings of *expire* are invoked:

(2) On the same day my old Dad expired, so did my driving licence.

Metonymy depends upon an association between two entities so that one entity can stand for the other. Consider example (3):

(3) a. My wheels are parked out (the) back.
b. My motor is parked out (the) back.

In this example, a salient component of a car, namely the wheels or the motor, can be used to refer to the car as a whole.

This brief survey reveals that both so-called 'literal language' and 'non-literal (or figurative) language' are complex concepts. We must therefore question the assumption that there are two distinct and discrete kinds of language use that can be unambiguously identified.

1.2 Can the distinction be maintained?

Given that the traditional view – there is a discrete distinction between literal versus figurative language – appears not to hold, this leads to the question I now turn to: can the various categories of literal language in fact be meaningfully distinguished from non-literal language?

1.2.1 Conventional versus non-conventional language use

This distinction relies upon the idea that while literal language is the conventional, commonplace or everyday way we have of talking about things, figurative language is, in some sense, exotic or literary, something that need only be of concern to creative writers. According to this view, most ordinary language is literal.

However, on closer inspection, much of our ordinary everyday language turns out to be figurative in nature. Consider the following examples, in which the figurative expressions are highlighted:

(4) Things are *going smoothly* in the operating theatre.

(5) He was *in* a state of shock after the election result.

(6) The economy *is going from* bad *to* worse.

These sentences, and in particular, the expressions in italics, are representative of everyday, mundane ways of talking about events such as operations, emotional or psychological states, and changes in the economy. However, each sentence makes use of language that relates to motion, physical location or change in location in order to describe non-physical entities. Consider sentence (4): while sailing boats can *go smoothly* across a lake or an ocean, abstract entities like operations are not physical objects that can undergo motion. Similarly, in sentence (5), while we can be physically located within bounded landmarks like rooms or buildings, we cannot literally be located *in* a state of shock, because shock is not a physical entity that can contain us in the way that , say, a room can. Finally, in example (6) a change of state is understood in terms of a physical change in location. From this perspective, the italicised expressions in examples (4)–(6) have non-literal meanings in these sentences. Despite this, these expressions represent conventional means of talking about events, states and changes.

This observation presents a serious challenge to the view that literal language provides the conventional means for talking about everyday events and situations.

1.2.2 Metaphorical versus non-metaphorical language use

Another definition of literality identified by Gibbs is non-metaphorical literality. According to this view, literal language is language that directly expresses meaning rather than relying upon metaphor. This view entails that we should always be able to express our 'true' meaning without recourse to metaphorical language, which involves expressing one idea in terms of another.

For example, while the sentence in (7) has literal meaning, the sentence in (8) does not because it employs a metaphor: Achilles is understood in terms of a lion, which conveys the idea that Achilles has some quality understood as typical of lions such as fearlessness. This interpretation arises from our folk knowledge of lions, which stipulates that they are brave.

(7) Achilles is brave.

(8) Achilles is a lion.

However, it is difficult to find a non-metaphorical way of thinking and talking about certain concepts. For example, try talking about TIME without recourse to expressions relating to SPACE or MOTION through space. Consider example (9).

(9) a. Christmas is *approaching*.
b. We're *moving towards* Christmas.
c. Christmas is not very *far away*.

Each of these expressions relies upon language relating to MOTION or SPACE in order to convey the idea that the temporally defined concept, CHRISTMAS is imminent. These expressions represent ordinary everyday ways of talking about time. Indeed, it turns out to be difficult, although not impossible, to find ways of describing temporal concepts that do not rely on metaphorical expressions invoking spatial notions (see Evans 2004, 2013a, 2013b). If certain concepts are wholly or mainly understood in metaphorical terms, then the non-metaphorical definition of literality entails that concepts such as CHRISTMAS or TIME somehow lack meaning in their own right. Indeed, some scholars have actually claimed that time is not a phenomenologically real experience – we don't 'feel' its passage. However, many everyday concepts do appear to be understood in metaphorical terms. Consider the concept ANGER. Emotions such as anger are, in developmental terms, among the earliest human experiences. Nevertheless, the way we conceptualise and describe this concept is highly metaphorical in nature, as the following examples illustrate:

(10) a. You make my *blood boil*.
b. He was *red with* anger.
c. She's just *letting off steam*.
d. Don't *fly off the handle*.
e. Try to *get a grip on yourself*.
f. He almost *burst a blood vessel*.

Consider another example. We typically think and talk about ARGUMENT in terms of WAR. The examples in (11) are from Lakoff and Johnson (1980: 4).

(11) a. Your claims are *indefensible*.
b. He *attacked every weak point* in my argument.
c. His criticisms were *right on target*.
d. I *demolished* his argument.
e. I've never *won* an argument with him.
f. You disagree? Okay, *shoot!*
g. If you use that strategy, he'll *wipe you out*.
h. He *shot down* all of my arguments.

As these examples demonstrate, the non-metaphorical definition of literality, which entails that we should always be able to express ourselves without recourse to metaphoric language, does not appear to present an accurate picture of the facts.

1.2.3 Literal truth versus literal falsity in language use

The truth-conditional view of literality rests upon the assumption that the basic function of language is to describe an objective external reality, and that this relationship between language and the world can be modelled in terms of truth or falsity (an idea I will revisit in Chapter 14). The intuition behind this approach is that an important function of language is to describe states of affairs. Consider example (12).

(12) It's raining in London.

This sentence describes a state of affairs in the world and can be assessed as either true or false of a given situation, real or hypothetical. According to the truth-conditional definition of literality, example (12) represents literal language because it can either be literally true or false of a given situation.

In contrast, expressions such as: *It's raining in my heart* or *You are my sunshine* can only be literally false and are therefore figurative. However, many linguistic expressions do not describe situations at all, and cannot therefore be meaningfully evaluated as true or false. Consider the examples in (13):

(13) a. Get well soon!
b. Can you pass the salt please?
c. I now pronounce you man and wife.

These examples represent speech acts. For instance, the function of the example in (13c) is not to describe a situation, but to change some aspect of the world (this was an idea I introduced in Chapter 1). If we adopt the truth-conditional view of literality, which rests upon the idea of literal truth, expressions such as those in (13) are neither literal nor figurative since they cannot be evaluated as true (or false) with respect to a given situation.

1.2.4 Context-free versus context-dependent language use

The truth-conditional view also holds that literal meaning is context-independent. This means that literal meaning does not require a context in order to be fully interpreted. Consider example (14):

(14) a. The cat sat on the mat.
b. My cat is a greedy pig.

According to this view, (14a) is fully interpretable independent of any context and the meaning we retrieve from (14a) is literal. In contrast, example (14b), which involves a metaphor, relies upon a context in which a cat habitually eats a lot in order to be fully understood. If this example were interpreted literally it would result in contradiction, since a cat cannot literally be a pig.

However, and as we shall see, when I discuss the encyclopaedic view of meaning that is assumed in cognitive linguistics (see Chapter 15), even the sentence in (14a) is not context-independent because it is interpreted against the background of rich encyclopaedic knowledge. Cultural associations, for instance, dictate what kind of cat we have in mind, and our experience of the world entails the assumption that gravity and normal force dynamics apply so that we do not envisage the cat in (14a) on a flying carpet. In short, a considerable number of background assumptions are brought to bear even on the interpretation of a relatively simple sentence. This brief discussion illustrates that it is difficult to pin down which aspects of meaning might be fully context-independent, which in turn calls into question the context-independent definition of literality.

2 What is metaphor?

For over 2,000 years, metaphor was studied within the discipline known as **rhetoric**. This discipline was first established in ancient Greece, and was focused on practical instruction in how to persuade others of a particular point of view by the use of rhetorical devices. Metaphor was one of these devices, which were called **tropes** by rhetoricians. Due to its central importance, metaphor came to be known as the **master trope**.

2.1 The traditional view

Within this traditional approach, metaphor was characterised by the schematic form: A is B, as in *Achilles is a lion*. As a consequence, metaphor has been identified, since the time of Aristotle, as facilitating **implicit comparison**: while metaphor is based on the comparison of two categories, the comparison is not explicitly marked. This contrasts with **simile**, where the comparison is overtly signalled by the use of *as* or *like*: *Achilles is as brave as a lion*; *Achilles is brave, like a lion*.

Self-evidently, examples of metaphor, such as *Achilles is a lion*, are based on comparison. Following Grady (1997a, 1999) I will use the term **perceived resemblance** to describe this comparison. In this case, the resemblance is not physical: Achilles does not actually look like a lion. Instead, due to cultural knowledge which holds that lions are courageous, by virtue of describing Achilles as a lion we associate a lion's qualities of courage and ferocity with Achilles. Metaphors of this kind are thus dubbed **resemblance metaphors** (Grady 1999).

Resemblance metaphors based on physical resemblance have been dubbed **image metaphors** (Lakoff and Turner 1989). As such, image metaphors constitute one subset of resemblance-based metaphors. For instance, consider the following translation of the beginning of André Breton's surrealist poem *Free Union*, cited in Lakoff and Turner (1989: 93):

> My wife whose hair is a brush fire

Whose thoughts are summer lightning
Whose waist is an hourglass
Whose waist is the waist of an otter caught in the teeth of a tiger
Whose mouth is a bright cockade with the fragrance of a star of the first magnitude
Whose teeth leave prints like the tracks of white mice over snow

Several of these lines utilise image metaphors. For example, in the third line, the poet is establishing a visual resemblance between the shape of his wife's waist and the shape of an hourglass.

2.2 Conceptual metaphor

Resemblance metaphors have received considerable attention within conceptual metaphor theory, particularly within the approach now known as **Cognitive Poetics** (see Lakoff and Turner 1989 for a seminal study; see also Brône and Vandaele 2009; Gavins and Steen 2003; Stockwell 2002; Tsur 2008; Turner 1991). However, for the most part, research in the conceptual metaphor tradition has not been primarily concerned with metaphors of this kind. Instead, research in this tradition has focused on the kind of everyday language illustrated by the following examples. These represent common ways of referring to particular experiences of relationships such as marriage. The examples in (15) are from Lakoff and Johnson (1980: 44–5).

(15) a. Look *how far* we've *come*.
b. We're at *a crossroads*.
c. We'll just have to *go our separate ways*.
d. We can't *turn back* now.
e. I don't think this relationship is *going anywhere*.
f. *Where* are we?
g. We're *stuck*.
h. It's been *a long, bumpy road*.
i. This relationship is *a dead-end street*.
j. We're just *spinning our wheels*.
k. Our marriage is *on the rocks*.
l. This relationship *is foundering*.

What is striking about these examples is that they represent ordinary everyday ways of talking about relationships: there is nothing stylised or overtly poetic about these expressions. Moreover, for the most part, they do not make use of the linguistic formula A is B, which is typical of resemblance metaphors. That said, these expressions are clearly non-literal: a relationship cannot literally spin its wheels, nor stand at the crossroads.

Although a slim volume, Lakoff and Johnson's 1980 book *Metaphors We Live By* changed the way linguists thought about metaphor for two important reasons. First, Lakoff and Johnson observed that metaphorical language appears to relate to an underlying metaphor system, a 'system of thought'. They noticed that we cannot choose any conceptual domain at random in order to describe relationships such as marriage. Observe that the expressions in (15) have something in common: in addition to describing experiences of relationships, they also rely upon expressions that relate to the conceptual domain JOURNEYS. Indeed, our ability to describe relationships in terms of journeys appears to be highly productive.

2.2.1 Source versus target domains

This pattern led Lakoff and Johnson to hypothesise a conventional link at the conceptual level between the domain of LOVE RELATIONSHIPS and the domain of JOURNEYS. According to this view, LOVE, which is the **target** (the domain being described), is conventionally structured in terms of JOURNEYS, which is the **source** (the domain in terms of which the target is described). This association is called a **conceptual metaphor**. According to Lakoff and Johnson, what makes it a **metaphor** is the conventional association of one domain with another. What makes it **conceptual** (rather than purely linguistic) is the idea that the motivation for the metaphor resides at the level of **conceptual domains**. In slightly different terms, Lakoff and Johnson proposed that we not only speak in metaphorical terms, but also think in metaphorical terms. From this perspective, linguistic expressions that are metaphorical in nature are simply reflections of an underlying conceptual association.

Lakoff and Johnson also observed that there are a number of distinct roles that populate the source and target domains. For example, JOURNEYS include TRAVELLERS, a MEANS OF TRANSPORT, a ROUTE followed, OBSTACLES along the route and so on. Similarly, the target domain LOVE RELATIONSHIP includes LOVERS, EVENTS in the relationship and so on. The metaphor works by mapping roles from the source onto the target: LOVERS become TRAVELLERS (We' re at a crossroads), who travel by a particular MEANS OF TRANSPORT (*We' re spinning our wheels*), proceeding along a particular ROUTE (*Our relationship went off course*), impeded by obstacles (*Our marriage is on the rocks*). As these examples demonstrate, a metaphorical link between two domains consists of a number of distinct correspondences or mappings. These mappings are illustrated in Table 12.1.

It is conventional in the conceptual metaphor literature, following Lakoff

Table 12.1 Mappings for LOVE IS A JOURNEY

Source: JOURNEY	Mappings	Target: LOVE
TRAVELLERS	→	LOVERS
VEHICLE	→	LOVE RELATIONSHIP
JOURNEY	→	EVENTS IN THE RELATIONSHIP
DISTANCE COVERED	→	PROGRESS MADE
OBSTACLES ENCOUNTERED	→	DIFFICULTIES EXPERIENCED
DECISIONS ABOUT DIRECTION	→	CHOICES ABOUT WHAT TO DO
DESTINATION OF THE JOURNEY	→	GOALS OF THE RELATIONSHIP

and Johnson, to make use of the 'A is B' formula to describe conceptual metaphor: for example, LOVE IS A JOURNEY. However, this is simply a convenient shorthand, a mnemonic, for a series of discrete conceptual mappings which license a range of linguistic examples.

2.2.2 The experiential basis of conceptual metaphors

The second important claim to emerge from *Metaphors We Live By* was that conceptual metaphors are grounded in the nature of our everyday interaction with the world. That is, conceptual metaphor has an experiential basis.

Consider the following linguistic evidence for the metaphor QUANTITY IS VERTICAL ELEVATION:

(16) a. The price of shares is *going up*.
 b. She got a *high* score in her exam.

In these sentences there is a conventional reading related to QUANTITY. In (16a) the sentence refers to an increase in share prices. In (16b) it refers to an exam result that represents a numerical quantity. Although each of these readings is perfectly conventional, the lexical items that provide these readings, *going up* and *high*, refer literally to the concept of VERTICAL ELEVATION. Examples such as these suggest that QUANTITY and VERTICAL ELEVATION are associated in some way at the conceptual level. The question is, what motivates these associations?

QUANTITY and VERTICAL ELEVATION are often correlated, and these **correlations** are ubiquitous in our everyday experience. For instance, when we increase the height of something there is typically more of it. If an orange farmer puts more oranges on a pile, thereby increasing the height of the pile, there is a correlative increase in quantity. Similarly, water poured into a glass results in a correlative increase in both height (vertical elevation) and quantity of water. According to Lakoff and Johnson, this kind of correlation, experienced in our everyday lives, gives rise to the formation of an association at the conceptual level which is reflected in the linguistic examples. According to this view, conceptual metaphors are always at least partially motivated by and grounded in experience. As we have seen, then, cognitive linguists define metaphor as a conceptual mapping between source and target domain. In the next section, I examine in more detail the claims made by conceptual metaphor theory.

3 Conceptual metaphor theory

Conceptual metaphor theory has been highly influential both within cognitive linguistics and within the cognitive and social sciences, particularly in neighbouring disciplines such as cognitive psychology and anthropology. In this section I outline some of the key aspects of conceptual metaphor theory as they emerged between the publication of *Metaphors We Live By* and the mid-1990s.

3.1 The unidirectionality of metaphor

An important observation made by conceptual metaphor theorists is that conceptual metaphors are **unidirectional**. This means that metaphors map structure from a source domain to a target domain but not vice versa. For example, while we conceptualise LOVE in terms of JOURNEYS, we cannot conventionally structure JOURNEYS in terms of LOVE: travellers are not conventionally described as 'lovers', or car crashes in terms of 'heartbreak' and so on. While we can say: *Those newly-weds are beginning their journey together*, and be understood to be referring to a marriage, not a literal journey, we cannot say of two people going on a car journey, who are not romantically involved: *Those lovers are setting off for London*. In short, the terms 'target' and 'source' encode the unidirectional nature of the mapping.

Lakoff and Turner (1989) observed that unidirectionality holds even when two different metaphors share the same domains. For example, they identified the two conceptual metaphors PEOPLE ARE MACHINES and MACHINES ARE PEOPLE. These are illustrated in examples (17) and (18), respectively.

(17) PEOPLE ARE MACHINES
  a. John always gets the highest scores in maths; he's a human calculator.
  b. He's so efficient; he's just a machine!
  c. He's had a nervous breakdown.

(18) MACHINES ARE PEOPLE
  a. I think my computer hates me; it keeps deleting my data.
  b. This car has a will of its own!
  c. I don't think my car wants to start this morning.

Although these two metaphors appear to be the mirror image of one another, close inspection reveals that each metaphor involves distinct mappings: in the PEOPLE ARE MACHINES conceptual metaphor, the mechanical and functional attributes associated with computers are mapped onto people, such as their speed and efficiency, their part–whole structure and the fact that they break down. In the MACHINES ARE PEOPLE METAPHOR, it is the notion of desire and volition that is mapped onto the machine. This shows that even when two metaphors share the same two domains, each conceptual metaphor is distinct in nature because it relies upon different mappings.

3.2 Motivation for target and source

Given that metaphorical mappings are unidirectional, two points of interest arise. The first relates to whether there is a pattern in terms of which conceptual domains typically function as source domains and which function as targets. The second point relates to what might motivate such a pattern.

Based on an extensive survey, Kövecses (2002) found that the most common source domains for metaphorical mappings include domains relating to the HUMAN BODY (*the heart of the problem*), ANIMALS (*a sly fox*), PLANTS (*the fruit of her labour*), FOOD (*he cooked up a story*) and FORCES (*don' t push me!*). The most common target domains included conceptual categories such as EMOTION (*she was deeply moved*), MORALITY (*she resisted the temptation*), THOUGHT (*I see your point*), HUMAN RELATIONSHIPS (*they built a strong marriage*) and TIME (*time flies*).

Turning to the second point, the prevalent explanation until the mid-1990s was that target concepts tended to be more abstract, lacking physical characteristics and therefore more difficult to understand and talk about in their own terms. In contrast, source domains tended to be more concrete and therefore more readily 'graspable'. As Kövecses (2002: 20) put it, echoing this view: 'Target domains are abstract, diffuse and lack clear delineation; as a result they "cry out" for metaphorical conceptualization.'

The intuition behind this view was that target concepts were often 'higher-order' concepts: although grounded in more basic embodied experiences, these concepts relate to more complex and abstract experiential knowledge structures. Consider the conceptual domain TIME, an abstract domain par excellence. TIME is primarily conceptualised in terms of SPACE and MOTION through space, as illustrated by the examples in (19):

(19) a. Christmas is *coming*.
b. The relationship lasted a *long time*.
c. The time for a decision *has come*.
d. *We' re approaching* my favourite time of the year.

Lakoff and Johnson (1999) argue that TIME is structured in terms of MOTION because our understanding of TIME emerges from our experience and awareness of CHANGE, a salient aspect of which involves MOTION. For instance, whenever we travel from place A to place B, we experience CHANGE in location. This type of event also corresponds to a temporal span of a certain duration. From this perspective, our experience of time – that is, our awareness of change – is grounded in more basic experiences like motion events. Lakoff and Johnson argue that this comparison of location at the beginning and endpoints of a journey, gives rise to our experience of time: embodied experiences such as MOTION partially structure the more abstract domain TIME. This gives rise to the general metaphor TIME IS MOTION.

3.3 Metaphorical entailments

In addition to the individual mappings that conceptual metaphors bring with them, they also provide additional, sometimes quite detailed knowledge. This is because aspects of the source domain that are not explicitly stated in the mappings can be inferred. In this way, metaphoric mappings carry **entailments** or rich inferences. Consider the examples in (20), which relate to the conceptual metaphor an ARGUMENT IS A JOURNEY:

(20) a. We will proceed in a *step-by-step fashion*.
b. We have *covered a lot of ground*.

In this metaphor, PARTICIPANTS in the argument correspond to TRAVELLERS, the ARGUMENT itself corresponds to a JOURNEY and the progress of the argument corresponds to the ROUTE taken. However, in the source domain JOURNEY, travellers can get lost, they can stray from the path, they can fail to reach their destination and so on. The association between source and target gives rise to the entailment (the rich inference) that these events can also occur in the target domain ARGUMENT. This is illustrated by the examples in (21) which show that structure that holds in the source domain can be inferred as holding in the target domain.

(21) a. I *got lost in* the argument.
b. We *digressed from* the main point.
c. He failed *to reach* the conclusion.
d. I *couldn' t follow* the argument.

3.4 Metaphor systems

An early finding by Lakoff and Johnson (1980) was that conceptual metaphors interact with each other and can give rise to relatively complex metaphor systems. These systems are collections of more schematic metaphorical mappings that structure a range of more specific metaphors such as LIFE IS A JOURNEY. Lakoff (1993) outlines a particularly intricate example of a metaphor system which he calls the **event structure metaphor**. This is actually a series of metaphors that interact in the interpretation of utterances. The individual metaphors that make up the event structure metaphor, together with linguistic examples, are shown in Table 12.2.

In order to illustrate how the event structure metaphor applies, consider the specific metaphor LIFE IS A JOURNEY. This is illustrated by the examples in (22):

(22) a. STATES ARE LOCATIONS
He's at a crossroads in his life.
b. CHANGE IS MOTION
He went from his forties to his fifties without a hint of a mid-life crisis.
c. CAUSES ARE FORCES
He got a head start in life.
d. PURPOSES ARE DESTINATIONS
I can't ever seem to *get to where I want to be* in life.
e. MEANS ARE PATHS
He followed *an unconventional course* during his life.
f. DIFFICULTIES ARE IMPEDIMENTS TO MOTION

Table 12.2 The event structure metaphor

Metaphor:	STATES ARE LOCATIONS (BOUNDED REGIONS IN SPACE)
Example:	*John is in love*
Metaphor:	CHANGE IS MOTION (FROM ONE LOCATION TO ANOTHER)
Example:	*Things went from bad to worse*
Metaphor:	CAUSES ARE FORCES
Example:	*Her argument forced me to change my mind*
Metaphor:	ACTIONS ARE SELF-PROPELLED MOVEMENTS
Example:	*We are moving forward with the new project*
Metaphor:	PURPOSES ARE DESTINATIONS
Example:	*We've finally reached the end of the project*
Metaphor:	MEANS ARE PATHS (TO DESTINATIONS)
Example:	*We completed the project via an unconventional route*
Metaphor:	DIFFICULTIES ARE IMPEDIMENTS TO MOTION
Example:	*It's been uphill all the way on this project*
Metaphor:	EVENTS ARE MOVING OBJECTS
Example:	*Things are going smoothly in the operating theatre*
Metaphor:	LONG-TERM PURPOSEFUL ACTIVITIES ARE JOURNEYS
Example:	*The government is without direction*

Throughout her working life problematic professional relationships had somehow always *got in her way*.

g. PURPOSEFUL ACTIVITIES ARE JOURNEYS
His life had been *a rather strange journey*.

The target domain for this metaphor is LIFE, while the source domain is JOURNEY. The EVENTS that comprise this metaphor are life events, while the PURPOSES are life goals. However, because this metaphor is structured by the event structure metaphor, LIFE IS A JOURNEY turns out to be a highly complex metaphor that represents a composite mapping drawing from a range of related and mutually coherent metaphors: each of the examples in (22) inherits structure from a specific metaphor within the event structure complex. Similarly, other complex metaphors, including an ARGUMENT IS A JOURNEY, LOVE IS A JOURNEY and a CAREER IS A JOURNEY, also inherit structure from the event structure metaphor.

3.5 Metaphors and image schemas

Subsequent to the development of the image schema theory (Chapter 9), the idea that certain concepts were image-schematic in nature was exploited by conceptual metaphor theory (e.g. Lakoff 1987, 1990, 1993). Lakoff and Johnson both argued that image schemas could serve as source domains for metaphoric mapping. The rationale for this view can be summarised as follows: image schemas appear to be knowledge structures that emerge directly from pre-conceptual embodied experience. These structures are meaningful at the conceptual level precisely because they derive from the level of bodily experience, which is directly meaningful. For example, our image-schematic concept COUNTERFORCE arises from the experience of being unable to proceed because some opposing force is resisting our attempt to move forward. Image schemas relating to FORCES metaphorically structure more abstract domains such as CAUSES, by serving as source domains for these abstract concepts. This is illustrated by the event structure metaphor, where the image-schematic concept BOUNDED LOCATIONS structures the abstract concept STATES, while the image-schematic concept OBJECTS structures the abstract concept EVENTS, and so on.

The striking consequence to emerge from this application of image schema theory to conceptual metaphor theory is that abstract thought and reasoning, facilitated by conceptual metaphor, is seen as having an image-schematic and hence an embodied basis (e.g. Lakoff 1990). Clearly, highly abstract concepts are unlikely to be directly structured in terms of simple image schemas but are more likely to be structured in complex ways by inheritance relations: a network of intermediate mappings. It also seems likely that certain concepts must relate, in part, to subjective experiences like emotions – a point to which I return below. Despite these caveats, conceptual metaphor theory holds that abstract concepts can, at least in part, be traced back to image schemas.

3.6 Invariance

As a result of the emergence of these ideas, a preoccupation for conceptual metaphor theorists in the late 1980s and early 1990s centred on how metaphoric mappings could be constrained (Brugman 1990; Lakoff 1990, 1993; Lakoff and Turner 1989; Turner 1990, 1991). After all, if conceptual metaphor is ultimately based on image schemas, with chains of inheritance relations giving rise to highly abstract and specific metaphors such as LOVE IS A JOURNEY, ARGUMENT IS WAR and so on, it is important to establish what licenses the selection of particular image schemas by particular target domains and why unattested mappings are not licensed.

There appear to be certain restrictions in terms of which source domains can serve particular target domains, as well as constraints on metaphorical entailments that can apply to particular target domains. For example, Lakoff and Turner (1989) observed that the concept of DEATH is personified in a number of ways (which means that a concept has human-like properties attributed to it, such as intentionality and volition).

However, the human-like qualities that can be associated with DEATH are restricted: DEATH can *devour*, *destroy* or *reap*, but as Lakoff (1993: 233) observes: 'death is not metaphorized in terms of teaching, or filling the bathtub, or sitting on the sofa'. In order to account for these restrictions, Lakoff posited the **Invariance Principle**. This he states as follows: 'Metaphorical mappings preserve the cognitive topology (that is, the image schema structure) of the source domain, in a way consistent with the inherent structure of the target domain' (Lakoff 1993: 215).

There are a number of specific death personification metaphors, including

DEATH IS A DEVOURER, DEATH IS A REAPER and DEATH IS A DESTROYER, which inherit structures from a more schematic metaphor, which Lakoff and Turner (1989) call a **generic-level metaphor**: EVENTS ARE ACTIONS (or INANIMATE PHENOMENA ARE HUMAN AGENTS). What the Invariance Principle does is guarantee that image-schematic organisation is invariant across metaphoric mappings. This means that the structure of the source domain must be preserved by the mapping in a way consistent with the target domain. This constrains potentially incompatible mappings.

I now illustrate this, in relation to the DEATH metaphors mentioned above. While DEATH can be structured in terms of the kinds of agents I have noted (DEVOURER, REAPER or DESTROYER), it cannot be structured in terms of any kind of agent at random. For example, it would not be appropriate to describe death as KNITTER, TEACHER or BABYSITTER. Agents that devour, reap or destroy bring about a sudden change in the physical state of an entity. This corresponds exactly to the nature of the concept DEATH whose **cognitiv**e topology – namely, inherent conceptual structure – is preserved by the attested mappings such as DEATH IS A DESTROYER but not the unattested mapping: ?DEATH IS A KNITTER.

The Invariance Principle also predicts that metaphoric entailments that are incompatible with the target domain will fail to map. Consider the examples in (23), which relate to the metaphor CAUSATION IS TRANSFER (OF AN OBJECT):

(23)	a.	She gave him a headache.	STATE
	b.	She gave him a kiss.	EVENT

While the source domain for both of these examples is TRANSFER, the first example relates to a STATE and the second to an EVENT. The source domain TRANSFER entails that the recipient is in possession of the transferred entity. However, while this entailment is in keeping with STATES because they are temporally unbounded, the same entailment is incompatible with EVENTS because they are temporally bounded and cannot therefore 'stretch' across time. This is illustrated by (24).

(24)	a.	She gave him a headache and he still has it.	STATE
	b.	#She gave him a kiss and he still has it.	EVENT

The process that prevents entailments from projecting to the target domain is called **target domain override** (Lakoff 1993).

3.7 The conceptual nature of metaphor

A consequence of the claim that conceptual organisation is in large part metaphorical is that thought itself is metaphorical. Metaphor is not simply a matter of language, but reflects 'deep' correspondences in the way our conceptual system is organised. This being so, we expect to find evidence of conceptual metaphor in human systems other than language. Indeed, this view comes from studies that have investigated the metaphorical basis of a diverse range of phenomena and constructs, including social organisation and practice, myths, dreams, gesture, morality, politics and foreign policy, advertisements and mathematical theory.

For example, the organisation of a business institution is often represented in terms of a diagram that represents a hierarchical structure, in which the chief executive officer is at the highest point and other officers and personnel of the company are placed at lower points; relative positions upwards on the vertical axis correspond to relative increases in importance or influence. This type of diagram reflects the conceptual metaphor SOCIAL INSTITUTIONS ARE HIERARCHICAL STRUCTURES. Conceptual metaphor theorists argue that this metaphor is in turn grounded in more basic kinds of experience, such as the correlation between height or size and influence, or the fact that the head (which controls the body) is the uppermost part of the body.

3.8 Hiding and highlighting

An important idea in conceptual metaphor theory relates to **hiding** and **highlighting**: when a target is structured in terms of a particular source, this highlights certain aspects of the target while simultaneously hiding other aspects. For example, invoking the metaphor ARGUMENT IS WAR highlights the adversarial nature of argument but hides the fact that argument often involves an ordered and organised development of a particular topic (*He won the argument*, *I couldn' t defend that point* and so on). In contrast, the metaphor AN ARGUMENT IS A JOURNEY highlights the progressive and organisational aspects of arguments while hiding the confrontational aspects (*We'll proceed in step-by-step fashion*; *We've covered a lot of ground*). In this way, metaphors can **perspectivise** a concept or conceptual domain.

SUMMARY

In this chapter I have introduced the basic insights of **conceptual metaphor theory**, as developed by Lakoff and Johnson in their seminal work *Metaphors We Live By*, as well as other publications, notably Lakoff's influential 1993 paper 'The contemporary theory of metaphor'. As we have seen, conceptual metaphor theory views metaphor as more than a superficial linguistic device. According to this view, metaphor is conceptual in nature, hence: **conceptual metaphor**. On this account, a conceptual metaphor consists of a series of multiple **mappings**, which collectively serve to map structure from one domain onto another, as in the case of the **event structure metaphor**. According to this approach, conceptual metaphor is motivated by the need to provide relatively abstract **target domains** with structure derived from more concrete **source domains**. These conceptual associations arise from **correlations** in experience, and can be contrasted with **resemblance** or **image metaphors**. Hence, conceptual metaphors derive from embodied experience and illustrate the guiding principle of embodied cognition.

FURTHER READING

Introductory textbooks

- **Dancygier and Sweetser (2014)**. This is an advanced introduction to various aspects of figurative language and thought from the perspective of cognitive linguistics. Phenomena covered include conceptual metaphor, conceptual metonymy (discussed in the next chapter of this book) and conceptual blending (discussed in Chapter 20, in the present book).
- **Kövecses (2010)**. A useful introductory overview of conceptual metaphor theory by one of its leading proponents, with exercises. Suitable for undergraduate level and above.

Key texts in the development of conceptual metaphor theory

- **Gibbs (1994); Gibbs and Steen (1999); Lakoff (1990, 1993); Lakoff and Johnson (1980, 1999)**. The foundational text is the extremely accessible 1980 book by Lakoff and Johnson. An updated and more extended version is presented in their 1999 book. The 1990 and 1993 articles by Lakoff elaborate on proposals in Lakoff and Johnson 1980. The 1994 book by Gibbs provides an excellent review of the relevant literature relating to experimental evidence for conceptual metaphor theory through its initial phase of development. The 1999 Gibbs and Steen book provides a collection of articles representing the state of the art in the first two decades of conceptual metaphor research, up until the turn of the century.

More recent advances in conceptual metaphor theory

Here I present a small selection of book-length theoretical advances in conceptual metaphor theory, from different perspectives, since the turn of the century.

- **Forceville and Urios-Aparisi (2009)**. An important collection of chapters that considers the multimodal nature of metaphor; chapters consider the co-presence of language, visuals, gestures, sound and music in their use of metaphor.
- **Gibbs (2008)**. A collection of specially commissioned chapters by leading

metaphor researchers. Chapters consider the nature and role of metaphor from theoretical perspectives as well as applications, including finding metaphor in modalities ranging from music to images and pictures, and its use in disciplines ranging from education to literature. Also considered is the way metaphor is processed in the mind, and the way it can be identified using corpora, as well as many other matters.

- **Gibbs (2017)**. Presents a state-of-the-art review and defence of conceptual metaphor theory, in light of arguments presented against it by critics.
- **Gibbs and Colston (2012)**. Presents a review of the psycholinguistic literature relating to different approaches and perspectives on the interpretation of figurative language understanding, including metaphor. The book argues that a single theory may not adequately account for the range of psycholinguistic processes at play, providing an overarching account based in dynamical systems theory.
- **Hampe (2017)**. A collection of specially commissioned chapters by leading experts on metaphor theory from the social and cognitive sciences. The unifying theme of the volume is an exploration of whether metaphor theory should view conceptual metaphor as, essentially, grounded in embodied experience or language use: the cognition–discourse divide. In so doing, chapters consider this issue from different perspectives, and in so doing examine the state-of-the-art in terms of the nature of metaphor and conceptual metaphor theory.
- **Kövecses (2016)**. An important volume that provides a revised account of the way in which conceptual metaphors are grounded in experience. In particular, the author examines the role of context in grounding metaphors.
- **Müller (2008)**. An exploration of the interplay between conventional 'dead' metaphors and the conceptual mappings that support ongoing creative 'live' metaphors. This is an important study that reveals that established idioms and metaphors arise from dynamic mappings in the mind.
- **Steen (2007)**. Presents a methodology for identifying metaphor in grammar and language usage, for determining what counts as converging evidence for conceptual metaphor.
- **Steen et al. (2010)**. An important book which provides a step-by-step method for identifying metaphor at the level of the word, based on corpus-analyses from English and Dutch.

Applications of conceptual metaphor theory

- **Charteris-Black (2011)**. A seminal contribution by one of the pioneers of critical metaphor analysis and conceptual critical discourse analysis. The author examines the foundational nature of metaphor in the foundational myths underpinning oratory and political speeches. The book analyses speeches from notable political leaders and activists including Winston Churchill, Martin Luther King, Margaret Thatcher, Tony Blair and Barack Obama.

- **Cienki and Müller (2008)**. A collection of chapters by leading proponents examining the relationship between metaphor and gesture from the perspectives of anthropology, linguistics, semiotics and psychology.
- **Díaz-Vera (2014)**. A highly useful edited volume examining the way in which conceptual metaphors can be studied from a historical/diachronic perspective across languages and cultures.
- **Goatly (2007)**. An insightful examination of the role of conceptual metaphors in constructing social identities and ideologies in realms as diverse as architecture, engineering, education, genetics, ecology, economics, politics, industrial time-management, medicine, immigration, race and sex.
- **Lakoff and Núñez (2001)**. An influential application of conceptual metaphor theory to the development of mathematical concepts.
- **Lakoff and Turner (1989)**. A seminal application of conceptual metaphor theory to literary metaphor, by two of the pioneers in conceptual metaphor theory.
- **Semino (2008)**. Examines the nature of metaphor in discourse. Discourse genres examined range from literature, politics, science, education and advertising to the discourse of mental illness.

DISCUSSION QUESTIONS

1. What are the main claims associated with conceptual metaphor theory?
2. What does it mean to say that a conceptual metaphor is a unit of conceptual structure?
3. Do you see any drawbacks with making claims about conceptual structure based on linguistic 'evidence'? What alternative lines of evidence might be required to substantiate the claim?

13

Primary metaphors and conceptual metonymy

In this chapter, I examine two influential ideas that emerged from conceptual metaphor theory: the notion of **primary metaphor**, on the one hand, and **conceptual metonymy** on the other. While both notions originally emerged within the context of conceptual metaphor theory, they have since become important theoretical advances in their own right. Consequently, each development can be viewed as an extension of conceptual metaphor theory. Accordingly, in this chapter I introduce and present the details of each, in turn.

Primary metaphor theory, as it has come to be known, arose in the context of the thesis of embodied cognition, and concerned, ultimately, questions arising from the experiential motivation or grounding of conceptual metaphors. For instance, while the putative conceptual metaphor THEORIES ARE BUILDINGS (Lakoff and Johnson 1980), as in: *That theory is without foundation*, is held to link two conceptual domains in the human conceptual system, it is less clear how such a conceptual metaphor might be grounded in experience. After all, while we might, on occasion, discuss theories in buildings, in what sense are theories and buildings correlated in experience: what motivates or grounds these two domains – theories and buildings – becoming linked in our minds, in order to form a long-term, stable knowledge relationship?

Indeed, a particular problem with conceptual metaphor theory, as formalised by the Invariance Principle, as discussed in the previous chapter, is the potential contradiction inherent in the claim that a target domain possesses an invariant 'inherent structure' that limits the metaphorical mappings and entailments that can apply, and at the same time that the target domain is abstract in the sense that it is not clearly delineated (e.g. Murphy 1996). According to conceptual metaphor theory, the purpose of conceptual metaphor is to map structure onto abstract domains; if a target already has its own invariant structure, why then should it require metaphoric structuring? In short, the Invariance Principle exhibits a contradiction, at its heart, which reflects, more generally, a failure to fully account for the experiential grounding of conceptual metaphors.

In an influential study, Joseph Grady (1997a) addresses this problem by proposing that there are two kinds of metaphor: primary metaphor and **compound metaphor** (sometimes referred to as **complex metaphor**, e.g. Lakoff and Johnson 1999). While primary metaphors are foundational, compound metaphors are constructed from the **unification** of primary metaphors. Grady's central claim, which marks his approach as distinct from earlier work in conceptual metaphor theory, is that primary metaphors conventionally associate concepts that are equally 'basic', in the sense that they are both directly experienced and perceived.

This means that Grady rejects the view that the distinction between the target and source of a metaphoric mapping relates to abstract versus concrete concepts. Instead, Grady argues that the distinction between target and source relates to **degree of subjectivity** rather than how clearly delineated or how abstract a concept is, as we shall see.

Turning now to conceptual metonymy, the potential importance of this phenomenon was already acknowledged by Lakoff and Johnson in *Metaphors We Live By*. In their 1980 book, Lakoff and Johnson first introduced conceptual metonymy as, potentially, on a par with conceptual metaphor, within their conceptual metaphor theory. Moreover, and as we shall see, Lakoff and Turner (1989) later distinguished between conceptual metaphor and conceptual metonymy as cross-domain versus within-domain mappings, respectively, while emphasising them both as foundational types of conceptual mappings or projections.

More recent work, particularly since Gibbs (1994), additionally began to emphasise the importance of conceptual metonymy. Research since the early 1990s has since suggested that this operation may be at least as important as conceptual metaphor in the organisation of conceptual structure; for instance, Langacker (1993: 30) identifies metonymy as a foundational imaginative capacity. And since this point, a range of leading researchers have posited its variegated role in giving rise to a wide range of conceptual and linguistic phenomena (e.g. Janda 2011 – although see Brdar and Brdar-Szabó 2011; and Peirsman and Geeraerts 2006 – although see Croft 2006). Still others have suggested that conceptual metonymy may be as foundational as conceptual metaphor to conceptual organisation (e.g. Barcelona 2003b; Kövecses and Radden 1998; Radden and Panther 1999), and may play a key role in providing conceptual 'shortcuts' (Littlemore 2015) in a wide range of symbol systems including language, music, film, art and gesture.

1 A primary metaphor account of conceptual metaphors

In this part of the chapter I introduce and provide an overview of primary metaphor theory. I begin by examining the outstanding problems with conceptual metaphor theory that led to the need to posit primary conceptual metaphors. I then consider the properties of primary metaphors, and how they diverge from more complex compound metaphors. Finally, I consider the consequences for conceptual metaphor theory as a whole.

1.1 Three problems for conceptual metaphor theory

In this section I consider three problems with conceptual metaphor theory as classically formulated – the view of conceptual metaphor theory up until, roughly, the mid-1990s, and as encapsulated in Lakoff's 1993 paper, 'The contemporary theory of metaphor'. I do so, as resolving these issues gave rise to primary metaphor theory.

First, we have the **problem of distinguishing between target and source**. As we saw in the previous chapter, conceptual metaphors are held to be long-term, stable knowledge structures, which map structure from a concrete domain of experience onto a more abstract domain. But this begs the question as to what makes a given domain of experience 'abstract'. For instance, TIME is a paradigm example of an 'abstract' domain, in the sense of something physical that can be pointed to and identified in the world, beyond the motion of the hands of a clock. Yet, many of the range of temporal experiences that give rise to time are directly perceived and experienced, including temporal experiences such as duration, and succession (see Evans 2004, 2013b for reviews) – recall the discussion in Chapter 4. Moreover, temporal experience has an embodied grounding, arising, ultimately, from our physiology and neuro-anatomical structure, such that we experience time without requiring that it be grounded in terms of space.

In similar fashion, early emotional experiences, such as anger and love, while putatively abstract, are nevertheless real and directly perceived experiences. Nor do they require metaphoric structuring to be processed and understood. Grady (1997a) suggested, in light of these observations, that the distinction between source and target is unlikely to turn on the distinction between concrete and abstract, as classically formulated in conceptual metaphor theory.

The second problem concerns the **problem of target domain literal structure**. In conceptual metaphor theory, target domains are claimed to be, in part, created by the mapping of structure from the source domain. But this is potentially problematic for the Invariance Principle introduced in the previous chapter. After all, the Invariance Principle is meant to guarantee that the right kind of source content is mapped onto the right kind of target content. But if there's little or nothing literal about the target – the target lacks conceptual structure prior to the mapping of structure from the source – how does the Invariance Principle know what to map? In short, what is the **literal structure** of the target domain, such that the Invariance Principle can apply?

The third issue is the **problem of mapping gaps**. As Grady (1997a, 1997b) observes, some conceptual metaphors appear to have 'gaps' in how literal structure from the source domain is mapped onto the target domain. For instance, in the domain of TIME, structure is mapped from the domain of SPACE. But the mappings are partial. For instance, while in the domain of space something can appear on several axes: up–down, ahead–behind, left–right, and in terms of cardinal points: north–south, east and west, in English only the ahead–behind axis is typically subject to mapping, as exemplified by the semantically anomalous examples in (1b and c):

(1) a. Christmas is still ahead of us.
b. #Christmas is still left/east of us.
c. #Christmas is still above us.

Interestingly, mapping gaps also appear to be culture-specific. For instance, in the domain of TIME, the vertical (up–down) axis does not typically apply for English speakers, but is available for speakers of other languages, such as Mandarin – as we saw in Chapter 4. But if conceptual metaphors are meant to reflect universal aspects of embodied experience, it remains unclear why mapping gaps are culture-specific.

1.2 Towards a decompositional account of conceptual metaphors

In attempting to reconcile these three specific problems, Grady provided a decompositional account of conceptual metaphors that had been proposed in the research literature. His aim was to establish the level at which a conceptual metaphor could be said to be directly grounded in embodied experience: what he termed a **primary conceptual metaphor**. His approach consisted of examining conceptual metaphors from three angles to establish whether they could be established as primary, in this sense. One celebrated example of this approach was his reanalysis of the THEORIES ARE BUILDINGS conceptual metaphor, first proposed by Lakoff and Johnson (1980):

> Is that the *foundation* for your theory? The theory needs more *support*. The argument is *shaky*. We need some more facts or the argument will *fall apart*. We need to *construct* a *strong* argument for that. I haven't figured out yet what the *form* of the argument will be. Here are some more facts to *shore up* the theory. We need to *buttress* the theory with *solid* arguments. The theory will *stand* or *fall* on the *strength* of that argument. The argument *collapsed*. They *exploded* his latest theory. We will show that theory to be without *foundation*. So far we have put together only the *framework* of the theory. (Lakoff and Johnson 1980: 46)

As Grady (1997b) observes, the examples for the THEORIES ARE BUILDINGS conceptual metaphor provide evidence for a number of distinct cross-domain mappings that constitute the conceptual metaphor. I have summarised these in Table 13.1.

1.2.1 The grounding problem for THEORIES ARE BUILDINGS

While linguistic data supports the view that THEORIES ARE BUILDINGS is a coherent conceptual metaphor – one that consists of stable, cross-domain mappings that inhere in long-term memory – it is less clear that it is directly

Table 13.1 Mappings for THEORIES ARE BUILDINGS

Source domain: BUILDINGS	Mappings	Target domain: THEORIES
FOUNDATIONS	→	MAJOR PREMISES (INCLUDING FACTS AND ASSUMPTIONS)
FRAMEWORK	→	THE ORGANISATION OF CLAIMS AND ARGUMENTS
SUPPORTING MATERIALS	→	FACTS AND ARGUMENTS
DESIGN	→	LOGICAL STRUCTURE OF THE THEORY
ARCHITECT/ENGINEER/BUILDER	→	THEORETICIAN

grounded in embodied experience. Grady (1997b) provides at least three reasons for this contention.

First, THEORIES ARE BUILDINGS exhibits **mapping gaps**. For example, BUILDINGS have WINDOWS, TENANTS and RENT, among other concepts; yet, these components fail to map onto the target domain of THEORIES, as the examples below illustrate (Grady 1997b: 270). This illustrates the phenomenon of **poverty of mapping**.

(2) a. #This theory has French windows.
  b. #The tenants of her theory are behind in their rent.

Second, THEORIES ARE BUILDINGS lacks a clear experiential basis: we can hardly claim that theories and buildings are closely correlated with one another in our everyday experience of the world. Although we often discuss theories in buildings, buildings are only incidentally associated with theories: we might just as easily discuss theories outdoors, in a tent or on a boat.

Third, THEORIES ARE BUILDINGS (e.g. *the foundation of the theory*) appears to be similar to other conceptual metaphors: BUSINESSES ARE TREES (e.g. *a bank branch*), SOCIETIES ARE FABRICS (e.g. *the fabric of society*) and ECOSYSTEMS ARE WHEELS (e.g. *the hub of political life*). Grady argues that this reveals there to be a generalisation that the metaphor analyst can make, one that holds for all four conceptual metaphors, namely: ABSTRACT ORGANISATION IS PHYSICAL STRUCTURE.

In short, Grady concludes that THEORIES ARE BUILDINGS appears not to be directly grounded in experience, and is motivated by a more fundamental generalisation. Moreover, it is for this reason that the phenomenon of mapping gaps is in evidence.

1.2.2 A decompositional account of THEORIES ARE BUILDINGS

Grady (1997a, 1997b) argues that THEORIES ARE BUILDINGS is made up of more basic or primary metaphors, as follows:

(3) ABSTRACT ORGANISATION IS PHYSICAL STRUCTURE
  a. the *foundation* of the theory
  b. a bank *branch*

c. the *fabric* of society
d. the *hub* of political life

(4) VIABILITY/PERSISTENCE IS REMAINING UPRIGHT
a. The 140 year old record for the fastest wind-powered sea voyage from San Francisco to Boston was finally *toppled* in 1996.
b. The poverty gap between rich and poor from the 1990s still *stands* today.

(5) THE ASYMMETRICAL DEPENDENCE OF SOME PARTS ON OTHERS IS PHYSICAL SUPPORT
a. During Jane's divorce she would have fallen apart if it hadn't been for her best friend's *support*.

Grady suggests that, in effect, THEORIES ARE BUILDINGS can be decomposed into these three distinct conceptual metaphors, which are directly grounded in experience. In short, these primary conceptual metaphors are not subject to the poverty of mappings associated with THEORIES ARE BUILDINGS, they have a clear experiential basis and cannot be reduced further to more experientially basic conceptual metaphors.

This begs the question as to how THEORIES ARE BUILDINGS arises. Grady proposes that this arises via a process of conceptual **unification** in which the three primary metaphors in (3), (4) and (5) give rise to a so-called **compound conceptual metaphor** (sometimes referred to as a **complex metaphor** – Lakoff and Johnson 1999). This process of unification gives rise to the compound metaphor: VIABLE (ABSTRACT) ORGANISATION IS UPRIGHT PHYSICAL STRUCTURE. I have provided the unified mappings for this compound metaphor in Table 13.2.

However, the unification of these three primary metaphors still doesn't quite give us THEORIES ARE BUILDINGS. The mappings give rise to a compound metaphor in which we understand any viable organisation in terms of an upright physical structure: it doesn't have to be a building. How, then, do we obtain the THEORIES ARE BUILDINGS conceptual metaphor?

In addition, semantic frames (as briefly introduced in Chapter 10, with my discussion of the COMMERCIAL EVENT frame – and in more detail in Chapter 16) for THEORIES and BUILDINGS must also be integrated with the mappings in Table 13.2 to provide a unified conceptual metaphor. As such,

Table 13.2 Mappings for VIABLE (ABSTRACT) ORGANISATION IS UPRIGHT PHYSICAL STRUCTURE

Source	Mappings	Target
COMPLEX PHYSICAL ENTITY	→	COMPLEX ABSTRACT ENTITY
REMAINING UPRIGHT	→	VIABILITY/PERSISTENCE
PHYSICAL SUPPORT	→	ABSTRACT ASYMMETRIC DEPENDENCE

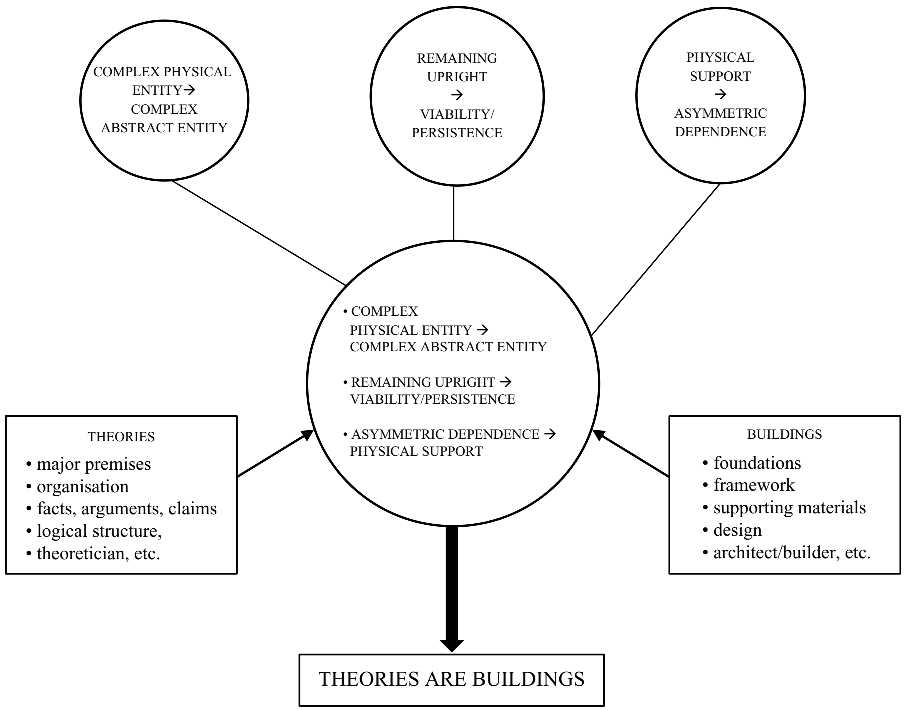

Figure 13.1 Integration network for THEORIES ARE BUILDINGS

THEORIES ARE BUILDINGS amounts to a culturally salient exemplar of the VIABLE (ABSTRACT) ORGANISATION IS UPRIGHT PHYSICAL STRUCTURE conceptual metaphor. This unification process, Grady argues, takes the form of **conceptual blending**: a process whereby different aspects of conceptual knowledge are integrated, or blended – an issue to which I return in detail in Chapter 20 – to provide a new, complex unit of conceptual structure. The unification or **integration network** for THEORIES ARE BUILDINGS is diagrammed in Figure 13.1.

1.3 Properties of primary conceptual metaphors

In this section, I consider the key properties of primary metaphors, as developed in the work of Grady (e.g. 1997a, 1997b, 1999, 2005, 2008; Grady and Johnson 1997; Grady et al., 1996).

1.3.1 Primary metaphors are directly grounded in experience, in primary scenes

Grady (e.g. 1997a; Grady and Johnson 1997) argues that primary metaphors are directly grounded in embodied experience arising in the context of what he dubs **primary scenes**. A primary scene is a relatively simple experience type that brings together perceptual and cognitive components dubbed **subscenes**. To illustrate, consider the following linguistic examples:

(6) a. I didn't *get much out of* this article.
b. There's very little *content* in this paper.

Grady and Johnson (1997) observe that these examples are, in part at least, motivated by the following primary conceptual metaphor:

(7) BECOMING ACCESSIBLE TO AWARENESS IS EMERGING FROM A CONTAINER.

As they also observe, the conceptual metaphor in (7) underpins the so-called **Conduit Metaphor** for communication, introduced into the literature by the philosopher Michael Reddy in 1979 (see Reddy 1993). Grady and Johnson propose that the primary conceptual metaphor in (7) arises from a primary scene that we experience many times a day, involving an object emerging from a container, and thereby becoming available to awareness. This primary scene consists of two subscenes: a perceptual component and a cognitive component. From a perceptual point of view, the entity contained becomes accessible to the senses (vision, touch and so on), by virtue of emerging from the container that otherwise occluded it. And as a consequence, the object becomes accessible to awareness: for instance, being able to see the object entails that we know what the object is. The perceptual and cognitive subscenes that make up the primary scene is diagrammed in Figure 13.2.

Figure 13.2 captures the following. The horizontal arrow represents time. The vertical line represents the point at which the object (X) emerges from the container and hence becomes accessible to awareness. The primary scene depicted in Figure 13.2 is made up of two components: a perceptual sub-scene – perceiving the object (X) emerging from the container – and a cognitive subscene – the conscious awareness as to the nature of the object (X). Together, these subscenes provide the experiential grounding for the primary conceptual metaphor in (7), in which the physical emergence from a container is cognitively linked with the awareness of accessibility, such that, linguistically, awareness of accessibility can be structured in terms of language concerning the emergence of an object from a container, as in (6).

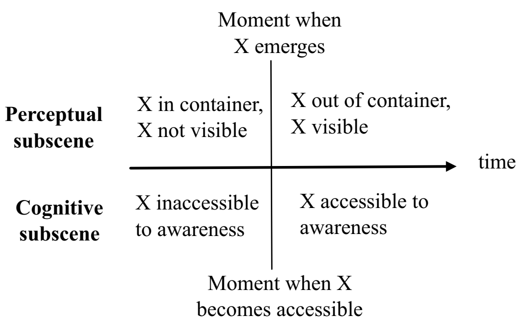

Figure 13.2 Proposed primary scene for emergence from a container/accessibility to awareness (adapted from Grady and Johnson 1997)

1.3.2 Subscenes are linked in primary metaphors by necessary and sufficient conditions

Grady (e.g. 2008) argues that there are necessary and sufficient conditions that must hold for two subscenes to become linked, such that they form a primary scene, thereby motivating a primary conceptual metaphor. The first is that the two subscenes must exhibit **similarity of scalarity**, in terms of the nature of the experience types. That is, in terms of scalar properties of the subscenes, such as their event structure, quantity and quality, they must exhibit scalar properties that are equally basic or simple. For instance, the two subscenes associated with Figure 13.2 are both relatively simple: an object emerging from a container, and awareness of perceptual accessibility of an object, and in terms of event structure, both are temporally simple, being punctual in nature. Hence, both exhibit corresponding scalar properties, the necessary condition for two subscenes becoming unified.

But the second and sufficient condition is that the two subscenes must exhibit distinctive and causal **experiential correlations**. For instance, while we think while we breathe, such that thought and breathing are correlated, this correlation in our experience does not give rise to a primary scene. Hence, it does not give rise to an ensuing primary conceptual metaphor in which we conceptualise thought in terms of breathing. And this follows as the experiential correlational is insufficiently distinct: we live out all aspects of our lives while breathing. As such, thought is not exceptional in this regard: thought is not causally linked to breathing.

In contrast, the emergence of an object from a container and its corresponding accessibility to awareness exhibit a distinctive correlation in experience: it is precisely because the object is removed from an occluding container that it thereby becomes accessible to awareness. In short, the correlation in experience is causally related: the awareness arises because the object emerges from the container.

Grady argues that these two conditions must be met for two subscenes to come to form a primary scene. Indeed, Grady's colleague, Christopher Johnson (1999), investigated the emergence of primary conceptual metaphors, arising from primary scenes of experience, in children's early acquisition of language. For instance, Johnson investigated children's acquisition of the word *see*. When a child sees that something is the case – a parent offering food – the child knows it to be the case that it has food. This correlation, between the subscenes of SEEING and KNOWING, gives rise to the primary conceptual metaphor: KNOWING IS SEEING (e.g. *I see what you mean*). A consequence of our early primary scene, in which SEEING inevitably correlates with KNOWING, is that the primary metaphor – knowing is seeing – arises.

Johnson found that when young children begin acquiring the verb *see*, they initially appear to **conflate** the meanings arising from the primary scene. Initial usages of *see* encompassed both the 'visual perception' meaning, and the 'knowing' meaning. But later, as children begin to gain a better understanding of how the verb is used by their caregivers, they slowly begin to discriminate, reserving *see* for those situations involving just visual perception. This points to the view that infants appear to map their early language acquisition onto primary scenes of experience. In the primary scene, seeing and knowing are tightly conflated. As a consequence, a child's earliest usage of the English word *see* involves both components: *seeing* and *knowing*. But only later, as the child develops a more mature linguistic system, does it begin to **deconflate** the two ideas, reserving *see* for visual perception. This has been dubbed the **deconflation hypothesis**.

1.3.3 Primary source and target concepts are simple

What makes something a primary concept (target or source) is that it is relatively simple. To illustrate, consider some primary conceptual metaphors proposed by Grady, together with example sentences.

(8) SIMILARITY IS NEARNESS
That colour is quite close to the one on our dining-room wall.

(9) IMPORTANCE IS SIZE
We've got a big week coming up at work.

(10) QUANTITY IS VERTICAL ELEVATION
The price of shares has gone up.

(11) CAUSES ARE FORCES
Vanity drove me to have the operation.

(12) CHANGE IS MOTION
Things have shifted a little since you were last here.

(13) DESIRE IS HUNGER
We're hungry for a victory.

In these examples the target and source concepts are relatively simple, albeit in slightly different ways. For instance, in (8) the primary target concept, SIMILARITY, relates to a subjective assessment that is **cognitively simple**: we judge similarity by comparing and contrasting two or more entities to form a cognitive judgement. In contrast, the primary source concept is **phenomenologically simple**, concerning a comparison in terms of our experience of location, based on perceptual cues such as visual information.

In contrast, a compound metaphor involves target and sources that are neither cognitively nor phenomenologically simple in these ways. Take the compound metaphor THEORIES ARE BUILDINGS. The compound target, THEORIES, is a complex notion that involves a number of different components – hypotheses, arguments, a theoretician and so on – and a relatively complex process, both in terms of the time taken, and the reasoning process involved to develop and later still, articulate, a compelling theory. A theory requires evidence, and may be revised, after previous false starts. It might be communicated, orally and in writing, and may be subject to rebuttal and further revision. There is little simple, in relative terms, about this.

In similar fashion, the compound source, BUILDINGS, is a complex physical entity that involves planning permission processes, as well as architectural design, which may be subject to revision, and construction techniques. Finally, once the structure of the building is complete, it must be then decorated and furnished, in a variety of ways. Moreover, there are many different types of buildings that fulfil different functions and purposes, ranging from ceremonial buildings such as churches and temples, to municipal buildings such as libraries, civic centres and town halls, to dwellings of various kinds. In contrast, a primary source is phenomenologically simple, in the way that a compound source is not.

1.3.4 Primary metaphors are universal

A key claim made by Grady is as follows: given that primary sources and targets are phenomenologically and cognitively simple, respectively, in the way just described, they are likely to give rise to conceptual metaphors that are universal. In slightly different terms, the primary conceptual metaphors (8) to (13) are likely to arise in the minds of speakers of any language, and members of any culture, a consequence of the necessary and sufficient conditions that lead to the formation of primary conceptual metaphors from primary scenes. In short, primary scenes are themselves universal, and these entail primary conceptual metaphors.

In contrast, compound metaphors are likely to be culture-specific and less likely to be universal. For instance, a culture that lives a nomadic lifestyle, and hence eschews fixed dwellings, may not possess a conventional THEORIES ARE BUILDINGS compound metaphor. And this follows as buildings may be less salient aspects of such cultures. Such a culture, if it deploys a conceptual metaphor with the target domain THEORIES, may be predisposed to make use of a different source domain, given its cultural biases.

1.3.5 The distinction between a source and target concerns a qualitative distinction between image and response content

As already alluded to, the distinction between a primary target and a primary source does not turn on the traditional distinction between abstract and concrete, as per compound metaphors. What makes a source a source and a target a target relates to the distinction between what Grady dubs **response content** on the one hand and **image content** on the other.

For instance, as Grady puts it, the target concepts in (8) to (13), SIMILARITY, IMPORTANCE, QUANTITY, CAUSES, CHANGE and DESIRE:

> lack the kind of perceptual basis which characterises the source concepts . . . CHANGE, for instance, can be detected in any number of domains, including non-physical ones (e.g. a change in the emotional

> tone of a conversation), whereas the detection of physical MOTION is directly based on physical perception. DESIRE is an affective state while HUNGER is a physical sensation. QUANTITY is a parameter in any realm, while VERTICAL ELEVATION is a physical variable, perceived by the senses. (Grady 1997a: Chapter 5, pp. 14–15)

What Grady is claiming is, in effect, that primary target concepts reflect subjective responses to sensory perception, and represent 'judgements, assessments, evaluations and inferences' (Grady 1997a: Chapter 5, p. 15). From this perspective, primary target concepts such as SIMILARITY, QUANTITY and DESIRE are not dismissed as 'abstract' but are recognised as being among the most fundamental and direct experiences we have as human beings. This explains why Grady describes them as 'primary'. The key distinction between target and source in Grady's theory is that primary source concepts relate to sensorimotor experience, while primary target concepts relate to subjective responses to sensorimotor experience. This is reminiscent of the distinction between exteroceptive and interoceptive experience that I introduced in Chapter 3.

1.3.6 Mappings between source and target, in primary metaphors, are asymmetric

An important consequence of the qualitative distinction between primary target and source concepts, in primary metaphors, is that the asymmetric nature of the mapping in conceptual metaphor theory is preserved for primary metaphors. Much like compound metaphors, primary metaphors exhibit an **asymmetric relationship**, whereby the conceptual projection is from source to target, rather than the other way around.

Like the more general framework of conceptual metaphor theory that I presented in the previous chapter, primary metaphor theory assumes that primary metaphors are **unidirectional**. However, because primary metaphors involve the association of a target and a source that are equally basic and are derived from real and directly apprehended experiences, there must be a different explanation for the unidirectionality: for what makes a source a source and a target a target. Recall that the earlier view in conceptual metaphor theory was that target concepts (or domains) were more abstract than the source concept (or domain), and that the source provided the target with structure that made it possible to think and talk about these abstract concepts.

In primary metaphor theory, the mapping from source to target is explained in the following terms: because primary target concepts relate to subjective responses, they operate at a level of cognitive processing to which we have low conscious access. Primary target concepts are responses and evaluations, which derive from background operations. According to this view, the function of primary metaphor is to structure primary target concepts in terms of sensorimotor images in order to foreground otherwise backgrounded cognitive operations. This is achieved by employing source concepts that are more accessible because they relate to sensorimotor rather than subjective experience.

Primary source concepts, which derive from external sensory experience, are thus, and as already intimated, said to have image content while primary target concepts, which are more evaluative and hence subjective in nature, are said to have response content.

To illustrate this point further, recall example (8), which illustrates the primary metaphor SIMILARITY IS NEARNESS. The target concept SIMILARITY relates to a covert (background) process of evaluation that is intrinsic to judgement. For instance, when we look at two people's faces and judge that they have similar appearances and might therefore be members of the same family, the cognitive operations that allow us to identify these similarities are part of the background. What is important or salient to us are the faces themselves and our resulting judgement of their similarity. While the concept NEARNESS is derived from sensory experience, the concept SIMILARITY relates to a subjective evaluation produced by mechanisms that are typically covert, or at least operate at a relatively low level of conscious access.

1.3.7 Primary conceptual metaphors constitute 'one shot' mappings between concepts across different domains, not multiple mappings

According to Grady, by virtue of being experientially grounded in primary scenes, primary conceptual metaphors involve target and source concepts, rather than domains. As such they involve a single or 'one-shot' cross-domain mapping, rather than a series of cross-domain mappings, as is the case with compound metaphors. I illustrate this idea in Figure 13.3.

In Figure 13.3, the small circles represent distinct concepts. This illustrates the idea that primary metaphors link distinct concepts from distinct domains, rather than linking entire domains. In contrast, compound metaphors, such as THEORIES ARE BUILDINGS, establish a stable link in long-term memory whereby sets of concepts, across domains, are linked, as in Figure 13.4.

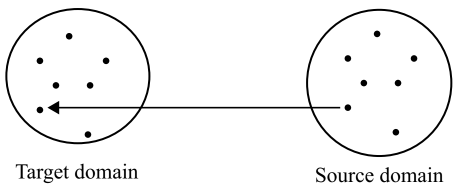

Figure 13.3 Mapping between concepts, across domains, in a primary conceptual metaphor

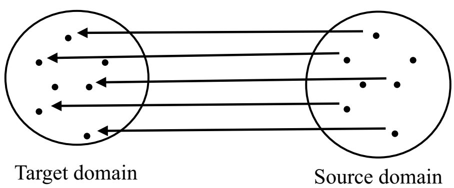

Figure 13.4 Mapping between concepts, across domains, in a compound conceptual metaphor (with mapping gaps)

1.4 Consequences of primary metaphor theory

One of the consequences of Grady's proposals is that in contemporary conceptual metaphor the Invariance Principle, introduced in the previous chapter, to constrain cross-domain mappings, is redundant. This follows as the foundational primary metaphors, upon which more complex metaphor systems are based, are not viewed as providing an 'abstract' target with 'missing' structure. Rather, primary target concepts reflect subjective responses to sensorimotor perception, and represent 'judgements, assessments, evaluations and inferences' (Grady 1997a: Chapter 5, p. 15). From this perspective, target concepts such as SIMILARITY, QUANTITY and DESIRE are not dismissed as 'abstract' – requiring something akin to the Invariance Principle, to motivate the right kind of conceptual mappings. Rather, they are recognised as being among the most fundamental and direct experiences we have as human beings. This explains why Grady describes them as 'primary'.

A further consequence of the Invariance Principle becoming redundant is the claim that while primary target and primary source concepts are equally 'basic', targets and sources in compound conceptual metaphors are not. Consequently, primary conceptual metaphors, but not compound metaphors, are directly grounded in embodied experience. In contrast, compound conceptual metaphors are indirectly grounded in experience by virtue of being made up of unifications of primary metaphors.

For instance, in the previous chapter, I observed that the assumption fundamental to conceptual metaphor theory is that there is an experiential basis for conceptual metaphor formation. However, in Grady's theory there must be a clear and direct experiential basis: a distinctive and causal experiential correlation. Consider the examples in (14):

(14) a. The price of shares is *going up*.
b. She got a *high* score in her exam.

In my discussion of these examples in the previous chapter, I observed that QUANTITY and HEIGHT correlate in experiential terms. This experience provides the basis for the conventional association between the concepts QUANTITY and VERTICAL ELEVATION. In this respect, Grady provides a more principled theory of the experiential basis of conceptual metaphor, linking this directly to the licensing of metaphorical mappings. QUANTITY IS VERTICAL ELEVATION is a primary conceptual metaphor, as it establishes a long-term mapping between response content (QUANTITY) and image content (VERTICAL ELEVATION), which arise in the context of a primary scene of experience.

Finally, the ability to construct compound metaphors has been argued to facilitate the process of **concept elaboration** (e.g. Evans 2004). According to this perspective, the nature and scope of concepts can be developed and extended through the conventional association between (lexical) concepts and imagery. In short, when the concept THEORIES is elaborated via mechanisms such as conceptual metaphor in terms of BUILDINGS, the conceptual metaphor serves as a **vehicle** for **conceptual evolution** (e.g. Musolff 2004). This explanation for why concepts such as THEORIES are structured metaphorically provides an alternative perspective to the position that it is the abstract nature of concepts and domains that underpins conceptual metaphor.

2 Conceptual metonymy

In *Metaphors We Live By*, Lakoff and Johnson pointed out that, in addition to conceptual metaphor, there is a related conceptual mechanism that is also central to human thought and language: conceptual metonymy. Much like metaphor, and as we saw in the previous chapter, metonymy has traditionally been analysed as a trope: a purely linguistic device. However, Lakoff and Johnson argued that metonymy, like metaphor, was conceptual in nature. In recent years, a considerable amount of research has been devoted to metonymy. Indeed, some scholars have begun to suggest that metonymy may be more fundamental to conceptual organisation than metaphor, and some have gone so far as to claim that metaphor itself has a metonymic basis, as we will see. Here, I present a flavour of the research in cognitive linguistics that has been devoted to what is now an important research topic in its own right.

2.1 What is metonymy?

To contextualise this discussion, I first begin by briefly introducing linguistic evidence for metonymy. From the perspective of rhetoric, metonymy involves one thing, a **vehicle**, standing for another, the **target**. For instance, if I say, *I like to read the Marquis de Sade*, I am using the Marquis de Sade, the person and author, to stand for the writings of the Marquis. In short, the Marquis de Sade is the vehicle that stands for the target, the writings of the Marquis. As such, this is an example of a type of metonymy that we might identify as PRODUCER FOR PRODUCT, whereby we refer to the producer as a means of identifying the product, in this case, a body of literary work. In the examples below, I illustrate this pattern, highlighting the vehicle, target and metonymy:

(15)	a.	He likes to read the *Marquis de Sade*.	VEHICLE
	b.	*The writings of the marquis*	TARGET
	c.	PRODUCER FOR PRODUCT	METONYMY
(16)	a.	He's in *dance*.	VEHICLE
	b.	*The dancing profession*	TARGET
	c.	ACTIVITY FOR PROFESSION	METONYMY
(17)	a.	*Acrylic* has taken over the art world.	VEHICLE
	b.	*The use of acrylic paint*	TARGET
	c.	PRODUCT FOR ACTIVITY	METONYMY

(18)	a.	*The Times* hasn't arrived at the press conference yet.	VEHICLE
	b.	*The reporter from The Times*	TARGET
	c.	INSTITUTION FOR PERSON	METONYMY
(19)	a.	New *windscreen wipers* will satisfy him.	VEHICLE
	b.	*The state of having new wipers*	TARGET
	c.	ENTITY FOR STATE	METONYMY

Just as is the case with metaphor, different linguistic expressions may be motivated by a single underlying metonymy. For instance, the following examples are all motivated by the metonymy: PART FOR WHOLE, which in classical rhetoric was termed **synecdoche**, a type of **rhetorical figure**.

(20)	a.	*The automobile* is clogging our highways.	VEHICLE
	b.	*The collection of automobiles*	TARGET
(21)	a.	We need a couple of *strong bodies* for our team.	VEHICLE
	b.	*Strong people*	TARGET
(22)	a.	There are a lot of good *heads* in the university.	VEHICLE
	b.	*Intelligent people*	TARGET
(23)	a.	I've got *a new set of wheels*.	VEHICLE
	b.	*A new car*	TARGET
(24)	a.	We need some *new blood* in the organisation.	VEHICLE
	b.	*New people*	TARGET

2.2 The conceptual basis of metonymy

The earliest approach to conceptual metonymy in cognitive linguistics was developed by Lakoff and Johnson (1980), within the framework of conceptual metaphor theory. They argued that, like metaphor, metonymy is a conceptual phenomenon, but one that has a distinct basis. Consider example (25).

(25) The ham sandwich has wandering hands.

Imagine that the sentence in (25) is uttered by one waitress to another in a café. This use of the expression *ham sandwich* represents an instance of conceptual metonymy: two entities are associated so that one entity (the item the customer ordered) stands for the other (the customer). As this example demonstrates, conceptual metonymy is referential in nature: it deploys linguistic expressions, motivated by an underlying conceptual metonymy, as a mental 'shortcut' (Littlemore 2015) in order to talk about them.

This demonstrates that conceptual metonymy functions differently from conceptual metaphor. For example (25) to be motivated by a conceptual metaphor we would need to understand *ham sandwich* not as an expression referring to the customer who ordered it, but in terms of a food item with human qualities. Imagine a cartoon, for example, in which a ham sandwich sits at a café table. On this interpretation, we would be attributing human qualities to a ham sandwich, motivated by the metaphor AN INANIMATE ENTITY IS AN AGENT. As these two quite distinct interpretations show, for cognitive linguistics, while metonymy is the conceptual relation 'X stands for Y', metaphor is the conceptual relation 'X understood in terms of Y'.

A further defining feature of conceptual metonymy observed by Lakoff and Johnson is that it is motivated by physical or causal associations. This has sometimes been expressed in terms of conceptual **contiguity** (Lakoff and Johnson 1980; see Peirsman and Geeraerts 2006 for a detailed account of this perspective). Contiguity constitutes a close or direct conceptual relationship between entities. This explains why the waitress can use the expression *the ham sandwich* to refer to the customer: there is a direct experiential relationship between the ham sandwich and the customer who ordered it.

In a later development, under the aegis of conceptual metaphor theory, Lakoff and Turner (1989) added a further distinction between conceptual metaphor and metonymy. They argued that conceptual metonymy, unlike metaphor, is not a cross-domain mapping. Rather, they proposed that it is a **within-domain mapping**, enabling one entity to stand for a related entity, as both concepts coexist within the same domain. This explains why a metonymic relationship is based on contiguity or conceptual 'proximity'. The reason *ham sandwich* in (25) represents an instance of metonymy is because both the target (the customer) and the vehicle (the ham sandwich) belong to the same CAFÉ domain. Figures 13.5 and 13.6 illustrate this distinction between conceptual metaphor and conceptual metonymy.

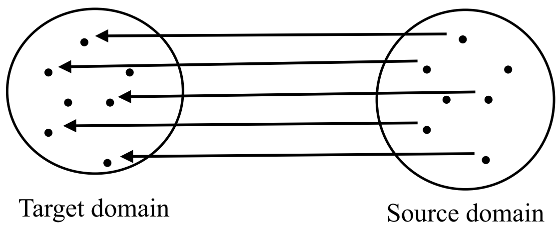

Figure 13.5 Conceptual metaphor: cross-domain mapping to create a compound metaphor

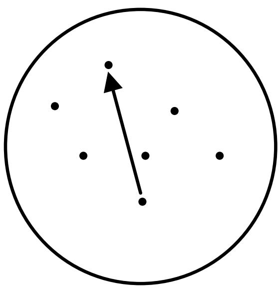

Figure 13.6 Conceptual metonymy: within-domain mapping to create a mapping between vehicle and target concepts

2.3 Conceptual metonymy as a domain highlighting operation

While cognitive linguists all agree that metonymy is a conceptual operation, since the 1990s they have increasingly framed the notion of metonymy in terms of an access or activation relationship between related concepts within the same domain, rather than a mapping operation. For instance, Kövecses and Radden (1998: 39) summarise this view of metonymy as follows: 'Metonymy is a cognitive process in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the same domain, or ICM.'

This idea is based on proposals made by Langacker (1993: 30) who argues that 'the entity that is normally designated by a metonymic expression serves as a reference point affording mental access to the desired target (that is, the entity actually being referred to)'. For Langacker, metonymy serves as point of access to a particular aspect of a domain and thus provides access to the target concept. Furthermore, each vehicle provides a different route into the relevant conceptual domain.

Indeed, some scholars, notably William Croft (e.g. 1993; see also 2006), have found it more useful to frame conceptual metonymy in terms of Langacker's Cognitive Grammar, rather than conceptual metaphor theory. Croft's (1993) account of conceptual metonymy works as follows. A metonymic target is accessed within a domain as a result of a process termed **domain highlighting**.

Croft takes as his starting point the **encyclopaedic view of semantics** adopted in cognitive linguistics and, in particular, Croft draws upon Langacker's account of conceptual **domains** – which I shall consider in more detail when we examine encyclopaedic approaches to semantics in Chapter 16),

In brief, Langacker's theory of domains holds that a concept is understood with respect to a **domain matrix**: the range of domains that contribute to our ultimate understanding of the concept. This accounts for the fact that lexical items relate to potentially huge knowledge structures. Croft's proposal is that, from this perspective of encyclopaedic semantics, metonymy functions by highlighting one domain within a concept's domain matrix. Thus, a particular metonymic vehicle can highlight distinct domains within the concept's domain matrix on different occasions.

To illustrate, consider the following examples drawn from Croft (1993):

(26) a. Proust spent most of his time in bed.
b. Proust is tough to read.

Part of the domain matrix associated with Marcel Proust is that he was a man known for particular habits relating to how much time he spent in bed. This is knowledge about Proust the man. Another aspect of the domain matrix relates to Proust's literary work and his career as a writer. While the expression *Proust* in (26a) highlights the domain for Proust (Proust the man), the expression *Proust* in (26b) highlights the literary work of Proust. Thus, from the perspective of domain matrices, a particular expression can metonymically highlight distinct, albeit related, aspects of our encyclopaedic knowledge relating to Proust.

From this perspective, metonymy amounts to an encyclopaedic access mechanism that activates or **highlights** a certain aspect of a domain. As such, it arguably provides a more nuanced account to that of conceptual metaphor theory, that conceptual metonymy provides a 'route' of access for a particular target within a single domain.

2.4 Different metonymic phenomena

A range of different types of linguistic and conceptual phenomena have been considered to have a metonymic basis in cognitive linguistics. For instance, cognitive linguists have sought to account for generalisations in language usage by positing underlying conceptual metonymies. Some examples of such patterns are provided here:

(27) PLACE FOR INSTITUTION
   a. *Buckingham Palace* denied the rumours.
   b. *The White House* won't support gun control.
   c. *The Kremlin* was accused of new foreign election meddling.

(28) PRODUCER FOR PRODUCT
   a. I've just bought a new *Citröen*.
   b. Pass me the *Shakespeare* on the top shelf.
   c. She likes eating *Burger King*.

(29) PLACE FOR EVENT
   a. *Iraq* nearly cost Tony Blair the premiership.
   b. American public opinion fears another *Vietnam*.
   c. *Chernobyl* is a stark reminder of the dangers of nuclear energy.

(30) PART FOR WHOLE
   a. My *wheels* are parked out the back.
   b. Lend me *a hand*.
   c. She's not just a *pretty face*.

(31) WHOLE FOR PART
   a. *America* is set to build a wall along its Mexican border.
   b. *England* beat *Australia* in the Rugby World Cup final.
   c. *My car* has developed a mechanical fault.

(32) EFFECT FOR CAUSE
   a. He has *a long face*.
   b. He has *a spring in his step* today.
   c. Her *face is beaming*.

While the examples considered above relate to noun phrases, metonymic vehicles are not restricted to individual lexical items. For instance, Panther and

Thornburg (2003) have argued that **indirect speech acts** represent instances of conceptual metonymy. Consider example (33):

(33) Can you pass the salt?

Recall from Chapter 1 that a speech act is an utterance that performs a (linguistically mediated) action. The example in (33) is 'indirect' because it counts as a conventional way of making a request, but does so 'via' a question about the ability of the addressee to carry out the action (signalled by the interrogative form of the clause), rather than making the request directly (by using an imperative clause like *Pass me the salt*). Panther and Thornburg argue that indirect speech acts are metonymic, in that the question stands for the request. Put another way, the ability to perform the action is a necessary prerequisite (or 'felicity condition') for a request to be carried out (Searle 1969), and a question about this ability stands for the request itself.

Finally, as we saw in Chapter 11, metonymy can also lead to typicality effects in terms of categorisation. Recall that categorisation relates to our ability to identify a referent as belonging to a particular group. Moreover, we saw there that while categorisation is fuzzy and graded, typicality effects arise when members of a category are judged as being better and worse instances of a category. In his work, Lakoff (1987) argued that idealised cognitive models (ICMs) can stand metonymically for an entire category they happen to be idealisations of. And in so doing, they can lead to typicality effects.

To illustrate, take the category: POLITICIAN. We have numerous ICMs for this category, depending on whether we are considering typical examples, salient examples, paragons, stereotypes or something else (see Table 13.3). Potential ICMs for the category politician are given in Table 13.4.

Based on Table 13.4, the relevant ICMs might metonymically stand for the entire category, on different occasions of use. As such, these ICMs metonymically license the following examples:

(34)	a.	He's a good politician; he's conniving and self-serving.	STEREOTYPE
	b.	He's a good politician; he's a true visionary.	IDEAL
	c.	He's no Nelson Mandela.	PARAGON
	d.	At this time of crisis we need another Winston Churchill.	SALIENT EXAMPLE

2.5 Metonymy–metaphor interaction

For cognitive linguists, conceptual metonymy and metaphor constitute processes that provide structure to the human conceptual system. As such, language data amount to reflexes of the underlying metonymic and metaphoric nature of conceptual structure. Indeed, a body of work has investigated their interaction, including recent research which suggests they form a **continuum of figurativity** (e.g. Barnden 2010). Earlier research in cognitive linguistics,

Table 13.3 Types of ICMs

Stereotypes	Represent cultural norms and expectations regarding instances of the category
Typical examples	Represent the most frequent or commonly encountered instances of the category
Ideals	Combine the ideal properties of the category
Paragons	Represent actual instances of an ideal
Salient examples	Represent memorable or well-known actual instances of a category

Table 13.4 Types of ICM for the category POLITICIAN

Stereotype	Self-serving, obsessed with power, psychologically flawed, narrow-minded, pander to short-term populism, obsessed with eye-catching initiatives
Typical examples	Boris Johnson, David Cameron, Bill Clinton, Donald Trump, Vladimir Putin, Xi Jinping
Ideals	Interested in the greater good, even at their own expense, wise, intelligent, a good orator who inspires with vision, a courageous leader who is not afraid to take decisions unpopular in the short term with an eye on the longer term benefits
Paragon	Nelson Mandela
Salient example	Abraham Lincoln, Winston Churchill, JFK, Margaret Thatcher, Angela Merkel

most notably exemplified by Goossens (1990), examined the way in which metaphor and metonymy interact, a phenomenon dubbed **metaphtonymy**. I begin this section by reviewing the interaction between these two conceptual mechanisms. Later research began to suggest that metonymy may in fact be more fundamental to the conceptual system than metaphor, and may in fact provide the experiential basis for conceptual metaphor. I briefly review the research of Antonio Barcelona who has advanced such proposals.

2.5.1 Metaphtonymy

Goossens (1990) presented an analysis of the way in which conceptual metaphor and metonymy interact. He calls this phenomenon metaphtonymy. Goossens identified a number of logically possible ways in which conceptual metaphor and metonymy could potentially interact; however, he found that only two of these logically possible interactions were commonly attested.

The first type of interaction is termed **metaphor from metonymy**. In this form of interaction, a metaphor is grounded in a metonymic relationship. For example, the expression *close-lipped* can mean 'silent', which follows from metonymy: when one has one's lips closed, one is (usually) silent, therefore to describe someone as *close-lipped* can stand metonymically for silence.

However, *close-lipped* can also mean 'speaking but giving little away'. This interpretation is metaphoric, because we understand the absence of meaningful information in terms of silence. Goossens argues that the metaphoric interpretation has a metonymic basis in that it is only because being closed-lipped can stand for silence that the metaphoric reading is possible: thus metaphor from metonymy.

The second common form of interaction is dubbed **metonymy within metaphor**. Consider the following example adapted from Goossens (1990):

(35) She caught the Prime Minister's ear and persuaded him to accept her plan.

This example is licensed by the conceptual metaphor ATTENTION IS A MOVING PHYSICAL ENTITY, according to which ATTENTION is understood as a MOVING ENTITY that has to be 'caught' (the minister's ear).

However, within this metaphor there is also the metonymy EAR FOR ATTENTION, in which EAR is the body part that functions as the vehicle for the concept of ATTENTION in the metaphor. In this example, the metonym is 'inside' the metaphor.

2.5.2 The metonymic basis of metaphor

According to some cognitive linguists (e.g. Barcelona 2003b; Taylor 2003), metonymy is an operation that may be more fundamental to the human conceptual system than metaphor. Barcelona (2003b: 31), for instance, goes so far as to suggest that 'every metaphorical mapping presupposes a prior metonymic mapping'.

One obvious way in which metaphor might have a metonymic basis relates to the idea of experiential correlation that I discussed earlier. As we saw, primary metaphors are argued to be motivated by experiential correlation. Yet, as Radden (2003) and Taylor (2003) have pointed out, correlation is fundamentally metonymic in nature. For example, when height correlates with quantity, as when fluid is poured into a glass, greater height literally corresponds to an increase in quantity. When this correlation is applied to more abstract domains, such as HIGH PRICES, we have a metaphor from metonymy, in the sense of Goossens. Indeed, as Barcelona argues, given the claim that primary conceptual metaphors underpin more complex compound metaphors and the claim that primary conceptual metaphors have a metonymic basis, it follows that all metaphor is ultimately motivated by metonymy.

However, although Taylor (1995: 139) has observed that: 'It is tempting to see all metaphorical associations as being grounded in metonymy', he observes some counter-examples to this thesis. These include so-called **synaesthetic metaphors**, in which one sensory domain is understood in terms of another, as in *loud colour*. Examples like these are problematic for the thesis that all conceptual metaphor is grounded in metonymy because there does not appear to be a tight correlation in experience between LOUDNESS and COLOUR that motivates the metaphor.

However, Barcelona (2003b) argues that even conceptual metaphors such as these can be shown to have a metonymic basis. He suggests that the conceptual metaphor that licenses expressions such as *loud colour* in (36) relate not to the entire domain of SOUND as the source domain, but to a subdomain which he identifies as DEVIANT SOUNDS, which attract involuntary attention, and hence are entities that we cannot help but notice and/or pay attention to. Thus, examples such as (36) are motivated by the conceptual metaphor in (37), which in fact is motivated by the conceptual metonymy in (38):

(36) That's a loud shirt

(37) COLOUR IS LOUDNESS

(38) LOUD SOUND FOR ATTRACTION OF INVOLUNTARY ATTENTION

In this respect, Barcelona's treatment of metonymy is, at least in part, consonant with Croft's domain highlighting approach, despite approaching the matter from the perspective of conceptual metaphor theory. According to Barcelona, these sounds are deviant because they deviate from a norm and thus attract involuntary attention. This provides the metonymic basis for the conceptual metaphor: there is a tight correlation in experience between deviant (or loud) sounds and the attraction of attention, so that a deviant sound can metonymically represent attraction of involuntary attention. For this reason, the subdomain of deviant sounds can be metaphorically employed to understand deviant colours which also attract involuntary attention.

2.6 A typology of conceptual metonymy

In this final subsection, I consider a typology of conceptual metaphor. My presentation here is based on seminal research by Zoltan Kövecses and Günter Radden. In their research, Kövecses and Radden (1998) attempted to figure out where conceptual metonymy comes from: what motivates it? To address this broad question, they addressed two more specific questions:

(39) a. What kinds of patterns/relationships give rise to conceptual metonymies?
b. What serve as apt vehicles for metonymic relationships?

2.6.1 Motivating relationships for metonymies

Kövecses and Radden examine the kinds of relationships that give rise to the metonymies that occur frequently in language. They observe that there appear to be two main kinds of motivating relationships: i) those relating to the part–whole organisation of a given domain (or domain matrix) so that parts (or substructures) of a domain represent the entire domain; ii) those involving parts of a domain that stand for other parts. These are illustrated below with just a few examples taken from the extensive taxonomy provided by Kövecses and Radden.

PART–WHOLE, WHOLE–PART RELATIONSHIPS

(40) WHOLE THING FOR PART OF A THING
America for 'United States'

(41) PART OF A THING FOR THE WHOLE THING
England for 'United Kingdom'

(42) A CATEGORY FOR A MEMBER OF THE CATEGORY
The pill for 'birth control pill'

(43) A MEMBER OF A CATEGORY FOR THE CATEGORY
Aspirin for 'any pain-relieving tablet'

These examples illustrate that the part–whole structure of a domain provides a 'route' of access via metonymy. A whole entity can be accessed by a part, or a part can be accessed by the entire domain.

DOMAIN PART–PART RELATIONSHIPS

This type of metonymic relationship is illustrated here by using the domain of ACTION; this domain entails INSTRUMENTS, an AGENT, a PATIENT, an end RESULT and so on. These 'parts' or substructures within the domain of ACTION can be metonymically related, as the following examples from Kövecses and Radden (1998: 54–5) illustrate:

(44) INSTRUMENT FOR ACTION
to ski, to shampoo one's hair

(45) AGENT FOR ACTION
to butcher the cow, to author a book

(46) ACTION FOR AGENT
snitch (slang: 'to inform' and 'informer')

(47) OBJECT INVOLVED IN THE ACTION FOR THE ACTION
to blanket the bed

(48) ACTION FOR OBJECT INVOLVED IN THE ACTION
give me one bite

(49) RESULT FOR ACTION
a screw-up (slang: 'to blunder' and 'blunder')

(50) ACTION FOR RESULT
a deep cut

(51) MEANS FOR ACTION
He sneezed the tissue off the table.

(52) MANNER OF ACTION FOR THE ACTION
She tiptoed to her bed.

(53) TIME PERIOD OF ACTION FOR THE ACTION
to summer in Paris

(54) DESTINATION FOR MOTION
to porch the newspaper

(55) TIME OF MOTION FOR AN ENTITY INVOLVED IN THE MOTION
the 8.40 just arrived

These examples from the domain of ACTION illustrate that a part of the domain can metonymically provide access to another part. Thus, together with the examples relating to part–whole structure of domains, these two sets of examples illustrate the ways in which metonymy provides access within a domain (or domain matrix).

2.6.2 Vehicles for metonymy

Kövecses and Radden (1998) propose a number of cognitive and communicative principles in order to account for the selection of a vehicle for metonymic relationships. In this section, I briefly present two of the cognitive principles:

(56) Principle: HUMAN OVER NON-HUMAN

(57) Principle: CONCRETE OVER ABSTRACT

A key plank of their explanation is that our anthropocentric perspective entails our tendency to privilege human and other humanly relevant entities and attributes for metonymic vehicles.

The principle HUMAN OVER NON-HUMAN holds that human vehicles are preferred over non-human vehicles. Examples of metonymy that illustrate this principle include the following (drawn from Kövecses and Radden 1998):

(58) CONTROLLER FOR CONTROLLED
Schwarzkopf defeated Iraq.

(59) PRODUCER FOR PRODUCT
He's reading Shakespeare.

The principle CONCRETE OVER ABSTRACT holds that concrete vehicles are preferred over abstract vehicles. This principle is illustrated by the following metonymic relationships:

(60) BODILY OVER ACTIONAL
hold your tongue (for 'stop speaking')

(61) BODILY FOR EMOTIONAL
heart (for 'kindness'), for example *He's heartless*

(62) BODILY OVER PERCEPTUAL
ear (for 'hearing'), for example *lend me your ear*

(63) VISIBLE OVER INVISIBLE
to save one's skin (for 'to save one's life')

The purpose of these principles is to provide generalisations that account for the vehicles that provide a basis for metonymy in thought and language. Table 13.5 presents a summary of the full range of principles proposed by Kövecses and Radden.

Table 13.5 Constraints on possible metonymic vehicles (adapted from Kövecses and Radden 1998)

COGNITIVE PRINCIPLES
Human experience
HUMAN OVER NON–HUMAN
CONCRETE OVER ABSTRACT
INTERACTIONAL OVER NON–INTERACTIONAL
FUNCTIONAL OVER NON–FUNCTIONAL
Perceptual selectivity
IMMEDIATE OVER NON–IMMEDIATE
OCCURRENT OVER NON–OCCURRENT
MORE OVER LESS
DOMINANT OVER LESS DOMINANT
GOOD GESTALT OVER POOR GESTALT
BOUNDED OVER UNBOUNDED
SPECIFIC OVER GENERIC
Cultural preferences
STEREOTYPICAL OVER NON–STEREOTYPICAL
IDEAL OVER NON–IDEAL
TYPICAL OVER NON–TYPICAL
CENTRAL OVER PERIPHERAL
BASIC OVER NON–BASIC
IMPORTANT OVER LESS IMPORTANT
COMMON OVER LESS COMMON
RARE OVER LESS RARE
Communicative principles
CLEAR OVER LESS CLEAR
RELEVANT OVER IRRELEVANT

SUMMARY

In this chapter I introduced two important theoretical constructs arising from the framework of conceptual metaphor theory: **primary metaphor** and **conceptual metonymy**. Evidence for both derives from linguistic data, which is deployed, by cognitive linguists, to infer the conceptual nature of these phenomena. Both primary metaphor and conceptual metonymy have been claimed to be foundational for **conceptual structure**. With the work of Joseph Grady and Christopher Johnson, primary metaphors are held to arise in **primary scenes** of experience, and as such provide the embodied grounding for more complex **compound metaphors**. In developing his **primary metaphor theory**, Grady argues that **primary target concepts** are no less abstract than **primary source concepts**. The distinction, rather, turns on the qualitative nature of these respective experience types: primary target concepts are considered to be less consciously accessible than primary source concepts because they relate to background cognitive operations and processes. Due to **correlations in experience**, primary source concepts come to be associated pre-linguistically with primary target concepts in predictable ways. The cognitive function of primary metaphors, according to this theory, is to foreground otherwise background operations. Moreover, primary conceptual metaphors are subject to a **unification** process giving rise to more complex compound metaphors, which consist of sets of mappings across target and source domains. In contrast to conceptual metaphors, conceptual metonymy is held to constitute a type of operation that **highlights** one entity by referring to another entity within the same **domain** (or **domain matrix**). Some researchers propose that conceptual metonymy may be more fundamental to conceptual organisation than conceptual metaphor, and may even underpin conceptual metaphors. Finally, conceptual metonymies have been found to be motivated by **cognitive and communicative principles** and requirements.

FURTHER READING

Introductory textbook

- **Dancygier and Sweetser (2014)**. As indicated in the previous chapter, this is an introduction to various aspects of figurative language and thought from the perspective of cognitive linguistics. The book notably provides excellent introductory coverage of both conceptual metaphor and conceptual metonymy.

Primary metaphor theory

- **Grady (1997a, 1997b)**. Grady's (1997b) article-length reanalysis of the THEORIES ARE BUILDINGS metaphor provides a useful introduction to key aspects of primary metaphor theory. His doctoral thesis (Grady 1997a) provides a more detailed treatment.

Conceptual metonymy

There is by now a large literature on conceptual metonymy, including methodological matters. The following constitutes a representative listing of book-length treatments and edited collections of articles to provide a flavour of the perspectives and treatments on offer.

- **Benczes et al. (2011)**. A collection of ten chapters that seek to reach a consensus view on outstanding questions in terms of metonymy research. Chapters consider whether metonymy is a relationship between entities or domains, whether it constitutes a mapping, whether it involves highlighting and whether it is a prototype category, amongst other issues.
- **Blanco-Carrión et al. (2018)**. A useful collection that presents a range of methodological, theoretical and descriptive insights into the study of conceptual metonymy, based on a series of case studies from a range of languages and modalities.
- **Littlemore (2015)**. Provides an excellent book-length overview of metonymy, using naturally occurring data, covering language, gesture, art, music, advertising and film.
- **Panther and Thornburg (2003)**. This edited volume brings together a number of important papers on the relationship between metonymy and inferencing, including articles by Panther and Thornburg, Coulson and Oakley, and Barcelona.
- **Panther and Thornburg (2009)**. An edited volume which examines the way in which metaphor and especially metonymy inform grammatical organisation and structure. Chapters suggest that metonymy may provide a fundamental design principle for grammar.
- **Radden and Panther (1999)**. This book is an early state of the art edited volume that brings together leading scholars in the field of conceptual metonymy, surveying the field up to the turn of the century.

Comparing and contrasting metaphor and metonymy

Barcelona (2003a); Dirven and Pörings (2002). Both these volumes compare and contrast conceptual metaphor and conceptual metonymy. The Dirven and Pörings volume reproduces influential articles on the topic of metaphor and metonymy; see in particular the articles by Croft, and by Grady and Johnson. The Barcelona volume includes an excellent introduction by Barcelona, as well as specially commissioned papers that bear on the distinction between the two, and on the nature of their conceptual relationship.

DISCUSSION QUESTIONS

1. What are the main claims associated with the theory of primary metaphor?
2. How do primary metaphors differ from compound (or complex) metaphors? And what are the arguments for positing a difference between the two types?
3. What is a conceptual metonymy? And how does it differ from conceptual metaphor?
4. What are the reasons for thinking that conceptual metonymy may be more foundational to thought than conceptual metaphor? Are you persuaded by these arguments, or not, and why?

Part III: Semantic structure

While Part I of the book provided an overview of the cognitive linguistics enterprise, in Part II, I examined the way in which cognitive linguists have examined conceptual structure. We saw that cognitive linguists study language because language reflects patterns of thought. Language offers a window into cognitive function, providing insights into the nature, structure and organisation of thoughts and ideas. In this part of the book we turn to an examination of the way in which cognitive linguists have examined **semantic structure** – the semantic residue encoded by language which reflects these patterns of thought. As we shall see, some cognitive linguistic theories take the view that semantic structure *is*, more or less, conceptual structure. This is the view taken by **mental spaces theory** (Chapter 19) and **conceptual blending theory** which builds upon it (Chapter 20). For these theories, semantic structure amounts to little more than impoverished prompts or instructions for **meaning construction** operations that take place at the level of conceptual structure. In contrast, some cognitive linguistic theories of semantic structure argue for a principled distinction between semantic content that is encoded in language, and that which arises from non-linguistic conceptual processes of meaning construction. A notable example of such a theory of semantic structure is **Access Semantics**, also known as the **theory of lexical concepts and cognitive models (LCCM theory**, Chapter 18).

Nevertheless, what unifies all cognitive linguistic approaches to semantic structure is the perspective that semantic structure is, or draws upon, semantic knowledge that is characterised as **encyclopaedic** in nature. The other fundamental assumption is that linguistically mediated processes of meaning construction involve the building of **simulations**: as we first saw in Chapter 8, a simulation is a general purpose computation performed by the human brain/mind which involves multimodal information, drawn from language as well as other non-linguistic modalities, including exteroception and interoception. Hence, this part of the book provides an introduction to **encyclopaedic approaches** to semantic structure (Chapters 15 and 16), as well as specific cognitive linguistic theories that address particular semantic phenomena, including **lexical semantics** (Chapter 17), **compositional semantics** (Chapter 18), **discourse semantics** (Chapter 19) and **semantic creativity** (Chapter 20), as well as theories that account for the relationship between semantic and conceptual structure in divergent ways.

This part of the book consists of seven chapters. In Chapter 14, I introduce the two guiding principles of a cognitive linguistics approach to semantic structure. These are that semantic structure is encyclopaedic, and that linguistically mediated meaning construction involves building simulations. In this chapter I also consider the formal approach to semantics, and contrast this with cognitive linguistics. Chapters 15 and 16 provide an overview of the encyclopaedic view of meaning. In Chapter 15, I present an overview of this account, and contrast it with the received dictionary view of meaning, assumed by formal linguistics. In Chapter 16, I introduce two specific accounts of encyclopaedic semantics that have been highly influential in cognitive linguistics: Fillmore's **Frame Semantics**, and Langacker's **theory of domains** (developed under the aegis of his **Cognitive Grammar**). Chapter 17 examines the way in which cognitive linguists have modelled semantic relations, using variants of semantic network theory. I introduce the two most influential exemplars, Lakoff's **radial categories** approach, and Langacker's **network conception**. This chapter also examines the way in which cognitive linguists have examined lexical **polysemy**, and introduces the **Principled Polysemy** methodology, developed by Tyler and Evans. Chapter 18 provides an introduction to the assumptions and architecture of Access Semantics (also known as LCCM **theory**), a theory of lexical representation and meaning construction, developed by Evans. The novelty of this approach is that it views semantic structure encoded in the linguistic system as being qualitatively distinct from units of meaning (concepts) encoded in the conceptual system. Both are central to meaning construction, but play qualitatively distinct, albeit complementary, roles in building simulations. Mental spaces theory, developed by Fauconnier, is the subject of Chapter 19. This constitutes a highly influential account of the way in which linguistic prompts activate units of conceptual structure during ongoing discourse, giving rise to meaning construction. This perspective laid the groundwork for the later development of conceptual blending, or **conceptual integration theory**, presented in Chapter 20, jointly developed by Fauconnier with his colleague Turner.

14

What is a cognitive linguistics approach to semantic structure?

In this chapter I introduce the way in which cognitive linguists approach the study of semantic structure. I begin by examining, in the first instance, the two guiding principles of cognitive linguistic approaches. These are that semantic structure is **encyclopaedic** in nature, and that semantic structure contributes to meaning construction by facilitating what are known as **simulations**. I introduce and illustrate these principles before comparing and contrasting the cognitive linguistics approach to semantics with a dominant perspective that has arisen within formal linguistics: the so-called **truth-conditional** or **Formal Semantics** approach.

1 Guiding principles

In this section I consider two central assumptions of the cognitive linguistics approach to semantics. These are listed below:

i) Semantic structure is encyclopaedic (the 'encyclopaedic' view of meaning).
ii) Linguistically mediated meaning construction facilitates simulations – reactivations of multimodal embodied experience.

These principles, as with the principles that guide cognitive linguistics approaches to conceptual structure (Part II) and grammar (Part IV) can be viewed as outcomes of the two key commitments described in Chapter 2: the Generalisation Commitment and the Cognitive Commitment.

1.1 Semantic structure is encyclopaedic

Cognitive linguists take the view that the meaning encoded by language – semantic structure – is encyclopaedic in nature. This means that words, and other linguistic forms and expressions, do not represent neatly packaged bundles of meaning (the so-called **dictionary view of meaning**, that I address in the next chapter), but serve as 'points of access' to vast repositories of knowledge relating to a particular concept or conceptual domain (e.g. Langacker 1987).

1.1.1 An example

To illustrate, take the lexical item *bachelor*, a much-discussed example in the semantics literature. The semantic structure associated with this form is traditionally defined as an 'unmarried adult male'. However, we know from experience that not all unmarried adult males can straightforwardly be dubbed 'bachelor', for reasons we saw when I discussed typicality effects, in the context of categorisation, in Chapter 11. After all, we understand that some adult males are ineligible for marriage due either to vocation or to sexual preference (at least in legal jurisdictions where marriage is restricted to occurring between members of the opposite sex). It is for this reason that we would find it odd to apply the term *bachelor* to either the Pope or a homosexual male, even though they both, strictly speaking, meet the 'definition' of being a bachelor.

Indeed, for precisely this reason, a strict definition such as 'unmarried adult male' fails to adequately capture the range and diversity of meaning associated with any given lexical item. For this reason, cognitive linguists reject a definitional or – the so-called – dictionary view of meaning in favour of an encyclopaedic view.

Indeed, not only do we know that certain kinds of unmarried adult males would not normally be described as bachelors, we also have cultural knowledge regarding the behaviour associated with stereotypical bachelors. It is 'encyclopaedic' knowledge of this kind that allows us to interpret this otherwise contradictory sentence:

(1) 'Watch out Jane, your husband's a right bachelor!'

On the face of it, identifying Jane's husband (a married man) as a bachelor would appear to be contradictory. However, given our cultural stereotype of bachelors, which sometimes views them as sexual predators, we can reasonably understand the utterance in (1) as a warning issued to Jane concerning her husband's fidelity. As this example illustrates, the meanings associated with words often draw upon complex and sophisticated bodies of knowledge.

Of course, to claim that words provide 'points of access' to encyclopaedic meaning is not to deny that words have conventional meanings associated with them. The fact that example (2) means something different from example (3) is a consequence of the conventional range of meanings associated with *safe* and *happy*.

(2) John is safe.

(3) John is happy.

However, cognitive linguists argue that the conventional meaning associated with a particular word is just a 'prompt' for the process of **meaning construction**: the 'selection' of an appropriate interpretation against the context of the utterance. For example, the word *safe* has a range of meanings, and the meaning that we select emerges as a consequence of the context in which the word occurs. To illustrate this point, consider the examples in (4) against the context of a child playing on the beach.

(4) a. The child is safe.
b. The beach is safe.
c. The spade is safe.

In this context, the interpretation of (4a) is that the child will not come to any harm. But, (4b) does not mean that the beach will not come to harm. Instead, it means that the beach is an environment in which the risk of the child coming to harm is minimised. Similarly, (4c) does not mean that the spade will not come to harm, but that it will not cause harm to the child using it. These examples illustrate that there is no single fixed property that *safe* assigns to the words *child*, *beach* and *spade*. In order to understand what the speaker means, we draw upon our encyclopaedic knowledge relating to children, beaches and spades, and our knowledge relating to what it means to be safe. We then 'construct' a meaning by 'selecting' a meaning that is appropriate in the context of the utterance.

Just to give a few examples, the sentence in (4b) could be interpreted in any of the following ways, given an appropriate context. Some of these meanings can be paraphrased as 'safe from harm', and others as 'unlikely to cause harm': i) this beach has avoided the impact of a recent oil spill; ii) this beach is not going to be dug up by property developers; iii) due to its location in a temperate climate, you will not suffer from sunburn on this beach; iv) this beach, which is prone to crowding, is free of pickpockets; v) there are no jellyfish in the sea; vi) the miniature model beach with accompanying model luxury hotels, designed by an architect, which was inadvertently dropped before an important meeting, has not been damaged.

1.1.2 The process of activating encyclopaedic knowledge: construal

The process just described, informally, whereby a linguistic expression draws upon aspects of encyclopaedic knowledge, in giving rise to a context-specific interpretation, is known in cognitive linguistics as **construal** or as involving **construal operations** – a term introduced into the literature by Langacker (e.g. 1987). While the nature of construal as a linguistic process has been studied extensively in cognitive linguistics (e.g. Verhagen 2007, for an overview), I introduce the notion of construal here, by drawing on Langacker's seminal (1987) presentation.

In Langacker's terms, construal is achieved by focusing attention on different aspects of a particular scene, using language as a means to do so. Indeed, this is achieved in language by a range of **focal adjustments** which 'adjust the focus' on a particular aspect of any given scene by using different linguistic expressions to describe that scene. The visual metaphor that the expression 'focal adjustment' rests upon emphasises the fact that visual perception is central to how we focus attention upon aspects of experience. By choosing a particular focal adjustment and thus, linguistically, 'organising' a scene in a specific way, the speaker imposes a unique construal upon that scene.

Hence, construal can be thought of as the way a speaker chooses to 'package' and 'present' an idea or scene, for purposes of encoding in language, which in turn has consequences for the conceptual representation that the utterance evokes in the mind of the hearer. For example, consider the distinction between the following active versus passive forms of the same scene:

(5) William Shakespeare wrote *Romeo and Juliet*. ACTIVE

(6) *Romeo and Juliet* was written by William Shakespeare. PASSIVE

In (5), the active construction focuses attention upon the AGENT of an action (*William Shakespeare*), while the passive construction, in (6) focuses attention upon the patient (*Romeo and Juliet*). Each of these constructions conventionally encodes a distinct construal. I provide a detailed account of Langacker's approach to construal and how focal adjustments can vary, in Chapter 16.

1.2 Meaning construction entails simulations

Cognitive linguistics assumes that, from an evolutionary perspective, representations – conceptual structure – in the conceptual system must have preceded language. The conceptual system – as we saw in Part II of the book – allows us to represent the world, to store and categorise experiences, and hence to respond to new experiences as a consequence.

But complex thought and action also requires that units of conceptual structure, such as concepts, can be joined compositionally in order to form complex ideas. In seminal research, cognitive scientist Lawrence Barsalou (1999) has argued that conceptual structure draws directly on embodied representations deriving from perceptual (interoceptive and exteroceptive) experience. Barsalou proposes that the same brain mechanisms that underpin perceptual processing are also activated during thought itself. Hence, his claim is the following: not only does cognition have an embodied basis, there is a single representational system that underpins both perception and cognition. Barsalou refers to these underlying representations as **perceptual symbols**.

Barsalou's proposal is that the brain is able to use perceptual symbols – memories of perceptual states – during thought. This is achieved, he argues, as the brain is able to perform a general purpose computation, known as **simulation**, which reactivates body-based states – perceptual symbols – and combines them in order to facilitate higher-order processes such as thought (recall my discussion of the process of simulation, and evidence for it, in Chapter 8).

To illustrate the idea, consider a conversation in which someone asks you to imagine using a hammer, perhaps to nail two pieces of wood together. To be able to do so requires that you have past experience of hammers, that you know what they are made from, how they feel in the hand, how to swing them and so on. Barsalou argues that in such a thought experiment, we draw upon embodied states, relating to past perceptual states, and reactivate, or **simulate** these states, in order to be able to imagine what it means, and what it feels like to swing a hammer. In short, thought itself is directly grounded in embodied experiences, as brain states associated with 'hammering' are reactivated in order to think about 'hammering'.

Barsalou proposes that this process of simulation works in the following way. When we act and interact in the world, perceptual information we store and record comes to directly underpin mental conceptual representations of the world. For instance, all our discrete perceptual experiences of hammers, their weight, texture, colour, our interaction with them and so forth, give rise to distinct perceptual symbols that make up our sets of stored experiences with hammers. We form a complex unit of conceptual structure for hammers, based on these perceptual symbols. On Barsalou's account, this is referred to as a **simulator**. A simulator is a mental representation that integrates and unifies related perceptual symbols (e.g. all our experiences with hammers). According to Barsalou, perceptual symbols are neural representations stored in sensori-motor areas of the brain. He describes perceptual symbols as: 'records of the neural states that underlie perception. During perception, systems of neurons in sensory-motor regions of the brain capture information about perceived events in the environment and in the body' (Barsalou 1999: 582).

The concept HAMMER will, accordingly, consist of information relating to its shape, weight, texture, colour, size and so on, as well as sensorimotor patterns consistent with the experience of using a hammer (derived from our experience of banging a nail into a piece of wood, for example). It follows that perceptual symbols are **multimodal**, drawing information from different exteroceptive and introspective input 'streams'.

Moreover, conceptual processes work on simulators by allowing two kinds of information to be extracted from simulators. The first is a **frame**, which I shall discuss in more detail in the next chapter. In brief, a frame for HAMMER is schematic in nature, abstracting across a range of different perceptual symbols for hammers. Hence, it provides a relatively stable representation (a concept) of HAMMER, drawing together what is uniform about our experience with tools of this kind.

The second kind of information extracted from a simulator is a simulation. A simulation is an 'enactment' of a series of perceptual experiences, although in attenuated (weakened) form. For instance, if we say 'imagine you're using a hammer . . .', this utterance allows you to construct a simulation in which you can imagine the hammer, have a sense of its weight and texture in your hand, and sense how you might swing it to strike another object. Therefore, part of our knowledge of the concept HAMMER includes a schematic frame relating to the kinds of knowledge we associate with hammers, as well as simulations that provide representations of our perceptual experience of hammers. Crucially, both frames and simulations derive from embodied experience.

Cognitive linguists contend that not only does thought rely on simulations – the reactivation of embodied experience – but that language itself can cue or lead to the construction of simulations (e.g. Bergen 2012; Evans 2015a, 2015b, 2016; Zwaan 2004). From this perspective, a linguistic system provides our species with added value: it provides an executive control function, operating over embodied concepts in the conceptual system (Barsalou 2005; Barsalou et al. 2008; see also Evans 2009).

The idea is that language provides the framework that facilitates the composition of concepts for purposes of communication. This is achieved as language consists of a grammatical system, with words and grammatical constructions cueing activations of specific body-based states in the brain (see Bergen 2012: Chapter 5). The integration of those reactivated body-based states – concepts – under the guidance of language, gives rise to complex simulations.

Hence, the second guiding principle of a cognitive linguistics approach to semantic structure is as follows: language guides the reactivation of body-based experience, in order to facilitate meaning construction. It does so by cueing simulations – reactivation of perceptual symbols. Hence, when we produce meaning, using language, this entails simulations. From this perspective, language allows us to control and manipulate the conceptual system, for purposes of communication. Under the control of language, we can seek to evoke body-based (not exclusively sensorimotor) concepts – simulations – in the minds of others, in order to communicate with them.

1.2.1 An example

To illustrate the way in which semantic structure facilitates simulations, consider the following sentences, focusing on the perceptual hue that is evoked, in each, by the word *red*. As you read each sentence, close your eyes, imagine the perceptual hue that you 'see' in your mind's eye, in each case.

(7) a. 'The red fox (*Vulpes vulpes*) is the largest of the true foxes and one of the most widely distributed members of the order Carnivora . . .' (Wikipedia)

b. 'Beauty, to me, is about being comfortable in your own skin. That, or a kick-ass red lipstick' (attributed to actress Gwyneth Paltrow by imbd.com)

For most of us, the use of *red* in (7a) calls to mind a dun or browny red. But in (7b), what comes to mind is a vivid or truly red. When we read, or hear sentences of this sort, we automatically activate a hue, for red, based on our array of past experiences of different types of red. But the perceptual hue, importantly, is not derived from language, from the word *red*. The precise perceptual hue doesn't reside in the word. After all, the word form *red* would otherwise convey the same thing on each occasion of use. In fact, what we are doing, to produce distinct mental representations for red, is reactivate a stored mental representation – a concept – one that is rich, vivid and detailed.

Of course, in these sentences, language is self-evidently enabling us to narrow in on the right kind of perceptual hue: just the right sort of contextually appropriate red. And much of this 'narrowing in' is provided by the linguistic context: the other words in each sentence, like *fox* and *lipstick*, which enable us to visualise the appropriate hue.

In fact, what is taking place, as revealed by this simple demonstration, is that, here, the word *red* is cueing part of the colour spectrum that relates to the hue red. We derive distinct simulations for *red*. And this is achieved via language, which nuances which part of the red colour spectrum we should activate. These visualisations, while not as vivid as actually seeing a fox or, indeed, a bright red lip-stick-adorned mouth in the flesh, are nevertheless rich experiences.

This illustrates the following: the 'meaning' of *red* is not, in any sense, there in the word. After all, upon reading these sentences you'll have called a different perceptual hue of red to mind: *red* could, in principle, lead to activation of the full panoply of distinct hues we normally associate with red. These range, for instance, from the orange-red of fire, to the auburn-red of henna, to the crimson-red of blood, to the truly-red of lipstick, to the distinctive telephone-box-red of classic British K2 telephone boxes (British Standard colour 539 to be precise) and so forth. All these different shades arise from our interaction in the world, which we can, in principle, call to mind, and visualise in our mind's eye in the absence of language.

In these sentences, the word *red* provides access to this **meaning potential** (Allwood 2003) or **semantic potential** (Evans 2006, 2009): all our stored experiences for red. But while the sensory experience of redness does not derive from language itself, the word cues the exteroceptive and interoceptive states stored in the brain, associated with red in all its glory. And these body-based states are reactivated during language use. Put another way, the word form *red* gives rise to distinct simulations for different hues of red. In short, the sentences in (7) enable us to construct just the right shade of red: a contextually appropriate shade. The linguistic context, in each sentence, guides the construction of the simulation, such that we obtain the 'correct' perceptual hue in each case (Evans 2015a, 2015b; Fischer and Zwaan 2008; Glenberg and Robertson 1999).

1.2.2 The role of language in meaning construction

While cognitive linguists and other embodied cognition researchers agree that language facilitates the construction of simulations, there are, in principle, two views as to how this occurs. In essence, one possibility is that semantic structure – the semantic content encoded by language – is indistinguishable from conceptual structure. The idea here is that the semantic representations associated with linguistic forms are, in fact, concepts: there is a direct link between a word form and the concept the word form calls to mind. From this perspective, the linguistic system has no inherent semantic representations of its own. On this **language-as-conduit** account, the function of language is to cue or activate the meaning potential that 'entirely' resides within the conceptual system. As such, semantic structure = conceptual structure (see Barsalou et al. 2008; Glenberg and Robertson 1999). This is the perspective adopted, or tacitly assumed, more or less, by some cognitive linguistic theories of semantic structure, including mental spaces theory and conceptual blending theory (Chapters 19 and 20).

In contrast, an alternative view is that semantic structure is qualitatively distinct from conceptual structure. From this perspective, both semantic structure and conceptual structure have a role in meaning construction, with semantic structure encoded by language serving as a guide for the activation of conceptual structure resulting in simulations. This **language-as-guide** account assumes that simulations arise from the interaction of qualitatively distinct semantic structure and conceptual structure, in producing simulations, and hence that semantic structure ≠ conceptual structure. This is the view explicitly adopted by the theory of Access Semantics (Chapter 18).

One reason for adopting the language-as-conduit view is that decontextualised words on their own do not trigger simulations. In contrast, analogue representations such as pictures and images do (Lindemann et al. 2006). For instance, being exposed to the word *cat*, unless embedded in a sentence, will not normally, on its own, give rise to a particularly rich conceptualisation. In contrast, a picture of a cat, which is analogue – it iconically represents our visual experience of a cat – gives rise to a simulation: an image of a cat is called to mind.

Another line of supporting evidence relates to gist. Upon hearing a story, subjects appear to store the gist of the narrative but not the form that it was told in – subjects can recount the story, but often use quite different words to do so. This takes place after about twenty seconds, suggesting that while the language used to convey the story erodes, the story itself is represented in a non-linguistic form, a complex representation, a simulation, in the conceptual system, once the memory of the words fades (Bransford and Franks 1971). This suggests that once a simulation has been achieved, language is largely irrelevant for, and hence independent of, the underlying meaning (Barsalou et al. 2008).

Some researchers have concluded from this that language processing is not very 'deep', in terms of the semantic representations it can evoke on its own (Barsalou et al. 2008). The role of language is to provide structure, essentially, a formal (sound or signed) representation, but little or no indigenous semantic content. The linguistic forms hook up to exteroceptive and interoceptive states, thereby facilitating reactivations of body-based states: simulations.

In contrast, there are a number of arguments that provide support for the more nuanced view: the language-as-guide account. First, if language has no independent semantic content, then presumably we should be unable to use language to evoke ideas we haven't yet experienced – because the brain states don't yet exist for the experiences. Yet, we can use language to evoke experiences we haven't yet experienced (Taylor and Zwaan 2009; Vigliocco et al. 2009). The experiences evoked via language, in the absence of a fully 'immersed' experience, such as seeing or enacting the experience, is somewhat attenuated and full of gaps. Nevertheless, language can facilitate an approximation.

By way of illustration, consider the following concerning a description of the Lutz jump, based on discussion in Taylor and Zwaan (2009). Readers largely ignorant of ice-skating will also be ignorant of what this move entails. Now read the following definition of the Lutz jump: 'A jump in figure skating in which the skater takes off from the back outer edge of one skate and makes one full rotation before landing on the back outer edge of the other skate.' Having read this, readers will have a rough idea of what the Lutz jump is. They will understand it is a move in ice-skating, which involves a particular kind of footwear on a particular kind of surface. Moreover, readers will be able to close their eyes and rehearse a move in which an ice-skater takes off, performs one rotation and lands. To be sure, many of the details will be unclear. If readers were then to look up *Lutz jump* on YouTube, they would be able to watch clips of the Lutz jump being performed. And this illustrates an important point: real experience of and in the world, the experience of seeing, acting and interacting, gives rise to body-based representations that are **analogue** in nature – a point I made previously in Chapter 8. Having seen the Lutz jump, readers can, thereafter, picture it in their mind's eye. Language, in contrast, doesn't work like that. The representations are more sketchy, more partial; they appear not to be analogue at all – an issue to which I shall return in Chapter 18.

Second, although activations of body-based brain states arise automatically in response to language use, they are not necessary for language to be successfully used. This is the case in disorders of the motor regions of the brain arising from conditions including apraxia, Parkinson's disease and motor neurone disease. For instance, patients with Parkinson's disease who display difficulty in carrying out motor movements, suggesting their motor representations in the brain are damaged, are still, more or less, able to use and understand corresponding action verbs (Boulenger et al. 2008). Similarly, patients with motor neurone disease are still able to process action verbs (Bak et al. 2001). This observation suggests that semantic structure is likely to be distinct from conceptual structure. After all, if conceptual structure is grounded in embodied brain states, and semantic structure were the same as conceptual structure, then it should not be possible to successfully deploy language to refer to the brain states that can no longer be activated due to the aforementioned disorders.

One proposal that accounts for the apparent fact that semantic structure can still be deployed to give rise to body-based simulations, in spite of the deterioration of relevant brain regions that subserve the body-based states, is the **fault tolerance hypothesis** (Taylor and Zwaan 2009). This posits that humans construct simulations from various sources, including language. Moreover, these may be incomplete. For instance, a novice skier doesn't have the motor routines necessary for skiing; an unconventional ski instructor might ask the novice skier to imagine being a waiter, with a tray held aloft, weaving through a busy Parisian café, in order to simulate the type of body posture and motor routines required when on skis (Fauconnier and Turner 2002). The point is that evoking such a simulation, via language, while not the same as the embodied experience of skiing, facilitates the learning of the requisite motor routines that, in time, will lead the novice to becoming an accomplished skier.

The third argument for the language-as-guide account of semantic structure is the following. Language itself appears to encode a type of semantic representation that is qualitatively distinct from the sorts of rich, multimodal representations that populate the conceptual system. Let's consider the distinction between the definite article *the* and the indefinite article *a*. The distinction between these two forms, in terms of their semantic representation, relates to a difference in specificity. But it is not clear what *the* might relate to in the conceptual system: although we can visualise ideas such as *chair* or *tree*, and simulate the feelings and scenes associated with more abstract nouns such as *love* and *war*, we can't simulate whatever it is that *the* corresponds to. This reveals that semantic structure associated with so-called grammatical or function words appears to provide a relatively schematic semantic representation, providing a type of content that is qualitatively distinct from richer semantic representations associated with open-class elements. This further suggests that there is a level of semantic structure, indigenous to language, and which is distinct from conceptual structure – this idea is central to the development of the theory of Access Semantics (see Chapter 18).

Fourth, language appears to directly influence the way in which we perceive the world – an issue that I introduced with the discussion of linguistic relativity in Chapter 7. For instance, in a language such as Greek, there are distinct words for light blue (*ghalazio*) and dark blue (*ble*). This contrasts with English, where there is a single word: *blue*. Neuroscientists have shown that whether one is a native speaker of Greek or of English influences how we 'perceive' blueness (e.g. Thierry et al. 2009). The brain activity of Greek speakers diverges when they perceive the different shades of blue. In contrast, English speakers exhibit no divergence in brain activity across the different shades of blue. The conclusion that emerges from this is that there is clear relationship between a linguistic distinction in a speaker's native language – Greek divides blue colour space whilst English doesn't – and the low-level, automatic perception of colour, as measured by brain activity at the onset of pre-attentive awareness, before subjects become conscious of the colour they are perceiving. For present purposes, the relevance of this finding is that it provides direct evidence that a distinction imposed by a language – dark versus light colour – modulates non-linguistic perceptual categorisation in visual experience. This could not be the case if language had no semantic content independent of the conceptual representations in the conceptual system.

Finally, language appears to induce the illusion of **semantic unity** (Evans 2009). This appears to be an effect of language (and hence semantic structure) rather than of concepts (and hence conceptual structure). For instance, the word *time* in English encodes a range of different, albeit related, concepts (Evans 2004). Consider some linguistic examples:

(8) a. The time for a decision has arrived.
 b. The relationship lasted a long time.
 c. Time flows on forever.
 d. The time is approaching midnight.

In these sets of examples, all involving the lexical item *time*, a different reading is obtained. In (8a), a discrete temporal point or moment is designated, without reference to its duration. The example in (8b) provides a reading relating to what might be described as magnitude of duration. In the sentence in (8c), *time* prompts for an entity that is infinite and hence eternal. Thus, in (8c) the reading relates to an entity that is unbounded. Finally, the example in (8d) relates to a measurement system, and specifically a point that could be paraphrased as 'The hour is approaching midnight.'

Although English has one word for a range of (arguably) quite distinct temporal ideas, other languages do not have a single word that covers all this semantic territory. For instance, recent research on the Amazonian language Amondawa reveals that there is no equivalent of the English word *time* in that language (Sinha et al. 2011). Moreover, even languages genetically related to English use distinct lexical items to describe the semantic territory covered by the single lexical form *time* in English.

French is a good example of this:

(9) C'est l'heure de manger
 'It's time to eat'

While the lexical form *heure* ('hour') is used to describe the moment sense of *time*, equivalent to the English example in (8a), some of the other senses for English *time* are covered by the form *temps* ('time'). This illustrates that word forms can provide an illusion of semantic unity, and give rise to the myth that *time*, by way of example, relates to a homogenous set of experiences. This appears to be an effect of (semantic structure indigenous to) language, rather than conceptual knowledge, which remains broadly similar across English and French. In short, other languages don't group the same semantic territory with a single lexeme. Still others separate out across distinct lexemes. In the final analysis, it appears that semantic unity is an illusion, an artefact of semantic structure specific to linguistic organisation and use. This provides compelling evidence that language brings with it its own semantic contribution, independent of the rich and detailed knowledge representation provided by conceptual structure in the conceptual system.

2 Formal Semantics

The perspective and guiding principles of the cognitive linguistics approach to semantic structure stand in stark contrast to the formal linguistics perspective on semantics. In this section, I briefly present some of the ideas developed within the discipline of philosophy of language that go under the name of **Formal Semantics** or, sometimes, as **truth-conditional semantics**.

As we shall see, this approach takes a radically different approach to investigating semantic structure from the tack taken in cognitive linguistics. Indeed, Formal Semantics is predicated on notions such as truth and reality, and how natural language meaning can be represented according to a formal metalanguage developed from logic. These ideas came to be highly influential in formal linguistics following the pioneering work of philosopher and logician Richard Montague in the 1960s and early 1970s. Montague argued that many of the ideas from the philosophy of language could be systematically applied to natural language. The tradition that grew up in linguistics following Montague's theory came to be known Formal Semantics.

2.1 Meaning, truth and reality

The philosophical interest in the relationship between meaning, truth and reality has a long and venerable tradition dating back to the ideas of the ancient Greek philosophers over 2,000 years ago. Since Aristotle, philosophers who have attempted to understand the concept of truth have equated this notion with reality as a guarantor of truth. This approach is called the **correspondence theory** and holds that a truth bearer (for example, a natural language sentence) is true if it corresponds to a state of affairs holding in the world. From this perspective, truth is a property of sentences that correspond to a reality they describe. The twentieth-century philosopher Alfred Tarski was influential in arguing that semantic meaning could be equated with truth defined in terms of its correspondence with the world: if a sentence is true by virtue of its correspondence with some state of affairs, then this truth condition constitutes its meaning. Consider the following excerpt from Tarski's classic paper first published in 1944: '*Semantics* is a discipline which . . . *deals with certain relations between expressions of a language and the objects* (or "states of affairs") *"referred to" by those expressions* (Tarski 2004: 119; original emphasis). From this perspective, linguistic meaning amounts to truth defined in terms of correspondence to reality. Meaning can therefore be defined in terms of the conditions that hold for a sentence to be true.

2.1.1 Object language versus metalanguage

Tarski argued that truth can only be defined for those languages whose semantic structure has been exactly defined; and that it is not possible to define the semantic structure of a language that is self-defining. For example, in a natural language, words are defined using other words in the language: if we 'define' *bachelor* as 'an unmarried adult male', we are using other words from the same language to define the word. According to Tarski, this fails to provide an objective definition, as it relies on words from the same language to understand other words. Tarski describes languages that are self-defining as **closed** because they fail to provide an objective definition of a particular term or expression.

He consequently argued that in order to establish the meaning of a sentence from a given natural language, we need to be able to translate the sentence from that **object language** into a **metalanguage**: a language that can be precisely and objectively defined. Tarski argues that **predicate calculus**, which was pioneered by the philosopher Gottlob Frege in his work on logic, provides a logic-based metalanguage for capturing the 'invariant' (semantic or context-independent) aspects of meaning.

According to this view, predicate calculus, or a similar 'logical' language, provides a means of capturing semantic structure in a way that is objective, precisely stated, free from ambiguity and universal in the sense that it can be applied to any natural language.

2.1.2 The inconsistency of natural language

It is important to note that Tarski was concerned with the study of semantics (meaning in general) rather than specifically linguistic semantics. While Tarski thought that the truth-conditions for formal languages like logic could be precisely specified, he argued that the meaning of natural languages could not be precisely specified in terms of truth conditions. Tarski expressed this view in the following way:

> *The problem of the definition of truth obtains a precise meaning and can be solved in a rigorous way only for those languages whose structure has been exactly specified*. For other languages – thus, for all natural 'spoken' languages – the meaning of the problem is more or less vague, and its solution can have only an approximate character. (Tarski 2004: 121; original emphasis)

A particularly clear illustration of the way in which natural language resists precise definition in terms of truth conditions emerged from J. L. Austin's work on **speech acts**. This theory was developed in Austin's 1955 lectures, which were published posthumously in 1962. Austin observed that only certain types of sentence relate to 'states of affairs in the world'. This sentence type, which Austin called **constative**, is illustrated in examples (10) to (13).

(10) It is raining.

(11) My cat is grey.

(12) Theresa May is Prime Minister.

(13) He doesn't feel very well today.

Compare examples (10)–(13) with what Austin called **performative** sentences, illustrated in examples (14)–(19).

(14) I bet you £10 it will rain tomorrow.

(15) I hereby name this ship the HMS *Queen Elizabeth*

(16) I declare war on the citizens of Venus.

(17) I apologise.

(18) I dub thee Sir Elton.

(19) I hereby pronounce you husband and wife.

Only sentences of the kind in (10) to (13) can be said to have truth conditions because they can be verified against the corresponding state of affairs that they describe. In contrast, it makes little sense to think of the sentences in (14) to (19) as 'describing' states of affairs because these sentences are performing verbal acts rather than describing situations. Observe that performatives license the adverb *hereby*, and are restricted to the first person present tense. If these sentences are changed to the third person and/or to the past tense, they become descriptions of states of affairs rather than performatives (20a), and do not license *hereby* (20b). Furthermore, only certain verbs function as performatives (20c).

(20) a. He sentenced you to ten years of hard labour yesterday.
b. #He hereby sentenced you to ten years of hard labour yesterday.
c. #I hereby love you.

As these examples illustrate, only a subset of sentence types can be understood in terms of their correspondence with 'states of affairs' or situations that they describe. Furthermore, this observation is not limited to the distinction between the types of examples illustrated here. For example, interrogative sentences such as: *Do you want to grab a coffee?* and imperative sentences: *Shut the door!* cannot be described as 'true' or 'false' with respect to a given state of affairs in the world.

2.1.3 Sentences and propositions

Before exploring how truth-conditional semantics was developed into the basis of a formal approach to linguistic meaning, I first introduce the important technical distinction between **sentence** and **proposition**. In formal linguistics, a sentence is a linguistic object – a well-formed grammatical string of words that can be described according to its grammatical properties (recall my discussion the distinction between a sentence and an utterance in Chapter 5). The meaning 'carried' by a sentence is a **proposition**. Crucially, there is no one-to-one correspondence between sentence and proposition because the same sentence can carry different propositions (e.g. *I love you* expresses a different proposition depending on who *I* and *you* refer to), and the same proposition can be expressed by different sentences. This is illustrated by the active versus passive sentences, from earlier, which are reproduced below as (21). This shows that both the active sentence (21a) and the passive sentence (21b) describe the same state of affairs and thus represent the same proposition. This means that these two sentences have the same truth conditions.

(21) a. Shakespeare wrote *Romeo and Juliet*.
b. *Romeo and Juliet* was written by Shakespeare.

In truth-conditional semantics, it is the meaningful proposition that is the truth bearer. As such, truth conditions relate to the proposition expressed by a sentence rather than directly to the sentence itself.

2.2 Truth-conditional semantics and formal linguistics

Despite reservations expressed by philosophers of language such as Tarski and 'natural language philosophers' such as Austin, the philosopher and logician Richard Montague (e.g. 1970, 1973) argued that natural language semantics could be modelled in terms of truth conditions. Montague held that as a crucial aspect of natural language semantics relates to logical properties and relations, it follows that natural language can be 'translated' into the metalanguage of predicate calculus, exposing its meaning to rigorous scrutiny and definition. In this section, we present an overview of this tradition.

Montague's ideas have appealed to formal linguists because of the perceived precision offered by the application of truth-conditional semantics to natural language. In particular, this approach has appealed to scholars who have sought to integrate the field of linguistic semantics with the theory of Generative Grammar developed by Chomsky (recall my discussion of Generative Grammar in Chapter 7). From this perspective, language is viewed as a modular system in the tradition pioneered by Chomsky (see Figure 14.1). Within this model, each module represents an encapsulated system of linguistic knowledge that contains principles operating over primitives of a specific kind. For example, while the syntax module operates over grammatical categories such as noun, verb, tense and so on, the phonology module operates over speech sounds representing bundles of articulatory features. Many semanticists influenced by the generative enterprise sought to develop an approach to natural language semantics that could provide a semantic representation for the grammatical representation generated by the syntax module: the sentence.

2.2.1 Compositionality of meaning

Formal semanticists adopt the principle of compositionality. This principle states that the meaning of a complex expression is determined by the meanings

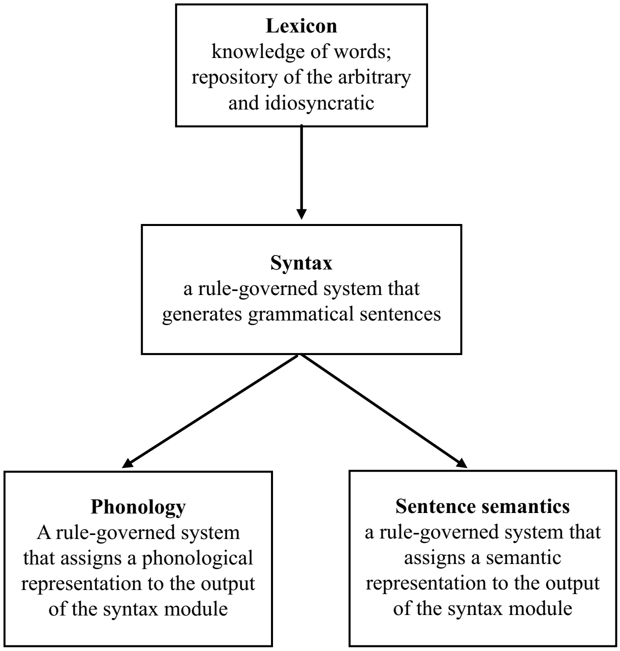

Figure 14.1 The Generative Grammar model

of its parts, affected only by the grammatical structure in which these parts coexist. The fact that grammatical structure plays a role in linguistic meaning is illustrated by examples (22a) and (22b). These examples contain the same words, but express different propositions precisely because those parts are arranged differently within the syntactic configuration.

(22) a. Joe gave Sally a lift.
b. Sally gave Joe a lift.

The fact that syntax can affect the semantic interpretation of a sentence explains why, in the Generative Grammar model, there is a semantic component that assigns a semantic representation to the output of the syntax module. While the lexicon accounts for a speaker's knowledge of word meaning, this model also requires a module that accounts for the meaning of a complex expression in which those words have been combined into a particular grammatical structure.

2.2.2 Translating natural language into a metalanguage

Predicate calculus, the logical metalanguage into which formal semanticists translate natural languages such as English, contains a range of expressions. These expressions represent the meaning expressed by units of language such as nouns, verbs and adjectives by means of terms. There are two kinds of terms: individual constants and predicates. Constants are expressions that relate to specific entities (e.g. *James Bond* or *the spy*) and are represented by lower-case letters of the alphabet like *a*, *b*, *c* and so on. Predicates are expressions that represent processes (expressed by verbs, e.g. *eat*), properties (expressed by adjectives, e.g. *funny*), roles (expressed by nouns, e.g. *a top British spy*) and relations (expressed by prepositions, e.g. *under*). One-place predicates such as *funny*, *die* or *a top British spy* only require a single participant to complete their meaning (e.g. *James Bond is funny; James Bond died; James Bond is a top British spy*), while two-place predicates such as *appreciate* or *under* require two participants (e.g. *James Bond appreciates Miss Moneypenny; James Bond is under the desk*). Predicates are represented by upper-case letters of the alphabet, such as A, B, C and so on. When constants and predicates are combined, this results in a formula.

For example, the sentence in (23a) can be expressed by the formula in (23b), where upper-case S represents the predicate *sings* and lower-case f represents the constant *James*. By convention, the predicate occurs first in the predicate calculus formula, so the 'translation' does not reflect the word order of English.

(23) a. James sings.
b. S(f)

Example (24) illustrates a formula in which a two-place predicate combines with two constants. The relative order of the constants is important, because this reflects the difference in meaning contributed by the syntactic structure: like the natural language sentence in (24a), the formula in (24b) says that Moneypenny loves James, not that James loves Moneypenny.

(24) a. Moneypenny loves James.
b. L(m, j)

In sentences like *Moneypenny loves James and James loves Moneypenny*, which consist of two or more conjoined clauses and thus express two or more propositions, the clauses are connected by natural language connectives like *and*, *or*, *but* and so on. In sentences such as *Moneypenny does not love James* or *Moneypenny loves James but not Q*, the negation word *not* is an operator, an expression that takes scope over some part of the sentence and affects its meaning.

Natural language expressions such as *all*, *every* and *some* are also operators. These are quantifiers and take scope over some part of the sentence by quantifying it (for example, the sentences *Every police officer witnessed some crimes* and *Some police officers witnessed every crime* each express a different proposition due to the positions of the quantifiers, despite the fact that they contain the same predicates and constants). Connectives and operators are represented by the logical symbols in Table 14.1, where the column 'Syntax' shows how these symbols can be combined with other units.

Example (25) illustrates how the sentence in (25a) is translated into a predicate calculus formula (25b). The expression in (25c) shows how the predicate

Table 14.1 Connectives and operators in predicate calculus

Connective	Syntax	English
$\wedge$	$x \wedge y$	x and y
$\vee$	$x \vee y$	x and/or y
$\vee_e$	$x \vee_e y$	x or y but not both
$\rightarrow$	$x \rightarrow y$	if x, then y
$\leftrightarrow$	$x \leftrightarrow y$	x if and only if y
Operator	**Syntax**	**English**
$\neg$	$\neg x$	not x
$\forall$	$\forall x$	every/all x
$\exists$	$\exists x$	some x

calculus can be 'read'. In this example, x represents a variable. This is an expression that, like a constant, relates to an entity or group of entities (hence the lower-case symbol); unlike a constant, a variable does not indicate a specific entity. The lower case letters x, y and z are reserved for variables.

(25) a. Every pupil sat an exam
b. $\forall x\ (P(x) \rightarrow S(x,e))$
c. For every entity x, if x is a pupil, then x sat an exam

2.2.3 Semantic interpretation and matching

Of course, the translation of a sentence from object language to metalanguage does not in itself tell us anything about what the sentence means. To accomplish this, the symbols in the metalanguage must be assigned a **semantic interpretation** or **value**, at which point the formula, which represents the proposition expressed by the original natural language sentence, must be matched with the state of affairs it describes. The process of assigning values and matching the proposition to the state of affairs it describes can be divided into four steps.

i) *Assigning values*: The first step is to assign the symbols of predicate calculus a semantic interpretation. This idea was implicit in the previous section, where I assigned the symbols a semantic value. For example, predicates expressed by *eat* and *love* are represented by E, L and so on, and constants expressed by proper nouns like *Jane* and *Tom* are represented by j, t and so on. Because natural language connectives and operators are closed-class expressions, these correspond to fixed logical symbols. In contrast, predicates and constants can be expressed by upper or lower-case letters of the alphabet, with the exception of *x*, *y* and *z*, which by convention are reserved for variables.
ii) *Establishing a model of the world*: The second step is the establishment of some model of the world against which the symbols in the metalanguage

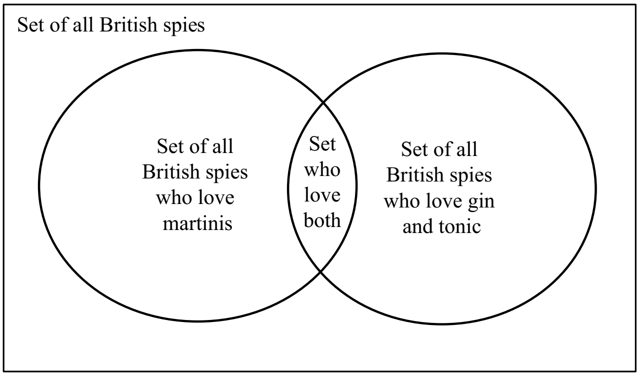

Figure 14.2 Set-theoretic model

can be matched. Within Formal Semantics, models are typically represented in terms of set theory. For example, in a model of the world in which all British spies love martinis, the sentence *All British spies love drinking martinis* would be true. However, in a model in which only a subset of British spies love martinis, a further subset love gin and tonic, and an intersection of these two subsets love both martini, and gin and tonic, the sentence *All British spies love martinis* would be false, whereas the sentences *Some British spies love martinis*, *Some British spies love gin and tonic*, *Some British spies love martinis, and gin and tonic* and *Not all British spies love martinis* would be true. It is because the symbols are matched with a model of the world that this type of approach is also known as **model-theoretic semantics**. This idea is illustrated by Figure 14.2.

iii) *Matching formula with model*: The third step is a matching operation in which the symbols are matched with appropriate entities in the model. This is called **denotation**: expressions in the metalanguage denote or represent elements in the model, and the meaning of the sentence is equivalent to its **denotatum**, or the sum of what it corresponds to in the model. Matching of predicates establishes the extension of individuals over which the predicate holds, which is represented in terms of sets. For example, in the sentence *All British spies love martinis*, the predicate *love* represents a relation between the set of all entities described as *British spies* and the set of all entities described as *martinis*. Once this matching operation has taken place, then the truth value of the sentence can be calculated.

iv) *Calculating truth values*: The fourth step involves the calculation of truth values. If the formula matches the model, then the sentence is true. If it does not, then the sentence is false.

As this brief overview shows, in truth-conditional semantics the meaning of a sentence is equivalent to the conditions that hold for that sentence to be true, relative to a model of the world. Central to this approach is the correspondence theory of truth that I presented earlier: meaning is defined in terms of the truth of a sentence, understood as conditions in the world (or a model of the world) to which the sentence corresponds.

I illustrate each of these steps using the following example.

(26) a. Jane loves Tom.
     b. L(j, t)

Once the sentence is translated into predicate calculus (26b), values are assigned to the logical symbols (e.g. j = Jane; t = Tom) and a model is established that identifies the entities corresponding to the linguistic expressions *Jane* and *Tom*. This model might represent the set of all people {Bill, Fred, Jane, Mary, Susan, Tom . . .}. Within this model is a domain or subset of entities who stand in the relation expressed by the predicate *love* (L). This is represented by (27), in which each ordered pair (inside angled brackets) stands in the relevant relation.

(27) L = {<Jane, Tom>, <Fred, Mary>, <Mary, Susan>}

Next, the formula is matched with the model so that constants and predicates are matched with entities and relations in the model. As (27) shows, this set contains an ordered pair, which means that Jane loves Tom. Finally, the truth condition of the proposition expressed by (26) is evaluated relative to this model. The rule for this evaluation process is shown in (28).

(28) $[L(j, t) = 1 \equiv [<j, t>] \in [L]]$

In this rule, the number '1' represents 'true' (as opposed to '0', which represents 'false'). This rule says '*Jane loves Tom* is true if and only if the ordered pair <Jane, Tom> is a member of the set L.' Since the set L contains the ordered pair <Jane, Tom> in the model, the sentence is true. Table 14.2 completes this brief overview of the truth-conditional approach to sentence meaning in Formal Semantics by summarising the properties that characterise this approach as it is conceived by generatively oriented semanticists.

3 Comparison with the cognitive linguistics approach to semantic structure

While the assumptions presented in Table 14.2 stand in direct opposition to those adopted within cognitive linguistics in general, and a cognitive approach to semantic structure in particular, there are nevertheless some important similarities between the cognitive linguistics approach to semantic structure and Formal Semantics.

First, both approaches are concerned with explaining sentence meaning and with the nature of the relationships between the words in a sentence, as well as between the words and the grammatical structure in which they occur. Second, both Formal Semantics and the cognitive linguistics approach accept the existence of a real external world which bears upon the nature

Table 14.2 Assumptions of Formal Semantics

The nativist hypothesis is widely assumed.
The modularity hypothesis is widely assumed: linguistic knowledge emerges from an encapsulated cognitive system, and the language module itself has a modular structure.
Semantic (context-independent) knowledge is separable from pragmatic (context-dependent) and encyclopaedic (non-linguistic) knowledge.
A correspondence theory of truth is assumed, hence this approach is 'objectivist' in the sense that sentence meaning relies upon an objectively defined world or model of the world.
Sentence meaning can be modelled using a logical metalanguage.
The meaning of complex expressions is compositional. Figurative language is non-compositional and therefore exceptional.
In practice, this approach is focused upon the logical properties of a carefully selected set of declarative sentences.

of linguistic meaning. For example, both perspectives distinguish between entities, properties, processes and relations. Third, both approaches assume that humans have stable knowledge of the external world which is reflected in language, and attempt to model this knowledge. While the earliest truth-conditional models relied upon a direct link between language and external world (referential or denotational models), contemporary Formal Semantics attempts to model the system of human knowledge that mediates between linguistic symbols and external reality. Therefore, much like cognitive linguists, formal semanticists aim to construct a representational model.

Despite these similarities, the differences remain significant. Beginning with fundamental assumptions, while formal semanticists assume an innate and modular system of specialised linguistic knowledge, cognitive linguists reject this view in favour of a system of semantic structure that provides 'prompts' to the rich system of conceptual structure that semantic encoding in language reflects. In adopting an **objectivist approach** to cognition, truth-conditional semanticists see human thought as 'disembodied' because linguistic meaning is conceived in terms of correspondence theory. In contrast, in adopting a broadly **experientialist** or **empiricist approach** to cognition, cognitive linguists conceive of semantic structure encoded by language as reflecting the imaginative projection of bodily experience giving rise to abstract cognitive models – of the sort I introduced in the previous part of the book.

Now turning to how each approach views the nature of linguistic meaning, formal semanticists argue that one of the primary goals of a theory of linguistic meaning is to address the informational significance of language. From this perspective, language is used primarily to describe states of affairs in the 'world', which are thus central to the account of linguistic meaning, as we have seen. This idea is represented by Figure 14.3.

In Figure 14.3, the arrow from the object language to the metalanguage represents the translation process, which gives rise to a representation in

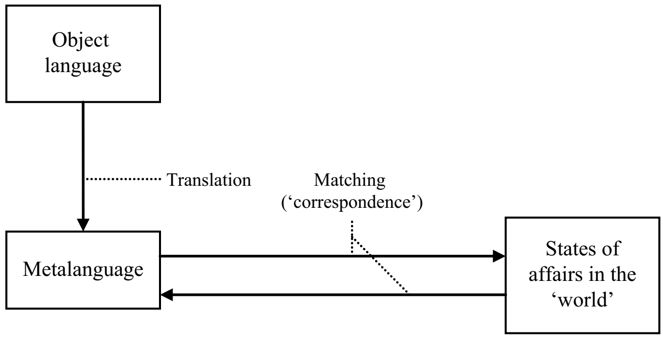

Figure 14.3 The construction of sentence meaning in Formal Semantics

the unambiguous and universally applicable language of predicate calculus. Linguistic meaning then derives from how well the values associated with the metalanguage correspond to a given state of affairs in the 'world', real or hypothetical.

In contrast, cognitive linguists argue that the role of language is to prompt for simulations, so that linguistically mediated meaning derives not from an objectively defined 'world' but from structured mental representations that reflect and model the world we experience as embodied human beings. According to the view in cognitive linguistics, these mental representations are partly stable (stored) knowledge systems and partly dynamic (on-line) conceptualisations. It follows from this view that linguistic meaning resides not within a specialised system of linguistic knowledge but at the conceptual level itself. The cognitive linguistic view of the way in which linguistically encoded semantic structure interfaces with conceptual structure, in meaning construction, is represented by Figure 14.4.

Figure 14.4 captures the following. Two basic kinds of embodied experiences, exteroceptive and interoceptive perception, give rise to conceptual representations which can lead to simulations. Language prompts for these, working in conjunction with the relatively stable encyclopaedic knowledge units of conceptual structure in order to produce reactivations of embodied mental states, namely simulations. Meaning construction processes, considered in detail in later chapters in this part of the book, enable language to provide cues or instructions for assembly of units of conceptual structure in facilitating dynamic simulations.

A further important difference relates to the nature of the relationship between semantics (context-independent meaning) and pragmatics (context-dependent meaning). As we have seen, a guiding principle of cognitive linguistics is the encyclopaedic perspective taken with respect to semantic structure. This, together with the second guiding principle, that meaning construction is a dynamic process involving simulations, entails that there is no principled distinction between semantic and pragmatic knowledge. In contrast, formal semanticists assume a sharp boundary between the two types of knowledge. According to this view, semantic knowledge is stable, conventionalised knowledge that is expressed by predictable form–meaning correspondences

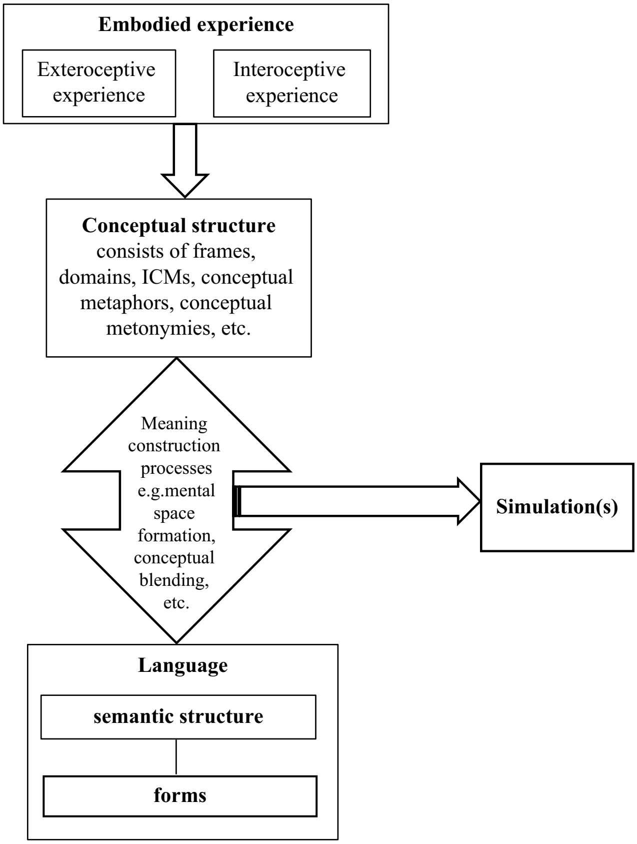

Figure 14.4 The nature of meaning construction in cognitive linguistics

and is contained within the linguistic system. In contrast, pragmatic inferences cannot be predicted from linguistic form; pragmatic knowledge involves more generalised inferencing processes that do not relate specifically to language but operate over the output of the language system together with non-linguistic contextual factors.

SUMMARY

This chapter introduced the way in which cognitive linguists approach the study of semantic structure, by considering the two guiding principles of cognitive linguistic approaches. These are that semantic structure is **encyclopaedic** in nature, and that semantic structure contributes to meaning construction by facilitating what are known as **simulations**. From the first guiding principle it follows that linguistic forms and expressions do not represent neatly packaged bundles of meaning (the so-called **dictionary view of meaning**), but serve as 'points of access' to vast repositories of conceptual knowledge. From the second guiding principle it follows that language guides the reactivation of body-based experience, in order to facilitate meaning construction. It does so by cueing simulations – reactivation of **perceptual symbols**. Hence, when we produce meaning, using language, this entails simulations. From this perspective, language allows us to control and manipulate the conceptual system, for purposes of communication. Under the control of language, we can seek to evoke body-based (not exclusively sensorimotor) concepts – simulations – in the minds of others, in order to communicate with them. I then compared and contrasted the cognitive linguistics approach to semantics with **Formal Semantics**. This takes an **objectivist** rather than an **experientialist** approach to semantic representation. Formal semantics treats semantic structure as something that can be modelled in terms of **truth**, using **first predicate calculus**, whereby semantic representation amounts to whether the truth **value** of a **proposition**, encoded by a **sentence**, corresponds or not to a state of affairs in the world. Hence, this approach views semantic structure in terms of so-called **truth conditions**. As the arbiter of linguistic meaning, on this account, concerns **correspondence**, measured by truth conditions, this approach can only readily address a relatively limited set of natural language expressions, and hence, for cognitive linguists, it is limited up front in terms of its ability to model natural language semantics.

FURTHER READING

Readings in cognitive linguistics approaches to semantic structure

- **Bergen (2012)**. An excellent book-length overview of the nature of simulation, and the way in which language facilitates the cueing or activation of simulations.
- **Evans (2015a)**. A book-length treatment of the cognitive linguistics approach to both conceptual structure and semantic structure, focusing on how the two levels of representation interact in the process of linguistically mediated meaning construction.
- **Geeraerts (2010)**. A book-length treatment of various approaches to semantic structure since the beginning of the twentieth century. Chapter 5 focuses on approaches within cognitive linguistics.

Readings in Formal Semantics

- **Bach (1989)**. This is one of the most accessible book-length introductions to Formal Semantics.
- **Cann (1993)**. This textbook is a challenging introduction for the novice, but is to be commended for attempting to introduce Montague's approach to natural language semantics without presupposing a particular theory of grammar.

- **Cann et al. (2009)**. A formalist approach to key topics in the study of semantics by three leading experts. Subjects considered include quantification, anaphora, discourse, tense, aspect and word meaning.
- **Chierchia and McConnell-Ginet (2000)**. A relatively accessible introduction to Formal Semantics.
- **Heim and Kratzer (1998)**. This textbook explicitly attempts to relate Formal Semantics with grammatical phenomena from the perspective of Chomskyan Generative Grammar.
- **Kearns (2011)**. An excellent general introduction to aspects of Formal Semantics and the philosophy of natural language more generally; includes chapters on logical tools, logical and generalised quantifiers, the principle of compositionality, modality and possible worlds.
- **Portner (2005)**. Another very accessible introduction to Formal Semantics.
- **Saeed (2016)**. Saeed's excellent general introduction to semantics includes a chapter-length introduction to formal (truth-conditional) semantics: the most accessible chapter-length introduction around. Saeed also provides an overview of Jackendoff's Conceptual Semantics theory of linguistic meaning, which I briefly mentioned in Chapter 7. The reader is strongly encouraged to investigate Jackendoff's theory in order to gain insights into a non-truth-conditional formal model of linguistic meaning.

DISCUSSION QUESTIONS

1. In your own words, provide a characterisation of the guiding principles of a cognitive linguistics approach to semantic structure. How do you see these principles reflecting the two primary commitments of cognitive linguistics that were presented in Chapter 2?
2. What does it mean, exactly, to say that linguistically mediated communication is achieved by the process referred to as simulation? What is the evidence for simulations?
3. What are the main points of divergence between Formal Semantics and the cognitive linguistics approach to meaning?
4. What do you see as the strengths of the cognitive linguistics perspective? Do you see any drawbacks, and why?

15

The encyclopaedic approach to semantic structure I: overview

In this chapter I introduce the first guiding principle of a cognitive linguistics approach to semantic structure: the thesis that semantic structure is encyclopaedic in nature, also known as the encyclopaedic approach to meaning. This principle holds that semantic structure – the representations associated with linguistic forms, such as words – relates to a large inventory of structured knowledge that resides in the conceptual system. According to this view, linguistic meaning cannot be understood independently of the vast repository of encyclopaedic knowledge to which it is linked. In order to then illustrate the nature of encyclopaedic knowledge, and show how it forms the basis for semantic structure, in the next chapter I explore in some detail two influential cognitive linguistic theories that propose, in related, albeit slightly different ways, encyclopaedic approaches to semantic structure. These are the theory of **Frame Semantics**, developed in the 1970s and 1980s by Charles Fillmore; and **Cognitive Grammar**, developed by Ronald Langacker (1987, 1991, 2008).

1 The dictionary view of linguistic meaning

I begin, in this section, by considering the traditional view of linguistic meaning, which is often called the **dictionary view**. By explaining how this received model works, I will establish a basis for exploring how the encyclopaedic view developed within cognitive linguistics diverges from this. The theoretical distinction between **dictionaries** and **encyclopaedias** has traditionally been an issue of central importance for **lexicologists** – linguists who study word meaning – and **lexicographers** – dictionary writers.

Since the emergence of cognitive science, in the late 1950s, and the view of language as a 'faculty' of mind, in the 1960s, it has also been widely assumed that a distinction parallel to the dictionary/encyclopaedia distinction exists at the level of the mental representation of words. This view has been widely adopted, particularly by formal linguists who assume a **componential view** of word meaning – recall my discussion of Universal Grammar and semantic universals in Chapter 7.

More recently, however, linguists have begun to argue that the distinction traditionally drawn between **dictionary knowledge** (word meaning) and **encyclopaedic knowledge** (non-linguistic or 'world knowledge') is artificial. If this can be established, the alternative view emerges that dictionary knowledge is a subset of more general encyclopaedic knowledge. This is the position adopted by cognitive linguists.

1.1 The characteristics of the dictionary view

The traditional view in formal theories of linguistic semantics typically holds that linguistic meaning can be divided into a dictionary component and an encyclopaedic component. According to this view, it is only the dictionary component that properly constitutes the study of **lexical semantics**: the branch of semantics concerned with the study of word meaning. In contrast, encyclopaedic knowledge is external to linguistic knowledge, falling within the domain of 'world knowledge'.

Of course, this view is consistent with the **modularity hypothesis** adopted within formal linguistics (Chapter 7), which asserts that linguistic knowledge – for example knowing the meaning of a word such as *shoelaces* – is specialised to language, and distinct in nature from other kinds of 'world' or 'non-linguistic' knowledge – such as knowing how to tie your shoelaces, or that you can usually buy them in the supermarket. From this perspective, then, dictionary knowledge relates to knowing what words mean, and this knowledge represents a specialised component, the 'mental dictionary', technically referred to as the **(mental) lexicon**. While this component is mainly concerned with word meaning, formal linguistic theories differ quite considerably on the issue of what other kinds of information might also be represented in the lexicon, such as grammatical information relating to word class and so on.

However, a common assumption within formal theories is that the word meanings stored in our minds can be defined, much as they appear in a dictionary. In the componential analysis or semantic decomposition approach, which is one version of the dictionary model, word meaning is modelled in terms of semantic features or primitives. For instance the semantic structure for the lexical item *bachelor* is represented as [+MALE, +ADULT, –MARRIED], where each of these binary features represents a conceptual **primitive** that can also contribute to defining other words, such as *man* [+MALE, +ADULT], *girl* [–MALE, –ADULT], *wife* [–MALE, +ADULT, +MARRIED] and so on; as an aside, the use of the term, 'male' rather than 'female' in the foregoing, drawn from early, classic componential accounts, is problematic from a twenty-first century perspective. We might better use a positive, rather than a negative value, to indicate gender. For instance, use the following features to identify *woman* [+FEMALE, +ADULT] and *man* [+MALE, +ADULT], respectively, to avoid the implication that one gender, rather than another, is somehow the default.

Early examples of this componential approach are presented in Katz and Postal (1964) and Katz (1972). Another more recent variant of this approach is represented in the work of Anna Wierzbicka (e.g. 1996), who takes the position that words are comprised of universal innate semantic primitives or **primes**, in terms of which other words can be defined. I will consider these componential approaches in more detail below.

According to the dictionary view, the core meaning of a word is the information contained in the word's definition – for example that *bachelor* means 'unmarried adult male' – and this is the proper domain of lexical semantics. Encyclopaedic knowledge – for example, stereotypical connotations relating to bachelor pads, sexual conquests and dirty laundry – is considered non-linguistic knowledge. In this way, the dictionary model enables lexical semanticists to restrict their domain of investigation to intrinsic or non-contextual word meaning, while questions concerning how the outside world interacts with linguistic meaning are considered to fall within the domain of **pragmatics**, an area that some linguists consider to be external to the concerns of linguistics proper.

A number of dichotomies follow from the dictionary view of word meaning. First, the core meaning of a word (**sense**), which is contained in the mental lexicon stands in sharp contradistinction to what that word refers to in the outside world (**reference**). This distinction is inherited from referential theories of meaning dating back to Plato's (fourth century BC) *Cratylus Dialogue: The Realm of Ideas and Truth*. Referential theories hold that word meaning arises from a direct link between words and the objects in the world that they refer to. As the philosopher Frege argued in 1892 (see Frege 1975), however, it is possible for a word to have meaning (sense) without referring to a real object in the world (e.g. *dragon*, *unicorn*), hence the distinction between sense and reference.

The second dichotomy that arises from the dictionary view of meaning is the distinction between **semantics** and **pragmatics**. As we saw above, the dictionary view assumes a sharp distinction between knowledge of word meaning (semantics) and knowledge about how contextual factors influence linguistic meaning (pragmatics).

Third, the dictionary view treats knowledge of word meaning as distinct from cultural knowledge, social knowledge (our experience of and interaction with others) and physical knowledge (our experience of interaction with the world). As we have seen, a consequence of this view is that semantic knowledge is autonomous from other kinds of knowledge, and is stored in its own mental repository, the mental lexicon. Other kinds of knowledge belong outside the language component, represented in terms of **principles of language use** (such as Grice's 1975 **Cooperative Principle** and its associated maxims, which represent a series of statements summarising the assumptions that speakers and hearers make in order to communicate successfully). This dichotomy between knowledge of language and use of language, where only the former is modelled within the language component, is consistent with the emphasis within formal approaches on the mental representation of linguistic knowledge rather than situated language use. Hence, the dictionary view of meaning entails an account of pragmatics, which deploys the semantic value of words, by virtue of situated processes of inferencing, in order to compute what a speaker actually means, when they use the words that they do. Such an account, which 'patches up' the semantic values of words, with their situated meaning is provided by **relevance theory**, which builds on the work of Paul Grice, and which I briefly introduce, below, for the interested reader.

Before concluding this subsection, it is worth observing that word meaning is only 'half' of what the linguistic discipline of semantics is concerned with. While lexical semantics is concerned with describing the meanings of individual words as well as the relationships between them, **lexical relations** or **sense relations** such as **synonymy**, **antonymy** and **homonymy** (see Murphy 2003, 2010 for overviews), the other 'half ' of semantics involves sentence meaning or **compositional semantics**. This relates to the study of the ways in which individual lexical items combine in order to produce sentence meaning. While the two areas are related – words, after all, contribute to the meaning of sentences – the two 'halves' of traditional semantics are often seen as separate sub-disciplines, with many linguists specialising in one area or the other. From the perspective of cognitive linguistics, the distinction between lexical and compositional semantics is not seen as a useful division. A key reason for this is that cognitive linguists view the grammatical construction, rather than the word, as the primary unit of linguistic meaning – a view which is enshrined in the guiding principles of grammar, adopted by cognitive linguists, as we will see in Chapter 21, and Part IV of the book. The upshot is that rather than words being viewed, as they are by formal linguists, as being combined in componential fashion, giving rise to the truth value of a sentence, from the perspective of cognitive linguistics, word meaning is coerced by the grammatical construction in which words are embedded; the grammatical unit itself is assumed to provide schematic meaning, which influences the meaning of the individual words that comprise the sentence – this perspective was apparent in Chapter 10, for instance, where I introduced Talmy's theory of Cognitive Semantics, and is a view central to Access Semantics (Chapter 18). It will also become clearer in Part IV of the book, where we consider the cognitive linguistics approach to grammar. Table 15.1 summarises the key components of the dictionary view of meaning.

Table 15.1 The dictionary view of key distinctions in the study and representation of meaning

Dictionary (linguistic) knowledge	Encyclopaedic (non-linguistic) knowledge
Concerns sense (what words mean)	Concerns reference (what speakers do with words)
Relates to the discipline of semantics	Relates to the discipline of pragmatics
Is stored in the mental lexicon	Is governed by principles of language use

1.2 A case study in pragmatics: relevance theory

As intimated, from the perspective of the dictionary view, a truth-conditional theory of semantics additionally requires a theory of pragmatics in order to provide the principles of language use that can be applied such that the speaker's intended meaning emerges from the so-called **logical form** – the representation of linguistic meaning that emerges from the semantic component of the language faculty, as per the Generative Grammar Model of language that I presented in the previous chapter. In this subsection, I present a brief overview of just such a theory, for the interested reader. This is relevance theory.

Relevance theory was developed by psychologist Dan Sperber and linguist Deirdre Wilson, and develops key insights from the well-known theory of pragmatics proposed by Paul Grice (1975). I base my discussion, here, on the 1995 edition of their landmark book, *Relevance: Communication and Cognition*, which was originally published in 1986. A useful chapter overview of relevance theory is presented in Wilson and Sperber (2006), and a detailed application of the theory is presented in Carston (2002).

Relevance theory represents a modern approach to what might be termed 'formal pragmatics', which adopts an explicitly 'generative' view of language, and aims to provide a cognitivist account of communication that can be integrated with the Generative Grammar model of language that I presented in the previous chapter (see Figure 14.1).

Relevance theory is a theoretical approach to communication in general, which views verbal communication as one instance of what is termed **ostensive-inferential** communication, where ostensive has to do with signalling an intention, and inferential concerns the ability to infer what the intention is that is being signalled. According to Sperber and Wilson, the defining characteristic of communication is that it involves revealing or making manifest a particular communicative intention. Accordingly, the communicator's intention is revealed by some kind of ostensive behaviour. For example, in response to the question: *How are you getting home?* you might perform a manual gesture representing a car's steering wheel. This is a form of ostensive behaviour signalling a specific communicative intention, namely that the addressee should infer that you will be driving home. Equally, if you are at a party that you wish to leave, you can raise your arm and tap your watch to indicate to your partner that it's time to go. In both cases, the act would fail as an instance of communication if it were not ostensive. For example, if you were sitting in the bathroom by yourself, the act of tapping your watch would fail to achieve ostensive-inferential communication.

Of course, for speaker and hearer to communicate successfully, particularly where inference is concerned, they must rely upon shared information. For example, the person in my example, above, who indicates that s/he will be driving home relies upon the assumption that his or her addressee knows that cars have steering wheels and can recognise the gesture that represents this. Sperber and Wilson describe this shared knowledge upon which inferences depend as the **mutual cognitive environment**. Sperber and Wilson explain this idea as follows:

> The cognitive environment of an individual is a set of facts that are manifest to him . . . A fact is manifest to an individual at a given time iff [if and only if] he is capable at that time of representing it mentally and accepting its representation as true or probably true . . . an individual's total cognitive environment is the set of all the facts he can perceive or infer . . . a function of his physical environment and his cognitive abilities . . . The total shared environment of two people is the intersection of their two total cognitive environments, i.e. the set of all facts that are manifest to them both. (Sperber and Wilson 1995: 39–41)

As this makes explicit, inference depends upon the speaker's knowledge, and the knowledge s/he can assume on the part of the hearer.

The hallmark of relevance theory, hence its name, is the claim that human cognition is driven by **relevance** in the sense that information (whether sensorimotor or linguistic) is selectively processed on the basis of the search for contextual effects: information that will affect our existing knowledge in some useful way or will allow us to construct an inference.

For example, imagine driving down the road in your car with the radio on. In this context, you are bombarded with sensorimotor stimuli including visual stimuli as well as linguistic and non-linguistic sounds. Suppose that you have been worried about your car lately. In this context, you might 'tune out' the linguistic sounds coming from the radio and focus your attention on the sounds coming from under the bonnet. Depending on whether these sounds are out of the ordinary or not, this information will interact with what you already know about your car and allow you to draw some conclusions. In this context, the car's sounds are more relevant than the radio's sounds. Now imagine that you are late for work and concerned about the time. You transfer your attention to the linguistic sounds coming from the radio and listen for the newsreader to announce the time. In this context, the radio's sounds are more relevant than the car's sounds. As this simple example illustrates, the human mind constantly searches for relevant information.

In relevance theory, this idea is captured by the **Cognitive Principle of Relevance**. This states the following: 'Human cognition tends to be geared to the maximisation of relevance' (Sperber and Wilson 1995: 158). Sperber and Wilson argue that ostensive-inferential communication is driven by the presumption of relevance. In short, a hearer will assume that any act of (linguistic or non-linguistic) ostensive-inferential communication is relevant, and moreover will search for the optimally relevant interpretation. It is this assumption that allows us to deduce or infer the communicative intention signalled by an act of ostensive communication.

This idea is captured by the **Communicative Principle of Relevance** which states that: 'Every act of ostensive communication communicates a presumption of its own optimal relevance' (Sperber and Wilson 1995: 260).

Optimal relevance is defined by Sperber and Wilson (1995: 158), in the following way:

> i) The set of assumptions *I* which the communicator intends to make manifest to the addressee is relevant enough to make it worth the addressee's while to process the ostensive stimulus.
> ii) The ostensive stimulus is the most relevant one the communicator could have used to communicate *I*.

Consider example (1), drawn from Sperber and Wilson (1995: 189). Imagine that this utterance is made in a jeweller's shop in response to an enquiry from a customer about how long they might expect to wait for the watch to be repaired.

(1) It will take some time to repair your watch.

It is obvious that a watch repair must take 'some time' (as opposed to no time), so the customer assumes that the communicative intention behind the utterance cannot be to convey this uninformative and therefore irrelevant interpretation. Sperber and Wilson argue that our presumption of relevance in everyday communication guides us to a more appropriate interpretation of the utterance. If the customer knows that it usually takes about a week to get a watch repaired, then the most relevant reason for mentioning the time it will take is probably because the repair will take significantly longer than a week.

Sperber and Wilson follow the formal linguistics view in distinguishing between what they call **explicature** and **implicature**. The term explicature describes an assumption that is explicitly communicated. In relating to explicit or context-independent meaning, this term roughly corresponds to the so-called logical form of the sentence. The term implicature, which is adopted from Grice (1975), relates to implicit or inferential (context-dependent) meaning, and corresponds to the traditional view of pragmatic meaning. Sperber and Wilson also follow the standard formal view in assuming that semantic 'decoding' takes place prior to (or in parallel to) the calculation of pragmatic inferences.

However, they depart from the standard formal view in arguing that meaning construction relies to a considerable extent upon inference, even in the 'decoding' of explicatures. This idea is illustrated by example (2), drawn from Sperber and Wilson (1995: 186).

(2) The child left the straw in the glass.

This sentence is straightforwardly interpreted to mean that a child left a 'drinking tube' in a glass drinking vessel. This meaning is the explicature expressed by the sentence. However, as Sperber and Wilson observe, even this straightforward sentence requires some inferential work, because the expression *straw* is lexically ambiguous: it could mean the child left a 'cereal stalk' in the glass. To derive the more likely or accessible 'drinking tube' interpretation, the hearer has to access encyclopaedic information relating to children and the typical scenarios involving a 'straw' and a 'glass'. The availability of the most salient interpretation might also depend on contextual information, such as whether the child in question was in a kitchen or a farmyard. As this example illustrates, many explicatures will rely upon inference on the part of the hearer in order to retrieve the intended meaning. Indeed, all explicatures containing referential expressions like *that man* or *him* rely upon inference for **reference assignment**: matching a referring expression with the 'right' entity.

1.3 Problems with the dictionary view

From the perspective of cognitive linguistics, the strict separation of lexical (or semantic) knowledge from 'world' knowledge is problematic in a number of ways. To begin with, the dictionary view assumes that word meanings have a semantic 'core', the 'essential' aspect of a word's meaning. This semantic core is distinguished from other non-essential aspects of the word's meaning, such as the associations that a word brings with it (recall my discussion of *bachelor*). Indeed, this distinction is axiomatic for many semanticists, who distinguish between a word's **denotation** – the set of entities in the world that a word can refer to – and its **connotation** – the associations evoked by the word. For example, the denotation of *bachelor* is the set of all unmarried adult males, while the connotations evoked by *bachelor* relate to cultural stereotypes concerning sexual and domestic habits and so on.

Take a different example. Most speakers would agree that the words *bucket* and *pail* share the same denotation: the set of all cylindrical vessels with handles that can be used to carry water. These words share the same denotation because they are synonyms. Thus, either of these lexical items could refer to the entity depicted in Figure 15.1.

However, while *bucket* and *pail* have the same (or at least very similar) denotations, for speakers who have both these words in their dialects they have very different connotations. For these speakers, a pail can be metal or wooden but not usually plastic, and it is associated with vessels of a certain size, with a handle and is used for carrying liquids, especially milk and water; consequently, a child's small bucket, for instance, used for making sandcastles on the beach could not be described as a pail. It follows from this that *pail* also shows a different linguistic distribution from its synonym. For example, it does

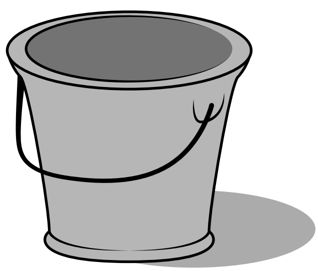

Figure 15.1 Bucket or pail?

not participate in the same collocational expressions as *bucket*: we can say *bucket and spade* but not *pail and spade*. Given these observations, cognitive linguists argue that the decision to exclude certain kinds of information from the 'core' meaning or denotation of a word, while including other kinds information, is arbitrary: on what basis is it decided that a particular piece of information is 'core' or 'non-core'?

The second way in which cognitive linguists argue that the dictionary view is problematic relates to **background knowledge**. The dictionary view assumes that words, although related to other words by lexical relations such as synonymy and so on, can nevertheless be defined in a context-independent way. In contrast, a number of scholars, such as Fillmore (1975, 1977, 1982, 1985a; and Fillmore and Atkins 1992) and Langacker (1987) have presented persuasive arguments for the view that words in human language are never represented independently of context. Instead, these linguists argue that words are always understood with respect to **frames** or **domains** of experience.

As we will see in detail in the next chapter, a frame or domain represents a schematisation of experience – a knowledge structure – which is represented at the conceptual level and held in long-term memory, and which relates elements and entities associated with a particular culturally embedded scene, situation or event from human experience. According to Fillmore and Langacker, words (and grammatical constructions) are relativised to frames and domains so that the semantic structure associated with a particular word (or grammatical construction) cannot be understood independently of the frame with which it is associated. For example, the word *aorta* relates to a particular unit of semantic structure. But this semantic unit cannot be understood without the frame of the MAMMALIAN CIRCULATORY SYSTEM.

The third problem with the dictionary view is the dichotomy between sense and reference. As we have seen, this view restricts linguistic meaning to a word's sense. From the perspective of the usage-based approach adopted in cognitive linguistics (recall Chapter 5), this dichotomy is problematic because a word's sense is a function of language use (or its **pragmatic meaning**). As such, the usage-based view holds that a word only comes to be meaningful as a consequence of use. This view stands in direct opposition to the dictionary view, which holds that a word's meaning or sense is primary and determines how it can be used.

Cognitive linguists also contend that the division of linguistic meaning into semantics (context-independent meaning) and pragmatics (context-dependent meaning) is problematic. This dichotomy arises for historical as well as theoretical reasons. The discipline of semantics originated with the ancient Greek philosophers and was only recognised as a sub-discipline of linguistics as recently as the nineteenth century. Until this point linguists had concerned themselves mainly with describing the observable structural properties of language (grammar and phonology). Indeed, as recently as the twentieth century the famous American linguist Leonard Bloomfield (1933: 140) described the study of semantics as 'the weak point in language study'.

The approach to linguistics pioneered by Chomsky, especially in the 1960s onwards, gave rise to a new interest in linguistic meaning as part of the competence of the native speaker. But due to the historical development of the discipline within the philosophical tradition, the resulting Formal Semantics approach – as I showed in the previous chapter – tended to emphasise only those aspects of meaning that could be 'neatly packaged' and modelled within the truth-conditional paradigm, hence the predominance of the dictionary view.

Meanwhile, in the 1950s and 1960s, the so-called **natural language philosophers** such as Austin and Grice, who argued that the truth-conditional model was artificially limiting the study of linguistic meaning, began to focus attention on the principles that governed the use of language in interactive contexts. For this reason, pragmatics emerged as a largely independent approach, and has often been seen as peripheral with respect to the concerns of formal linguistics, which relate to modelling knowledge of language rather than use of language, or competence rather than performance. An important exception to this generalisation is the model developed by relevance theory, which I briefly addressed above.

As argued by many linguists, imposing a principled distinction between semantics and pragmatics results in a rather artificial boundary between the two types of meaning. After all, context of use is often critical to the meaning associated with words, and some linguistic phenomena cannot be fully explained by either a semantic or a pragmatic account in isolation. For example, Saeed (2016) makes this point in relation to **deictic expressions**: words such as *bring* and *take*, and *today* and *tomorrow*. These expressions clearly have semantic content, yet their meaning cannot be fully determined in isolation from context.

Levinson (1983: 55) provides a famously revealing example. Imagine you are on a desert island and you find this message in a bottle washed up on the beach. The message reads *Meet me here a week from now with a stick about this big*. This example illustrates the dependence of deictic expressions on contextual information. Without knowing the person who wrote the message, where the note was written or the time at which it was written, you cannot fully interpret *me*, *here* or *a week from now*. Observe that we also rely upon visual signals to interpret expressions such as *this big*, where the speaker would hold his or her hands a certain distance apart to indicate the size of the object being described. Such expressions are not fully meaningful in the absence of this visual information. It is the deictic or context-dependent properties of expressions such as these that also explain why it is less than helpful for a shopkeeper to go out for lunch and leave a sign on the door reading *Back in 30 minutes!*

In view of these observations, cognitive linguists argue that the dichotomy between semantics and pragmatics represents an arbitrary distinction: linguistic knowledge cannot be separated in a principled way from 'world' knowledge, nor can 'semantic' knowledge be separated from 'pragmatic' knowledge. Rather, the kinds of knowledge subsumed under these headings constitute a continuum. The encyclopaedic view adopted within cognitive linguistics assumes that there are no principled distinctions of the kind discussed here, but that any apparent distinctions are simply a matter of degree.

2 The encyclopaedic view of linguistic meaning

For the reasons outlined in the previous section, cognitive linguists reject the dictionary view of word meaning in favour of the encyclopaedic view. Before proceeding with my investigation of the encyclopaedic view, it is important to emphasise the following. While the dictionary view represents a model of the knowledge of semantic structure, the encyclopaedic view represents a model of the system of conceptual knowledge (conceptual structure) that underlies linguistic meaning. While different cognitive linguistic theories have different views on whether there is semantic structure that is distinct and/or distinguishable from conceptual structure, all theories concur that there is a level of conceptual structure that is non-linguistic in nature, which subserves linguistically mediated meaning construction. Hence, it follows that the two accounts of encyclopaedic knowledge that I will present later in the chapter involve a far broader range of phenomena than the purely linguistic. This is in keeping with the two central commitments of cognitive linguistics: the Generalisation and Cognitive Commitments that I explored in Chapter 2.

There are a number of characteristics associated with the encyclopaedic view. I summarise these here, and explore them in more detail below:

i) There is no principled distinction between semantics and pragmatics.
ii) Encyclopaedic knowledge is structured.
iii) There is a distinction between encyclopaedic knowledge and contextual information.
iv) Linguistic units facilitate access to encyclopaedic knowledge.
v) Encyclopaedic knowledge is dynamic.

2.1 No principled distinction between semantics and pragmatics

First, cognitive linguists reject the idea that there is a principled distinction between 'core' meaning on the one hand, and pragmatic, social or cultural meaning on the other. From this it follows that there is no sharp distinction between semantic and pragmatic knowledge. Knowledge of what linguistic expressions, such as words, mean and knowledge about how words are used are both types of 'semantic' knowledge, according to this view. This is why cognitive linguists study such a broad range of (linguistic and non-linguistic) phenomena in comparison to traditional or formal semanticists. This is not to say that the existence of pragmatic knowledge is denied. Instead, cognitive linguists claim that semantic and pragmatic knowledge cannot be clearly distinguished. As with the lexicon–grammar continuum that I discussed in Chapter 10, semantic and pragmatic knowledge can be thought of in terms of a continuum. While there may be qualitative distinctions at the extremes, it is often difficult in practice to draw a sharp distinction.

As a consequence, cognitive linguists do not posit an autonomous mental lexicon which contains semantic knowledge that is held to be distinct from other kinds of (linguistic or non-linguistic) knowledge. It follows that there is no distinction between dictionary knowledge and encyclopaedic knowledge: there is only encyclopaedic knowledge, which subsumes what we might think of as dictionary knowledge.

The rationale for this follows, in part, from the usage-based perspective presented in Chapter 5. The usage-based thesis holds, among other things, that context of use guides meaning construction. As such, linguistic meaning is a consequence of language use; the stored mental representation of a lexical item's semantic structure is as a **schema**: a skeletal representation of semantic structure abstracted from recurrent experience of language use. If meaning construction cannot be divorced from language use, then meaning is fundamentally pragmatic in nature because language in use is situated, and thus contextualised, by definition.

2.2 Encyclopaedic knowledge is structured

The view that there is only encyclopaedic knowledge does not entail that the knowledge that linguistic expressions afford access to amounts to disorganised chaos. Cognitive linguists view encyclopaedic knowledge as a structured system of knowledge, organised as a network, and not all aspects of the knowledge that is, in principle, accessible by a single word has equal standing. For example, what we know about the word *banana* includes information concerning its shape, colour, smell, texture and taste; whether we like or hate bananas; perhaps information about how and where bananas are grown and harvested; details relating to funny cartoons involving banana skins and so on. However, certain aspects of this knowledge are more central than others to the meaning of *banana*.

According to Langacker (1987), **centrality** relates to how salient certain aspects of the encyclopaedic knowledge associated with a word are to the meaning of that word. Langacker divides the types of knowledge that make up the encyclopaedic network into four types: i) **conventional**, ii) **generic**, iii) **intrinsic** and iv) **characteristic**. While these types of knowledge are, in principle, distinct, they frequently overlap. Moreover, each of these kinds of knowledge can contribute to the relative **salience** of particular aspects of the meaning of a linguistic expression, such as a word.

The conventional knowledge associated with a particular word concerns the extent to which a particular facet of knowledge is shared within a linguistic community. Generic knowledge concerns the degree of generality (as opposed to specificity) associated with a particular word. Intrinsic knowledge is that aspect of a word's meaning that makes no reference to entities external to the referent. Finally, characteristic knowledge concerns aspects of the encyclopaedic information that are characteristic of or unique to the class of entities that the word designates. Each of these kinds of knowledge can be thought of as operating along a continuum: certain aspects of an expression's meaning are more or less conventional, or more or less generic and so on, rather than having a fixed positive or negative value for these properties.

2.2.1 Conventional knowledge

Conventional knowledge is information that is widely known and shared between members of a speech community, and is, thus, likely to be more central to the mental representation of a particular word or expression. The idea of conventional knowledge is not new in linguistics. Indeed, the early twentieth-century linguist, Ferdinand de Saussure (1916), also observed that conventionality is an important aspect of lexical meaning: given the **arbitrary** nature of the sound–meaning pairing – the fact that there is nothing intrinsically meaningful about individual speech sounds, and therefore nothing predictable about why a certain set of sounds and not others should convey a particular meaning – it is only because members of a speech community 'agree' that a certain word has a particular meaning that we can communicate successfully using language. Of course, in reality this 'agreement' is not a matter of choice but of learning, but it is this 'agreement' that represents conventionality in the linguistic sense.

For instance, conventional knowledge relating to the lexical item *banana* might include the knowledge that some people in our culture have bananas with their lunch or that a banana can serve as a snack between meals. An example of non-conventional knowledge concerning a banana might be that the one you ate this morning gave you indigestion.

2.2.2 Generic knowledge

Generic knowledge applies to many instances of a particular category and therefore has a good chance of being conventional. Generic knowledge might include our knowledge that yellow bananas taste better than green bananas. This knowledge applies to bananas in general and is therefore generic. Generic knowledge contrasts with specific knowledge, which concerns individual instances of a category. For example, the knowledge that the banana you peeled this morning was unripe is specific knowledge, because it is specific to this particular banana.

However, it is possible for large communities to share specific (non-generic) knowledge that has become conventional. For instance, generic knowledge relating to US presidents is that they serve a term of four years before either retiring or seeking re-election. This is generic knowledge, because it applies to US presidents in general. However, a few presidents have served shorter terms. For instance, John F. Kennedy served less than three years in office. This is specific knowledge, because it relates to one president in particular, yet it is widely known and therefore conventional.

In the same way that specific knowledge can be conventional, generic knowledge can also be non-conventional, even though these may not be the patterns we expect. For example, while scientists have uncovered the structure of the atom and know that all atoms share a certain structure (generic knowledge), the details of atomic structure are not widely known by the general population.

2.2.3 Intrinsic knowledge

Intrinsic knowledge relates to the internal properties of an entity that are not due to external influence. Shape is a good example of intrinsic knowledge relating to objects. For example, we know that bananas tend to have a characteristic curved shape. Because intrinsic knowledge is likely to be generic, it has a good chance of being conventional. However, not all intrinsic properties (for example, that bananas contain potassium) are readily identifiable and may not therefore be conventional. Intrinsic knowledge contrasts with extrinsic knowledge. Extrinsic knowledge relates to knowledge that is external to the entity: for example, the knowledge that still-life artists often paint bananas in bowls with other pieces of fruit relates to aspects of human culture and artistic convention rather than being intrinsic to bananas.

2.2.4 Characteristic knowledge

This relates to the degree to which knowledge is unique to a particular class of entities. For example, shape and colour may be more or less characteristic of an entity: the colour yellow is more characteristic of bananas than the colour red is characteristic of tomatoes, because fewer types of fruit are yellow than red (at least, in the average Western supermarket). The fact that we can eat bananas is not characteristic, because we eat lots of other kinds of fruit.

2.2.5 Four continua

The four types of knowledge just discussed relate to four continua, which are shown in Figure 15.2. Knowledge can fall at any point on these continua, so that something can be known by only one person (wholly non-conventional), known by the entire discourse community (wholly conventional) or somewhere in between (for example, known by two people, a few people or many but not all people).

Of course, conventionality versus non-conventionality stands out in this classification of knowledge types because it relates to how widely something is known, whereas the other knowledge types relate to the nature of the encyclopaedic knowledge associated with the expressions themselves. Thus, it might seem that conventional knowledge is the most ‘important’ or ‘relevant’ kind when in fact it is only one ‘dimension’ of encyclopaedic knowledge.

Conventional $\longleftrightarrow$ Non-conventional

Generic $\longleftrightarrow$ Specific

Intrinsic $\longleftrightarrow$ Extrinsic

Characteristic $\longleftrightarrow$ Non-characteristic

Figure 15.2 Four continua

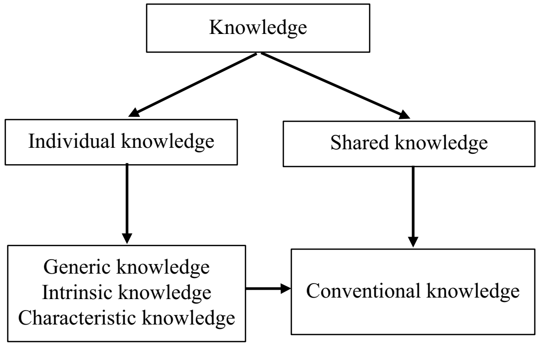

Figure 15.3 Identifying knowledge types which give rise to centrality

Figure 15.3 represents the interaction between the knowledge types discussed here. As this diagram illustrates, while generic, intrinsic and characteristic knowledge can be conventional (represented by the arrow going from the box containing these types of knowledge to the box containing conventional knowledge) they need not be. Conventional knowledge, is, by definition, knowledge that is shared.

2.2.6 Centrality

Finally, I now turn to the question of how these distinct knowledge types influence centrality. The centrality of a particular aspect of knowledge for a linguistic expression will always be dependent on the precise context in which the expression is embedded and on how well established the knowledge element is in memory. Moreover, the closer knowledge is to the left-hand side of the continua in Figure 15.2, the more salient that knowledge is and the more central that knowledge is to the meaning of a lexical expression.

For example, for Joe Bloggs, the knowledge that bananas have a distinctive curved shape is conventional, generic, intrinsic and characteristic, and is therefore highly salient and therefore central to his knowledge about bananas and to the meaning of the lexical concept *banana*. The knowledge that Joe Bloggs has that he once peeled a banana and found a maggot inside is non-conventional, specific, extrinsic and non-characteristic, and hence is much less salient and less central to his knowledge about bananas. Table 15.2 summarises the four categories of encyclopaedic knowledge.

Table 15.2 Four kinds of knowledge which relates to the centrality of encyclopaedic knowledge

Conventional knowledge	Knowledge that is widely known
Generic knowledge	Knowledge that is general rather than specific in nature
Intrinsic knowledge	Knowledge deriving from the form of the entity or relation in question
Characteristic knowledge	Knowledge that is (relatively) unique to the entity or relation in question

2.3 There is a distinction between encyclopaedic knowledge and contextual information

The third issue concerning the encyclopaedic view relates to the distinction between encyclopaedic knowledge and contextual (or situated) information. Encyclopaedic knowledge arises from the interaction of the four kinds of knowledge discussed above. However, meaning construction arises in a given context of use, so that the 'selection' of encyclopaedic knowledge is informed by contextual factors.

For example, recall my discussion of *safe* in the previous chapter. We saw that this word can have different interpretations depending on the particular context of use: *safe* can mean 'unlikely to cause harm' when used in the context of a child playing with a spade, or *safe* can mean 'unlikely to come to harm' when used in the context of a beach that has been saved from development as a tourist resort.

Similarly, the phenomenon of **frame-dependent meaning** reveals that the discourse context actually guides the nature of the encyclopaedic information that a lexical expression prompts for. For instance, the kind of information evoked by use of the word *foot* will depend upon whether we are talking about rabbits, humans, beds, stairs, ladders, altars, cliffs or mountains – which serves to frame what sort of 'foot' is intended. This phenomenon, also dubbed **contextual modulation** (Cruse 1986), arises when a particular aspect of the encyclopaedic knowledge associated with a lexical item is privileged due to the discourse context.

Compared with the dictionary view of meaning, which separates core meaning (semantics) from non-core meaning (pragmatics), the encyclopaedic view makes very different claims. Not only does semantic structure relate to encyclopaedic knowledge, but what a given expression means is fundamentally 'guided' by context. Furthermore, the meaning of a word is 'constructed' on-line as a result of contextual information. From this perspective, fully specified pre-assembled word meanings do not exist, but are selected and formed from encyclopaedic knowledge, termed the meaning potential (Allwood 2003), as noted in the previous chapter, or **purport** (Cruse 2000) of a lexical item. As a result of adopting the usage-based approach, then, cognitive linguists do not uphold a meaningful distinction between semantics and pragmatics, because word meaning is always a function of context (pragmatic meaning).

From this perspective, there are a number of different kinds of context that collectively serve to modulate any given instance of a lexical item as it occurs in a particular usage event. These types of context include (but are not necessarily limited to): i) the encyclopaedic information accessed: the lexical expression's context within a network of stored knowledge; ii) **sentential context**: the resulting sentence or utterance meaning; iii) **prosodic context**: the intonation pattern that accompanies the utterance, such as rising pitch to indicate a question; iv) situational context: the physical location in which the sentence is uttered; and v) **interpersonal context**: the relationship holding at the time of utterance between the interlocutors. Each of these different kinds of context can contribute to the contextual modulation of a particular lexical item.

2.4 Lexical expressions facilitate access to encyclopaedic knowledge

The encyclopaedic view treats linguistic expressions as providing (points of) access to encyclopaedic knowledge. According to this view, words and other linguistic forms are not containers that present neat pre-packaged bundles of information. Instead, they provide access to a vast network of encyclopaedic knowledge.

2.5 Encyclopaedic knowledge is dynamic

Finally, it is important to note that while the central meaning associated with a word is relatively stable, the encyclopaedic knowledge that each linguistic form provides access to, its encyclopaedic network, is dynamic. Consider the lexical item *dog*. Our knowledge of dogs continues to be modified as a result of our ongoing interaction with dogs, our acquisition of knowledge regarding dogs and so on. For example, imagine that your dog returns to the house from the garden, looking extremely unwell, suffering from muscle spasms and vomits a bright blue substance. After several days in and out of the animal hospital (and an extremely large veterinarian bill) you will have acquired the knowledge that metaldehyde (the chemical used in slug pellets) is potentially fatal to dogs. This information now forms part of your encyclopaedic knowledge prompted by the word *dog*, alongside the central knowledge that dogs are four-legged creatures with a wagging tail.

SUMMARY

In this chapter, I have examined one of the two guiding principles of a cognitive linguistics approach to semantic structure: that linguistic meaning is **encyclopaedic** in nature. This view holds that linguistically mediated meaning cannot be understood independently of the vast system of encyclopaedic knowledge to which it is linked. In addition, cognitive linguists argue that semantic knowledge is grounded in human interaction with others (social experience) and with the world around us (physical experience). The encyclopaedic view makes five assumptions: i) there is no principled distinction between semantics and pragmatics; ii) encyclopaedic knowledge is structured; iii) there is a distinction between encyclopaedic knowledge and contextual information; iv) linguistic units facilitate access to encyclopaedic knowledge; and v) encyclopaedic knowledge is dynamic. This view can be contrasted with the more traditional **dictionary view** of linguistic semantics, which is rejected by cognitive linguists. In order to elaborate the notion of encyclopaedic semantics, in the next chapter we explore two theories of semantic structure that have been particularly influential in developing this approach to meaning: i) the theory of **Frame Semantics** developed by Charles Fillmore and ii) the theory of **domains** developed by Ronald Langacker as part of his **Cognitive Grammar** approach to language.

FURTHER READING

- **Haiman (1980)**. Haiman (a typologist) considers and rejects arguments for assuming a dictionary view of word meaning. Haiman argues in favour of an encyclopaedic account.
- **Langacker (1987)**. The first volume in Langacker's seminal two-volume overview of Cognitive Grammar provides a detailed case for an encyclopaedic approach to linguistic meaning. See Chapter 4 in particular.
- **Taylor (2012)**. A contemporary cognitive linguistic treatment of the encyclopaedic nature of words, idioms and grammatical constructions. Taylor makes a compelling case for treating units of language as constituting a mental corpus: a repository of memories, arising from previous encounters with similar expressions.
- **Tyler and Evans (2003)**. Tyler and Evans also make the case for an encyclopaedic account of word meaning, applying this approach to a single and highly complex lexical class: the English prepositions.

DISCUSSION QUESTIONS

1. What are the key tenets of the encyclopaedic approach to semantic structure?
2. What does it mean to say that semantics and pragmatics form a continuum? Are you persuaded by this claim, and why or why not?
3. Consider the different types of context that have been considered in this chapter. Construct or find linguistic examples, and consider how these different types of context might influence the interpretation of your examples.

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The encyclopaedic approach to semantic structure II: two theories

In this chapter, I explore two influential cognitive linguistic theories that propose, in related, albeit slightly different ways, encyclopaedic approaches to semantic structure. These are the theory of Frame Semantics, developed by Charles Fillmore, and Cognitive Grammar, developed by Ronald Langacker. These two theories were originally developed for different purposes: Fillmore's theory derived from his research on **Case Grammar** in the 1960s, and continued to be developed in association with his (and others') work on **Construction Grammar** (see Part IV of this book). Langacker's theory of Cognitive Grammar, which I introduced in Chapter 5, is one of the dominant cognitive linguistic theories of grammar (also see Part IV). An important element of Langacker's model of human language is his theory of conceptual **domains**, which provides a key component of Cognitive Grammar, and the semantic basis for his overall account of human language. Hence, it is this element of Langacker's Cognitive Grammar framework which I focus on, in this chapter, in order to exemplify an encyclopaedic approach to semantic structure that is complementary to Fillmore's Frame Semantics.

One of my main arguments in this chapter is that, despite the different starting points for the two accounts of semantic structure, both perspectives address related phenomena. For this reason, I argue that together they form the basis for a comprehensive cognitive linguistics account of encyclopaedic semantics. We shall see that Langacker argues that **basic domains** – knowledge structures derived from pre-conceptual interoceptive and exteroceptive experiences – form the basis of more complex abstract domains which correspond to the semantic frames proposed by Fillmore. Together, these two types of knowledge structure make up encyclopaedic knowledge.

1 Frame Semantics

Having provided an overview of what an encyclopaedic view of meaning entails, in the previous chapter, I now present the theory of Frame Semantics, one theory that has influenced the encyclopaedic model adopted within cognitive linguistics. This approach, developed by Charles Fillmore (1975, 1977, 1982, 1985a; Fillmore and Atkins 1992), attempts to uncover the properties of the structured inventory of knowledge associated with words, and to consider what consequences the properties of this knowledge system might have for a model of semantic structure.

1.1 What is a semantic frame?

Fillmore proposes that a **frame** is a schematisation of experience – a knowledge structure – which is represented at the conceptual level and held in long-term memory. The frame relates the elements and entities associated with a particular culturally embedded scene from human experience. According to Fillmore, words and grammatical constructions are **relativised** to frames: the 'meaning' associated with a particular word (or grammatical construction) cannot be understood independently of the frame with which it is associated. In his 1985a article, Fillmore adopts the terms **figure** and **ground** from Gestalt psychology in order to distinguish between a particular unit of semantic structure – the specific meaning designated by a lexical item – and the background frame against which it is understood. The specific meaning designated by a lexical item is represented by the figure, and is a salient subpart of a larger frame, which represents the ground relative to which the figure is understood. Frames thus represent a complex knowledge structure that allows us to understand, for example, a group of related words, and that also plays a role in licensing their grammatical behaviour in sentences.

1.2 Frames in cognitive psychology

Before developing Fillmore's theory of semantic frames in more detail, I begin by exploring the development of this idea in cognitive psychology. This will enable us to obtain a richer picture of the kind of conceptual entity that Fillmore assumes as the basis of his theory. In psychology, the basic unit of knowledge is the **concept** – a notion discussed in detail in Chapter 8. Theories of **knowledge representation** attempt to model the kinds of concepts that people appear to have access to, including the relationships holding between concepts and the kinds of operations that people use concepts for, such as categorisation judgements (explored in detail in Chapter 11) and meaning construction (explored in Chapters 18 to 20).

A common system for modelling knowledge representation is the **feature list approach**. This entails listing the range of distinct **features** or **attributes** associated with a particular concept. From this perspective, we might hypothesise that the concept of CAR, for instance, has a range of features or attributes associated with it that relate to its parts (wheel, tyre, windscreen, bonnet, boot, steering wheel, engine and so on), as well as the fact that cars require petrol or diesel in order to function, are driven by humans who must first obtain a driving licence and so on. However, one of the problems associated with modelling knowledge solely in terms of feature lists is that people's knowledge regarding conceptual entities is **relational**. For example, we know that cars have engines which provide the mechanism for moving the vehicle. We also know that this motion is effected by the engine causing the axles to turn which then causes the wheels to turn. Moreover, we know that unless a driver is operating the vehicle, which involves turning on the ignition, the engine will not start in the first place. Thus, a serious problem with viewing a concept as a straightforward list of features is that there is no obvious way of modelling how the relationships between the components of the list might be represented. A theory of frames represents an attempt to overcome this shortcoming.

Since Bartlett's (1932) theory of **schemata**, there has been a tradition in cognitive psychology of modelling knowledge representation in terms of frames. I will base my discussion of frames on a recent version of this theory proposed by Lawrence Barsalou (1992a, 1992b), who defines frames as complex conceptual structures that are used to: 'represent all types of categories, including categories for animates, objects, locations, physical events, mental events and so forth' (Barsalou 1992a: 29). According to this view, frames are the basic mode of knowledge representation. They are continually updated and modified due to ongoing human experience, and are used in reasoning in order to generate new inferences.

I describe, below, two basic components of frames: **attribute-value sets** and **structural invariants**. In order to illustrate these notions, I present a vastly simplified frame for CAR. This is illustrated in Figure 16.1.

1.2.1 Attributes and values

I begin by examining the ideas of **attribute** and **value**. Barsalou (1992a: 30) defines an attribute as: 'a concept that describes an aspect of at least some cate-

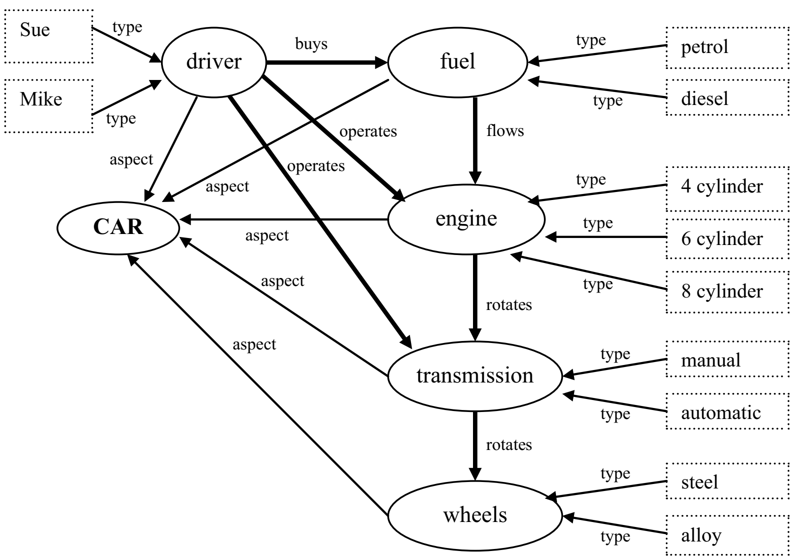

Figure 16.1 A partial frame for CAR (adapted from Barsalou 1992a: 30)

gory members'. For instance, ENGINE represents one aspect of the members of the category CAR, as do DRIVER, FUEL, TRANSMISSION and WHEELS. An attribute is therefore a concept that represents one aspect of a larger whole. Attributes are represented in Figure 16.1 as ovals. Values are subordinate concepts which represent subtypes of an attribute. For instance, SUE and MIKE are types of DRIVER; PETROL and DIESEL are types of FUEL; MANUAL and AUTOMATIC are types of TRANSMISSION and so on. Values are represented as dotted rectangles in Figure 16.1. Crucially, while values are more specific than attributes, a value can also be an attribute because it can also have subtypes. For instance, PETROL is an attribute to the more specific concepts UNLEADED PETROL and LEADED PETROL which are values of PETROL. Attributes and values are therefore superordinate and subordinate concepts within a taxonomy: subordinate concepts, or values, which are more specific inherit properties from the superordinate concepts, or attributes, which are more general.

1.2.2 Structural invariants

As Barsalou observes, 'Attributes in a frame are not independent slots but are often related correlationally and conceptually . . . a frame's core attributes correlate highly, often appearing together across contexts' (Barsalou 1992a: 35). In other words, attributes within a frame are related to one another in consistent ways across exemplars: individual members of a particular category. For example, in most exemplars of the category CAR it is the driver who controls the speed of the ENGINE. This relation holds across most instances of cars, irrespective of the values involved, and is therefore represented in the frame as a **structural invariant**: a more or less invariant relation between attributes DRIVER and ENGINE. In Figure 16.1, structural invariants are indicated by bold arrows.

1.2.3 Simulations

As I observed in Chapter 14, cognitive linguists assume that linguistically mediated meaning construction is achieved via a general-purpose computation, performed by the brain, known as simulation. Using conceptual frames, of the kind I have just introduced, particular attributes and structural invariants are activated, under the guidance of linguistically encoded semantic structure, in order to simulate a conceptual entity, such as an action involving a particular object, based on a particular frame. For example, we can mentally simulate the stages involved in filling a car up with petrol, including mentally rehearsing the actions involved in taking the petrol cap off, removing the petrol nozzle from the pump, placing it in the petrol tank, pressing the lever so that the petrol flows into the tank and so on.

1.3 The COMMERCIAL EVENT frame

I now return to Fillmore's theory of semantic frames. The semantic frame is a knowledge structure required in order to understand the semantic representation

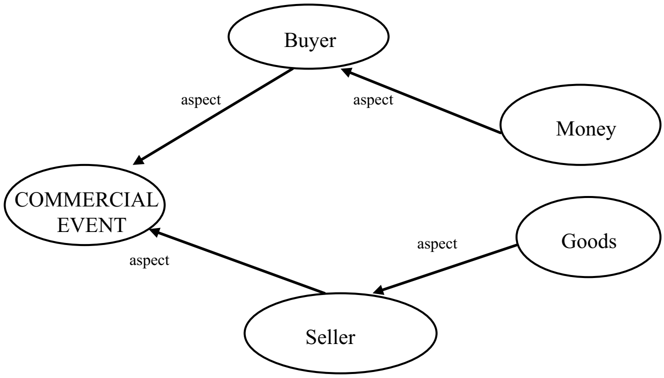

Figure 16.2 Partial COMMERCIAL EVENT frame

of a particular word, related set of words or grammatical construction. Consider the related group of words *buy*, *sell*, *pay*, *spend*, *cost*, *charge*, *tender*, *change* and so on. Fillmore argues that in order to understand these words, we need access to a COMMERCIAL EVENT frame which provides: 'the background and motivation for the categories which these words represent' (Fillmore 1982: 116–17). The COMMERCIAL EVENT frame includes a number of attributes called **participant roles** which must, at the very least, include BUYER, SELLER, GOODS and MONEY. This skeletal frame is represented in Figure 16.2.

According to Fillmore, **valence** is one of the consequences of a frame like this. Valence concerns the ways in which lexical items such as verbs can be combined with other words to make grammatical sentences. More precisely, the valence (or **argument structure**) of a verb concerns the number of participants or **arguments** required, as well as the nature of the arguments, that is, the participant roles assumed by those participants. For example, *buy* is typically **divalent** which means that it requires two participants, the BUYER and the GOODS. *Pay*, on the other hand, is typically **trivalent**, which means that it requires three participants: the BUYER, the SELLER and the GOODS. Observe that valence is not a stable feature of verbs, however. *Pay* could also occur in a sentence with two participants (*I paid 500 euros*) or with four participants (*I paid John five euros for that pile of junk*). While *buy* and *pay* relate to the actions of the BUYER, *buy* relates to the interaction between the BUYER and the GOODS, while *pay* relates to the interaction between the BUYER and the SELLER. This knowledge, which is a consequence of the COMMERCIAL EVENT frame, has consequences for grammatical organisation. Consider the following sentences:

(1) a. John bought the car (from the salesperson).
    b. *John bought the salesperson

(2) a. John paid the salesperson (for the car).
    b. *John paid the car

The sentences in (1) and (2) demonstrate that *bought* and *paid* take the same number of arguments. These are realised as subject and object, and optionally as **oblique object**: an object such as *from the salesperson* which is introduced by a preposition. The verb *bought* **profiles** a relation between the participant roles BUYER and GOODS, not a relation between BUYER and SELLER. This explains why the sentence in (1b) is ungrammatical. Of course, if we invoke a SLAVE TRADE frame then (1b) might be acceptable on the interpretation that *the salesperson* represents the GOODS role. Example (2) shows that the verb *pay* relates the BUYER role with the SELLER role rather than the GOODS role. In addition, *pay* can also prompt for a relation between BUYER and AMOUNT PAID, or between BUYER, SELLER and AMOUNT PAID, as illustrated by examples (3) and (4), respectively.

(3) John paid €2,000 (for the car).

(4) John paid the salesperson €1,000 (for the car).

These examples demonstrate that *pay* relates to that aspect of the COMMERCIAL EVENT frame involving the transfer of money from BUYER to SELLER in order to receive the GOODS. The frame thus provides a structured set of relationships that define how lexical items like *pay* and *buy* are understood and how they can be used. As we have seen, this has consequences for the grammatical behaviour of these lexical items. Indeed, frames of this kind have played a central role in the development of Construction Grammar (e.g. Goldberg 1995), to which I return in Part IV.

One way of interpreting the structured set of linguistic relationships licensed by the frame is to analyse the frame as a knowledge representation system that provides a potentially wide range of event sequences. According to this view, the frame provides **event-sequence potential**. Given that verbs such as *buy* and *sell* encode particular kinds of dynamic processes, we can analyse these verbs as designating particular configurations of events. As such, the verb selected by the speaker (for example, *buy* versus *sell* versus *pay*) designates a particular 'route' through the frame: a way of relating the various participant roles in order to highlight certain aspects of the frame. While some 'routes' include obligatory relationships (invariant structure), others are optional. For instance, *pay* designates a relation between the BUYER and the SELLER, which has the potential to make optional reference to GOODS and MONEY. However, not all these participant roles need to be mentioned in any given sentence, and when they are not mentioned, they are 'understood' as part of the background. For example, in the sentence *I paid five euros*, we understand that this event must also have involved a SELLER and some GOODS, even though these are not explicitly mentioned in the sentence. This knowledge derives from our knowledge of the event frame.

Table 16.1 summarises the 'routes' connecting the participants encoded by verbs that are understood with respect to the COMMERCIAL EVENT frame. Brackets indicate that an element is optional and can therefore be omitted (that is, not explicitly mentioned in the sentence). The symbol Ø indicates that an element cannot be included in the sentence, for example **I spent John 500 euros for that pile of junk*. 'I-object' indicates that an element is the indirect object: the

Table 16.1 The valence of the verbs relating to the COMMERCIAL EVENT frame (adapted from Fillmore and Atkins 1992: 79)

	BUYER	SELLER	GOODS	MONEY
buy	subject	(oblique)	object	(oblique)
	e.g. *John bought the car (from the salesperson) (for €10,000)*			
sell	(oblique)	subject	object	(oblique)
	e.g. *Susan sold the car (to John) (for €10,000)*			
charge	(I-object)	subject	(oblique)	object
	e.g. *Susan charged (John) €10,000 (for the car)*			
spend	subject	Ø	(oblique)	object
	e.g. *John spent €10,000 (on the car)*			
pay1	subject	(I-object)	(oblique)	object
	e.g. *John paid (Susan) €10,000 (for the car)*			
pay2	subject	(oblique)	(oblique)	object
	e.g. *John paid €10,000 (to Susan) (for the car)*			
cost	(I-object)	Ø	subject	object
	e.g. *The car cost (John) €10,000*			

first element in a double object construction like *I paid John 500 euros for that pile of junk*. 'Oblique' indicates that an element is introduced by a preposition: *for that pile of junk*.

1.4 Speech event frames

While semantic frames such as the COMMERCIAL EVENT frame describe a knowledge inventory independent of the speech event, a second kind of frame provides a means of framing the discourse or communication context. This type of frame is called the **speech event frame**. These frames schematise knowledge about types of interactional context which contribute to the interpretation and licensing of particular lexical items and grammatical constructions. For example, we have speech event frames for fairytales, academic lectures, spoken conversations, obituaries, newspaper reports, horoscopes and business letters, among others. Frames of this type contain schematic knowledge about styles or registers of language use. Moreover, and as is evident, while these frames are described as 'speech event frames', they encompass not only events relating to spoken language, but also events relating to written language. Each of these provides a means of framing a particular type of linguistic interaction, with respect to which choices about language and style (including choices about vocabulary and grammatical constructions) can be made and understood. Indeed, many lexical items explicitly index a specific speech event frame. A case in point is the English expression *once upon a time*, which indexes the generic FAIRYTALE speech event frame, bringing with it certain expectations. Speech event frames, then, are organised knowledge structures that are culturally embedded.

1.5 Consequences of adopting a frame-based model

In this section, I briefly explore some of the consequences that arise from adopting a frame-based model of encyclopaedic knowledge.

1.5.1 Words and categories are dependent on frames

A theory based on semantic frames asserts that the semantic structure encoded by linguistic expressions can only be understood with respect to frames. Fillmore (1982) provides an example of this, which relates to language change. According to semantic frame theory, words disappear from language once the frame with respect to which they are understood is superseded by a different frame. As Fillmore observes, the word *phlogiston*, a substance without colour, odour or weight, believed to be given off in burning by all flammable materials, has now disappeared from the English language. This is because the frame against which the corresponding lexical item was understood, a theory of combustion developed in the late seventeenth century, had, by the end of the eighteenth century, been shown to be empirically inaccurate. As the frame disappeared, so did the word.

1.5.2 Frames provide a particular perspective

The words *coast* and *shore*, while both relating to the strip of land adjacent to the sea, do so with respect to different frames: LAND DWELLING versus SEAFARING. While *coast* describes the land adjacent to the sea from the perspective of a person on land, *shore* describes the same strip of land from the perspective of a person out at sea. It follows that a trip from 'coast to coast' is an overland trip, while a trip from 'shore to shore' entails a journey across the sea or some other body of water. In this way, lexical choice brings with it a particular background frame that provides its own perspective. Fillmore calls this perspective a particular **envisionment of the world**.

1.5.3 Scene-structuring frames

From the Frame Semantics perspective, both closed-class and open-class elements of language are understood with respect to semantic frames. As Fillmore observes, 'any grammatical category or pattern imposes its own "frame" on the material it structures' (Fillmore 1982: 123). For instance, the distinction between active and passive constructions is that they provide access to distinct scene-structuring frames. While the active takes the perspective of the AGENT in a sentence, the passive takes the perspective of the PATIENT. This is an idea that is consonant with Talmy's theory of Cognitive Semantics (Chapter 10). We saw that Talmy views the open-class semantic system as providing the 'content' upon which the closed-class or grammatical system performs a 'configuring' function. In Part IV of the book, we will see that this aspect of Fillmore's proposals have been influential for the development of Construction Grammar.

1.5.4 Alternate framing of a single situation

The same situation can be viewed, and therefore linguistically encoded, in multiple ways. For example, someone who is not easily parted from his or her money could be described either as *stingy* or as *thrifty*. Each of these words is understood with respect to a different background frame which provides a distinct set of evaluations. While *stingy* represents a negative assessment against an evaluative frame of GIVING AND SHARING, *thrifty* relates to a frame of HUSBANDRY (management of resources), against which it represents a positive assessment. In this way, lexical choice provides a different way of framing a situation, giving rise to a different **construal** – an idea that I explore in more detail below. In short, language is rarely 'neutral', but usually represents a particular perspective, even when we are not consciously aware of this as language users.

2 Cognitive Grammar and the theory of domains

Langacker's approach to knowledge, his theory of domains, is a central component of his larger approach to language, known as Cognitive Grammar (first introduced in Chapter 5). Langacker's account of domains, like Fillmore's theory of Frame Semantics, is based on the assumption that semantic structure relates to encyclopaedic knowledge, and that linguistically encoded meaning cannot be understood independently of larger knowledge structures. Langacker calls these knowledge structures domains. Langacker's theory of domains complements Fillmore's theory of Frame Semantics in a number of ways.

2.1 What is a domain?

According to Langacker: 'Domains are necessarily cognitive entities: mental experiences, representational spaces, concepts, or conceptual complexes' (Langacker 1987: 147). As such, domains are conceptual entities of varying levels of complexity and organisation. The only prerequisite that a knowledge structure has for counting as a domain is that it provides background information against which linguistic expressions can be understood and used in language. For instance, expressions like *hot*, *cold* and *lukewarm* designate linguistically encoded concepts in the domain of TEMPERATURE: without understanding the temperature system, we would not be able to use these terms. In this respect, the theory of domains is very much like Fillmore's theory of frames.

However, the theory of domains adds to the theory of Frame Semantics in four important respects. First, while Fillmore acknowledges that concepts can be structured in terms of multiple frames (or domains), Langacker argues that this is actually the typical arrangement. The range of domains that structure a single linguistically encoded unit of semantic structure is called the **domain matrix** of that concept. Clausner and Croft illustrate this idea in the following way:

> Our commonsense knowledge about birds for example includes their shape, the fact that they are made of physical material, their activities such as flying and eating, the avian lifecycle from egg to death, etc. These aspects of the concept *bird* are specified in a variety of different domains such as SPACE, PHYSICAL OBJECTS, LIFE, TIME, and so on. (Clausner and Croft 1999: 7)

Second, Langacker addresses an additional level of conceptual organisation that, although implicit in Fillmore's work, was not explicitly worked out within the theory of Frame Semantics. This relates to the distinction between **basic domains** and **abstract domains**. This distinction rests upon the notion of experiential grounding or embodiment which I addressed in the previous part of the book, especially Chapter 8. While some basic domains, such as SPACE and TIME derive directly from the nature of our embodied experience, other domains such as MARRIAGE, LOVE or MEDIAEVAL MUSICOLOGY are more abstract, in the sense that, although they are ultimately derived from embodied experience, they are more complex in nature. For instance, our knowledge of LOVE may involve knowledge relating to basic domains, such as directly embodied experiences like touch, sexual relations and physical proximity, and may also involve knowledge relating to abstract domains, such as experience of complex social activities like marriage ceremonies, hosting dinner parties and so on. While Fillmore's theory primarily addresses abstract domains, Langacker's theory addresses both basic and abstract domains.

Third, as we will see in the next section, domains are organised in a hierarchical fashion in Langacker's Cognitive Grammar. This means that a particular linguistically encoded concept can simultaneously presuppose a domain lower down the hierarchy and represent a subdomain for a lexical concept further up the hierarchy (see Figure 16.3). For example, while the concept ELBOW is understood with respect to the domain ARM, the concept ARM is understood with respect to the domain BODY. In this way, the relationship between domains reflects **meronymic** (part–whole) relations.

Finally, Fillmore's emphasis in developing a theory of Frame Semantics is somewhat different from Langacker's emphasis in developing a theory of domains. While Fillmore, particularly in more recent work (e.g. Fillmore and Atkins 1992), views frames as a means of accounting for grammatical behaviour such as valence relations (recall examples (1)–(2)), Langacker's theory of domains is more concerned with conceptual ontology: the structure and organisation of knowledge, and the way in which concepts are related to and understood in terms of others, as a basis for modelling the nature of linguistically encoded semantic structure.

2.2 Basic versus abstract domains

If linguistically encoded concepts presuppose the domains against which they are understood, it follows that there is a **hierarchy of complexity** leading ultimately to domains that do not presuppose anything else. Hence, conceptual

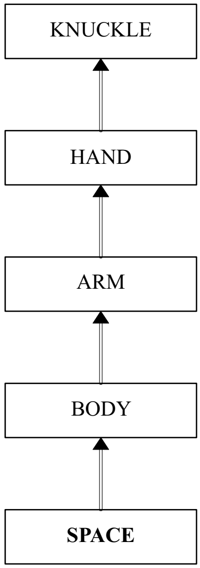

Figure 16.3 Location of the linguistically encoded concept KNUCKLE in a hierarchy of domain complexity

structure must ultimately be based on knowledge that is not dependent upon other aspects of conceptual organisation, otherwise the system would suffer from the problem of circularity. Domains that are not understood in terms of other domains are the basic domains I introduced above.

However, given that cognitive linguists reject the idea that concepts are innately given (as we saw in Chapter 7), it is important to establish the origins of these basic domains. Of course, Langacker argues that basic domains derive from pre-conceptual experience, such as sensorimotor and interoceptive experience, which forms the basis of more complex knowledge domains.

In order to illustrate the theory of domains and look at how they are related, let's consider a specific example of a hierarchy of complexity. Consider the word *knuckle*. This relates to a unit of semantic structure that is understood with respect to the conceptual domain HAND. In turn, HAND is understood with respect to the domain ARM. It follows that ARM is understood with respect to the domain BODY, which is understood more generally in terms of (three-dimensional) SPACE. However, it is difficult to envisage another domain in terms of which we understand SPACE. After all, SPACE is a domain that derives directly from sensorimotor experience of the world, such as visual perception and our experience of motion and touch. Therefore, SPACE appears not to be understood in terms of a further conceptual domain but in terms of fundamental pre-conceptual experience. This hierarchy of complexity is illustrated in Figure 16.3.

Because SPACE is presupposed by all the concepts above it, it is situated at the lowest point in the hierarchy. A domain of this sort is, in Langacker's terms, a basic domain. Because knuckle requires knowledge of a greater number of domains, it is placed at the highest point in this hierarchy. Accordingly, those domains that presuppose the basic domain of space are deemed to be abstract domains, in Langacker's terms. As such, basic domains derive from directly embodied experiences that are pre-conceptual in nature. This means that such experiences derive either from subjective or interoceptive embodied experiences such as emotion, consciousness or awareness of the passage of time, or from sensorimotor (exteroceptive) experiences which relate to information derived from the external world. Subjective experiences and sensorimotor experiences are both directly embodied pre-conceptual experiences; once experienced, they are represented at the conceptual level, and linguistically encoded units of semantic structure draw upon them for purposes of linguistically mediated meaning.

As basic domains provide the basis for encyclopaedic knowledge, on Langacker's account, I now consider, in more detail what might count as basic domains and what kinds of subjective (interoceptive) and external (exteroceptive) experiences might give rise to these domains. I begin with the exteroceptive experiences that relate to the external world. Vision contributes to at least two basic domains: COLOUR and SPACE. The word 'contribute' is important here, particularly as it relates to the domain of SPACE. After all, people who are blind or partially sighted still develop concepts relating to SPACE. This means that other sensory capacities also contribute to this domain, including touch, and **kinaesthetic perception** (the ability to perceive self-motion). Other basic domains include PITCH (arising from hearing experience) and TEMPERATURE, PRESSURE and PAIN (arising from tactile experience). All these domains are directly tied to sensorimotor experience and do not presuppose other conceptual domains.

Experiences that are subjective in nature give rise to a basic domain (or domains) relating to EMOTION and TIME, among others. A (non-exhaustive) inventory of basic domains is shown in Table 16.2. Based on this discussion, we can identify three attributes associated with basic domains. These I have summarised in Table 16.3.

Finally, while Langacker assumes that encyclopaedic knowledge upon which linguistic meaning depends is, ultimately, grounded in basic domains, as he

Table 16.2 Partial inventory of basic domains

Basic domains	Pre-conceptual basis
SPACE	Visual system, motion and position (proprioceptive) sensors in skin, muscle and joints; vestibular system (located in auditory canal – detects motion and balance)
COLOUR	Visual system
PITCH	Auditory system
TEMPERATURE	Tactile (touch) system
PRESSURE	Pressure sensors in the skin, muscles and joints
PAIN	Detection of tissue damage by nerves under the skin
ODOUR	Olfactory (smell) system
TIME	Temporal awareness
EMOTION	Affective (emotion) system

Table 16.3 Attributes of basic domains

Provide the least amount of complexity in a complexity hierarchy, where 'complexity' relates to level of detail.
Are directly tied to pre-conceptual embodied experience.
Provide a 'range of conceptual potential' in terms of which other concepts and domains can be understood.

observes, 'for the most part this grounding is indirect, being mediated by chains of intermediate concepts' (Langacker 1987: 149–50). These intermediate concepts, which correspond to the non-bold type domains in Figure 16.3, are abstract domains. As we have seen, an abstract domain is one that presupposes other domains, ranked lower in the complexity hierarchy.

2.3 Other characteristics of domains

Langacker's proposal that encyclopaedic knowledge consists of an inventory of basic and more abstract domains is only one step in developing an account of the encyclopaedic knowledge upon which semantic structure depends. In addition, Langacker sets out a number of characteristics that identify domains.

2.3.1 Dimensionality

The first characteristic is **dimensionality**: some domains are organised relative to one or more dimension. For example, the basic domains TIME, TEMPERATURE and PITCH are organised along a single dimension and are thus one-dimensional: TEMPERATURE is structured in terms of a series of points that are conceptualised as an **ordinal sequence**. In contrast, SPACE is organised with respect to two or three dimensions (a drawing of a triangle on a page is two-dimensional, while a flesh-and-blood human is three-dimensional), and COLOUR is organised with respect to three dimensions (BRIGHTNESS, HUE and SATURATION). These dimensions of colour relate to distinct neuro-perceptual mechanisms, which allow us to detect differences along these three dimensions, affecting our perception of colour. Abstract domains can also be organised with respect to a particular dimension or set of dimensions. For example, CARDINAL NUMBERS (1, 2, 3, 4 . . .) represent a domain ordered along a single dimension. However, some domains cannot be characterised in terms of dimensionality; it is not clear how we might describe the domain of EMOTION in this way, for example.

2.3.2 Locational versus configurational domains

A further characteristic of domains is that they can be distinguished on the basis of whether they are **configurational** or **locational**. This distinction relates to whether a particular domain is calibrated with respect to a given dimension. For example, COLOUR is a locational domain because each point along each of its dimensions (e.g. HUE) is calibrated with respect to the point adjacent to it. In short, each colour sensation occupies a distinct 'point' on the HUE dimension, so that a different point along the dimension represents a different colour experience. This contrasts with the domain of SPACE, which is not calibrated in this way: SPACE is not locational but configurational. For example, regardless of its position with respect to the dimension of SPACE, the shape TRIANGLE remains a triangle rather than, say, a SQUARE.

2.4 Deploying domains in the service of linguistically mediated meaning

Having established how domains are organised and derived, Langacker provides an account of how semantic structure relates to and draws upon encyclopaedic knowledge. He does so by invoking the notion of a domain matrix, an idea I introduced earlier. The idea is the semantic structure encoded by a word or other linguistic expression relates to and draws upon a number of domains, organised in a network. I explore how domain matrices are organised, and how linguistic expressions differentially draw upon aspects of their domain matrices, in this section.

2.4.1 Profile/base organisation

Given Langacker's claim that linguistic semantics draws upon a domain matrix, then it follows that we must provide an account for why different facets of the encyclopaedic knowledge network are differentially important in providing the linguistic expression with its semantic structure. For example, consider the word *hypotenuse*. The semantic structure – namely the conventional meaning – associated with this word relates to the longest side of a right-angled triangle. I have illustrated this in Figure 16.4. In this diagram, the hypotenuse is the side of the triangle in bold type labelled A.

While *hypotenuse* provides a point of access to a potentially infinite knowledge inventory, relating to RIGHT-ANGLED TRIANGLES, TRIANGLES in general, GEOMETRIC FIGURES, GEOMETRIC CALCULATION, SPACE and so on, only part of this knowledge network is essential for an understanding of the meaning of the word. Langacker suggests an explanation for this in terms of what he refers to as **scope**, **profile** and **base**, each of which refers to a different aspect of the domain matrix – the knowledge network – for *hypotenuse*.

The essential part of the knowledge network is called the scope. The scope for a unit of semantic structure is subdivided into two aspects, both of which are

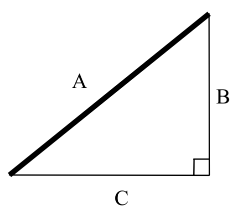

Figure 16.4 Scope for the lexical item *hypotenuse*

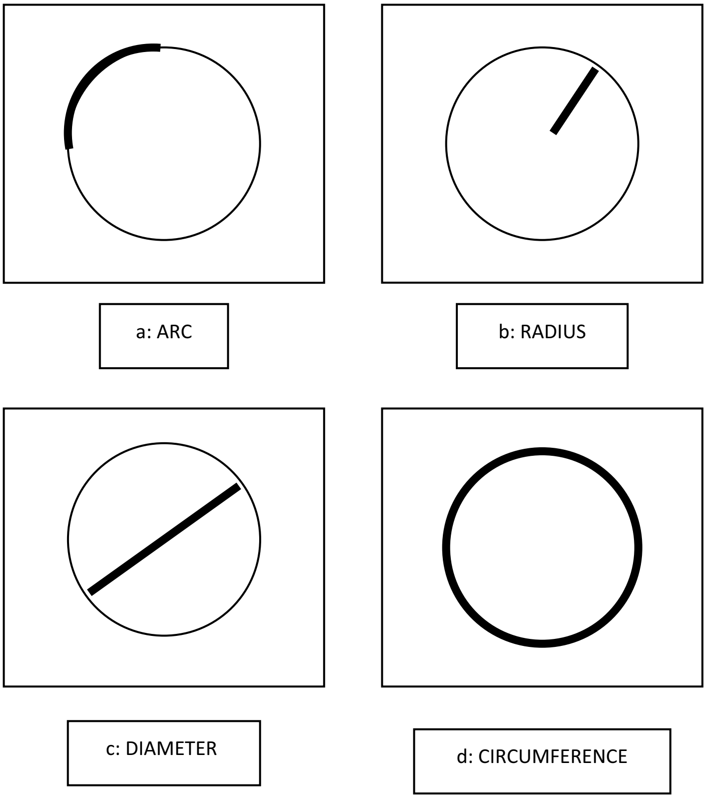

Figure 16.5 Different profiles derived from the same base

indispensable for understanding what the word means. These are the profile and its base. The profile is the entity or relation designated by the word, and the base is the essential part of the domain matrix necessary for understanding the profile. In the case of my example *hypotenuse*, this word profiles or designates the longest side in a right-angled triangle, while the base is the entire triangle, including all three of its sides. Without the base, the profile would be meaningless: there is no hypotenuse without a right-angled triangle. Hence, the word *hypotenuse* designates a particular substructure within a larger knowledge unit. As Langacker explains it: 'The semantic value of an expression resides in neither the base nor the profile alone, but only in their combination' (Langacker 1987: 183).

One consequence of the profile/base relation is that the same base can provide different profiles. Consider Figure 16.5, which depicts a CIRCLE. This base can give rise to numerous profiles, including ARC (Figure 16.5(a)), RADIUS (Figure 16.5(b)), DIAMETER (Figure 16.5(c)), CIRCUMFERENCE (Figure 16.5(d)) and so on.

Now let's consider a more complex example. The word *uncle* profiles an entity with a complex domain matrix. This includes at least the following abstract domains: GENEALOGY, PERSON, GENDER, SEXUAL INTERCOURSE, BIRTH, LIFE CYCLE, PARENT/CHILD RELATIONSHIP, SIBLING RELATIONSHIP, EGO. The base for *uncle* is the conceived network of familial relations represented in

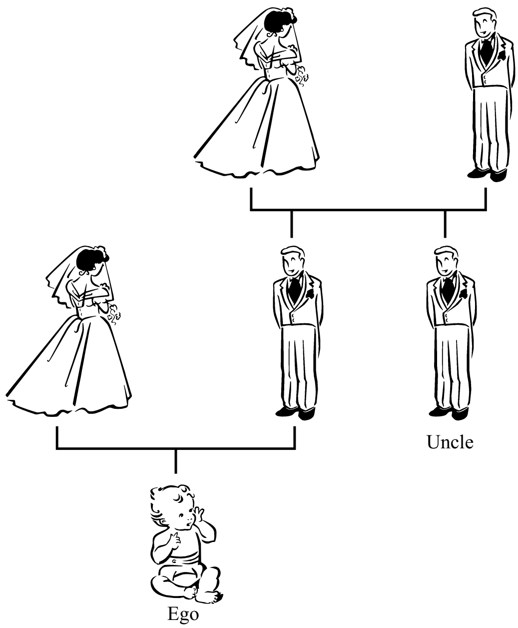

Figure 16.6 Familial network in which UNCLE is profiled

Figure 16.6. Against this base, *uncle* profiles an entity related to the EGO by virtue of being a MALE SIBLING of EGO's mother or father.

2.4.2 Active zones

As we have seen, the encyclopaedic view of meaning recognises that, in ordinary language use, the semantic structure associated with a lexical item undergoes modulation as a result of the context in which it is used. This means that typically only part of an entity's profile is relevant or active within a particular utterance. This part of the profile is called the active zone. Consider the examples in (5).

(5) a. The footballer headed the ball.
    b. The footballer kicked the ball.
    c. The footballer frowned at the referee.
    d. The footballer waved at the crowd.

While *the footballer* is profiled in each of these examples, a different active zone is evident in each example. For instance, in (5a) the active zone is the footballer's forehead (Figure 16.7(a)); in (5b) the active zone is the footballer's foot (Figure 16.7(b)); in (5c) the active zone is the footballer's face (Figure 16.7(c)); and in (5d) the active zone is the footballer's hands and arms (Figure 16.7(d)).

Let's now illustrate how the phenomenon of active zones is evident in language use. Consider the example in (6).

(6) This red pen isn't red.

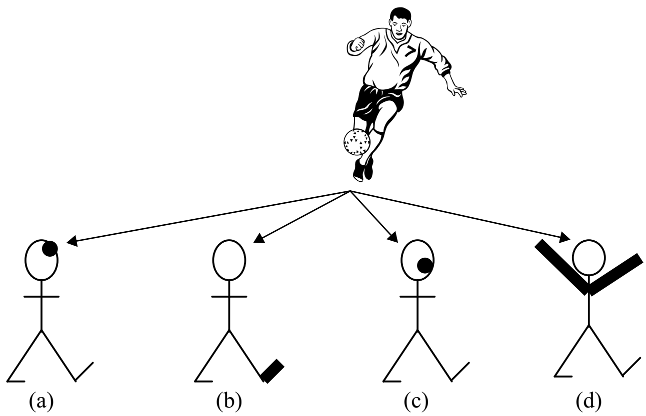

Figure 16.7 Active zones for the sentences in (5)

The idea of active zones helps to explain why this apparently contradictory sentence can give rise to a non-contradictory interpretation. If we interpret the sentence in (6) to mean that a pen whose ink is red is not coloured red, or indeed that a pen that is coloured red does not contain red ink, then we do so by assigning each instance of *red* a different active zone. One active zone relates to the contents of the pen that result in coloured marks on paper while the othe active zone corresponds to the outer casing of the pen. This example shows how active zone phenomena are at work in discourse, enabling speakers and hearers to 'search through' the inventory of knowledge associated with each word and to 'select' an interpretation licensed by the context.

2.5 Construal

In Cognitive Grammar, the way in which encyclopaedic knowledge becomes selectively activated, as in the case of active zones just considered, is due to a process termed construal. Langacker likens construal, using a visual analogy, to a process he dubs 'focal adjustment'; the idea is that by changing one's focal adjustment, a scene can be rendered, in language, in different ways, thereby providing a different construal of the same scene. The process of construal differs from the phenomenon of active zones: the latter relates to a process of interpretation – the same linguistic expression can be interpreted in different ways by selectively activating different aspects of encyclopaedic knowledge. But in the case of construal, divergent linguistic expressions facilitate distinct focal adjustments, giving rise to divergent construals of ostensibly the same scene.

In his seminal work, Langacker (1987) distinguishes three parameters along which focal adjustments can vary (see Langacker 2008, and Verhagen 2007, for revisions to this original taxonomy). These parameters are: i) **selection**, ii) **perspective** and iii) **abstraction**. Together, these parameters provide different ways of focusing attention upon and thus construing a scene for purposes of linguistic encoding (see Figure 16.8). I illustrate each of these below.

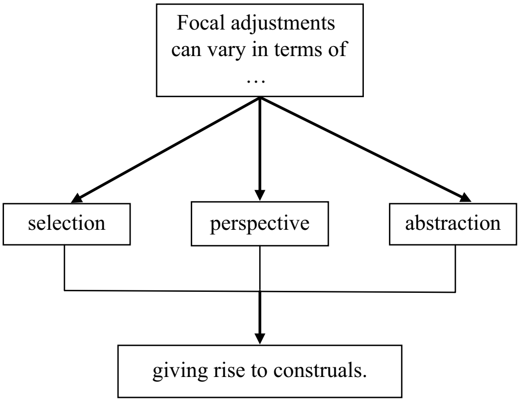

Figure 16.8 The relationship between focal adjustments and construal

2.5.1 Selection

Selection determines which aspects of a scene are attended by selecting a given domain rather than others. To illustrate, consider the expression *close* in the following examples. In each, *close* selects a different domain and therefore contributes to a very different construal in each sentence.

(7) a. Big Ben is quite close to the London Eye — SPACE
b. It's close to Monica's birthday. — TIME
c. That blue is close to the walls in the dining room. — COLOUR
d. Monica and Tommy are very close. — EMOTION

Moreover, even within a single domain, an expression such as *close* can give rise to distinct construals. For example, an expression can select for differences of **scale**. Langacker (1987: 118) illustrates this idea with the examples in (8), which relate to the domain of SPACE.

(8) a. The two galaxies are very close to one another.
b. San Jose is close to Berkeley.
c. The sulphur and oxygen atoms are quite close to one another in this type of molecule.

The expression *close* selects for different scales in each of these examples: thedistance between the two elements in each example ranges from the distance between galaxies to the distance between the subparts of a single molecule.

A second aspect of selection, and one that is fundamental to Langacker's approach, relates to **profiling**. This draws upon the profile/base organisation of semantic structure that I introduced earlier, and can be thought of, informally, as the conceptual 'highlighting' of some aspect of a domain. Recall that profiling involves selecting some aspect of a base, which is a conceptual entity necessary for understanding what a word means. Hence, lexical meaning involves understanding a substructure of some base, termed the profile, as illustrated with my discussion of the lexical items *arc*, *radius*, *diameter* and *circumference*, earlier.

The examples of selection I have discussed thus far (selection of domain and profiling) relate to open-class elements. However, profiling is also reflected in the closed-class system. For example, active and passive constructions can give rise to different profiling possibilities. Consider the examples in (9).

(9) a. John opened the cupboard. ACTIVE
b. The cupboard was opened. PASSIVE

The act of opening a cupboard requires both an AGENT (the person opening the cupboard) and a PATIENT (the cupboard). Hence, both participants form part of the base against which the active and passive constructions are understood. The difference between the examples is that in the active construction, the subject position is occupied by the AGENT, while in the passive construction the same slot is occupied by the PATIENT. Hence, the ACTIVE construction profiles the AGENT (John), while the PASSIVE profiles the PATIENT (the cupboard).

In Cognitive Grammar, Langacker refers to the semantic pole of a symbolic unit – such as a word or a grammatical construction – as its **predication**. Because the predication necessarily includes both the profile and the base, the base represents what is termed the **full scope of predication** associated with an expression. In terms of the examples in (9), the AGENT and PATIENT are both part of the scope of predication of a sentence describing this scene. While the example in (9a) profiles the full scope of predication, the example in (9b) selects the PATIENT for profiling while the AGENT remains part of the base. This is made possible by the passive construction, which allows the AGENT to remain unexpressed. This difference in terms of profiling is illustrated by Figures 16.9 and 16.10 which represent examples (9a) and (9b), respectively.

In these diagrams, the circles represent entities (AGENT and PATIENT) and the arrows represent energy transfer from AGENT to PATIENT. The fact that the AGENT is unshaded in Figure 16.10 represents the fact that that the AGENT is not profiled but is nevertheless present as part of the base.

Selection, particularly as it relates to profiling, is part of the process of what is termed **coding**. As we have seen, when a speaker wants to express a conceptual representation in language, he or she has choices over which linguistic expressions and constructions are used to 'package' the conceptual representation. Coding is the process of 'activating' these linguistic units. As Langacker (1991: 294) explains, the process of coding is closely interwoven with construal,

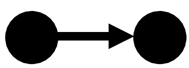

Figure 16.9 *John opened the cupboard*

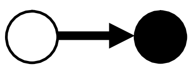

Figure 16.10 *The cupboard was opened*

because decisions about how a situation is construed have consequences for the linguistic expressions selected to code the conceptualisation.

To illustrate, consider the following examples, all of which might be appropriate descriptions of the same event. These are more complex than the examples in (9): in addition to an AGENT (*John*) and a PATIENT (*the TV*) they also involve an INSTRUMENT (*a shoe*), the entity used by the AGENT to carry out the action.

(10) a. John threw a shoe at the TV and smashed it.
b. John threw a shoe.
c. John smashed the TV.
d. The shoe smashed the TV.
e. The TV smashed.

These examples reflect different focal adjustments in terms of profiling and entail differences in terms of how much information the speaker intends to convey. The scope of predication (or base) is the 'background' against which the speaker construes the scene. Example (10a) profiles the entire scope of predication, as does (10c), although in less detail (this difference in detail relates to the focal adjustment abstraction, which I discuss below). Examples (10b) and (10e) have a narrower scope of predication, encompassing only the beginning of the event (10b) or the end of the event (10e). In short, example (10b) only expresses information about John throwing a shoe; this sentence does not entail any consequences for the TV, which is therefore not part of the scope of predication in this example. Equally, (10e) only tells us that the TV smashed but does not entail an AGENT or an INSTRUMENT (it may have fallen over). In contrast, (10d) does entail an AGENT as part of the scope of predication because a shoe is not an animate entity capable of smashing a TV without an AGENT.

The scope of predication, in turn, has consequences for which participants are profiled. In (10a), AGENT, INSTRUMENT and PATIENT are all profiled. In (10b), only AGENT and INSTRUMENT are profiled. In (10c), AGENT and PATIENT are profiled, although the INSTRUMENT is 'understood' because we know that John must have used some INSTRUMENT to smash the TV, even if it was only his fist. This means that the instrument is part of the scope of predication in this example. Equally, in (10d), INSTRUMENT and PATIENT are profiled but an AGENT is understood as part of the base or scope of predication. Finally, in (10e), only the PATIENT is profiled.

As these examples illustrate, the scope of predication or base of a given expression is determined by encyclopaedic knowledge. Compare the following examples (Langacker 1991: 332–5):

(11) a. An explosion woke me up.
b. A crowbar opened the window.

The interpretation evoked by example (11a) does not necessarily entail an AGENT as part of its base, whereas the interpretation evoked by (11b) does.

While the scope of predication in (11a) only includes the participants profiled by *an explosion* and *me*, the scope of predication of (11b) includes an unprofiled AGENT in addition to the two participants profiled by *a crowbar* and *the window*. This follows from the semantics of the expressions *an explosion* (which may occur without an external AGENT) and *a crowbar* (which cannot participate in an event without an external AGENT). In the same way, the unprofiled AGENT in (10d) arises from the semantics of *a shoe*.

2.5.2 Perspective

The second parameter of focal adjustment is perspective. The perspective from which a scene is viewed has consequences for the relative prominence of its participants. Langacker argues that the grammatical functions subject and object are reflections of perspective and thus have a semantic basis. He suggests that the distinction between subject and object relates to the prototype of an **action chain**, a cognitive model involving an active **energy source** (the AGENT), which transfers energy to an **energy sink** (the PATIENT).

In his theory of Cognitive Grammar, Langacker dubs the semantic pole of the expression that fulfils the subject function the **trajector** (**TR**), which reflects the observation that the prototypical subject is dynamic. The semantic pole of the expression that fulfils the object function is called the **landmark** (**LM**). This reflects the observation that the prototypical object is stationary or inert. The terms 'trajector' and 'landmark' have been adopted and deployed in a range of related ways in cognitive linguistics – as we shall see, for instance, in the next chapter. Moreover, and as Langacker points out, TR–LM (or subject–object) organisation in linguistic expressions is an instance of the more general perceptual and attentional phenomenon of figure–ground organisation, a recurring theme throughout this book – see, for instance, the discussion of Talmy's approach to spatial semantics in Chapter 3.

Langacker defines TR–LM organisation in terms of a conceptual asymmetry between participants in a profiled relationship: while the TR signifies the **focal** (or most prominent) **participant**, the LM represents the **secondary participant**. In an English sentence, the TR (subject) comes first and the LM (object) comes second. The familiar case of an active and passive pair of sentences illustrates this point. Consider the examples in (12).

(12) a. John ate all the chips. ACTIVE
b. All the chips were eaten by John. PASSIVE

In (12a) the focal participant (TR) is *John* who is the AGENT of the action, and the secondary participant (LM) is *the chips* which is the PATIENT. In (12b) the situation is reversed and the PATIENT is now the focal participant (TR). In a passive sentence, the AGENT is the secondary participant (LM), but it is not the object because passivised verbs do not take objects. Instead, the *by*-phrase that contains the object behaves more like a **modifier** – an optional phrase or clause element – and can be deleted without making the sentence ungrammatical.

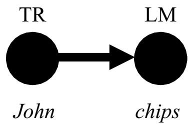

Figure 16.11 *John ate all the chips*

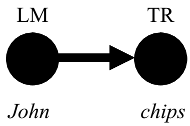

Figure 16.12 *All the chips were eaten by John*

This difference between the active construction and the passive construction is captured by Figures 16.11 and 16.12.

The distinction between these two sentences relates to a shift in perspective, which is effected by changing the relative prominence attached to the participants in the profiled relationship. While both participants are profiled, *John* is marked as TR in Figure 16.11, while *the chips* is marked as TR in Figure 16.12. The direction of the arrow remains the same in both diagrams because *John* remains the energy source, irrespective of whether he is the focal (or primary) or secondary participant.

Although the term 'trajector' is derived from 'trajectory' (a path of motion), in Langacker's framework, this term is applied to all focal participants, regardless of whether the verb involves motion or not. For example, Langacker (2002: 9) illustrates the trajector–landmark asymmetry with the verb *resemble*. Consider example (13).

(13) a. $[\text{Susan}]_{TR}$ resembles $[\text{Titian's Venus of Urbino}]_{LM}$
b. $[\text{Titian's Venus of Urbino}]_{TR}$ resembles $[\text{Susan}]_{LM}$

Although these two sentences are 'truth-conditionally equivalent' – the nature of the meaning of *resemble* is that it entails a mutual relationship: X resembles Y and vice versa – Langacker observes that they are not semantically equivalent. Example (13a) tells us something about *Susan* (she resembles *Titian's Venus of Urbino*). Example (13b) tells us something about *Titian's Venus of Urbino* (it resembles *Susan*). The verb *resemble* is **stative**: it describes an unchanging scene. Despite this, the TR–LM asymmetry is still evident.

Perspective also underpins the **personal pronoun system**: the grammatical feature **person** distinguishes speaker, hearer and third party. However, person is a **deictic category** because SPEAKER, HEARER and THIRD PARTY are not fixed properties of any given individual but shift continually during conversation, depending on who is talking to whom. Consider the following short conversational exchange.

(14) John: I love marmite!
Susan: I hate it!

In this short conversation, an individual referred to as *I* both loves and hates the yeast-based sandwich spread: marmite. However, there is no contradiction in *I* both loving and hating marmite because the participants in the conversation know that the first person singular pronoun *I* refers to a different individual in each of the utterances. If John says *I*, it means 'John'. If Susan says *I*, it means 'Susan'. Speakers have no difficulty in keeping track of who *I* or *you* refer to at any given point in a conversation – due, as we shall see in Chapter 19, to our ability to link elements across **mental spaces** during discourse. According to Langacker, it is our ability to adopt various viewpoints during a conversational exchange that underlies the ease with which we manipulate the person system: when John says *I*, Susan knows it means 'John', the speaker and not 'Susan' the hearer, because she momentarily adopts John's perspective as speaker.

Langacker argues that the parameter of perspective also gives rise to focal adjustments as a result of the distinction between **subjective construal** and **objective construal**, which relates to the asymmetry between perceiver and perceived. In order to illustrate this distinction, Langacker uses the example of a pair of glasses. If the wearer of the glasses takes them off, holds them in front of his or her face and looks at them, the glasses become the object of perception (perceived). In contrast, if the wearer has the glasses on and is using them to see some other object, the attention focused on the glasses themselves becomes far weaker to the extent that they become a subpart of the perceiver.

In the same way, when an individual's attention is fully focused on some external entity, subjective construal (awareness of self) is backgrounded and objective construal is salient. When an individual's attention is fully focused on him or herself, subjective construal is foregrounded and objective construal is backgrounded. In reality, objective construal and subjective construal can be seen as extreme poles on a continuum, where the usual case is that an individual's attention is partly focused on objective construal and partly focused on subjective construal and one is more salient than the other.

For example, objective construal is likely to be more salient than subjective construal when an individual is absorbed in watching a film or reading a gripping novel. However, subjective construal is likely to become more salient when an individual's attention is focused on riding a bike or threading a needle.

In order to see how this distinction between objective and subjective construal is related to perspective, and in turn how it is reflected in the grammatical system, I first introduce the term **ground**. In Langacker's Cognitive Grammar, this term describes any speech event, and includes the participants, the time of speaking and the immediate physical context. Deictic expressions make specific reference to ground, and Langacker divides them into two broad categories: those that place the ground **offstage** or in the background, and those that focus attention upon the ground, placing it **onstage**.

For instance, temporal deictics such as *tomorrow* and *next week* place the ground offstage because they profile a point in time relative to the time of speaking, but the time of speaking which makes up part of the ground ('now') is backgrounded or implicit. In contrast, deictic expressions such as *now* (temporal), *here* (spatial) and *you* (person deixis) place the ground onstage because they focus explicit attention upon aspects of the ground: time, place and participant(s). The greater the attention upon the ground, the greater the objectivity of construal. Speaker and hearer are usually subjectively construed or offstage, and only become objectively construed or onstage when linguistically profiled by expressions such as *I* or *you*. For example, if John utters the first person pronoun *I*, he places himself in the foreground as an object of perception. In this way, the speaker is objectified. According to Langacker, then, the difference between explicit mention of the ground (objective construal) and implicit dependence upon the ground (subjective construal) is a difference of perspective. As we will see in Chapter 27, this aspect of perspective forms the basis of Langacker's theory of grammaticalisation.

2.5.3 Abstraction

This focal adjustment operation relates to how specific or detailed the description of a scene is. This also has consequences for the type of construction selected. Recall my earlier examples in (10), two of which are repeated here as (15).

(15) a. John threw a shoe at the TV and smashed it.
b. John smashed the TV.

The example in (15b) is more abstract (less detailed) than the example in (15a). As we saw earlier, both of these examples share the same scope of predication, which involves an AGENT, a PATIENT and an INSTRUMENT. However, the more abstract description only profiles the AGENT and the PATIENT and leaves the INSTRUMENT as an unprofiled part of the base. In this way, abstraction, which relates to the level of attention paid to a scene, is reflected in the kinds of linguistic constructions available to us in terms of level of detail.

SUMMARY

This chapter explored two influential cognitive linguistic theories that propose **encyclopaedic approaches** to semantic structure. These were the theory of **Frame Semantics**, developed by Charles Fillmore, and **Cognitive Grammar**, developed by Ronald Langacker. These two theories were originally developed for different purposes: Fillmore's theory derived from his research on **Case Grammar** in the 1960s, and continued to be developed in association with his (and others') work on **Construction Grammar** (see Part IV of this book). Langacker's theory of Cognitive Grammar is one of the dominant cognitive linguistic theories of grammar (also see Part IV). An important element of Langacker's model of human language is his theory of conceptual **domains**, which provides a key component of Cognitive Grammar, and the semantic basis for his overall account of human language. In terms of Frame Semantics, a **semantic frame** is a knowledge structure required in order to understand the semantic representation of a particular word, related set of words or grammatical construction. I gave the example of the COMMERCIAL EVENT frame. This includes a number of attributes called **participant roles** which must, at the very least, include BUYER, SELLER, GOODS and MONEY. Moreover, these roles are required in order to understand the semantic values of a related group of words, *buy*, *sell*, *pay*, *spend*, *cost*, *charge*, *tender*, *change* and so on. According to Frame Semantics, these words, and even their grammatical behaviour, are **relativised** with respect to the COMMERCIAL EVENT frame. In terms of Langacker's approach, I introduced his theory of domains, central to the Cognitive Grammar account of encyclopaedic semantics. Domains are conceptual entities of varying levels of complexity and organisation. The only prerequisite that a knowledge structure has for counting as a domain is that it provides background information against which linguistic expressions can be understood and used in language. For instance, expressions like *hot*, *cold* and *lukewarm* designate linguistically encoded concepts in the domain of TEMPERATURE: without understanding the temperature system, we would not be able to use these terms. The theory of domains adds to the theory of Frame Semantics in four important respects. First, while Fillmore acknowledges that concepts can be structured in terms of multiple frames (or domains), Langacker argues that this is actually the typical arrangement. The range of domains that structure a single linguistically encoded unit of semantic structure is called the **domain matrix** of that concept. Second, Langacker addresses an additional level of conceptual organisation. This relates to the distinction between **basic domains** and **abstract domains**. Third, domains are organised in a hierarchical fashion in Langacker's Cognitive Grammar. This means that a particular linguistically encoded concept can simultaneously presuppose a domain lower down the hierarchy and represent a subdomain for a lexical concept further up the hierarchy. Finally, Fillmore's emphasis in developing a theory of Frame Semantics is somewhat different from Langacker's emphasis in developing a theory of domains. While Fillmore views frames as a means of accounting for grammatical behaviour such as **valence relations**, Langacker's theory of domains is more concerned with conceptual ontology: the structure and organisation of knowledge, and the way in which concepts are related to and understood in terms of others, as a basis for modelling the nature of linguistically encoded semantic structure. Finally, I considered Langacker's approach to **construal operations**, also known as **focal adjustments**, which provides the way in which language users deploy encyclopaedic knowledge for purposes of linguistically mediated meaning construction.

FURTHER READING

Frame Semantics

Fillmore (1975, 1977, 1982, 1985a); Fillmore and Atkins (1992). These are the key papers that have given rise to the Frame Semantics approach. The paper by Fillmore and Atkins (1992) presents a detailed analysis of the semantic frame for RISK. The words in this set include: *risk*, *danger*, *peril*, *hazard* and neighbouring words such *gamble*, *invest* and *expose*. Prior to his death in 2014, Fillmore led the FrameNet project. This project applies the theory of Frame Semantics with a view to developing an electronic frame-based dictionary. For further details, references and ongoing work, see the FrameNet website: framenet.icsi.berkeley.edu

Cognitive Grammar and the theory of domains

- **Langacker (1987)**. This is the key source for the theory of domains. See Part II of the book in particular.
- **Langacker (2008)**. A more recent, one volume summary and presentation of Cognitive Grammar, including Langacker's approach to encyclopaedic semantics.
- **Taylor (2002)**. This textbook introduction to Langacker's theory has a number of very good chapters on the theory of domains. See in particular Chapters 10, 11, 22 and 23.

DISCUSSION QUESTIONS

1. What are the main claims associated with Frame Semantics?
2. What are the main claims associated with the theory of domains, as developed in Langacker's Cognitive Grammar?
3. What are the similarities and differences, as you see them, between these two encyclopaedic accounts of semantic structure?
4. Consider the notion of *construal* and focal *adjustments* discussed in this chapter. What do these terms refer to? And how do they relate to the encyclopaedic account of semantic structure, in your view?

17

Network approaches to semantic structure

In the previous two chapters I considered the nature of the encyclopaedic knowledge that cognitive linguists contend semantic structure draws upon. In this chapter I focus on how cognitive linguists model relationships between units of semantic structure. This takes the form of a network conception: the idea that units of semantic structure – the conventional meanings encoded by linguistic forms – are structured in the mind of a language user in terms of a **semantic network**.

In this chapter I illustrate this semantic network approach by examining two distinct theoretical and descriptive traditions. The first approach is the tradition pioneered by Claudia Brugman and George Lakoff, focusing specifically on the **polysemy** exhibited by word meaning. Polysemy is the phenomenon whereby a single word form has two or more distinct, yet semantically related conventional meanings. Drawing on Lakoff's theory of idealised cognitive models (ICMs, Chapter 11) and Johnson's approach to image schemas (Chapter 9), Lakoff (1987) and Brugman and Lakoff (1988) present an account of word meaning in terms of **radial categories**: recall that a radial category is structured with respect to a composite prototype, and the various category members are related to the prototype by convention rather than being 'generated' by predictable rules. Thus, Lakoff (e.g. 1987: case study 2), in particular, argued that words are categories that can be modelled and investigated using the theory ICMs. As such, word meanings are stored in the mental lexicon as highly complex structured categories of meanings or senses.

In their classic work, Lakoff and Brugman specifically examined the semantic structure of spatial prepositions, notably the English form *over*. They argued that distinct word senses, in a radiating network of meanings, draw upon image-schematic knowledge as a basis for accounting for the semantic structure of word meaning. I first address this approach to semantic networks, in this chapter, and also consider drawbacks to the specific proposals made. I also consider more recent developments in this tradition, including my own research with Andrea Tyler (e.g. Tyler and Evans 2001a, 2003).

Later in the chapter, I then turn, more briefly, to Langacker's network approach – this encompasses units of semantic structure, as well as, more broadly, other aspects of linguistic organisation. As we shall see, rather than drawing on the notion of ICMs and radial categories, Langacker's approach assumes the notion of **schemas** and **instances**, as introduced in Chapter 5, where I first presented his Cognitive Grammar model of language representation and use. I conclude the chapter by examining the nature of context, in deriving the situated interpretation of semantic structure.

1 Lexical versus compositional semantics: a false dichotomy

Before elaborating the network approach to semantic structure, I contextualise this discussion of linguistic meaning by considering the received view: formal linguists have traditionally separated the study of linguistic meaning into the study of word meaning (**lexical semantics**) and sentence meaning (**compositional semantics**). As we saw in Chapter 14, this view arises from the modular perspective that is sometimes assumed in formal theories. On this account, the semantic value of a word amounts to its denotation – what it refers to within a particular model or version of reality. Words are then combined, **monotonically**, such that the semantic value of each word is preserved. The composition of the words gives rise to the logical form (or truth value) of the sentence, whereby the semantic values of the lexical parts – the words – gives rise to the overall whole. On this account, where **sentence meaning** – the logical form – diverges from what a speaker actually means – **speaker meaning** – pragmatic inferencing is required to interpret the sentence meaning in context, for instance using relevance theory, as introduced in Chapter 15. On this account, it is possible to study word meaning and compositional meaning as distinct sub-branches of semantics, as they involve different processes in the meaning construction process.

In contrast, cognitive linguists do not assume that words and sentences involved different types of semantic information. Moreover, as we saw in Chapter 15, cognitive linguists don't recognise a principled distinction between semantics and pragmatics. Hence, it follows that a neat division between lexical semantics on the one hand and compositional semantics on the other amounts to a false dichotomy. I briefly present the reasons for this contention by cognitive linguists, as a way of framing the discussion of the semantic network approach, in the remainder of the chapter.

1.1 Word meaning is protean in nature

The traditional distinction between lexical and compositional semantics is based on the assumption that word meanings combine, together with the grammatical structure of the sentence, to produce sentence meaning. This is known as the **principle of compositionality**. The way the 'division of labour' works in most formal approaches is that lexical semanticists work out how to represent the meanings of words, while compositional semanticists work out the principles governing the combination of words into larger units of meaning and the relationships between words within those larger units.

From the perspective of cognitive linguistics, a significant problem with the compositional view of sentence meaning is that word meanings cannot be precisely defined in the way that is required by this approach. Instead, cognitive linguists argue that, while words do have relatively well-entrenched meanings stored in long-term memory (their conventional meaning), word meaning in language is **protean** in nature (e.g. Evans 2006, 2009). This means that the meaning associated with a single word is prone to shift depending on the exact context of use. Thus, cognitive linguists argue that the meaning of any given word is constructed 'on-line' in the context in which it is being used. We saw an example illustrating this when I discussed various uses of the word *safe* in Chapter 14, examples (2) and (4). One problem with the compositional view of sentence meaning, then, is that it relies upon the assumption that the context-independent meanings associated with words can be straightforwardly identified.

1.2 The conceptual nature of meaning construction

The second problem with dividing semantics into the study of word meaning on the one hand, and sentence meaning on the other, relates to meaning construction, which has traditionally been regarded as the remit of compositional semantics. Meaning construction is the process whereby language encodes or represents complex units of meaning; therefore, this area relates to sentence meaning rather than word meaning. The principle of compositionality assumes that words 'carry' meaning in neatly packaged self-contained units, and that meaning construction results from the combination of these smaller units of meaning into larger units of meaning within a given grammatical structure.

However, as we have begun to see, cognitive linguists argue that words are prompts for meaning construction rather than 'containers' that carry denotations. Furthermore, according to this view, language actually represents highly underspecified and impoverished prompts relative to the richness of encyclopaedic knowledge, contained at the level of conceptual structure. From this perspective, what is encoded in semantic structure amounts to prompts that serve as 'instructions' for activating facets of encyclopaedic knowledge. Moreover, the process of meaning construction involves activation of conceptual knowledge, under the guidance of language, in order to produce simulations. In short, cognitive linguists argue that meaning construction is primarily conceptual rather than linguistic in nature. From this perspective, if meaning construction is conceptual in nature, and if words themselves do not 'carry' meaning, then the idea that sentence meaning is built straightforwardly out of word meanings is largely vacuous.

1.3 Grammatical constructions are independently meaningful

Finally, as we saw in Chapter 1, and as will see in detail in Chapter 21, cognitive linguistics adopts the **symbolic thesis** with respect to linguistic structure and organisation. This thesis holds that linguistic units are form–meaning pairings. This idea is not new in linguistics: indeed, it has its roots in the influential work of the Swiss linguist Ferdinand de Saussure (1857–1913) and is widely accepted by linguists of all theoretical persuasions. The innovation in cognitive linguistics is that this idea is extended beyond words to larger grammatical constructions, including phrases and whole sentences. According to this view, it is not just words that bring meaning to sentences, but the grammatical properties of the sentence are also meaningful in their own right.

In one sense, this does not appear significantly different from the compositional view: all linguists recognise that *Monica loves Tommy* means something different from *Tommy loves Monica*, for example, and this is usually explained in terms of grammatical functions such as Subject and Object which are positionally identified in a language such as English. However, the claim made in cognitive linguistics is stronger than the claim that grammatical structure contributes to meaning via the structural identification of grammatical functions such as subject and object. The claim made by cognitive linguists is that grammatical constructions, and grammatical functions, are themselves inherently meaningful, independently of the content words that fill them. From this perspective, the idea that sentence meaning arises purely from the composition of smaller units of meaning into larger ones is misleading. I shall look in detail at the idea that grammatical constructions are meaningful in Part IV of the book.

2 Words as radial categories

In this section, I present Lakoff's account of the semantics of *over*, which has been highly influential in the development of cognitive linguistic approaches to semantic structure. Lakoff's account was based on ideas proposed in a master's thesis by Claudia Brugman, his former student. As already intimated, the idea underpinning Lakoff's approach was that a lexical item such as *over* constitutes a semantic category of distinct but related (polysemous) senses, that can be modelled, using his theory of ICMs (Chapter 11), as a semantic network: a **radial category**.

2.1 The nature of polysemy

I begin, in this section, by illustrating the nature of polysemy, in order to make clear the semantic phenomenon that Lakoff sought to provide an account for. To do so, I begin by comparing and contrasting polysemy with **homonymy**. While both polysemy and homonymy give rise to **lexical ambiguity** (two or more meanings associated with a word), the nature of the ambiguity is different in each case. Polysemy is the phenomenon whereby a lexical item is commonly associated with two or more meanings that appear to be semantically related in some way. Consider the following examples containing the English preposition *over*.

(1) a. The picture is over the sofa. ABOVE
b. The ball landed over the wall. ON THE OTHER SIDE
c. The car drove over the bridge. ACROSS

Each of these instances of *over* is associated with a slightly different meaning or **sense** (listed on the right); but these senses are nevertheless relatively closely related. This shows that *over* exhibits polysemy.

Polysemy contrasts with homonymy, which relates to two distinct words that happen to share the same form in sound (**homophones**) and/or in writing (**homographs**). For example, the form *bank* relates to two different words with unrelated meanings, 'financial institution' and 'bank of a river'. These two senses are not only **synchronically** unrelated (unrelated in current usage), but also historically, or **diachronically**, unrelated. The word *bank* meaning 'side of river' has been in the English language for much longer, and is related to the Old Icelandic word for 'hill', while the word *bank* meaning 'financial institution' was borrowed from Italian *banca*, meaning 'money changer's table' (*Collins English Dictionary*).

While formal linguists have long recognised the existence of polysemy, it has generally been viewed as a surface phenomenon, in the sense that lexical entries are underspecified (abstract and lacking in detail), and are 'filled in' either by context (Ruhl 1989) or by the application of certain kinds of lexical generative devices (Pustejovsky 1995).

According to this view, polysemy is **epiphenomenal** – a secondary effect caused by something else. Indeed, the common position adopted by formal linguists has been dubbed **monosemy** (e.g. Ruhl 1989). The idea is that word meanings are stored, in the mental lexicon, as single relatively abstract meanings from which other word senses – such as the range of meanings associated with *over* in (1) – are derived on the basis of context, speaker intention, recognition of that intention by the hearer and so on. A monosemy account is plausible in principle when accounting for senses like those in example (1), which are all spatial in nature and could, therefore, be accounted for in terms of a single abstract spatial sense. However, *over* also exhibits non-spatial senses. Consider example (2).

(2) Monica has a strange power over him. CONTROL

While the meaning of *over* in (2) might be characterised as a 'control' sense, it is diffcult to see how a single abstract meaning could derive the three spatial senses in (1) as well as this non-spatial 'control' sense. After all, the sentence in (2) does not describe a spatial scene (*Monica* is not located above *him* in space), but has an abstract sense relating to a power relationship between two entities.

One way of analysing the semantic representation of *over* in (2) would be to treat it as distinct from the spatial senses in (1). This would amount to the claim that *over* in (2) is a homonym: a distinct word. A second possible analysis, which preserves the monosemy position, might claim that a single abstract underlying sense licenses both the spatial and non-spatial senses, but that while the spatial senses are literal, the non-spatial sense is metaphorical and is interpreted by applying pragmatic principles to retrieve the speaker's intended meaning. As I develop the cognitive linguistics position on polysemy, we will see why these lines of analysis are both rejected in favour of a radial category model of polysemy.

2.2 The polysemy approach to *over*

In their work on *over* Claudia Brugman (1981; Brugman and Lakoff 1988) and George Lakoff (1987) claimed that *over* is stored as a category of distinct polysemous senses rather than a single abstract monosemous sense. Thus, in the same way that units of language are conceived as being stored in an inventory-like grammar (as we will see in Part IV), as constructions, the senses associated with each linguistic unit are conceived as being stored as distinct, yet related, semantic entities. The position originally proposed by Claudia Brugman, in a 1981 master's thesis, was that polysemy as a conceptual phenomenon should form the basis of a theory of word meaning. Lakoff developed this idea within the theory of ICMs and radial categories (Chapter 11) and integrated it with conceptual metaphor theory (Chapter 12).

The outcome of this approach was that Lakoff (1987: case study 2) proposed that the distinct, polysemous, senses of *over* formed part of a single category; moreover, distinct senses of the lexical form could, therefore, be judged as more prototypical (central), or less prototypical (peripheral). This means that word senses exhibit typicality effects, just as was the case with the cognitive categories that I examined in Chapter 11.

For instance, the ABOVE sense of *over* in example (1a) would be judged by most native speakers of English as a 'better' example of *over* than the CONTROL sense in example (2). While the prototypical ABOVE sense of *over* relates to a spatial configuration, the CONTROL sense does not. The intuition that the spatial meanings are somehow prototypical led Brugman and Lakoff (1988) and Lakoff (1987) to argue that the CONTROL sense of *over* is derived metaphorically from the more prototypical spatial meaning of *over*.

Lakoff (1987) proposed that words represent radial categories. As we saw in Chapter 11, a radial category is a mental construct in which the range of concepts or ideas are organised relative to a central or prototypical concept. The radial category representing polysemous word senses has the same structure, with its range of senses organised with respect to a prototypical word sense. This means that lexical categories have structure: more prototypical senses are 'closer' to the central prototype, while less prototypical senses are 'further from' the prototype (peripheral senses).

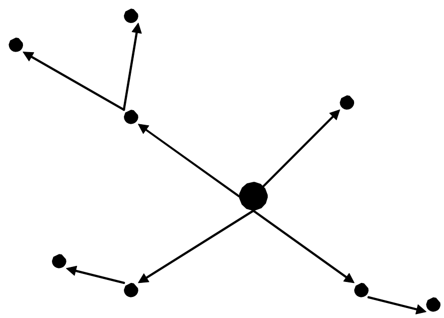

Figure 17.1 A radiating lattice diagram ('semantic network') for modelling radial categories

Lakoff modelled radial categories in terms of a radiating lattice configuration, as shown in Figure 17.1. In this diagram, each distinct sense is represented by a node (indicated by a black circle). While all senses are related by virtue of belonging to the same radial category, arrows between nodes indicate a close relationship between senses.

Central to this approach is the assumption that radial categories of senses are represented or instantiated in long-term **semantic memory**. According to this view, the reason we are able to use *over* with a CONTROL meaning is because this sense of *over* is instantiated in long-term memory. This means that the range of senses associated with *over* are **conventionalised**: most native speakers of English simply 'know' the range of senses associated with *over*. From this perspective, a radial category is not a device for **generating** distinct meanings from the central or prototypical sense. Instead, it is a model of how distinct but related meanings are stored in semantic memory. In this important respect, Lakoff's account of word meaning departs from the monosemy account, which holds that a single abstract sense is stored which is 'filled in' by context on each occasion of use.

Since Lakoff's pioneering work, an important concern for cognitive linguists has been to explain how polysemy arises. Because cognitive linguists assume that linguistic categories are no different, in principle, from other kinds of mental categories, it follows that linguistic categories are structured by the same general cognitive mechanisms that structure non-linguistic categories. According to this view, less prototypical senses are derived from more prototypical senses by cognitive mechanisms that facilitate meaning extension, including conceptual metaphors and image schema transformations (as described in Part II of the book). These mechanisms result in the systematic extension of lexical categories resulting in **meaning chains**. This gives rise to polysemy: a **semantic network** for a single lexical item that consists of multiple related senses. It follows that the radial category in Figure 17.1 also represents a semantic network. A semantic network might consist of a number of distinct senses that are peripheral and hence not strictly predictable with respect to the prototype, but which are nevertheless motivated by the application of general cognitive mechanisms. In addition, this model predicts the emergence of senses that are intermediate with respect to the prototype and the peripheral senses. The process that connects these central and peripheral senses is termed **chaining**.

2.3 Lakoff's full-specification approach

Lakoff's analysis of the English preposition *over* has been described as the **full-specification approach** to lexical polysemy (Tyler and Evans 2001a, 2003). Central to Lakoff's account is the view that the senses associated with prepositions such as *over*, which are grounded in spatial experience, are structured in terms of image schemas. As I noted above, the spatial senses of *over* are judged to be more prototypical by native speakers than non-spatial meanings, as illustrated, for instance, by the fact that spatial senses are listed as primary senses by lexicographers.

Specifically, Lakoff argued that the prototypical sense for *over* is an image schema combining elements of both ABOVE and ACROSS senses. The distinct senses associated with *over* are structured with respect to this image schema which provides the category with its prototype structure. Recall from Chapter 9 that image schemas are relatively abstract schematic representations derived from embodied experience. The central image schema for *over*, proposed by Lakoff, is shown in Figure 17.2.

Lakoff argues that the schema depicted in Figure 17.2 underlies examples such as (3):

(3) The plane flew over.

The abbreviations TR and LM are borrowed, by Lakoff, from Langacker's theory of Cognitive Grammar (e.g. 1987), which I introduced, in that context, in the previous chapter. Recall that TR stands for **trajector** and relates to the entity in the scene that is smaller and that is typically capable of motion. LM stands for **landmark** and relates to the entity with respect to which the TR moves. TR and LM are therefore Langacker's terms for figure and ground (or reference object), respectively, which I introduced in Chapter 3. In the central schema for *over* the LM is unspecified. The oval represents the TR and the arrow represents its direction of motion. The TR and its path of motion are located above the LM. According to Lakoff, this central image schema is highly schematic, lacking detail not only about the nature of the LM but also about whether there is contact between the TR and the LM.

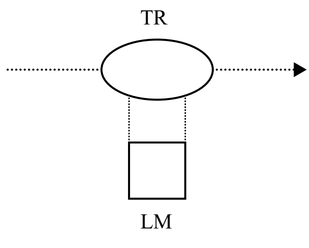

Figure 17.2 The central schema for *over* (Schema 1) (adapted from Lakoff 1987: 419)

Lakoff proposes a number of further more detailed image schemas related to this central schema. These are developed by the addition of further information that specifies properties of the landmark and the existence and nature of any contact between the TR and LM. For example, landmarks can be 'horizontally extended', which means that they can extend across the horizontal plane of the LM. This is illustrated in example (4), where the bird's flight (TR) extends across the yard (LM).

(4) The bird flew over the yard.

Lakoff annotates this property with the symbol X (horizontally eXtended). For contexts in which there is no contact between the TR and LM, which is also illustrated by example (4), Lakoff uses the abbreviation NC (no contact). According to Lakoff, examples such as (4) therefore relate to a distinct sense of *over* arising from a distinct image schema. This image schema is represented in Figure 17.3.

As with the central image schema (designated schema 1) in Figure 17.2, the moving entity is designated by TR, but this schema contains an overt horizontal landmark, represented by LM. This LM corresponds to *the yard* in example (4).

Some landmarks are simultaneously vertically and horizontally extended, such as *hill* in example (5).

(5) The plane flew over the hill.

Lakoff annotates landmarks that are vertically extended with V. Thus, a landmark that is both vertically and horizontally extended is represented by VX. According to Lakoff, the schema in Figure 17.4, which corresponds to example (5), represents a distinct sense for *over*, which counts as an instance of the central schema with the additional features VX.NC.

While the previous two schemas involve landmarks that are horizontally extended, example (6) designates a landmark (*the wall*) that is vertically, but

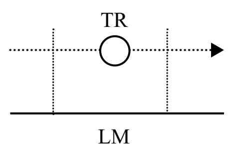

Figure 17.3 *The bird flew over the yard* (Schema 1.X.NC) (adapted from Lakoff 1987: 421)

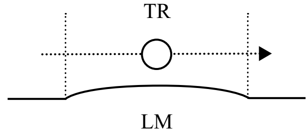

Figure 17.4 *The plane flew over the hill* (Schema 1.VX.NC) (adapted from Lakoff 1987: 421)

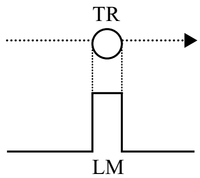

Figure 17.5 *The bird flew over the wall* (Schema 1.V.NC) (adapted from Lakoff 1987: 421)

not horizontally, extended. Lakoff's image schema for examples of this kind is depicted in Figure 17.5.

(6) The bird flew over the wall.

In addition to the variants of schema 1 represented in Figures 17.3, 17.4 and 17.5, none of which involve contact between the TR and LM, Lakoff also proposes instances of this schema that involve contact between the TR and LM. These are annotated as 'C' rather than 'NC', and are illustrated in Figures 17.6, 17.7 and 17.8.

In sum, Lakoff claims that each of the schemas considered so far represent distinct senses associated with *over*. According to this model of word meaning, the central schema for *over* in Figure 17.2 has at least six distinct and closely related variants (see Figure 17.9), each of which is stored in semantic memory.

It should now be clear why Lakoff's approach has been described as the 'full-specification approach'. Given the range of senses *over* is associated with in addition to the ABOVE–ACROSS sense (which I have summarised in Table 17.1), this model results in a potentially vast proliferation of senses for

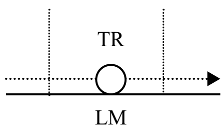

Figure 17.6 *John walked over the bridge* (Schema 1.X.C) (adapted from Lakoff 1987: 422)

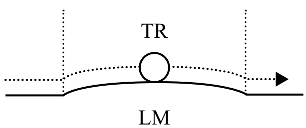

Figure 17.7 *John walked over the hill* (Schema 1.VX.C) (adapted from Lakoff 1987: 422)

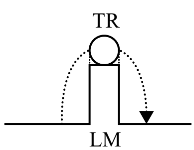

Figure 17.8 *Sam climbed over the wall* (Schema 1.V.C) (adapted from Lakoff 1987: 422)

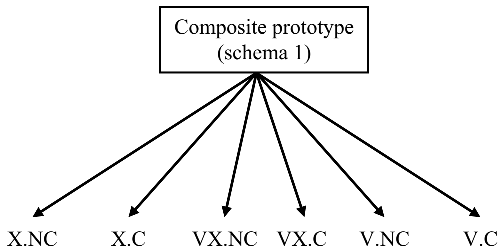

Figure 17.9 Instances of schema 1, the central image schema (adapted from Lakoff 1987: 423)

Table 17.1 Schemas proposed by Lakoff (1987) for *over* in addition to the central schema

Schema type	Basic meaning	Example
ABOVE schema	The TR is located above the LM	*The helicopter is hovering over the hill*
COVERING schema	The TR is covering the LM	*The board is over the hole*
REFLEXIVE schema	The TR is simultaneously the TR and the LM. The final location of the TR is understood with respect to its starting position	*The fence fell over*
EXCESS schema	When *over* is employed as prefix it can indicate 'excess' of a TR relative to LM	*The bath overflowed*
REPETITION schema	*Over* is used as an adverb to indicate a process has been repeated	*After receiving a poor grade, the student started the assignment over*

any lexical item. As I shall show, shortly, some cognitive linguists argue that the level of detail or granularity that characterises the full-specification approach is problematic.

2.3.1 Image schema transformations

As we have seen, some of the distinct senses posited by Lakoff are reflections of individual schemas, which are stored image-schematic representations that specify the central schema in more detail.

However, Lakoff argues that distinct senses can also be derived by virtue of **image schema transformations**. In Chapter 9, we saw that image schemas are dynamic representations that emerge from embodied experience, and that one image schema can be transformed into another (for example, when we understand the relationship between a SOURCE and a GOAL in terms of a PATH, and vice versa). One consequence of a shift in focus from PATH to GOAL is that we achieve **endpoint focus**: the end of a path takes on particular prominence. In other words, image schema transformations relate to the construal of a scene according to a particular perspective.

Lakoff has argued that the transformation from a SOURCE schema to an endpoint focus or GOAL schema gives rise to two distinct senses associated with the ABOVE–ACROSS schema (schema 1) that I discussed above. Consider once more the senses depicted in Figures 17.6 and 17.7, illustrated by examples (7) and (8).

(7) John walked over the bridge. [1.X.C: represented in Figure 17.6]

(8) John walked over the hill. [1.VX.C: represented in Figure 17.7]

As a result of image schema transformation, an endpoint focus can be added to these senses. This is illustrated by examples (9) and (10).

(9) St Paul's Cathedral is over the bridge.

(10) John lives over the hill.

By following a mental path, a process that Langacker (1987) refers to as **subjective motion**, attention is focused on the location of St Paul's in example (9) and on where John lives in example (10). In other words, the meaning of *over* in these examples is focused not on the path itself, but on the endpoint of the path. Lakoff argues that sentences such as these relate to the image schemas shown in Figures 17.10 and 17.11. Observe that the TR is located at the endpoint of the path.

Lakoff argues that endpoint focus is not supplied by the subject *John*, nor by the verb, nor by the landmark; it follows that this 'additional' meaning is supplied by *over*. Lakoff annotates this aspect of meaning by adding E (endpoint focus) to the representations in (9) and (10), resulting in 1.X.C.E and 1.VX.C.E respectively. As these annotations indicate, Lakoff argues that *over* has two distinct endpoint focus senses, one relating to horizontally extended landmarks, illustrated by sentence (9), and the other relating to vertically

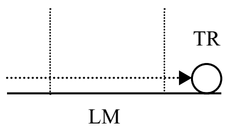

Figure 17.10 St Paul's Cathedral is over the bridge (Schema 1.X.C.E) (adapted from Lakoff 1987: 424)

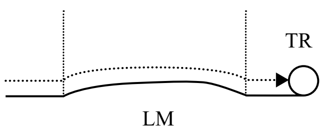

Figure 17.11 John lives over the hill (Schema 1.VX.C.E) (adapted from Lakoff 1987: 423)

extended landmarks, illustrated by sentence (10). In sum, these endpoint focus senses are the result of image schema transformation. Moreover, Lakoff claims that image schema transformations like these result in addition of 'endpoint focus' senses to the semantic network for *over*. In other words, they represent distinct senses instantiated in semantic memory. According to Lakoff, the fact that senses of this kind exist provides further evidence for the cognitive reality of image schemas and illustrates their important role in meaning extension.

2.3.2 Metaphorical extensions

As I indicated earlier, conceptual metaphor also has a central role in Lakoff's theory of radial categories. Consider the following example (Lakoff 1987: 435).

(11) She has a strange power over me.

In this example, *over* is understood metaphorically, which results in a CONTROL sense. That is, this sentence does not mean that the TR (*she*) is literally moving above and across the LM (*me*), nor that the TR is located in a static position above the LM. This CONTROL sense of *over* is peripheral rather than central and, according to Lakoff, is licensed by the conceptual metaphor CONTROL IS UP. Because *over* has a conventional ABOVE schema associated with it (see Table 17.1), this conceptual metaphor allows the ABOVE schema to be extended metaphorically, providing a new meaning for *over*: the CONTROL sense. Furthermore, Lakoff argues that just as schemas can be extended via conceptual metaphor, some schemas are derived via conceptual metaphor in the first place. Consider the REPETITION schema, which is illustrated in (12).

(12) The student started the assignment over.

According to Lakoff, this schema is derived from the X.C variant of Schema 1 (recall Figure 17.6). However, the REPETITION sense is derived via two conceptual metaphors. First this sense relies upon the conceptual metaphor A PURPOSEFUL ACTIVITY IS A JOURNEY: because purposeful activities such as student assignments can be understood as journeys, the X.C instance of the ABOVE–ACROSS schema associated with *over* is licensed. Second, the repetition sense relies upon the metaphor EVENTS ARE OBJECTS: the LM is metaphorically understood as an earlier performance of the activity, where each performance event is understood as an object. From this perspective, REPETITION is understood in terms of movement ACROSS an earlier performance of the activity, which gives rise to the REPETITION sense. As with senses which derive from image schema transformations, senses derived by conceptual metaphor can be instantiated in semantic memory as distinct units of semantic structure. Table 17.2 provides a summary of the main claims to emerge from Lakoff's full-specification approach.

Table 17.2 The main findings of the full-specification approach (Lakoff 1987)

Words represent radial categories: related senses organised with respect to a central sense.
A radial category consists of abstract schemas, which may also consist of more detailed instances.
Radial categories are highly granular in nature, ranging from relatively schematic senses to very detailed senses.
The lexicon (semantic memory) fully specifies the majority of the senses associated with a lexical item.
Senses may derive from image schema transformations and/or conceptual metaphorical extensions.
Because radial categories have prototype structure, they exhibit polysemy; while some senses are closely related, others are more peripheral (e.g. metaphorical extensions).

2.4 Problems with the full-specification approach

While Lakoff's full-specification approach has been hugely influential, there nevertheless remain a number of outstanding problems with it, which have attracted a fair degree of attention in the literature. For instance, a significant criticism has been that it entails a potentially vast proliferation of distinct senses for each lexical item. For example, Lakoff's approach entails that *over* has, at the very least, several dozen distinct senses. A proliferation of senses is not problematic per se because cognitive linguists are not concerned with the issue of economy of representation. However, the absence of clear methodological principles for establishing the distinct senses is problematic. In this section, I focus on two main problems that have been pointed out in relation to this issue.

2.4.1 Polysemy and vagueness: the role of context

The first problem concerns a failure to distinguish between polysemy and **vagueness**. A linguistic expression is vague rather than polysemous if context rather than information stored in semantic memory provides the meaningful detail about the entity in question. Consider the word *thing*. This expression could be used to refer to almost any entity or event; yet, it seems unlikely that semantic memory links this expression to all the possible entities that it could refer to. Instead, the meaning of this expression is fully specified by context. A less extreme example is the expression *aunt*, which can refer either to a maternal or a paternal aunt. While our knowledge associated with this expression contains this information, the distinction between these senses is fully dependent upon non-linguistic context. Thus, while a polysemous expression relates to a range of conventional senses, a vague expression is characterised by a lack of conventional sense distinctions.

Based on proposals by Tuggy (1993), the distinction between polysemy and vagueness is illustrated in Figure 17.12. Polysemy is illustrated in Figure 17.12(a) and vagueness is illustrated in Figure 17.12(b). In the case of polysemy,

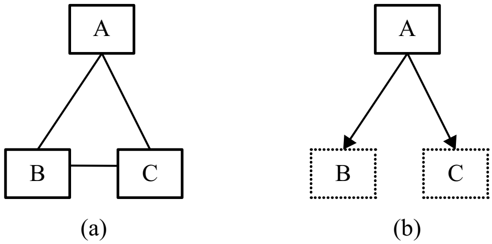

Figure 17.12 The distinction between polysemy and vagueness

A represents the central sense and other senses are represented by the boxes marked B and C. All the boxes are marked with bold lines which captures the idea that all three representations have equal degrees of **entrenchment** in memory (recall the discussion from Chapter 5). The lines between the boxes indicate that the senses are related.

In the case of vagueness, in contrast, A licenses the interpretations designated by B and C: the arrows represent the idea that interpretations B and C are 'computed' from the basic meaning A plus context. The dashed lines represent the idea that meanings B and C are not stored in semantic memory as distinct senses, but emerge from 'on-line' processing.

In light of this distinction, it may now be clearer why Lakoff's full-specification model results in such a large number of distinct senses; Lakoff's model fails to distinguish between polysemy (distinct senses stored in memory) and vagueness (meaning 'filled in' by context). Recall that Lakoff argued for at least six distinct senses associated with the ABOVE–ACROSS schema alone. This number rises to eight if we include the two image schema transformations resulting in endpoint focus.

Indeed, this proliferation of senses results, it can be argued, from a failure to take into account the role of context in determining meaning ('filling in' information). From this perspective, Lakoff's full-specification model represents the opposite extreme of the monosemy approach, by virtue of denying the role of context in meaning altogether.

In subsequent work, some cognitive linguists have argued for a position somewhere between these two extremes. For example, Tyler and Evans (2003) argue that the examples in (13) do not represent distinct senses of *over* (one specifying contact and one specifying lack of contact):

(13) a. The bird flew over the wall.
b. Sam climbed over the wall.

Instead, Tyler and Evans argue that the interpretation of *over* with respect to contact or lack of contact derives from the integration of *over* with the other elements in the sentence. Our knowledge about birds (they can fly) and people (they cannot), provides us with the inference that birds do not come into contact with walls when crossing over them while people do. Hence, the linguistic context together with encyclopaedic knowledge provides the details relating to the presence or absence of contact.

According to Tyler and Evans, *over* in (13) is vague with respect to contact. They argue that while Lakoff's position on polysemy as a radial category phenomenon is correct, it is also important to take into account the crucial role of context in the situated interpretation of the semantic structure encoded by words.

2.4.2 The polysemy fallacy: unconstrained methodology

The full-specification approach has also been criticised for a lack of methodological constraints. The concern is that Lakoff provides no principled criteria for determining what counts as a distinct sense. This means that the polysemy account presented for *over* (or whatever lexical item we might apply the approach to), results purely from the intuitions (and perhaps also the imagination) of the analyst rather than the way a particular category is actually represented in the mind of the language user.

This problem has been discussed in some detail by Sandra and Rice (1995) and by Sandra (1998). Sandra argues that to view all context-bound usages of a particular lexical item as instances of polysemy is to commit what he dubs the **polysemy fallacy**: just because lexical items *can* exhibit polysemy, it does not follow that all or even many distinct senses associated with a lexical item *are* instances of polysemy. Indeed, Sandra has even suggested that the lack of clear methodological principles underpinning Lakoff's semantic network analysis undermines its status as a true linguistic theory. As he puts it, 'what is lacking from the exercise is a set of *scientifically valid* [decision] principles' (Sandra 1998: 371; original emphasis).

2.5 The Principled Polysemy approach

The Principled Polysemy approach proposed by Vyvyan Evans and Andrea Tyler (e.g. Evans 2004, 2005; Tyler and Evans 2001a, 2003) takes up Sandra's challenge to develop clear decision principles that make semantic network analyses objective and verifiable. These decision principles should achieve two goals:

i) They should serve to determine what counts as a distinct sense and thus distinguish between senses stored in semantic memory (polysemy) and context-dependent meanings constructed 'on-line' (vagueness).
ii) They should establish the prototypical or central sense associated with a particular radial category.

The second point is important because cognitive linguists have not always agreed about the central senses of categories. For example, while Lakoff argued that the central sense for *over* is the ABOVE–ACROSS image schema, Kreitzer (1997) has argued that the central sense is in fact the ABOVE schema. In their (2003) book *The Semantics of English Prepositions*, Tyler and Evans sought to provide decision principles that could be applied to the entire class of English prepositions. In the remainder of this section, I examine, in detail how the Principled Polysemy approach works.

2.5.1 Distinguishing between senses

Tyler and Evans provide two criteria for determining whether a particular sense of a preposition counts as a distinct sense and can therefore be established as a case of polysemy:

i) For a sense to count as distinct, it must involve a meaning that is not purely spatial in nature, and/or a spatial configuration holding between the TR and LM that is distinct from the other senses conventionally associated with that preposition.
ii) There must also be instances of the sense that are context-independent: instances in which the distinct sense could not be inferred from another sense and the context in which it occurs.

To see how these criteria are applied, consider the sentences in (14) and (15):

(14) The hummingbird is hovering over the flower.

(15) The helicopter is hovering over the city.

In (14), *over* designates a spatial relation in which the TR, *the hummingbird*, is located higher than the LM, *the flower*. In (15), *over* also designates a spatial relationship in which the TR, *the helicopter*, is located higher than the LM. In these examples, neither instance of *over* involves a non-spatial interpretation and both senses encode the same spatial relation. According to Tyler and Evans' first criterion, the two instances do not encode distinct senses; hence, the second criterion does not apply. The sense of *over* that is represented in both these examples is what Tyler and Evans call the ABOVE sense. According to Tyler and Evans, this is the central sense, a point to which we return below. Now compare the example in (16) with (14) and (15).

(16) Joan nailed a board over the hole in the ceiling.

In (16), the spatial configuration between the TR and LM is not consistent with the ABOVE meaning in (14) and (15): in (16) the board is actually below the hole in the ceiling. In addition, there is a non-spatial aspect to this sense: part of the meaning associated with *over* in (16) relates to COVERING, because the LM (*the hole*) is obscured from view by the TR. This COVERING meaning is not apparent in examples (14) and (15). The presence of this non-spatial aspect in the sense of *over* in (16) meets the first assessment criterion stated by Tyler and Evans, which means we can now consider the second criterion. In doing so, we must establish whether the COVERING meaning is context-independent. Recall that if the meaning is 'computed' on-line, based on the central ABOVE meaning of *over* plus contextual and/or encyclopaedic knowledge, then this sense qualifies as vagueness rather than polysemy. Tyler and Evans argue that the meaning of *over* in (16) cannot be computed on-line, and is therefore context-independent. In short, the knowledge that *over* in (15) has an ABOVE meaning does not allow us to infer a COVERING meaning from the context supplied by (16).

To elaborate this point, Tyler and Evans provide a different example in which the COVERING interpretation is derivable from context. Consider example (17).

(17) The tablecloth is over the table.

In (17), the TR (*the tablecloth*) is above (and in contact with) the LM (*the table*). The interpretation that the table is covered or obscured by the tablecloth can be inferred from the fact that the tablecloth is above the table, together with our encyclopaedic knowledge that tablecloths are larger than tables and the fact that we typically view tables from a vantage point higher than the top of the table. This means that the sense of *over* in (17) can be inferred from the central ABOVE sense together with encyclopaedic knowledge. This type of inference is not possible in (16) because the spatial relation holding between the TR and the LM is one that would normally be encoded by the expression *below* (*The board is below the hole in the ceiling*), given our typical vantage point in relation to ceilings. The COVERING meaning of *over* in (16) must therefore be stored as a conventional sense associated with *over*, which means that we can conclude that this is an instance of polysemy.

It is worth observing that Tyler and Evans argue that examples such as (17) – which give rise to a 'covering' inference while conventionally encoding the ABOVE meaning of *over* – represent the means by which new senses are added to a lexical category. According to this view, when context-dependent inferences are reanalysed as distinct meanings (a process termed **pragmatic strengthening**), a lexical item develops new senses.

This perspective is somewhat at odds with Lakoff's view that conceptual metaphor and image schema transformations hold a central place in meaning extension. By arguing that contextual factors can give rise to new senses, Tyler and Evans emphasise the usage-based nature of semantic change, adopting a position that owes much to the **invited inferencing theory** of semantic change (see Chapter 27).

2.5.2 Establishing the prototypical sense

Recall that Tyler and Evans argue that the central sense of *over* is the ABOVE sense. I now examine the criteria Tyler and Evans provide for establishing the central sense of a polysemous lexical item. These relate to four types of linguistic evidence (listed below) that Tyler and Evans suggest can be relied upon to provide a more objective means of selecting a central sense. Taken together, these criteria form a substantial body of evidence pointing to one sense from which other senses may have been extended.

i) earliest attested meaning;
ii) predominance in the semantic network;

iii) relations to other prepositions;
iv) ease of predicting sense extensions.

Let's begin with the first criterion. Given the very stable nature of spatial expressions within a language (prepositions represent a closed-class), one likely candidate for the central sense is the historically earliest sense. Moreover, unlike other word classes, the earliest attested sense for many prepositions is still an active component of the **synchronic semantic network**. For example, *over* is related to the Sanskrit *upan* 'higher' as well as the Old Teutonic comparative form *ufa* 'above', representing in both cases a spatial configuration in which the TR is higher than the LM. This historical evidence points to the ABOVE meaning as the central sense.

The second criterion relates to predominance within a semantic network. This criterion holds that the central sense will be the one most frequently involved in or related to the other distinct senses. For example, by applying the two criteria discussed in the previous section, Tyler and Evans (2003) identified sixteen distinct senses associated with *over*. Of these, eight directly involve the location of the TR ABOVE the LM; four involve a TR located ON THE OTHER SIDE OF the LM relative to the vantage point; one involves occlusion (COVERING); two (REFLEXIVE and REPETITION) involve a multiple TR–LM configuration: a situation in which there is more than one TR and/or LM; and one involves temporal 'passage'. The criterion of predominance therefore suggests that the central sense for *over* is the ABOVE sense.

The third criterion concerns relations to other prepositions. Within the entire group of English prepositions, certain clusters of prepositions appear to form what Tyler and Evans dub **contrast sets** that divide up various spatial dimensions. For example, *above*, *over*, *under* and *below* form a compositional set that divides the vertical dimension into four related subspaces, as illustrated in Figure 17.13.

As this diagram shows, *over* and *under* tend to refer to those subspaces along the vertical axis that are physically closer to the LM, while *above* and *below* tend to designate relations in which the TR is further away from the LM. In Figure 17.13, the bold horizontal line refers to the LM while the dotted lines refer to areas of vertical space higher and lower than the LM which count as

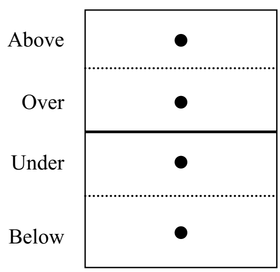

Figure 17.13 Division of the vertical axis into subspaces by prepositions

proximal. The dark circles represent TRs in each subspace corresponding to the prepositions listed on the left of the diagram.

Evidence for the proximity distinction comes from the fact that sentences relating to an unspecified region higher than the LM appear to be less natural with *over* but more natural with above (for example, compare: *The birds are somewhere above us* with the semantically anomalous: #*The birds are somewhere over us*).

To a large extent, the lexical item assigned to designate a particular TR–LM configuration is determined by how it contrasts with other members of the set. For example, what we label as *over* is partially determined by what we label as *under*. The sense used in the formation of such a contrast set would thus seem a likely candidate for a primary sense. For *over*, the sense that distinguishes this preposition from *above*, *under* and *below* relates to a TR located ABOVE but in proximity to the LM. This criterion therefore also suggests that the ABOVE sense is central.

Finally, the fourth criterion relates to the ease with which sense extensions can be predicted from a given sense: the greater the ease of prediction, the more central the sense. Because the central sense is likely to be the sense from which the other senses in the semantic network have derived diachronically, it seems likely that the central sense should be the best predictor of other senses in the network.

The approach to establishing the central sense proposed by Tyler and Evans differs markedly from the approach proposed by Lakoff. Rather than assuming an idealised composite image schema as Lakoff does, Tyler and Evans provide a number of distinct criteria that can be applied to other prepositions, providing empirically testable predictions and a methodology that can be replicated.

Finally, for Tyler and Evans' theory, the central sense for a preposition such as *over* is directly grounded in a specific kind of recurring spatial scene. This spatial scene, which relates a TR and an LM in a particular spatio-geometric configuration, is termed the **proto-scene**. While the proto-scene is a type of image schema, it is distinct from the central image schema proposed by Lakoff because it relates to a distinct and discrete spatial scene. The proto-scene for *over* is illustrated in Figure 17.14. The small circle represents the TR and the unbroken line the LM. The fact that the TR is located above the LM indicates that the spatio-geometric relation involves a 'higher-than' or ABOVE relation. The dashed line indicates that the TR must be within a region proximal to the LM.

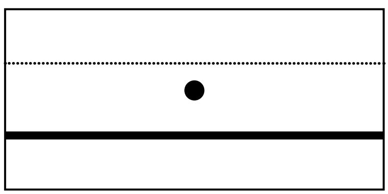

Figure 17.14 The proto-scene for *over* (Tyler and Evans 2003)

2.5.3 Illustration of a radial category based on Principled Polysemy

On the basis of the Principled Polysemy approach, Tyler and Evans (2003) propose that *over* can be modelled in terms of a semantic network consisting of sixteen distinct senses, as shown in Figure 17.15. Each distinct sense is shown as a dark circle which represents a node in the network. The central sense occupies a central position, indicating its status as the prototypical sense. Some senses within the radial category appear to be more closely related to one another. These senses are represented in clusters, arranged with respect to an unshaded circle. Distance from the prototype reflects intuitions about degree of centrality. Direction of arrows represents possible paths of derivation, discussed in a little more detail below. A key to the distinct senses is given in Table 17.3.

2.5.4 Beyond prepositions

The attraction for cognitive linguists in studying prepositions such as *over* has been their direct grounding in spatial experience. In this respect, prepositions

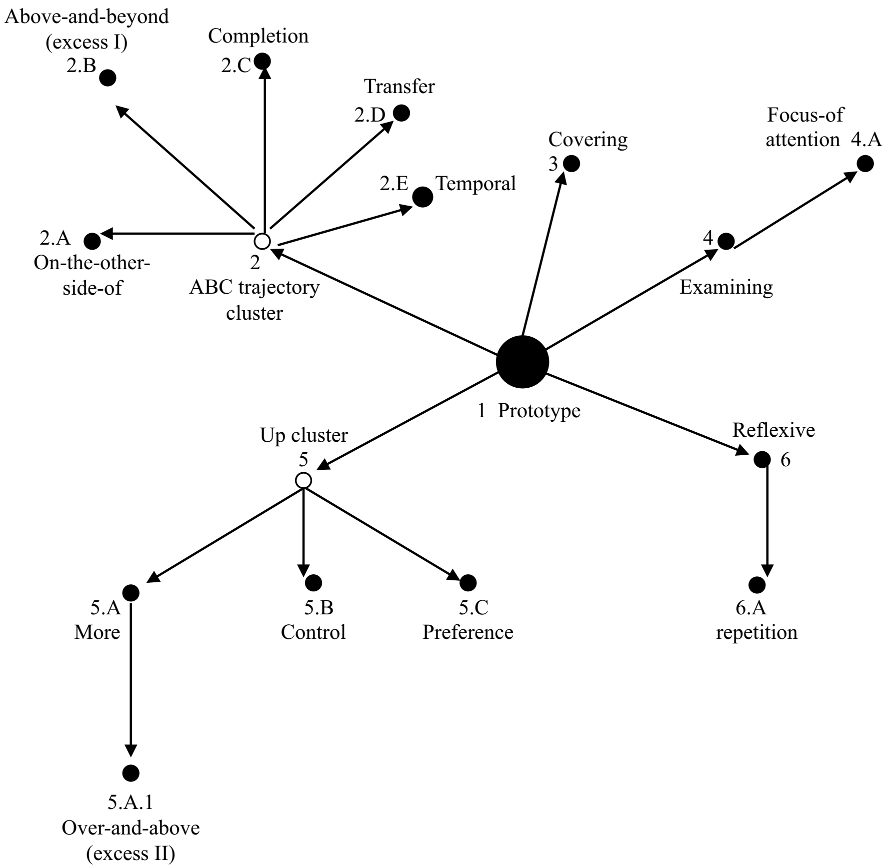

Figure 17.15 The semantic network for *over* (adapted from Tyler and Evans 2003: 80)

Table 17.3 Distinct senses for *over* identified in Tyler and Evans (2003)

	Sense	Example
1	ABOVE (central sense)	The picture is over the sofa
2A	ON-THE-OTHER-SIDE-OF	St. Paul's is over the river from Southwark
2B	ABOVE-AND-BEYOND (EXCESS I)	Your article is over the page limit
2C	COMPLETION	The movie is over
2D	TRANSFER	The discredited government hand power over to an interim authority
2E	TEMPORAL	The relationship had altered over the years
3	COVERING	The clouds are over the sun
4	EXAMINING	Mary looked over the document quite carefully
4A	FOCUS-OF-ATTENTION	The committee agonised over the decision
5A	MORE	Jerome found over forty kinds of shells on the beach
5A1	OVER-AND-ABOVE (EXCESS II)	The heavy rains caused the river to flow over its banks
5B	CONTROL	She has a strange power over me
5C	PREFERENCE	I would prefer tea over coffee
6	REFLEXIVE	The fence fell over
6A	REPETITION	After the false start, they started the race over

provide a transparent illustration of the thesis of embodied cognition, particularly in terms of how units of semantic structure grounded in the spatio-physical realm are extended to those that are less clearly grounded in spatio-physical experience such as COMPLETION, CONTROL and TIME. However, the approach developed by Tyler and Evans is, in principle, applicable to all lexical classes. I illustrate this point with a discussion of different lexical classes: nouns and verbs. I begin with more abstract entity: the noun *time*.

Evans (2004, 2005) further developed the Principled Polysemy approach in order to investigate the polysemy associated with the abstract noun *time*. Evans proposes three criteria for establishing distinct senses associated with *time*:

i) *The meaning criterion*: for a sense to count as distinct, it must contain additional meaning not apparent in any other senses associated with *time*.
ii) *The concept elaboration criterion*: a distinct sense will feature unique or highly distinct patterns of **concept elaboration**. Concept elaboration relates to **semantic selection restrictions** which determine how the sense can be (metaphorically) structured and thus elaborated at the linguistic level. Concept elaboration may relate to how the noun is modified (*a short time*), to the verb phase that forms a sentence with the noun phrase (*The time sped by*) or to an adverbial element (*The time went by quickly*).

iii) *The grammatical criterion*: a distinct sense may manifest unique or highly distinct **structural dependencies**. That is, it may occur in specific kinds of grammatical constructions. Hence, for a sense to be distinct it must exhibit distinctive grammatical behaviour.

In order to illustrate how these criteria apply, consider examples (18) and (19).

(18) a. Time flies when you're having fun.
b. Last night at the fair the time seemed to whizz by.

(19) a. The time has arrived to finally tackle environmental pollution.
b. A time will come when we'll have to say no to further deforestation of the Amazon region.

In (18), the examples relate to one aspect of our experience of DURATION in which time appears to be proceeding more quickly than usual. As we saw in Chapter 4, this psychologically real phenomenon is called **temporal compression**. In contrast, the examples in (19) do not relate to our experience of duration but our experience of discrete points in time, without regard for their duration (MOMENT). Hence, the expression *time* has quite distinct meanings associated with it in each set of examples. This means that the two senses are distinct according to the meaning criterion.

In terms of the second criterion, the examples in (18) and (19) have distinct patterns of concept elaboration (metaphorical structuring) associated with them. The temporal compression interpretation associated with *time* can be elaborated in terms of motion, which is either rapid as in example (18) or imperceptible as in example (20).

(20) a. The time has vanished.
b. The time seems to have sneaked by.

In contrast, the moment meaning in (19) has to be elaborated in terms of motion that is terminal in nature which is therefore oriented with respect to a specific reference point (e.g. NOW). In short, elaborating the MOMENT sense of *time* in terms of rapid or imperceptible motion results in extremely unnatural sentences that are diffcult to interpret. This is illustrated by example (21a), which can be explained on the basis that rapid or imperceptible motion is incompatible with a reading involving the imminent occurrence of a discrete temporal MOMENT:

(21) a. #The time has vanished/whizzed by to finally tackle environmental pollution.
b. #A time will whizz by/vanish when we'll have to say no to further deforestation of the Amazon region.

Table 17.4 Some senses of *fly*

	Sense	Example
Sense 1	SELF-PROPELLED AERODYNAMIC MOTION (no contact with the ground)	*The bird is flying*
Sense 2	OPERATION BY AGENT OF ENTITY CAPABLE OF AERODYNAMIC MOTION	*The pilot is flying the plane*
Sense 3	CONTROL OF LIGHTWEIGHT ENTITY BY AGENT (so that it remains airborne)	*The child is flying the kite*
Sense 4	SUSPENSION OF LIGHTWEIGHT OBJECT (which is thus extended and visible)	*The flag is flying*

Equally, elaborating the temporal compression sense of *time* in terms of terminal motion cancels the TEMPORAL COMPRESSION reading and forces a MOMENT reading as illustrated by example (22).

(22) The time has arrived.
[Intended reading: the experience of duration is abnormally compressed; that is, time *feels* as if it's proceeding more 'quickly' than usual]

This fact that these two senses of *time* respond differently to concept elaboration satisfies the second criterion, suggesting that these readings qualify as distinct senses.

In terms of the third criterion, which relates to the grammatical realisation of distinct senses, observe that the temporal compression sense is encoded by a mass noun, one diagnostic of which is that *time* cannot take the singular indefinite article (*a*), as shown in (23).

(23) *A time raced by.

In contrast, the MOMENT sense is encoded by a count noun and can co-occur with the indefinite article:

(24) A time will come when we'll finally have to address global warming.

The fact that the two senses of *time* pattern differently in terms of grammatical behaviour means, according to the third criterion, that they are also distinct senses. Taken together, these three criteria provide persuasive evidence for the view that we are dealing with two distinct lexical concepts or senses of *time*.

Although they were originally developed for the analysis of the single lexical item *time* which relates to a relatively narrow subset of one lexical class (abstract nouns), the criteria discussed above provide a promising direction for the analysis of concrete nouns and other lexical classes including adjectives and verbs. For example, consider how these criteria might serve to provide a semantic analysis of the motion verb *fly*, illustrated by the examples in (25):

(25) a. The plane/bird is flying (in the sky).
b. The pilot is flying the plane (in the sky).
c. The child is flying the kite (in the breeze).
d. The flag is flying (in the breeze).

In terms of the meaning criterion, each instance of *fly* in (25) represents a distinct sense. The meaning in (25a), which I will identify as sense 1, can be represented as SELF-PROPELLED AERODYNAMIC MOTION and entails absence of contact with the ground. The meaning in (25b), sense 2, can be represented as OPERATION BY AGENT OF ENTITY CAPABLE OF AERODYNAMIC MOTION. The meaning in (25c), sense 3, can be represented as CONTROL OF LIGHTWEIGHT ENTITY BY AGENT (e.g. using an attachment like a piece of string, with the result that it remains airborne). The meaning in (25d), sense 4, can be represented as SUSPENSION OF LIGHTWEIGHT OBJECT (like a flag, with the result that it remains extended and visible).

In terms of the second criterion, which relates to concept elaboration and resulting semantic selectional restrictions, there are a number of distinct patterns in evidence. For example, the different senses of *fly* appear to require distinct kinds of semantic arguments. For instance, sense 1 can only apply to entities that are capable of self-propelled aerodynamic motion. Entities that are not self-propelled, like tennis balls, cannot be used in this sense (**The tennis ball is flying in the sky*).

Sense 2 is restricted to the operation by an AGENT of entities that can undergo self-propelled aerodynamic motion and the entity must therefore be able to accommodate the AGENT and thereby serve as a means of transport. This explains why planes and hot air balloons are compatible with this sense but entities unable to accommodate an AGENT are not. This is illustrated by example (26).

(26) #He flew the sparrow across the English Channel.

In the case of sense 3, this sense is restricted to entities that are capable of becoming airborne by turbulence and can be controlled by an AGENT on the ground. This sense appears to be specialised for objects such as kites and model aeroplanes.

Sense 4 relates to entities that can be horizontally extended by virtue of air turbulence, yet retain contact with the ground by virtue of remaining physically attached to another (non-agentive) fixed entity. This sense can be applied to flags as well as hair and scarves, which can 'fly in the wind'. In sum, each of the four senses discussed here appear to restrict the kind of entities to which the verb can be applied and are therefore distinct senses according to the second criterion.

In terms of the third criterion, there are also grammatical differences associated with the senses presented which are most clearly manifested in terms of valence – discussed in the previous chapter, and also known as **transitivity**. For instance, while senses 1 and 4 are **intransitive** (they cannot take a direct object), senses 2 and 3 are transitive (they either can – sense 2 – or must – sense 3 – take a direct object). Hence, it appears that the three lines of evidence developed in Evans (2004, 2005) provide the basis for a methodology for distinguishing distinct senses across a wider range of lexical classes. The senses of *fly* discussed in this section are summarised in Table 17.4.

2.6 Criticisms of principled polysemy

Since the development of the Principled Polysemy model, there have been a number of studies that have sought to critique the approach on empirical and/or theoretical grounds, and/or further refine the model, based on revising the methodological criteria for positing polysemy. Representative critiques of the Principled Polysemy model include, among others, Deane (2005), Dewell (2008), Ma (2011) and Van der Gucht et al. (2007), as well as Evans (2010a).

In particular, a trenchant criticism has been that in attempting to distinguish between conventional senses established in semantic memory from contextual inferences – those that are constructed 'on the fly' – the architects of the model, Evans (2004), and Tyler and Evans (2003), in fact underplayed the semantic complexity of the conventional representations associated with sense-units (see the critique of the model in Evans 2009, 2010a). This, in part, led Evans to a newer theoretical development, the theory of **Access Semantics** (Evans 2009, 2013b, 2015b, 2015c, 2016), which I introduce in the next chapter.

The thrust of Evans' (2010a) criticism relates to the way in which established senses in a semantic network give rise to new or extended senses. I illustrate with respect to spatial semantics. Recall that in Chapter 3, I introduced the idea that linguistic representations of spatial schemas are typically **functional** in nature. I did so, for instance, by discussing the work of Annette Herskovits, as well as Claude Vandeloise. To recall Vandeloise's observation, I reproduce the image he used, that here I label Figure 17.16.

Vandeloise observes that the image depicted in Figure 17.16 could either represent a bottle or a light bulb. As example (27) shows, we can use the preposition *in* to describe the relation between *the light bulb* (TR) and *the socket* (LM).

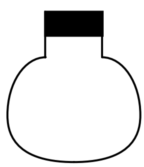

Figure 17.16 A bottle or a light bulb? (adapted from Vandeloise 1994)

(27) The bulb is in the socket.

In contrast however, we cannot use *in* to describe the relation between a bottle and its cap, as illustrated by (28).

(28) #The bottle is in the cap.

Vandeloise points out that the spatial relation holding between the TR and LM in each of these utterances is identical, and yet while (27) is a perfectly acceptable sentence (28) is semantically odd. Vandeloise suggests that it is not the spatial relation holding between the TR and LM that accounts for the acceptability or otherwise of *in*. He argues that the relevant factor is one of force dynamics: '[W]hile the socket exerts a force on the bulb and determines its position, the opposite occurs with the cap and the bottle' (Vandeloise 1994: 173). In short, not only is the position and the successful function of the bulb contingent on being *in* (contained by) the socket, but the socket also prevents the bulb from succumbing to the force of gravity and falling to the ground. In contrast, the position and successful functioning of the bottle is not contingent on being *in* the cap. This suggests that our knowledge of the functional consequences associated with located containment affects the contextual acceptability of a preposition such as *in*.

This insight influenced the development of the Principled Polysemy approach. Tyler and Evans posited a **functional element** for the prototypical spatial sense-unit associated with a given preposition. That is, to understand how language users employ the prototypical sense of a preposition, the Principled Polysemy approach posits that part of the conventional semantic structure of the central spatial sense is non-spatial in nature. In terms of *over*, the claim is that the functional element is 'sphere of influence'. For this reason, *over* can encode only spatial relations where the TR is higher than, but within the sphere of influence of the landmark. It is for this reason that *over* is acceptable with examples when, for instance, the TR can be observed, as in (29), but not in (30).

(29) There are birds flying over us.

(30) #There are birds somewhere over us.

The example in (29) connotes that we can see the birds, and hence, they may be sufficiently proximal, above our heads that we can make out their details, or perhaps even that we need to duck. However, the example in (30) connotes that while we may be aware of birds, they are not visible, perhaps due to cloud cover, and/or foliage if we are in a wood or forest and/or they may only be partially audible. This implies lack of proximity, such that we are less affected by the birds. Indeed, if we replace over with above, as in (31), the utterance now becomes semantically acceptable:

(31) There are birds somewhere above us.

This illustrates that part of the semantic structure of the spatial ABOVE sense of *over* encodes a functional element – a humanly relevant consequence of the spatial configuration, relevant in the sense of our interaction with and action in the world around us.

But while the Principled Polysemy approach posits a functional element, it turns out that such a single element is empirically inadequate to account for the range of non-spatial, 'functional' sense-units that develop, over time, from the prototypical spatial sense. It turns out that the prototypical spatial sense includes several distinct functional elements – which, in the framework of Access Semantics, are referred to as semantic **parameters** (see Evans 2009, 2015c) – which form part of the semantic structure encoded by a linguistic form.

Ultimately, the difficulty for the Principled Polysemy framework is that while it attempted to provide a detailed account of lexical representation, because of its primary concern with detailing a rigorous methodology for establishing distinct sense-units, it failed to fully work out the implications of the functional nature of spatial semantics for lexical representation.

3 Langacker's network conception

In this section, I briefly introduce the network conception as developed by Langacker in his theory of Cognitive Grammar. Langacker's network model is conceived as representing the structure of categories, with members of a category viewed as nodes in a complex network. Hence, Langacker's approach is analogous to Lakoff's radial category model; however, as we shall see, Langacker's model is broader in scope, as it is intended to represent all linguistic categories, including word senses – as with Lakoff's approach – but also grammatical constructions, and even units of phonological structure.

3.1 Schemas versus instances

As we saw in Chapter 5, when I introduced the usage-based perspective assumed by cognitive linguists, Langacker proposes that the hallmark of linguistic organisation relates to the degree of abstractness of both grammatical and semantic units. This Langacker models in terms of **schemas** and **instances**, a distinction central to Langacker's network approach. In this section, I reconsider this distinction, before considering the model in more detail.

According to Langacker, and cognitive linguists more generally, the mental grammar of our native language is made up of an inventory of symbolic units – form–meaning pairings such as the word *over*, or a grammatical construction such as the passive. For Langacker, this inventory of symbolic units is organised in terms of **schema–instance relations**. A schema is a symbolic unit that emerges from a process of **abstraction** over more specific symbolic units termed instances. Langacker holds that schemas form in the mental grammar when patterns of similarity are abstracted from utterances, giving rise to a more schematic representation or symbolic unit. The relationship between a schema and the instances from which it emerges is the schema–instance relation. This relationship is hierarchical in nature.

Consider common nouns such as *cats*, *dogs*, *books*, *flowers* and so on. Each of these expressions is a highly entrenched symbolic unit. For example, the symbolic unit *cats* might be represented by the formula in (32):

(32) [[[CAT]/[kæt]]-[[PL]/[s]]]

The representations in small capitals indicate the **semantic poles** of the symbolic unit (units of semantic structure), while those in the International Phonetic Alphabet (IPA) font represent the **phonological poles** (units of form). The slash indicates the symbolic link between semantic and phonological poles, and the hyphen indicates the linking of symbolic units to form a complex structure. Given that there are many cases of regular plural nouns in the linguistic inventory, this regular pattern is captured by a schematic symbolic unit which contains only schematic information about the construction. This schema for plural nouns is represented in (33).

(33) [[[THING]/[. . .]]-[[PL]/[s]]]

In this schematic representation, the semantic pole THING indicates a noun, but its corresponding phonological unit is left blank to indicate that this construction represents nouns in general. Each fully specified unit corresponding to this schema (e.g. the expressions *cats*, *dogs*, *books*, *flowers*) represents an instance of the schema. The hierarchical relationship between a schema and its instances is captured in Figure 17.17.

As already intimated, however, the schema–instance relation is not restricted to symbolic units. For Langacker, the schema is any superordinate (more general) element in a taxonomy and the instance is any subordinate (more specific) element. Hence, the schema–instance relation represents a type of categorisation relation. In terms of phonological units, for example, the phoneme is the schema and its allophones are instances. In terms of units of semantic structure, the concept BEER is schematic in relation to the instances ALE, LAGER, STOUT, PORTER and MALT. An instance is said to **elaborate** its schema, which means that it provides more specific meaning. For example, PRIMATE is more specific than ANIMAL, and in turn APE is more specific than PRIMATE.

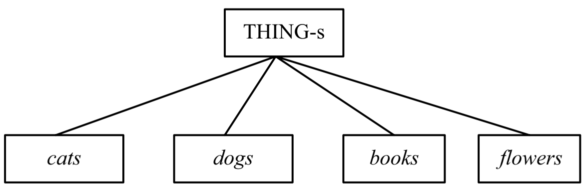

Figure 17.17 Schema–instance relations

3.2 The network model

In Langacker's **network model**, the links between nodes in a network arise from a number of different kinds of **categorising relationships** which hold between the symbolic units stored in the grammatical inventory. One type of categorising relationship, and the most general, is the relationship between schema and instance. As intimated above, entrenched units – instances – that share a structural pattern give rise to a schematic representation of that structure, reflecting the usage-based nature of the model. The schema structures those related units as a category within the network, and novel expressions can be compared against such categories.

According to Langacker, the network model characterises not only polysemous units of semantic structure, including words, but also underlies other kinds of linguistic categories, including those relating to sound as well as grammar. This means that morphemes, word classes and grammatical constructions are also envisaged as nodes in a network. It follows that while some nodes (such as **morphemes**) are structurally simplex, other nodes (such as the phonological poles of symbolic units or phrase or sentence-level grammatical constructions) themselves have complex internal structure. For example, the English past tense morpheme is represented by the (partial) model in Figure 17.18.

At the semantic pole, PROCESS represents the verb and PAST represents the past tense morpheme. The next level in the network represents the various phonological instantiations of this schema, which are themselves schematic representations of the next level in the hierarchy, where specific instances of each schema are represented.

A second type of categorising relationship is **extension from a prototype**, where A is the prototype and B shares some but not all attributes of A and is thus categorised as an instance of that category. In this case, B is both an instance of the prototype and is also an instance of the more abstract schema. Hence, in Langacker's model, as all instances share a more abstract schema, the network can grow 'upwards' via schematisation, 'outwards' via extension and 'downwards' as more detailed instances are added. Figure 17.19 captures the basis of the network model.

3.3 Polysemy in the network model

On Langacker's account, polysemy arises due to the extension from a prototype categorising relationship. To illustrate, consider Langacker's (1991: 185) discussion of gender morphology in Spanish; this provides an example of how prototype structure in a grammatical category gives rise to polysemy via extension from the prototype.

In Spanish, there are two gender suffixes, *-o* and *-a* that can be added to nouns. According to Langacker, the prototypical values of these morphemes are MALE THING (*-o*) and FEMALE THING (*-a*), as the examples in (34) illustrate.

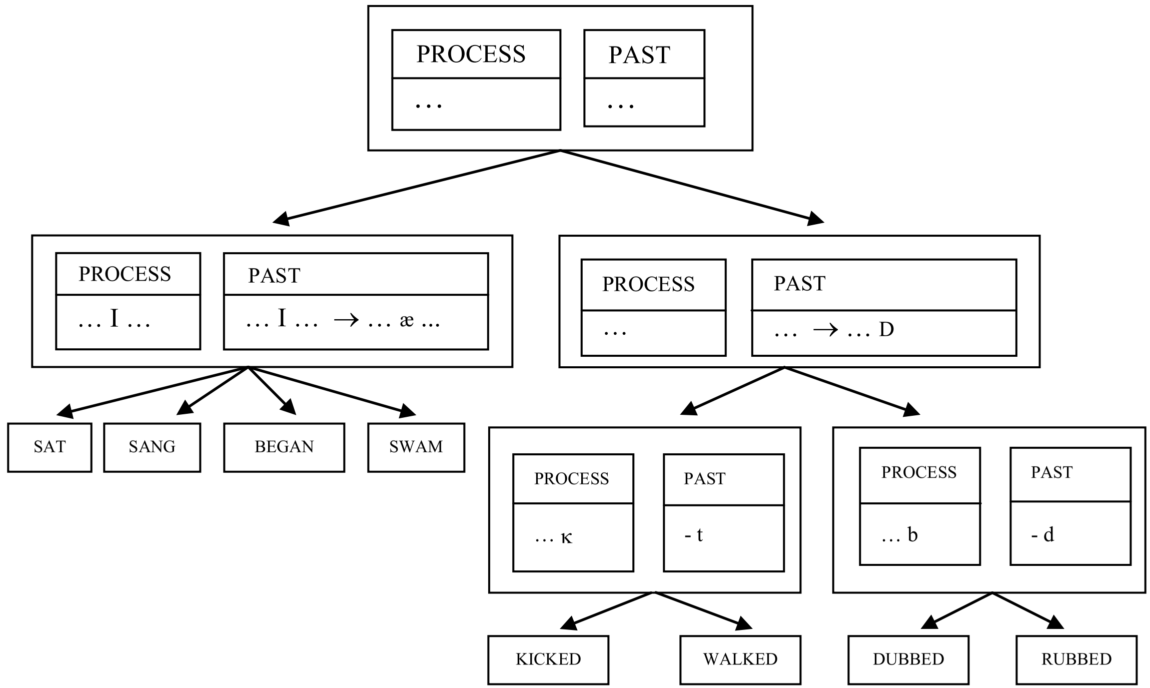

Figure 17.18 (Partial) network model of the English past tense morpheme (adapted from Langacker 2002: 283)

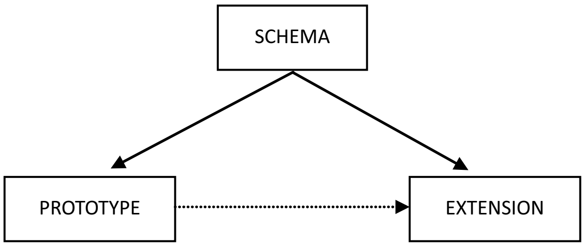

Figure 17.19 Network model (adapted from Langacker 2002: 271)

(34)	a.	hermano	'brother'	b.	hermana	'sister'
	c.	oso	'male bear'	d.	osa	'female bear'
	e.	muchacho	'boy'	f.	muchacha	'girl'

However, these affixes also attach to nouns that have no inherent sex, such as the inanimate objects *mesa* 'table' and *cerro* 'hill'. Langacker argues that these affixes are still meaningful, but have a highly schematic meaning in the latter type of example where they mean just THING – in Langacker's theory of Cognitive Grammar – as we shall see in Part IV of the book – the semantic representation for the grammatical category noun is THING. Hence, based on the network model, at the 'centre' of this category are the semantically rich instances which encode MALE/FEMALE THING. But extending out from this prototype are more peripheral instances which share the semantic characterisation THING but lack the richer semantic characterisation. Hence, 'o' and 'a' can be added to designate that a lexical item is a nominal, but without indicating gender.

4 The importance of context for polysemy

In this chapter, I have largely assumed that it is possible to provide criteria for establishing senses associated with words (and other linguistic units), and that it is therefore possible to determine where sense boundaries occur. However, in practice, it is not always a straightforward matter to determine whether a particular sense of a word counts as a distinct sense and thus establishes polysemy. This is because word meanings, while relatively stable, are always subject to context (recall the discussion in the previous chapter). The consequence of this fact is that while polysemy, as a phenomenon pertaining to semantic structure, entails a number of wholly distinct yet demonstrably related senses, the reality is that some word senses, while appearing to be distinct in certain contexts, appear not to be in others. In short, polysemy is often a matter of degree and exhibits **gradability** due to contextual influence. In a number of studies, Alan Cruse (e.g. 2002) has identified a number of ways in which context affects the nature of polysemy. I discuss three of these, which I refer to as **usage context**, **sentential context** and **knowledge context**.

4.1 Usage context: subsenses

A **subsense** is a distinct word meaning that appears to be motivated by usage context: the specific situational context in which the word (and the utterance in which the word is embedded) occurs. However, the distinct sense disappears in other contexts. This suggests that subsenses (also known as **micro-senses**; Croft and Cruse 2004) lack what Cruse calls **full autonomy**: the degree of conventionalisation that secures relative context-independence and thus identifies distinct senses. Example (27), taken from Cruse (2000: 36), illustrates a context-specific subsense of the lexical item *knife*:

(35) Mother: Haven't you got a knife, Billy?
Billy: (at table, fingering his meat: has penknife in his pocket, but no knife of the appropriate type) No.

Although Billy does have a knife (a penknife), the context (sitting at the meal table) stipulates that it is not a knife of the appropriate kind. Hence, the usage context narrows down the meaning of knife to cutlery knife.

At this point, we might pause to consider whether the notion of subsenses can be subsumed under vagueness: could it be that the expression *knife* is vague rather than polysemous like the expression *aunt*? Cruse argues that this is not the case based on evidence such as the **identity constraint**. Consider the following examples adapted from Croft and Cruse (2004: 129):

(36) John needs a knife; so does Sarah.

(37) John has an aunt; so does Sarah.

In the first sentence, we are likely to interpret the second conjunct as referring to the same sense of *knife* (e.g. they both need a table knife): this illustrates the identity constraint. However, in (37), there is no such constraint. The second conjunct could refer to either a maternal or paternal aunt. These examples illustrate Cruse's claim that while subsenses adhere to the identity constraint, lexical items that are vague do not.

Now let's consider why subsenses are not fully conventional senses. Cruse observes that in certain situations the distinct subsenses cutlery knife and penknife disappear:

(38) The drawer was filled with knives of various sorts.

This sentence could appropriately be used to describe a drawer that contained a cutlery knife, a penknife, a surgeon's knife, a flick knife, a soldier's knife and so on. As such, the example in (38) appeals to a unified meaning of *knife* in which the contextually induced subsenses disappear. This demonstrates that subsenses do not qualify as fully distinct senses, encoded in semantic memory, because they require specific kinds of context in order to induce them. Hence, the polysemy associated with the lexical item appears to be heavily dependent upon usage context.

4.2. Sentential context: facets

A facet is a sense that is due to the part–whole structure of an entity, and is selected by a specific sentential context. As with subsenses, facets are context-dependent because the distinctions between facets only arise in certain sentential contexts. For example, consider the lexical item *book*. By virtue of its structure, the concept book consists of both text (the informational content of a book) and tome (the physical entity consisting of pages and binding). These two meanings are facets rather than subsenses because they relate to the intrinsic structure and organisation of books in general rather than relating to contexts of use. However, these facets only become apparent in certain sentential contexts. Consider the examples in (39).

(39) a. That book is really thick.
b. That book is really interesting.

The example in (39a) refers to the TOME facet of *book* while (39b) refers to the TEXT facet. Observe that it is sentential context (the presence of the expressions *thick* versus *interesting*) rather than context of use that induces a particular facet.

However, just as with subsenses, the distinction between facets can disappear in certain contexts:

(40) Although it's an expensive book, it's well worth reading.

In this example, while price (*it's an expensive book*) relates to the TOME facet, the fact that the book is interesting (*it's well worth reading*) relates to the TEXT facet. The fact that the example in (40) coordinates these two facets without the difference in meaning being marked in any way suggests that the distinction between the facets disappears in this context. In this example, the facets combine to form a unified meaning of *book* that includes both TEXT and TOME.

4.3 Knowledge context: ways of seeing

The third and final kind of context that I consider is knowledge context. This relates to encyclopaedic knowledge – as discussed in the previous chapter – rather than context of use or sentential context. The fact that each individual has different experiences entails that each individual also has different mental representations relating to their experience of particular entities. This creates an encyclopaedic knowledge context that can influence how words are interpreted. Cruse (2000; Croft and Cruse 2004) dub this phenomenon: **ways of seeing**. For example, Croft and Cruse (2004: 138) show that the expression *an* *expensive hotel* can be interpreted in (at least) three different ways depending upon 'ways of seeing':

(41) *an expensive hotel*
'Kind' way of seeing: 'a hotel that is/was expensive to buy'
'Functional' way of seeing: 'a hotel that is expensive to stay at'
'Life-history' way of seeing: 'a hotel that is/was expensive to build'

In sum, Cruse (1986) refers to contextual effects upon interpretation that I have discussed in this section as **contextual modulation**. This idea I briefly introduced when I presented the encyclopaedic view of meaning in Chapter 15. There, I observed that contextual factors modulate different aspects of our knowledge associated with a particular entity. As we have seen, these contextual factors might include the situation in which an expression is used, the sentence in which an expression occurs and/or the encyclopaedic knowledge that particular individuals bring to bear upon the interpretation of an expression. As the discussion in this section has demonstrated, language use involves a complex interaction between conventional semantic structure (polysemy), contextual factors and encyclopaedic knowledge.

SUMMARY

This chapter has provided an overview of the **semantic network** approach to semantic structure adopted in cognitive linguistics. In the first part of the chapter, I presented a detailed overview of the specific model developed by Claudia Brugman and George Lakoff. This focused on the issue of lexical **polysemy**, and drew upon Lakoff's pioneering work on **radial categories** (Chapter 11). While this research effort initially focused on spatial semantics, later work, especially as developed under the aegis of the **Principled Polysemy** approach, extended this to other lexical classes. A key criticism of the radial category approach was that it played down the role of context in computing word senses 'on the fly'. Accordingly, this approach proposed highly granular semantic networks, and was dubbed the **full-specification approach**. In order to properly factor in the role of context in semantic interpretations, and to avoid methodologically unconstrained semantic networks, more recent work by Tyler and Evans pioneered a more methodologically rigorous approach. This so-called **partial-specification approach**, provided decision principles for determining the **sense-units** maintained in semantic memory. However, this approach has also been criticised for underestimating how much **functional** information is stored as part of the conventional representation of semantic structure. This approach led to the later development of the theory of **Access Semantics**, presented in the next chapter, which in part sought to resolve some of the shortcomings of Principled Polysemy. The chapter also briefly considered the semantic network approach developed by Ronald Langacker in his theory of Cognitive Grammar. While there are broad similarities with Lakoff's approach, Langacker's approach assumes that a network approach covers more than simply semantic structure, with linguistic categories of any kind being included – a claim modelled explicitly in his approach. Finally, the chapter also briefly considered how contextual factors of various kinds, as described by Cruse, serve to **modulate** semantic structure, such as word meaning. We saw that semantic interpretation involves a complex interaction between polysemy, context and encyclopaedic knowledge.

FURTHER READING

Overview of polysemy

- **Falkum and Vicente (2015)**. This article provides a clear and comprehensive summary of the state of the art as it stood at date of publication.

The distinction between polysemy, homonymy and vagueness

- **Dunbar (2001); Geeraerts (1993); Tuggy (1993)**. These articles provide classic and influential cognitive linguistic perspectives on the traditional problem of distinguishing between polysemy, homonymy and vagueness. The Geeraerts paper provides a comprehensive consideration of problems for traditional distinctions between these notions. Such diffculties have given rise to the view that these notions constitute a continuum.

Analysis of theoretical developments

- **Croft (1998); Sandra (1998); Tuggy (1999)**. These articles appeared in the journal *Cognitive Linguistics* in the late 1990s and provide an interesting and insightful commentary on some of the debates relating to theoretical models for lexical semantics.

The development of the radial categories model of word meaning

- **Geeraerts (1994)**. In this important book, Geeraerts develops a model of prototype semantics that can be applied to historical semantic change.
- **Lakoff (1987)**. Lakoff's famous book, *Women, Fire and Dangerous Things*, introduced and developed the notion of radial categories and prototype semantics.

The Principled Polysemy approach

- **Evans (2004); Tyler and Evans (2003)**. These two book-length treatments introduce and develop different aspects of the Principled Polysemy approach.

The polysemy of spatial particles

- **Brugman and Lakoff (1988); Coventry and Garrod (2004); Deane (2005); Dewell (1994); Evans and Tyler (2004a, 2004b); Herskovits (1986); Kreitzer (1997); Lindner (1981); Lindstromberg (2010); Sinha and Kuteva (1995); Tyler and Evans (2001a); Vandeloise (1994); Zelinsky-Wibbelt (1993)**. There is a vast literature in cognitive linguistics that addresses the polysemy of spatial particles in English and other languages. The references listed here provide a flavour of the nature and extent of this research.

The psycholinguistics of polysemy

- **Cuyckens et al. (1997); Gibbs and Matlock (2001); Rice et al. (1999); Sandra and Rice (1995)**. Increasingly, cognitive linguists have turned to experimental techniques for testing theoretical models of polysemy. The sources listed here provide some influential examples of this experimental research.

Corpus linguistics and cognitive lexical semantics

- **Gries (2005)**. This paper makes a compelling case for the use of techniques from corpus linguistics in shedding light on many of the issues explored in this chapter.
- **Gries and Stefanowitsch (2005)**. This is an edited collection of seminal papers on topics relating to the application of corpus linguistics to cognitive linguistics.

The role of context in polysemy

- **Cruse (1986, 2000, 2002); Croft and Cruse (2004)**. Cruse's contribution to the cognitive linguistics framework has been important not least for his work on the role of context in sense-delimitation. Perhaps the most accessible introduction to some of the issues he addresses is Chapter 6 of his 2000 textbook *Meaning in Language*.

Surveys and edited volumes on polysemy

- **Cuyckens and Zawada (2001); Cuyckens et al. (2003); Nerlich et al. (2003); Ravin and Leacock (2002)**. The volumes listed here provide influential collections of articles that address many of the issues considered in this chapter. The first two listed are collections that contain papers by leading cognitive linguists. The second two also include papers by scholars working outside cognitive linguistics. For an introduction to some of the theoretical and descriptive concerns in cognitive linguistics approaches to semantic structure and semantic networks, the volume by Cuyckens et al. is a good place to start.

DISCUSSION QUESTIONS

1. This chapter has considered the semantic network approaches of Lakoff and of Langacker. What are the similarities and differences between these two approaches? And what sorts of phenomena do they each seek to account for?
2. The chapter has also considered divergent account of lexical polysemy: Lakoff's full specification account versus Tyler and Evans' Principled Polysemy model. What are the drawbacks associated with the full specification account, and how does Principled Polysemy attempt to resolve these?
3. Generate or find semantically divergent examples of a spatial term from a language you know, and apply the Principled Polysemy criteria to it. How many distinct senses are you able to identify?
4. What are the drawbacks to the Principled Polysemy approach? What solutions do you see to these, in terms of devising a methodologically reliable means of identifying word senses?

18

Access Semantics and meaning construction

In this chapter I turn to a cognitive linguistics account of the areas traditionally referred to, in linguistics, as lexical semantics – the nature of word meaning – and compositional semantics – the way in which words and other linguistic units are combined, in service of facilitating sentence, or utterance-level, meaning. The theoretical approach discussed below has been referred to as **Access Semantics** (Evans 2013b), and in an earlier iteration as the **theory of lexical concepts and cognitive models** (or LCCM theory, for short; Evans 2009), named after the two theoretical constructs central to the theory; in this chapter I will use the designation Access Semantics to refer to this theory, for reasons that will become clear. Within Access Semantics, the range of (lexical and compositional) semantic phenomena addressed are collectively referred to as **meaning construction**; hence Access Semantics is an attempt to account for the role of language in facilitating meaning construction.

Access Semantics takes an encyclopaedic approach to meaning (see Chapter 15). And in so doing, it builds on the proposals made by Ronald Langacker – who developed a theory of domains as part of his model of Cognitive Grammar – and Charles Fillmore, in developing his theory of Frame Semantics (see Chapter 16). But Access Semantics goes beyond those two approaches, by developing a joined-up account of the nature and role of language-specific representations – **lexical concepts** – which interface with, or, facilitate **access** to the non-linguistic, encyclopaedic knowledge upon which meaning construction, in part, depends. And within the theory of Access Semantics, the non-linguistic knowledge structures are referred to as **cognitive models**.

In addition, Access Semantics also builds on the approach to Principled Polysemy, reviewed in the previous chapter. It adopts, and revises, the analytic procedure for establishing conventional sense-units, developed by Evans (2004) and Tyler and Evans (2003), and resolves some of the potential problems of the Principled Polysemy approach outlined in the previous chapter (Evans 2010a, 2015c).

And finally, Access Semantics complements the dynamic perspective on meaning construction developed by mental spaces theory (Chapter 19), and conceptual blending theory (Chapter 20). These two theoretical perspectives are primarily concerned with the role of non-linguistic mechanisms in meaning construction. Hence, Access Semantics, with its focus on the nature and role of semantic structure in language, including the way language interfaces with non-linguistic knowledge, provides an important part of a full account of meaning construction.

The essential insight of Access Semantics Theory is that semantic structure – the conventional semantic knowledge associated with words and other lexical units – is encoded by **referential vehicles** (e.g. word forms and grammatical constructions) which provides access to conceptual (i.e. multimodal) knowledge, thereby facilitating the construction of simulations. This is a view that is shared with a number of recent 'encyclopaedic' approaches to lexical representation and meaning construction. The novelty of Access Semantics lies in the fact that it provides a detailed account of the linguistically instantiated processes of integration which allows language to build complex semantic units that structure and influence the way in which access takes place. In the sections that follow I provide an introduction to the notions and theoretical constructs central to Access Semantics.

1 Design features for meaning construction

The essential insight of Access Semantics is that language, in facilitating meaning construction, takes advantage of the **semantic potential** of the evolutionarily prior conceptual system, a system that, in outline at least, we share with other great apes – gorillas, chimpanzees, bonobos and orangutans – primates more generally and, indeed, many other mammalian species (see Hurford 2007 for a review).

Access Semantics, then, is an account of how the linguistic system of any given language user, of any given linguistic system – spoken, signed, written and pictographic – facilitates access to knowledge representation – concepts – in the conceptual system, in order to construct meaning, by activating simulations, during the course of linguistically mediated communication. On this account, the relationship between a linguistic system and the human conceptual system forms a **symbiotic assembly** that has co-evolved, with each system being co-adapted over evolutionary time, in order to enable meaning construction.

In order to achieve this, according to Access Semantics, this meaning-making complex exhibits a number of design features, two of the most prominent of which I address in this section:

i) language deploys two qualitatively distinct types of reference: words-to-world reference versus words-to-words reference;
ii) semantic structure, encoded by linguistic forms, relates to knowledge of two qualitatively distinct types: parametric knowledge – knowledge that

is schematic, digitised – and analogue knowledge – knowledge that is rich or multimodal.

1.1 Language employs two qualitatively distinct types of reference

As we saw in Chapter 1, and as we shall see in further detail in Part IV of the book, language is symbolic in nature, made up of conventional form–meaning pairings, whereby a lexical form is conventionally associated with a unit of semantic structure. Moreover, given it is a symbolic system, language exhibits a design feature such that it employs two qualitatively distinct types of symbolic reference. The first constitutes what has been dubbed a **words-to-world direction** of symbolic reference (Evans 2015a, 2016). In this type of symbolic reference, lexical vehicles (e.g. words, morphemes and grammatical constructions) are conventionally associated with specific objects and events in the world, and/or in the mind of the language user. The **symbolic relation** holds between a referential vehicle – such as a phonological word – from the linguistic system, and an entity or **idea** outside the system. For instance, the English word /dɒg/ refers to the pet of choice for many western households.

Figure 18.1 captures this type of relation. It shows that a given referential vehicle – vehicle1, vehicle2 and so forth – is symbolically related to objects and events in the world and/or the mind. The symbolic relation, established by convention, is represented by the directed arrow, connecting a particular sign with its referential target.

Importantly, the nature of the **referential target** constitutes a potentially large body of knowledge that you and I may have concerning dogs, knowledge which is dynamically updated: each time you step outside your front door, and see a dog across the street, your knowledge is updated, and the symbol refers not just to specific exemplars of dogs, but other breeds too. It may also include a wide range of knowledge you possess concerning dogs, including their behaviour and life cycle, their appearance, their status in human life and culture, as well as a plethora of information you'll have gleaned through direct experience with dogs, including dogs you may have known, as well as information derived through cultural transmission. Hence, the referential target of a vehicle in fact relates to a complex web of knowledge, termed the semantic potential of the referential target, in Access Semantics.

The second symbolic reference strategy involves a **words-to-words direction** of symbolic reference. Here, the symbolic relation holds not between a

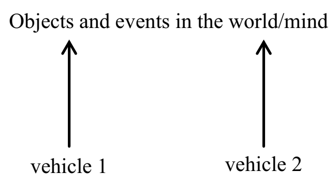

Figure 18.1 Words-to-world reference

referential vehicle and an entity in the world and/or the mind. Instead, reference holds between one linguistic symbol and another. To illustrate, consider the following referring expression:

(1) a dog

While the noun phrase (NP), *a dog*, as a whole, refers in a words-to-world direction, the indefinite article refers to the noun (N), *dog*: it has a words-to-words direction of reference. Indeed, the **semantic function** of the indefinite article is specialised for words-to-word reference: whatever it is that the symbol, *dog*, refers to, the indefinite article tells us that the sign to which it refers, in this case, *dog*, is both **univalent** – there's just one of it – and **non-specific** – the hearer can't be expected to have specific information about the entity; it is for this reason that the symbol *a* is termed the 'indefinite' article.

This idea is subtle, so let's examine it in a little more detail. One way of thinking about the indefinite article is that, in part, it encodes a schematic slot – what has been termed an **elaboration site** (Langacker 1987), discussed further in Chapter 23 – which is completed by a noun. In short, the English indefinite article requires a noun to elaborate it, and hence to complete its meaning. Notice that while the overall function of the referring expression – *a dog* – is to identify an individual entity in the world – a words-to-world direction of reference – the English symbol *a* is specialised for a words-to-words direction: it assumes a distinction in **lexical classes**, such as noun versus indefinite article.

Now consider a more complex example of words-to-words symbolic reference, focusing on the noun *aim*, in the following attested example (from Schmid 2000):

(2) The Government's **aim** is <u>to make GPs more financially accountable, in charge of their own budgets, as well as to extend the choice of the patient</u>.

In (2), *aim* can be thought of as a **shell noun** (Schmid 2000), in the sense that it refers to the entire conceptual complex that is underlined. The underlined portion of the discourse chunk, while, on the face of it, relating to a complex set of ideas, is encapsulated as a coherent conceptual whole. Importantly, this is achieved via word-to-word symbolic reference: the noun, *aim*, provides a linguistic 'shell', enabling reference to the complex idea that it points to. Evidence for this function comes from the next sentence in the discourse, which I present below (also from Schmid 2000):

(3) The Government's **aim** is <u>to make GPs more financially accountable, in charge of their own budgets, as well as to extend the choice of the patient</u>. Under **this new scheme**, family doctors are required to produce annual reports for their patients . . .

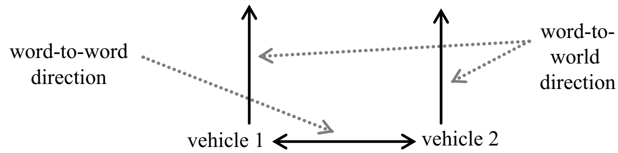

Figure 18.2 Two types of symbolic reference

Having established a **shell noun complex** – the underlined portion – by virtue of a referring shell noun, *aim*, it is then possible to continue treating the complex as a single coherent conceptual entity, in ongoing discourse. Evidence for this comes from the new shell NP, *this new scheme*, which, again, I've highlighted in (3). This shell NP refers back to the underlined shell noun complex, established by the symbol *aim*, in the first sentence of the discourse chunk. In short, both *aim* and *this new scheme* refer symbolically in a words-to-words fashion, providing a means of packaging a complex idea – a shorthand mnemonic – without the need to continue to spell out the entire idea itself.

Language, then, appears to make use both of words-to-world and words-to-words types of symbolic reference. Figure 18.2 captures both directions of symbolic reference.

These two types of symbolic reference, exploited by language, are qualitatively different. Words-to-words reference is, qualitatively, more abstract than words-to-world symbolic reference. This follows as reference in this direction is to another referential vehicle, rather than to an idea or entity in the world (or mind) per se. It presumes the existence of a linguistic level of semantic representation which can be referred to, independently of entities in the world. Moreover, this distinction amounts to, in broad terms, the distinction between a lexical system and a grammatical system, populated by content words and function words, respectively – notions introduced at earlier points in the book. To illustrate, consider the following linguistic example (based on Evans 2009: 102):

(4) A waiter served the customers.

This sentence features words, and other linguistic constructions, that serve two distinct reference strategies. Let's consider the words-to-world strategy first. This strategy relates to the content words in the sentence. I've highlighted these in bold in (5):

(5) A **waiter serve**d the **customer**s.

A content word is usually taken to be a word that concerns rich content, as discussed in Chapter 1. In (5) these are the nouns *waiter* and *customer*, and the verb *serve*. These words relate to relatively rich aspects of the scene being described, in particular, the participants in the scene and the relationship that holds between them. Moreover, we are able to map these words onto rich and detailed scenarios, stored in memory, relating to our encyclopaedic knowledge arising from interacting in the world. We each have rich and varied experiences of restaurants, eateries and other venues that sell food for consumption in situ, including the format and moves involved in such service encounters. We know that a waiter is someone who liaises with the customer on choice of food, and the kitchen where the food is prepared. The waiter's function is to communicate with both parties, and to deliver the food, once prepared, to be consumed by the customer, in return for pay and, often, for a tip. In short, these content words encode a words-to-world relation: they enable language users to map the words onto specific participants and the relations holding between them, based on the rich knowledge we have about a restaurant **frame**.

In contrast, the sentence also consists of function words and closed-class elements. I've placed these in bold in (6):

(6) **A** waiter serve**d** **the** customer**s**.

Function (or closed-class) words encompass those referential vehicles which, in the most simplistic of terms, aren't **imageable**. For instance, while we can call to mind, should we wish, a waiter or a customer, or imagine what is entailed by a waiter serving a customer, it's not clear what is called to mind by grammatical words such as *a*, or *the*, the past tense marker *-d*, or the bound plural morpheme *-s*. These referential vehicles, on their own, are not specialised for indexing particular entities in the world per se. Rather, their function is to say something about how we should interpret the other words in the sentence that they relate to. For instance, the distinction between the definite and indefinite articles relates to **indefiniteness** versus **specificity**, and provides an instruction about how we should interpret the nouns: *waiter* versus *customer*. In short, they provide a means of constraining the range of potential interpretations that *waiter* and *customer* facilitate access to. Moreover, the past tense marker constrains our interpretation of the verb *serve*: it situates the serving event as having taken place before now. But in this way, the past tense marker guides the way in which – whatever it is in our conceptual system that *serve* indexes – this knowledge becomes activated. And finally, the plural marker provides a means of interpreting the free morpheme, the noun *customer*, to which it is morphologically bound.

One line of evidence for distinguishing between content and function words, between words-to-world and words-to-words reference takes the following form: if we change the content words, we obtain a different scene, yet the structural elements, provided by words-to-words reference, remain the same. Consider the following:

(7) A rockstar smashed the guitars.

In (7), when changing just the three content words, vis-à-vis (4), an entirely different simulation arises, one involving a rockstar smashing guitars. This reveals that the function of words-to-world reference concerns people, things, events, properties of things and events, and so on. But the **semantic scaffolding** remains the same, as the words-to-words relations are unchanged: *a*, *-d*, *the* and *-s*. These aspects of the sentence concern whether the participants (*rockstar/guitars*) evoked can be easily identified by the interlocutor (the use of the indefinite article *a* versus the definite article *the*), that the event took place before now (the used of the past tense marker, *-d*) and how many participants were involved (the presence, or absence, of the plural marker *-s*).

Moreover, the semantic scaffolding provided by words-to-words reference encompasses more than just the function words. It also includes the full range of grammatical constructions in which the content words participate. This includes the lexical class in which words participate: *waiter/rockstar* and *customer/guitar* are nouns, while *serve/smash* are verbs, as well as word order – in these example sentences, we have a declarative word order. And finally, the sentences all invoke active, rather than passive voice. In each case, these grammatical constructions – lexical class, word order and voice – all facilitate a words-to-words referential strategy: they constrain how we should interpret the participants in the event, and the nature of the relationship holding between them.

Let's focus on lexical class first. Consider the following expressions:

(8) a. Thumb a lift!
 b. Lift a thumb!

While the expressions in (8) involve the same phonological forms, *lift* and *thumb* belong to different lexical classes in each expression. In (8a) *thumb* is a verb, and *lift* is a noun. In contrast, in (8b) *lift* is a verb and *thumb* a noun. We know this because one of the things we happen to know about English is that the article typically precedes a noun. And on the basis of this **distributional analysis**, *lift*, in (8a) and *thumb* in (8b) are nouns. Moreover, because we also know that verbs can serve an **imperative** ('telling') **function**, especially when they appear in first position in an expression, *thumb* is a verb in (8a), while *lift* is a verb in (8b).

Now, the fact that the same referential vehicles can shift their lexical class, as they do in these examples, reveals that the lexical classes, noun versus verb, are examples of a **functional category** independent of the phonological forms themselves. The categories noun versus verb have **semantic significance** independent of their lexical instantiations, and serve to constrain how we should interpret the phonological forms, and their referential targets, in each case. In (8a), consequently, the scene involves a hitchhiking scenario, while in (8b) a different scenario is evoked, involving physical movement of someone's anatomy.

Similarly, the declarative word order in (4) and (7) signals that the scenario being evoked is one that the speaker knows, or assumes to be true, and is presenting it as such to the interlocutor. If we alter the word order, by adding the function word *did* so that *waiter* is no longer the first element in the sentence, as in (9) we no longer have a declarative construction, but rather an **interrogative**. And now we are conveying a different perspective on the scenario: the speaker is no longer presenting the scenario as fact, but is, rather, signalling that they don't know whether the scenario is true.

(9) Did a waiter serve the customers?

What this shows is that the declarative and, indeed, interrogative word orders – the words-to-words strategy – constrain in rather important ways the way the information – the words-to-world strategy – is being packaged in English. Moreover, the interactive function of both sentences is rather different: (9) invites a response in a way that (5) doesn't.

And finally, active voice designates a particular point of view, which constrains the nature of the relationship holding between the participants in a scene. In (5), the point of view is being designated as located with the agent – the waiter. If we change the grammatical construction to passive, as in (10), the point of view is now situated with the customers, even though the waiter remains the active participant – the agent – in the words-to-world relation designated:

(10) The customers were served by a waiter.

The upshot of all this is that while the simulation is achieved by language working in a words-to-world direction, the precise details – the scaffolding upon which the scenario is constructed – both affects, and consequently transforms, in rather important ways the world-to-words reference; in short, the content is packaged, for purposes of linguistically mediated meaning construction, by virtue of words-to-words reference. Table 18.1 provides a summary of what is conveyed by words-to-world reference for sentence (5), while Table 18.2 provides a summary from the perspective of words-to-words reference.

Table 18.1 Content deriving from words-to-world referring expressions

Referential vehicle	Words-to-world relation
Waiter	Person with a particular function, and sometimes appearance, who works in a particular setting
Serve	Particular mode of activity involving two or more people and, typically, an entity with which one of the participants is provided by the other
Customer	Person who is provided with a particular object or service (of various sorts) in exchange for, typically, money

Table 18.2 Content deriving from words-to-words referring expressions

Referential vehicle	Words-to-word relation
A	Introduces a referent which the hearer is held to be unable to readily identify (from context or preceding discourse)
A	Designates a unitary instantiation of the referent
The	Introduces a referent which the hearer is held to be able to readily identify (from context or preceding discourse)
-s	Designates multiple instantiations of a referent
lexical class: verb (for *serve*)	Designates entity as an event (as one possibility)
lexical class: noun (for *waiter/customer*)	Designates entity as an object (as one possibility)
Grammatical relation: subject (for *waiter*)	Designates entity as being the primary or focal entity in a designated relationship
Grammatical relation: object (for *customers*)	Designates entity as less important or secondary entity in a designated relationship
Active voice (through verb form)	Designates point of view being situated at the agent
Declarative word order	Speaker knows the situation to be true and asserts it to the hearer

1.2 Semantic structure, encoded by linguistic referential vehicles, relates to knowledge of two qualitatively distinct types

Not only do the words-to-world versus words-to-words reference strategies have different functions in the meaning construction process, they additionally appear to relate to qualitatively distinct types of knowledge. The content words that I've been discussing, in words-to-world fashion (Table 18.1), self-evidently, relate to information 'above' the level of language. When we imagine a waiter, this involves rich information concerning the appearance, dress, location and tasks involved in being a waiter, the sequence in which the tasks are performed and so on. Information of this kind is multimodal in nature, involving streams of information that is sensorimotor and/or interoceptive. In short, it is **analogue** – it relates to information that corresponds, more or less, to what we actually experience.

In contrast, the words and constructions that facilitate words-to-words reference (Table 18.2) concerns information that is, in a profound sense, not rich nor multimodal, in the same way. In fact, the information conveyed is far more schematic in nature (Bergen 2012; Evans 2009). To illustrate, if we exclude the semantic content associated with words-to-world referring expressions, we are left with a type of schematic representation that is not straightforwardly imageable, or perceptual. In short, the representations associated with words-to-words reference (also known as grammatical structure), appear not to relate, in a straightforward way, to perceptual representations. And yet, such representations appear to be meaningful. To make this point more explicitly, consider the following:

(11) **Those** boy**s** **are** paint**ing** **my** railing**s**.

In this example, if we strip away the content words – *boy*, *paint* and *railing* – we are left with the function (or closed-class) words in bold – the bound morphemes (*-ing* and *-s*), and the closed-class free morphemes *those*, *are* and *my*. Moreover, the state of being a noun, which is to say, the schematic category NOUN, and the schematic category VERB (although not specific exemplars of nouns, such as *boy*, *railing* and *paint*), as we saw above, also count as function elements (providing words-to-word reference). The composite meaning of all these referential vehicles in (12) is as follows:

(12) *Those somethings are somethinging my somethings.*

The semantic structure of this 'gloss' can captured as follows:

(13) More than one entity close to the speaker is presently in the process of doing something to more than one entity belonging to the speaker.

What we see from (13) is that the words-to-words referential vehicles in (11) actually provide quite a lot of semantic content. That said, this semantic structure is, nevertheless, highly schematic. We don't have the details of the scene: we don't know what the entities in question are, nor do we know what is being done by the agent to the patient. Nevertheless, this illustration reveals the following: there appears to be a type of schematic semantic representation that is unique to the linguistic system – it doesn't relate to multimodal content that directly relates to perceptual experience in analogue fashion. Moreover, this representation provides information relating to how a simulation should be constructed (see Bergen 2012). After all, the words-to-words (i.e. grammatical) organisation of the sentence entails that the first entity is the agent and the second entity the patient: the first entity is performing an action that affects the second entity. This level of semantic representation derives exclusively from language, rather than from representations in the conceptual system. It provides a set of instructions as to the relative significance, and the relation that holds, between the two entities in the sentence. In short, the closed-class words and constructions involve semantic content, albeit of a highly schematic sort (see Evans 2009; Goldberg 1995, 2006; Talmy 2000a).

This distinction, in terms of the nature of the content associated with content words on the one hand, and function elements on the other, constitutes the second design feature for human meaning construction. Words like *boy*, *paint* and *railing* give rise to rich experiences, which are analogue in nature: they relate to entities which we have directly experienced and about which we retain detailed knowledge. Accordingly, knowledge units of this sort are dubbed **analogue concepts** in Access Semantics – concepts that are directly grounded in the experiences that give rise to them. How then does semantic structure (in language) differ from this level of conceptual structure – which is to say, from analogue concepts?

To illustrate, consider the use of the adjective *red* and the noun *redness*, underlined, in the following examples, adapted from a skin-care product advertisement:

(14) a. Treat <u>redness</u> with Clinique urgent relief cream.
b. Treat <u>red</u> skin with Clinique urgent relief cream.

Both words, *red* and *redness*, relate to the same perceptual state, presumably. But the words package or serve to construe the content in a different way, giving rise to distinct simulations. In the example in (14a), *redness* gives rise to an interpretation relating to a skin condition. In the second, (14b), *red* refers more straightforwardly to an unwanted property of the skin.

The different interpretations arising from these sentences are not due to a different hue being indexed. Rather, the words (noun versus adjective) modulate the perceptual hue in a slightly different way, giving rise to slightly distinct simulations: SKIN CONDITION versus DISCOLORATION OF SKIN interpretations. In short, the grammatical distinction between the adjective (*red*) and noun (*redness*) appears to relate to a semantic distinction between the notion of PROPERTY versus THING. The words *red* and *redness*, while indexing the same (or similar) perceptual state, also encode schematic concepts: PROPERTY versus THING (see Langacker 2008).

But unlike the body-based perceptual state – the hue of red – which is analogue, PROPERTY and THING are highly schematic notions. They are what are referred to, in Access Semantics, as **parametric concepts**. Unlike the perceptual experience of redness, which comes to mind when we variously imagine fire, henna, lipstick, the traditional British red telephone box and so on, parametric concepts are not like actual embodied experiences. There is nothing about the (parametric) concepts PROPERTY or THING that is akin to the perceptual experience of redness (an analogue concept).

Parameters are abstracted from embodied (perceptual *and* interoceptive) states, filtering out all points of difference to leave highly **image-schematic content**: the **parameter**. The word form *red* encodes the parameter PROPERTY, while *redness* encodes the parameter THING. This is another way of saying that *red* is an adjective – it describes a property of a thing – while *redness* is a noun – it describes a property that is objectified in some way and established as being identifiable, in principle, in its own right, independent of other entities in world.

In sum, analogue concepts – semantic representations that populate the conceptual system – in evolutionary terms, had to precede the existence of language. Parametric concepts constitute a species of concept that arose as a consequence of the emergence of language. They provide a level of schematic representation directly encoded by language: parametric concepts guide *how* analogue concepts are activated and, consequently, *how* simulations are constructed in the service of linguistically mediated meaning construction.

For instance, the forms *red* and *redness* both index the same perceptual state(s). But they **parcellate** the conceptual content in a different way, giving rise to distinct simulations: *redness* = condition; *red* = (unwanted) property of skin. The schematic parametric concepts, which is to say, that part of semantic representation that is native to language, relates to THING versus PROPERTY. Parametric concepts are language-specific **affordances**, rather than affordances of the conceptual system (see also Bergen 2012: Chapter 5). This reveals that parametric concepts, encoded by language, guide the formation of complex simulations for purposes of linguistically mediated communication. Parametric concepts guide the **parcellation** – similar to Langacker's notion of focal adjustment, considered in Chapter 16 – of analogue concepts, in the construction of simulations. Parametric concepts encode schematic or **digitised content**. Content of this sort is abstracted from analogue – that is exterocepetive and interoceptive – representations. Hence, the parameters THING versus PROPERTY are schemas drawn from embodied experience.

2 The linguistic focus hypothesis

The view presented above, which provides the underpinnings for the Access Semantics theoretical architecture, receives support from the way language is processed in the mind, and the way in which experiments reveal the mind to be engaged by the linguistic system during meaning construction. The role of language, in guiding activation of multimodal brain states – analogue concepts in present terms – has been dubbed the **linguistic focus hypothesis** (Taylor and Zwaan 2009). This hypothesis claims that during language understanding, motor representations in the brain are activated under the governance of language. Linguistic symbols serve to differentially direct focus on the referential world. Evidence for this comes from behavioural experiments.

For instance, in one experiment, psycholinguist Benjamin Bergen (2012) found that the grammatical subject, for instance, the use of *I* versus *you*, influences the perspective from which a language user perceives a scene. Bergen explains this as follows:

> Grammatical person seems to modulate the perspective you adopt when performing embodied simulation. This isn't to say that every time you hear *you*, you think about yourself as a participant in simulated actions. But it does mean that the grammatical person in a sentence pushes you toward being more likely to adopt one perspective or another. What's interesting about this is that in this case, grammar appears not to be telling you what to simulate, but rather, how to simulate – what perspective to simulate the event from. Instead of acting as the script in this case, grammar is acting as the director. (Bergen 2012: 114)

Let's now examine a more complex example of a parametric concept. Consider the ditransitive construction (introduced in Chapter 2), as exemplified by the following:

(15) John baked Mary a cake.

This linguistic example is sanctioned by a sentence-level construction that encodes the schematic semantics in (16):

(16) X (INTENDS TO) CAUSE(S) Y TO RECEIVE Z

The point is that the CAUSE TO RECEIVE interpretation in (15) arises not from the semantics of *bake*, which is canonically a transitive (rather than a ditransitive) verb, but from the larger construction in which it is embedded. And there is behavioural evidence to support such a contention.

In one study (Kaschak and Glenberg 2000), subjects were shown sentences using the novel verb *to crutch*. Some sentences employed the ditransitive construction, as in (17a), while others placed the novel verb in the transitive construction as in (17b). Subjects were then asked to say which of the sentences were consistent with two inference statements, given below in (18):

(17) a. Lyn crutched Tom her apple.
b. Lyn crutched her apple.

(18) a. Tom got the apple.
b. Lyn acted on her apple.

The sentence in (17a) provides an inference of TRANSFER OF POSSESSION. In contrast, the inference arising from (17b) is TO ACT ON. Because the verb is novel, it has no inherent semantics associated with it. Hence, if the sentence possesses inherent semantics independently of the verb, as claimed, then we would expect the inference in (18a) to be judged as compatible with sentence (17a), and the inference in (18b) to be compatible with the sentence in (17b). And this is indeed what was found.

In short, the ditransitive construction appears to have a schematic representation associated with it – a complex parametric concept, according to Access Semantics – which is represented in (16). Parametric concepts of this sort guide or modulate how analogue concepts are parcellated, giving rise to a simulation. And a complex parametric concept such as (16) does this, in principle, in the same way as parametric concepts associated with single lexical items such as *red* and *redness*.

In essence, body-based representations, stored in different brain regions, form the basis of a species of concepts: analogue concepts. Concepts of this kind are grounded in the external (perceptual) and phenomenological (interoceptive) experience types from which they arise. But a second species of concept, parametric concepts, appears to be directly encoded by language. Concepts of this kind are far more schematic: they encode parameters – THING versus PROPERTY, DARK COLOUR versus LIGHT COLOUR. They are abstracted from embodied experience but are not rich analogue representations. Moreover, the parametric concepts appear to be deployed to modulate

Table 18.3 Parametric versus analogue concepts

Parametric concepts	Analogue concepts
Specific to language	Specific to the conceptual system
Parametric (or digitised) – a unit of semantic structure	Analogue (or multimodal) – a unit of conceptual structure
Formed by abstracting away from embodied states, filtering out all points of difference, to leave highly schematic properties or 'parameters'	Arise directly from perceptual experience and reside in the same neural system(s) as body-based states
The 'how' of a simulation, providing cues or prompts for parcellation of multimodal content (analogue concepts) for purposes of linguistically mediated meaning construction	The 'what' or content of a simulation: reactivated during the course of linguistically mediated meaning construction

the analogue concepts in giving rise to a representation known as a simulation: a complex representation that is constructed in the process of speaking and thinking. This simulation expresses an idea that language is instrumental in facilitating: language provides the focus for how representations that populate the conceptual system are combined and activated in the course of meaning construction. Table 18.3 summarises the distinction between parametric and analogue concepts.

3 The architecture of Access Semantics

In this section I provide an overview of Access Semantics, based on Evans (2009, and 2013b). Access Semantics adopts the two guiding principles of cognitive linguistics approaches to semantic structure (Chapter 14), and, moreover, explicitly adopts the symbolic thesis – the view that language consists of learned pairings of form and meaning (introduced in Chapter 1, and discussed further in Chapter 21). That said, it differs from other cognitive linguistics theories of semantics, as it also provides a methodological framework for conducting semantic analysis of lexical concepts, building on and revising the principles developed in the Principled Polysemy model (Chapter 17).

In particular, based on the assumptions outlined above, Access Semantics provides a theoretical account of lexical representation and semantic composition in language understanding. It models the nature of the symbolic units in language – and in particular semantic structure (also known as parametric concepts) – the nature of conceptual representations (also known as analogue concepts), and the compositional mechanisms that give rise to the interaction between the two sets of representations – the semantic and the conceptual – in service of linguistically mediated meaning construction. In Access Semantics, parametric concepts are modelled in terms of the theoretical construct known as the lexical concept; analogue concepts are modelled in terms of what is dubbed a cognitive model. It is because of the central importance of these two theoretical notions that the approach has sometimes been referred to as the theory of lexical concepts and cognitive models (LCCM theory).

3.1 Semantic representation in Access Semantics

As observed above, the overarching assumption of the theory is that the linguistic system emerged, in evolutionary terms, much later than the earlier conceptual system. The utility of a linguistic system, on this account, is that it provides an executive control mechanism facilitating the deployment of conceptual representations in service of linguistically mediated meaning construction. Hence, 'semantic' representations in the two systems are of a qualitatively distinct kind: lexical concepts versus cognitive models.

In Access Semantics, semantic structure – the primary semantic substrate of the linguistic system – is modelled in terms of the theoretical construct of the lexical concept. A lexical concept is a component of linguistic knowledge – the semantic pole of a **symbolic unit**. Lexical concepts have **bipartite structure**. First, lexical concepts encode information that can be directly encoded in, and externalised via, language. Hence, information of this sort is unique to language. This relatively stable information is referred to as **linguistic content**. In addition, a subset of lexical concepts serve as **access sites** to a representational type which is multimodal in nature: conceptual structure – modelled in terms of the construct of the cognitive model. The analogue information encoded by cognitive models is referred to as **conceptual content**. Content of this type is not directly encoded by lexical concepts, which is to say it is not encoded *in* language. Rather it can be accessed by lexical concepts, and hence *via* language. Thus, the bipartite structure of lexical concepts means that they encode linguistic content and facilitate access to a potentially unlimited array of conceptual content. This situation is summarised in Figure 18.3.

3.1.1 Lexical concepts

The linguistic content encoded by a lexical concept includes information relating to the **selectional tendencies** – the range of semantic and grammatical

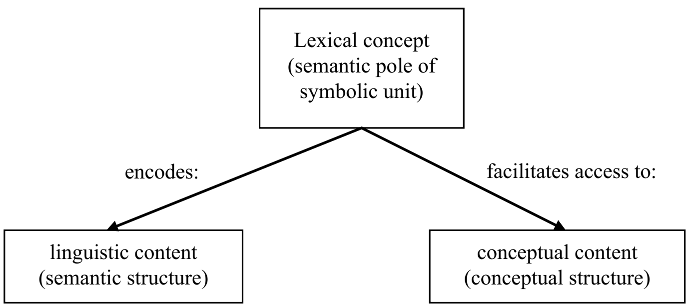

Figure 18.3 The bipartite structure of a lexical concept

patterns associated with the lexical concept. For instance, the lexical concepts associated with the following vehicles, *stale*, *rotten*, *sour* and *rancid*, as applied to particular foodstuffs, exhibit the following restrictions in terms of their selectional tendencies:

(19) a. stale bread/cake/cheese and so on
b. rotten fruit/eggs/vegetables and so on
c. sour milk/yoghurt and so on
d. rancid butter/oil and so on

A selectional tendency for any given lexical concept, for convenience, can be divided into **semantic selectional tendencies** and **formal selectional tendencies**. Semantic selectional tendencies have to do with the (range of) lexical concepts with which a lexical concept co-occurs and in which it can be embedded. Formal selectional tendencies have to do with the (range of) vehicles with which a given lexical concept co-occurs, or in which it can be embedded. I illustrate each kind with an example adapted from Goldberg (2006: 56). Consider, first of all, the semantic selectional tendencies associated with the [PLACEMENT] lexical concept encoded by *put on* – note, in Access Semantics, a referential vehicle, a form, is represented in italics, while the corresponding unit of semantic structure, the lexical concept, is represented in small capitals within square brackets.

(20) a. Jane put the butter on the table
b. <actor> *put* <thing> *on* <location>

The [PLACEMENT] lexical concept selects for semantic arguments that can be construed as, respectively, an actor, a thing and a location. In other words, part of our knowledge concerning this lexical concept involves knowing what kinds of lexical concepts it can co-occur with. In terms of formal selectional tendencies, part of our knowledge of the same lexical concept is knowing the order in which the vehicles associated with the actor, thing and location lexical concepts occur, with respect to the vehicle *put on*. That is, part of knowledge involves knowing where the actor, thing and location slots are located relative to the vehicle. Together these two types of knowledge form the **lexical profile** for the [PLACEMENT] lexical concept.

In addition, formal selection tendencies needn't be restricted to knowledge of word order. It can also include knowledge concerning the nature of the permissible vehicles that can co-occur with a given lexical concept. For instance, and again adapting an example from Goldberg (2006: 57), the [LOCATE] lexical concept associated with the vehicle *found* exhibits a distinct formal selectional tendency from the [REALISE] lexical concept exhibited by the same vehicle:

(21) a. Jane found the cat [LOCATE]
b. Jane found that the cat was missing [REALISE]

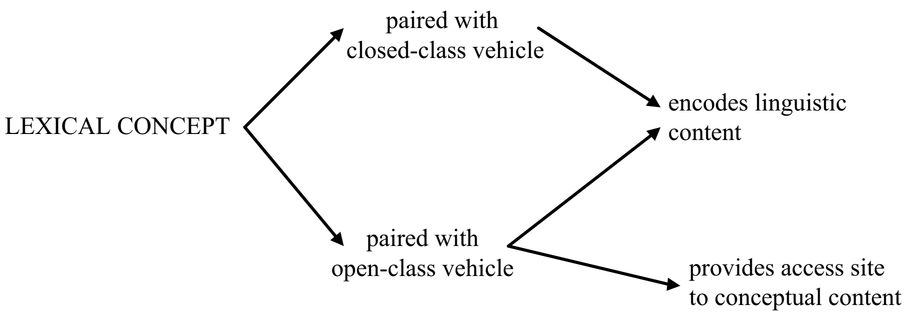

Figure 18.4 The distinction in content associated with lexical concepts

The [LOCATE] lexical concept selects for a direct object, whilst the [REALISE] lexical concept selects for a sentential complement.

While lexical concepts encode highly schematic linguistic content, a subset – those associated with open-class forms – are connected, and hence facilitate access, to the conceptual system. Lexical concepts of this type are termed **open-class lexical concepts**, which contrast with closed-class lexical concepts (see Figure 18.4). Open-class lexical concepts are typically associated with multiple areas in the conceptual system, referred to as **association areas**.

The range of association areas to which a given lexical concept facilitates access is termed an **access site**. Access Semantics assumes that the access site for a given open-class lexical concept is unique. As lexical concepts facilitate access to a potentially large number of association areas in the conceptual system, any given open-class lexical concept, in principle, facilitates access to a large semantic potential. However, only a small subset of this semantic potential is typically activated in **interpretation** of a given utterance.

3.1.2 COGNITIVE MODELS

In contrast, in Access Semantics, conceptual structure – the semantic representational substrate of the conceptual system – is modelled by the theoretical construct of the cognitive model. A cognitive model is a coherent body of multimodal knowledge grounded in the brain's modal systems, and derives from the full range of experience types processed by the brain including sensorimotor experience, proprioception and subjective experience including affect.

The **conceptual content** encoded by cognitive models can become reactivated during a simulation, while simulations are effected by a subset of lexical concepts – open-class lexical concepts – facilitating access to the conceptual system via a number of association areas. Each association area corresponds to a cognitive model, as captured in Figure 18.5. A summary of some of the key terms deployed in Access Semantics Theory is presented in Table 18.4.

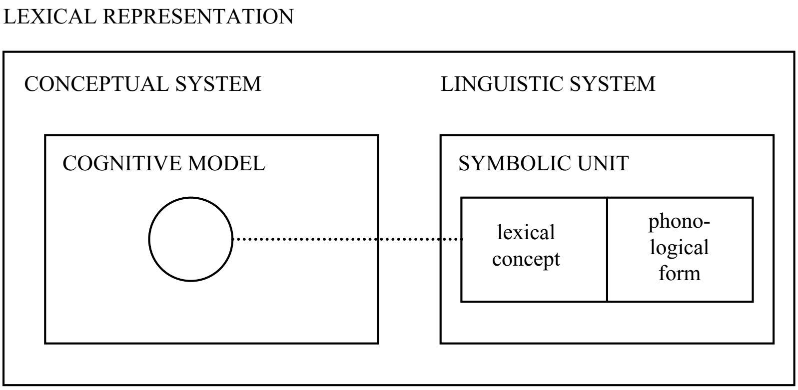

Figure 18.5 An association between an open-class lexical concept and a cognitive model

Table 18.4 A summary of key terms in Access Semantics (adapted from Evans 2009)

Term	Description
Linguistic system	The collection of symbolic units comprising a language, and the various relationships holding between them.
Symbolic unit	A conventional pairing of a referential vehicle and a unit of semantic structure.
Lexical concept	The unit of semantic structure that is paired with a phonological vehicle in a symbolic unit.
Linguistic content	The type of content encoded by a lexical concept. This content is of a highly schematic type that can be directly encoded in language.
Conceptual system	The body of non-linguistic knowledge captured from multimodal experience. This knowledge derives from sensorimotor experience, proprioception and subjective experience.
Cognitive model	The representational form that knowledge in the conceptual system takes. Consists of frames which give rise to a potentially unlimited set of simulations.
Conceptual content	The nature of the knowledge encoded by a cognitive model.
Lexical representation	The primary substrate deployed in linguistically mediated meaning construction, and modelled in terms of symbolic units and cognitive models.
Semantic representation	The semantic dimension of lexical representations, consisting of semantic structure and conceptual structure.
Semantic structure	That part of semantic representation encoded by the linguistic system. Semantic structure is modelled, in Access Semantics, by lexical concepts.
Conceptual structure	That part of the semantic representation encoded by the conceptual system. Conceptual structure is modelled, in Access Semantics, by cognitive models.

3.2 The cognitive model profile

An important construct in Access Semantics, and one that is essential to providing an account of meaning construction, is that of the **cognitive model profile**. As an open-class lexical concept facilitates access to numerous association areas within the conceptual system, it facilitates access to numerous cognitive models. Moreover, the cognitive models to which a lexical concept facilitates access are themselves connected to other cognitive models. The range of cognitive models to which a given lexical concept facilitates **direct access**, and the range of additional cognitive models to which it therefore facilitates **indirect access** is termed its cognitive model profile.

3.2.1 An example: [FRANCE]

To illustrate, consider the cognitive model profile for the lexical concept which I gloss as [FRANCE] associated with the form *France*. A partial cognitive model profile for [FRANCE] is represented in Figure 18.6.

Figure 18.6 is an attempt to capture the sort of knowledge that language users must presumably have access to when speaking and thinking about France. As illustrated by Figure 18.6, the lexical concept [FRANCE] provides access to a potentially large number of cognitive models – recall that a lexical concept, here [FRANCE], is abbreviated by small capitals in square brackets; this relates to a unit of semantic structure, as defined, as well as, in the case of [FRANCE], an access site to a range of cognitive models, abbreviated, in Access Semantics, as small capitals without square brackets.

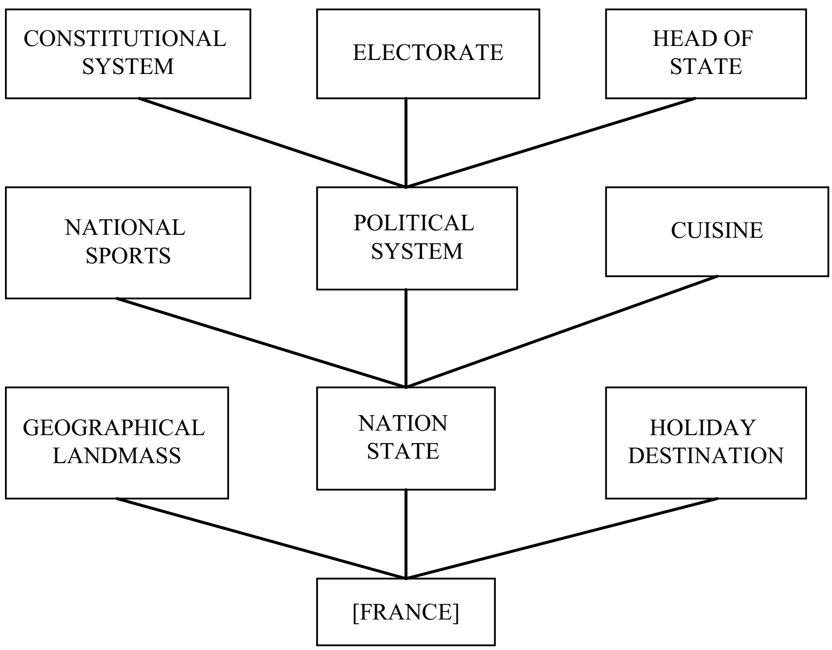

Figure 18.6 Partial cognitive model profile for [FRANCE]

3.2.2 Primary versus secondary cognitive models

As each cognitive model consists of a complex and structured body of knowledge, which, in turn, provides access to other sorts of knowledge, Access Semantics distinguishes between cognitive models which are directly accessed via the lexical concept – **primary cognitive models** – and those cognitive models which form substructures of those which are directly accessed – **secondary cognitive models**. These secondary cognitive models are indirectly accessed via the lexical concept.

The lexical concept [FRANCE] affords access to a number of primary cognitive models, which make up the **primary cognitive model profile** for [FRANCE]. These are hypothesised to include: GEOGRAPHICAL LANDMASS, NATION STATE and HOLIDAY DESTINATION. Each of these cognitive models provides access to further cognitive models. In Figure 18.6 a flavour of this is given by virtue of the various secondary cognitive models which are accessed via the NATION STATE cognitive model – the **secondary cognitive model profile**. These include NATIONAL SPORTS, POLITICAL SYSTEM and CUISINE. For instance, we may know that in France, the French engage in national sports of particular types, for instance, football, rugby, athletics and so on, rather than others: the French don't typically engage in American football, ice hockey, cricket and so on. We may also know that as a sporting nation they take part in international sports competitions of various kinds, including the FIFA World Cup, the Six Nations rugby competition, the Rugby World Cup, the Olympics and so on.

That is, we may have access to a large body of knowledge concerning the sorts of sports French people engage in. We may also have some knowledge of the funding structures and social and economic conditions and constraints that apply to these sports in France, France's international standing with respect to these particular sports, and further knowledge about the sports themselves including the rules that govern their practice and so forth. This knowledge is derived from a large number of sources including direct experience and through cultural transmission (including language).

With respect to the secondary cognitive model of POLITICAL SYSTEM, Figure 18.6 illustrates a sample of further secondary cognitive models which are accessed via this cognitive model. Hence, each secondary cognitive model has further (secondary) cognitive models to which it provides access. For instance, (FRENCH) ELECTORATE is a cognitive model accessed via the cognitive model (FRENCH) POLITICAL SYSTEM. In turn the cognitive model (FRENCH) POLITICAL SYSTEM is accessed via the cognitive model NATION STATE. Accordingly, NATION STATE is a primary cognitive model while ELECTORATE and POLITICAL SYSTEM are secondary cognitive models.

An important consequence of assuming a distinction between primary and secondary cognitive models relates to figurative language. Specifically, some aspects of the distinction between literal and figurative language can be elegantly accounted for (Evans 2010b, 2013c). For instance, consider knowledge representation for the celebrated French novelist, critic and essayist Marcel

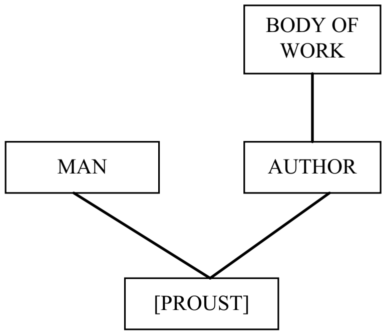

Figure 18.7 Schematic cognitive model profile for [PROUST]

Proust. Many native speakers of English may only be dimly aware of Proust's literary contribution. Speakers in this category may simply know that Proust was a French literary figure. They may be unaware of precisely when he lived, what his literary output related to, and indeed any other information about him. Cognitive model profiles relating to Proust, for these speakers, will involve knowledge inherited from **type cognitive models**. Such cognitive models facilitate **inheritance of content** in order to populate a cognitive model profile for an **individual**. In this case, a **schematic cognitive model profile** will be derived. Such a cognitive model profile is presented in Figure 18.7.

In the schematic cognitive model profile in Figure 18.7, there are at least two primary cognitive models, for MAN and AUTHOR, respectively. Each will consist of a range of **attributes**, inherited from type cognitive models for MAN and AUTHOR. For instance, the type cognitive model for MAN will include generic information relating to aspects of physiology, appearance, personality, socio-cultural role, dress, behavioural traits and so on. The schematic cognitive model for AUTHOR will include generic information relating to the generic habits and qualities associated with being an author, the nature of the activities engaged in, potential for success and so on. A salient secondary type cognitive model also inherited by the schematic cognitive model profile is likely to relate to BODY OF WORK. This might include generic knowledge about the type and nature of the output associated with being an author, some information about the publishing process, the requirement to have a literary agent, the role of booksellers and so on.

Now consider the following sentences:

(22) a. Proust had a moustache.
b. Proust is difficult to read.

The sentence in (22a) gives rise to a reading in which the man identified as Proust had a moustache. In contrast, the example in (22b) relates not to the man per se, but rather to his literary output. That is, in an example such as this *Proust* would normally be taken as referring not to the man, but rather to the literary works produced by Proust the man. Moreover, the interpretation of *Proust* in (22a) would normally be judged to be literal, while the interpretation in (22b) would be judged as figurative, and more specifically an instance of metonymy: Proust stands for the works created by the man – PRODUCER FOR PRODUCT. A central claim of Access Semantics is that one reason for the distinction in **literal interpretations** versus **figurative interpretations** is a consequence of the cognitive model profile. Literal interpretations involve activation of a primary cognitive model – in this case MAN – while figurative interpretations involve activation of secondary cognitive models – in this case BODY OF WORK. And intuitively, it does seem as if there is some sense in which body of literary output is more peripherally accessed than being a human male, a man, and having a particular profession, namely being an author. In other words, the explicit claim made by Access Semantics is that cognitive model profiles accessed by open-class lexical concepts exhibit a qualitative distinction between cognitive models that are in some sense more central to the knowledge associated with, for instance, Proust, and knowledge that is less central. While there is unlikely to be a neat distinction between primary and secondary cognitive models, and while the distinction is likely to vary from individual to individual, and indeed across discourse communities, there appears to be grounds for making a qualitative distinction of this sort.

Now let's consider the empirical rationale for positing a distinction between primary and secondary cognitive models. Empirical research over more than four decades reveals that conceptual knowledge is structured. Research arising from the programme associated with cognitive psychologist Eleanor Rosch in the 1970s (see Chapter 11), demonstrates that human knowledge falls along a **typicality continuum**. In classic work Rosch demonstrated that subjects provide goodness-of-example ratings on categories of entities in an intersubjectively reliable way. As we have seen, categories exhibit typicality effects; while some exemplars of a given category of entities are judged to be more central, others are judged as being more peripheral. This finding shows that knowledge is organised into categories (or concepts), and that the categories themselves exhibit internal organisation in terms of typicality (i.e. central aspects of knowledge versus more peripheral aspects of knowledge).

One response to this empirical finding, proposed by Rosch herself, was to posit what was termed a prototype. Rosch argued that, 'prototypes appear to be those members of a category that most reflect the redundancy structure of the category as a whole' (Rosch 1978: 37). In short, the more frequent a particular attribute is among members of a particular category, the more representative it is. The prototype structure of the category reflects this 'redundancy' in terms of repeated attributes across distinct members, or exemplars. This entails that another way of assessing prototype structure is by establishing the set of attributes that a particular entity has (Rosch and Mervis 1975). The more category-relevant attributes a particular entity has, the more representative it is.

However, an important feature of knowledge representation – one not captured by Rosch's prototype approach – concerns **relational knowledge**. It is now well-established that human knowledge is not an unstructured list of attributes. Rather, attributes are systematically related to one another. This manifests itself, for instance, in behavioural tasks which take a particular perspective. For instance, in one task (see Barsalou 1992a for review) it was found that when a subject was asked to imagine filling up a car with petrol, and then asked to describe component parts of the car, they do so in a perspective-specific way. That is, in such a scenario subjects begin by listing attributes of the car adjacent to the petrol cap, and working their way around the car exterior. When asked to imagine sitting in the driving seat, subjects first list component parts on the interior of the car, moving from area to area, before proceeding to describe the exterior. This finding strongly suggests that the knowledge for a car is relational – attributes suggest other attributes to which they are related, and this knowledge structure manifests itself when subjects are asked to describe a car.

While these findings suggest that knowledge is structured in various ways, it still doesn't account for the claim that the cognitive models which embody knowledge should be modelled in terms of the distinction between primary and secondary levels. The assumption made in Access Semantics is that cognitive models are coherent bodies of knowledge which are accessible by linguistic units. In linguistics, it is often observed that words have a core or literal representation and a non-core representation, relating to value-laden effects associated with the literal representation. This is normally operationalised in terms of a bifurcation between **denotation** and **connotation**, a distinction introduced by the philosopher John Stuart Mill (1843; see also Allan 2007; Lyons 1977). As classically formulated, a word or other linguistic expression denotes the class of entities to which it may refer. In contrast, a word or linguistic expression connotes the qualities associated with those entities. Allan (2007: 1047) argues that the 'connotations of a language expression are pragmatic effects that arise from encyclopaedic knowledge about its denotation (or reference) and also from experiences, beliefs, and prejudices about the contexts in which the expression is typically used'. For instance, for much of the English-speaking world, the word *December* refers to the last month of the year. In contrast, it connotes – at least in the Northern Hemisphere – that which is associated with this month, such as short days, cold weather and Christmas.

In his theory of Cognitive Grammar, Ronald Langacker (e.g. 1987, 2008) has developed a theory of linguistic semantics that attempts to capture this intuition. As we saw in Chapter 16, Langacker models the information types that words facilitate access to in terms of domains, with the semantic potential that a word potentially activates, in terms of a hierarchical domain matrix. For instance, in Chapter 16, we saw that the word *knuckle* potentially activates a series of domains, as modelled in Figure 18.8.

Figure 18.8 captures the following. The word *knuckle* provides access to a potentially large number of domains, ranging from the domains of SPACE, to that of HAND. However, as Langacker notes, the essential domain, the one required to facilitate an understanding of *knuckle,* is that of HAND. After all, while the example in (23a) is felicitous, the example in (23b) is semantically anomalous, as indicated by the hash sign.

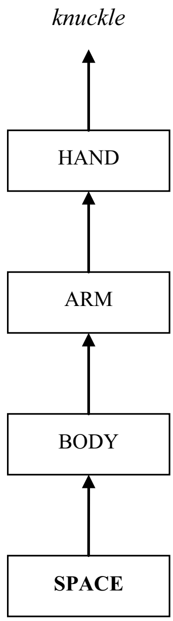

Figure 18.8 Domain matrix for *knuckle*

(23) a. I have 14 knuckles on my hand.
b. #I have 14 knuckles on my arm.

Langacker takes this fact as evidence that a word designates or, in his parlance, profiles, just a subset of that contained by the domain matrix. In the case of *knuckle*, the essential part of the domain matrix is the domain HAND. Langacker refers to this essential domain as the base. Hence, on Langacker's view, while a word provides a point of access to large body of knowledge, it directly represents a profile, and the base within which the profile constitutes a substructure. Access Semantics assumes, in similar fashion, that the non-linguistic knowledge, the semantic potential, to which lexical concepts facilitate access, is also structured.

A cognitive model profile captures the observation that a number of knowledge types, cognitive models, intuitively have equivalent status in terms of their readiness for **activation**. For instance, knowledge relating to Proust as a man and Proust as an author appear to be, at least in principle, knowledge types that have equal status. Of course, linguistic and extra-linguistic context can influence which cognitive model receives **primary activation**, as discussed below when we consider meaning construction. However, all things being equal, there appear to be a number (perhaps a large number) of cognitive models to which a lexical concept has primary access.

By virtue of cognitive models being knowledge structures, and given what we know about the structured nature of knowledge representation as discussed above, the cognitive models to which lexical concepts have direct access will also be related to other cognitive models. These are cognitive models to which lexical concepts have only indirect access. That is, these are cognitive models which a lexical concept can potentially access because these are associated with the cognitive models to which a given lexical concept has direct access. Secondary cognitive models are 'secondary', therefore, by virtue of the way knowledge is organised in the conceptual system, rather than due to language per se. What makes something a secondary cognitive model derives not from how lexical concepts access particular (i.e. 'secondary') cognitive models, but from the nature of the conceptual system itself.

3.2.3 Access site

While the foregoing provides the rationale, in Access Semantics, for distinguishing between primary and secondary cognitive models in a single cognitive model profile, we now need to consider the rationale for determining which cognitive models populate the primary level, namely the access site. Recall that an access site, in Access Semantics, amounts to the primary cognitive model profile: those cognitive models to which an open-class lexical concept affords direct access.

In determining which cognitive models make up the access site of a lexical concept, Access Semantics adapts ideas from Langacker (1987) to provide principled grounds for asserting that particular knowledge types constitute a primary cognitive model. Candidate primary cognitive models are likely to be those whose knowledge is conventional, generic, intrinsic and/or characteristic – ideas I introduced in Chapter 16 – with respect to a given lexical concept. Conventional knowledge concerns information that is widely known and shared between members of a speech community. Generic knowledge has to do with how common something is across instances. Intrinsic knowledge has to do with information that is due to the entity in question, rather than being due to external influence. And finally, characteristic knowledge concerns information that is unique to a given entity. For a cognitive model to be a likely primary cognitive model, Access Semantics posits that we might expect all, or nearly all, of these cognitive models to exhibit knowledge that can be considered as conventional, generic, intrinsic and/or characteristic. This follows as knowledge that is conventional, generic, intrinsic and characteristic is likely to be central, rather than peripheral, with respect to a given lexical concept.

To illustrate, take the lexical concept [APPLE] associated with the vehicle *apple*. There appear to be at least three primary cognitive models to which this lexical concept facilitates access, as indicated in Figure 18.9.

For instance, the cognitive model for SNACK is likely to involve knowledge relating to the fact that apples are eaten, either alone or with other types of food, between main meals. Knowledge of this type is conventional, as it is widely known. In addition, the fact that apples can be eaten as a snack is intrinsic to apples, they are an edible foodstuff, and they require no preparation to be edible, which is precisely one of the reasons why they provide a convenient snack. And finally, this information is characteristic of apples. Apples, unlike many other foodstuffs, are typically eaten in this way, presumably because they

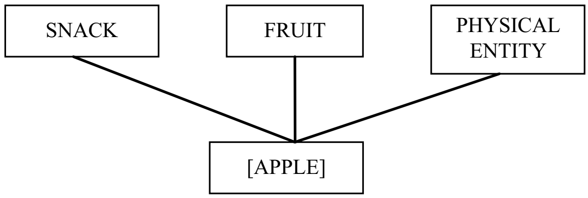

Figure 18.9 Partial listing of primary cognitive models for [APPLE]

require no preparation – apples don't need to be cooked, for instance, to be edible. Hence, the cognitive model SNACK, to which [APPLE] facilitates access concerns knowledge that can be characterised as meeting most – three out of four – of the criteria required for constituting a primary cognitive model.

Now consider the cognitive model FRUIT. This involves knowledge relating to the type of food an apple amounts to, due to its provenance. An apple qualifies as an item of fruit by virtue of being an edible foodstuff that grows on a tree or bush, which is to say above ground. This type of knowledge is conventional, which is to say, widely known. It is also generic: it applies to all apples. Moreover, it is intrinsic as it is a function of an internal property of an apple: an apple is a fruit by virtue of growing in the way that it does.

And lastly, take the cognitive model PHYSICAL ENTITY. This includes knowledge such as shape, relative size and weight, colour, texture and so on. Specifically, this cognitive model will include knowledge relating to the fact that apples are spherical, and are typically red or green or both. Knowledge of this type is highly conventional, so satisfies the criterion of conventionality. Moreover, such knowledge is generic – all instances of apples are spherical. Finally, knowledge that apples are both round, as well as coloured red and/or green constitutes characteristic knowledge – there are relatively few other fruit that exhibit this intersection of characteristics. As such, the cognitive model PHYSICAL ENTITY accessed by the lexical concept [APPLE] also counts, on these criteria, as a primary cognitive model.

Now let's return to the example relating to [PROUST], as exemplified in Figure 18.7 above. In that discussion I claimed that while MAN and AUTHOR are primary cognitive models, BODY OF WORKS is a secondary cognitive model. What then constitutes a principled basis for this claim in Access Semantics? Each of the two putative primary cognitive models relates to knowledge that is conventional, intrinsic and characteristic, matching most of the four criteria for constituting a primary cognitive model. After all, that Proust was a man, for example, is conventional knowledge. Moreover, being a man is intrinsic to Proust and is also characteristic of him. Similarly, that Proust was an author is conventional knowledge, it is intrinsic to Proust, in the sense that it arose from his own predispositions and impulses, and is characteristic of him.

In contrast, the cognitive model BODY OF WORK only counts as conventional knowledge. That is, while the fact that Proust produced a particular body of work may be widely known, this knowledge is intrinsic to and characteristic of the fact that he was an author, rather than being intrinsic to, and characteristic of, Proust himself. As such, the type of knowledge captured by the BODY OF

WORK cognitive model does not meet the criteria for being a primary cognitive model.

3.2.4 The individual nature of cognitive model profiles

Cognitive model profiles are both **individual** and **dynamic**. They are individual in the sense that they relate to conceptual systems of real live language users, who are exposed to new, different and unique sets of experiences. They are dynamic in the sense that stuff happens: the world changes, moves and evolves, and individuals observe, do and learn new things. This results in a continual updating of an individual's conceptual system. This might necessitate updating an existing cognitive model, merging existing cognitive models, deleting a cognitive model and replacing it with another, or a range of other changes to mental knowledge representation.

3.3 Semantic composition

Access Semantics is motivated, in large part, by the observation that word meanings vary across contexts of use in terms of the conceptualisation that they, in part, give rise to. To illustrate, consider the following examples which relate to the lexical form *France*:

(24) a. France is a country of outstanding natural beauty.
b. France is one of the leading nations in the European Union.
c. France famously beat New Zealand in the 2007 Rugby World Cup.
d. France voted against the EU Constitution in the 2005 referendum.

In the first example, *France* relates to a specific geographical landmass coincident with the borders of mainland France. In the second example, *France* relates to the political nation state, encompassing its political infrastructure, political and economic influence and its citizens, including those in French overseas territories. In the example in (24c) *France* relates to the team of fifteen rugby players, drawn from the pool of rugby players of French citizenship, who represented the French nation in the 2007 Rugby World Cup. In the final example, *France* relates to the French electorate, and specifically that part of the electorate which voted against proceeding with ratification of a proposed EU Constitution in a national referendum in 2005. These examples illustrate that a word form such as *France* appears to be protean in nature: its meaning is flexible, in part dependent upon the context of its use.

Access Semantics accounts for variation in word meaning by proposing two compositional mechanisms which integrate information deriving from context with linguistic content and conceptual content. These mechanisms facilitate the integration of words and other grammatical constructions such that an utterance-level simulation is derived. This utterance-level simulation (informally, what we might think of as utterance meaning), is termed a **conception** in Access Semantics.

The two compositional mechanisms are **lexical concept selection** and **fusion**. The first, lexical concept selection, serves to identify the most appropriate lexical concept associated with a given referential vehicle during the processing of an utterance. As the linguistic system consists of symbolic units – conventional pairings between vehicles and lexical concepts – a vehicle may potentially be associated with a large number of distinct lexical concepts. To illustrate, consider the lexical form *in*, which occurs in the following examples:

(25) a. The kitten is in the box.
b. The flag is flapping in the wind.
c. John is in love.

In each of these examples, a distinct lexical concept is selected for. The lexical concepts for *in* selected are [ENCLOSURE] for (25a), [PREVAILING CONDITIONS] for (25b) and [PSYCHOSOMATIC STATE] for (25c).

Selection relies on a number of constraining factors to determine the appropriate lexical concept: the lexical concept which best fits the conception under construction. Once a lexical concept has been selected, it must be integrated with other selected lexical concepts of the utterance, and, if it is an open-class lexical concept, interpreted in the light of conceptual structure to which it affords access, and the other open-class lexical concept(s) with which it has been integrated. That is, the selected lexical concept undergoes the second compositional process: namely fusion.

Fusion is the integrative process at the heart of semantic composition in Access Semantics, and the second of the two constituent processes of meaning construction. It results in the construction of a conception. This is achieved by recourse to two sorts of knowledge: linguistic content and conceptual content. Fusion is itself made up of two constituent processes: **lexical concept integration** and **interpretation**. The first relates to the integration of linguistic content, in order to produce, informally, the 'scaffolding' for the **activation** of conceptual content. Both sorts of information, and both types of processes, are necessary for the construction of meaning, and thus the formation of a conception.

Lexical concept integration involves the integration of lexical concepts in order to produce a composite unit: a **lexical conceptual unit**. The output of this process is a **semantic value**, a situated semantic attribution associated with a lexical conceptual unit based on integration of linguistic content. Hence, the semantic contribution of the lexical conceptual unit is highly schematic in nature. The lexical conceptual unit then undergoes interpretation. That is, open-class lexical concepts within the lexical conceptual unit **activate** part(s) of the conceptual content (the semantic potential) to which they facilitate access.

That part of the semantic potential that becomes activated is constrained by the nature of the semantic value for the lexical conceptual unit of which the open-class lexical concept(s) are part, and which emerges from integration. Hence, interpretation – the activation of conceptual content – is constrained by integration – the **unpacking** of linguistic content. A diagrammatic

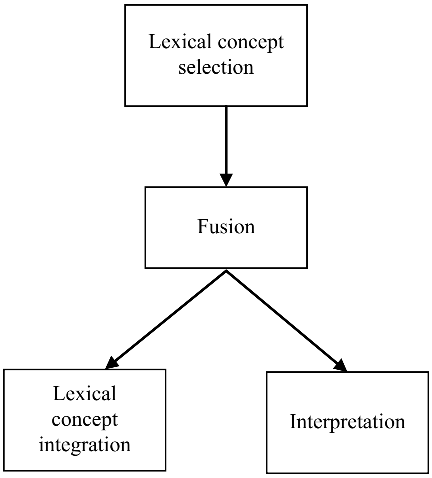

Figure 18.10 Processes of semantic composition in Access Semantics

representation of the processes of semantic composition in Access Semantics is provided in Figure 18.10.

3.4 Interpretation

According to Access Semantics, the process of interpretation is at the heart of the meaning construction process. In a lexical conceptual unit, it is only open-class lexical concepts that undergo interpretation. The outcome of interpretation results in the open-class lexical concepts achieving an **informational characterisation**, which is to say a semantic interpretation facilitated by simulation. This takes place by virtue of the relevant part of the semantic potential to which the lexical concepts facilitate access becoming activated. In the canonical case, when there are two (or more) open-class lexical concepts in the same lexical conceptual unit, these lexical concepts undergo interpretation simultaneously. In such cases, interpretation of the lexical concepts is constrained by a process termed **matching**. The purpose of matching is to ensure that a coherent informational characterisation emerges: one in which coherent parts of the cognitive model profile to which the distinct lexical concepts facilitate access are activated. Hence, interpretation is a constrained process.

3.4.1 An example of interpretation

To provide an immediate illustration of how interpretation proceeds, consider the expressions in (26) and (27) in the light of the partial primary cognitive model profiles for [FRANCE] in Figure 18.11, for [LANDMASS] in Figure 18.12 and for [NATION] in Figure 18.13.

(26) France, the landmass

(27) France, the nation

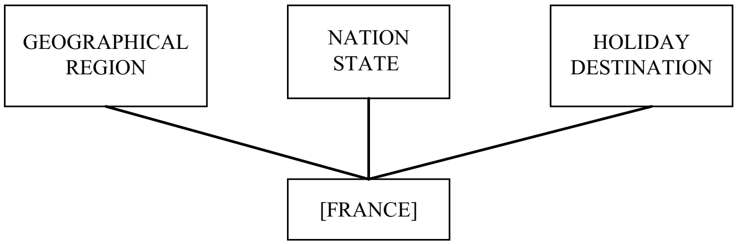

Figure 18.11 Partial primary cognitive model profile for [FRANCE]

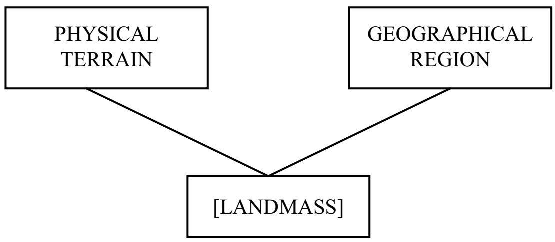

Figure 18.12 Partial primary cognitive model profile for [LANDMASS]

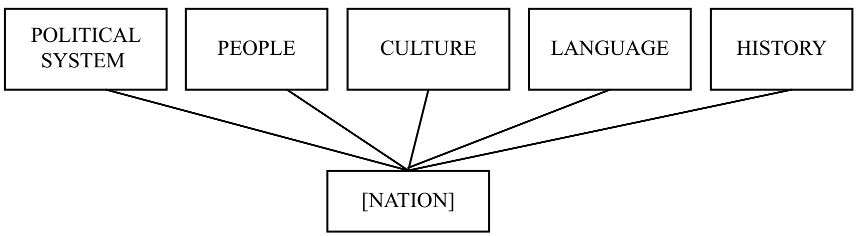

Figure 18.13 Partial primary cognitive model profile for [NATION]

In each of these examples, *France* receives a distinct informational characterisation.

In (26) *France* relates to a geographical area, while in (27) it relates to a political entity. Let's consider how it is that each of these instances of *France* receives a distinct interpretation, according to Access Semantics.

As we have seen earlier, the lexical concept [FRANCE] affords access to conceptual content relating, at the very least, to France as a geographical region, as a political entity – including knowledge relating to the French political system, the French people and their social customs practices, their history and language, and the national sports engaged in and so forth – and to France as a holiday destination, with, perhaps, knowledge relating to the sorts of holiday activities it is possible (or typical) to engage in, in France, such as skiing (in the Alps), seaside holidays (on the Mediterranean coast) and so on (recall Figure 18.6).

The lexical concept [LANDMASS] – see Figure 18.12 – facilitates access, at the very least, to primary cognitive models that relate to a PHYSICAL TERRAIN – a landmass can be hilly, mountainous, may consist of plains, woodland, and so on – or to a GEOGRAPHICAL AREA. Figure 18.13 relates to a very partial primary cognitive model profile for [NATION]. This lexical concept, at the very least, facilitates access to cognitive models having to do with a political entity, a nation state, and hence a particular POLITICAL SYSTEM, a PEOPLE (with common customs, traditions, cuisine and so on), LANGUAGE (and/or languages) and a common (often complex) HISTORY.

Interpretation works by virtue of the process of matching, which takes place between the cognitive model profiles accessed by the open-class lexical concepts which are subject to matching. In terms of the examples in (26) and (27), the relevant lexical concepts are [FRANCE], [LANDMASS] and [NATION]. Interpretation involves establishing a **match** between one (or more) cognitive models in the cognitive model profiles associated with the relevant lexical concepts. This process serves to **activate** the matched cognitive models. For instance, in the example in (26), a match is established between the primary cognitive model profile associated with [LANDMASS], and one of the cognitive models to which [FRANCE] affords access. This is, of course, the cognitive model GEOGRAPHICAL REGION, accessed via the lexical concept [FRANCE], which becomes activated. In the second example, the match takes place between the primary cognitive model profile to which [NATION] affords access and the nation state cognitive model to which [FRANCE] affords access. Hence, the reason for different readings of [FRANCE] in (26) and (27) is because the lexical concept in each utterance receives a distinct informational characterisation. In (26) interpretation results in an informational characterisation for [FRANCE] relating to France as geographical landmass. In (27) interpretation results in an informational characterisation of a political entity: France the nation state.

3.4.2 Constraints

The compositional mechanisms in Access Semantics, including matching, are subject to constraints. These constraints are formalised by a number of principles that govern the operation of semantic composition. The matching operation central to interpretation is constrained by the **Principle of Conceptual Coherence**. This can be stated as follows:

(28) Principle of Conceptual Coherence
Matching occurs between one or more cognitive models belonging to distinct cognitive model profiles, which share schematic coherence in terms of conceptual content.

This principle relies on a second principle, the **Principle of Schematic Coherence**:

(29) Principle of Schematic Coherence
The conceptual content associated with entities, participants and the relations holding between them must exhibit coherence in fusion operations.

What the principles in (28) and (29) do is to guarantee that matching takes place only when the cognitive models that undergo the matching process i) belong to different cognitive model profiles – and hence are accessed by different lexical concepts – and ii) exhibit coherence.

To illustrate consider the example in (30) which again employs the lexical concept [FRANCE]:

(30) France is beautiful.

The example in (30) provides a 'geographical region' conception. A common conception arising from (30), without a further specifying linguistic or extra-linguistic context, might relate to an understanding of France as a geographical region which is physically beautiful, for instance in terms of its landscape and so forth. This takes place by virtue of the lexical concepts [FRANCE] and [BEAUTIFUL] undergoing matching, giving rise to an informational characterisation.

The Principles of Conceptual and Schematic Coherence in (28) and (29) determine how the matching process is constrained and hence how, in general terms, the cognitive models across cognitive model profiles to be matched are selected. To make this clear consider the partial cognitive model profile for the lexical concept [BEAUTIFUL], given in Figure 18.14.

The lexical concept [BEAUTIFUL] facilitates access, at the very least, to cognitive models that have to do with multimodal knowledge relating to visual pleasure, non-visual pleasure (such as touch and sexual arousal, for instance), and aesthetic pleasure, relating, for instance, to our experience of pleasure arising from an appreciation of literature, music, language and so on.

Matching takes place by conducting what is referred to as a **search** in the primary cognitive model profiles of the two lexical concepts subject to matching, as guided by the principles in (28) and (29). That is, the primary cognitive models accessed by [FRANCE] (Figure 18.11) and [BEAUTIFUL] (Figure 18.14) are searched in order to identify a match at the level of schematic coherence across conceptual content. Put another way, the match relates not to details of similarity but, rather, how schematically coherent the conceptual content is. In terms of the three primary cognitive models given for [FRANCE] in Figure 18.11, only that of GEOGRAPHICAL REGION achieves a match in terms of schematic coherence with one (or more) of the primary cognitive models for

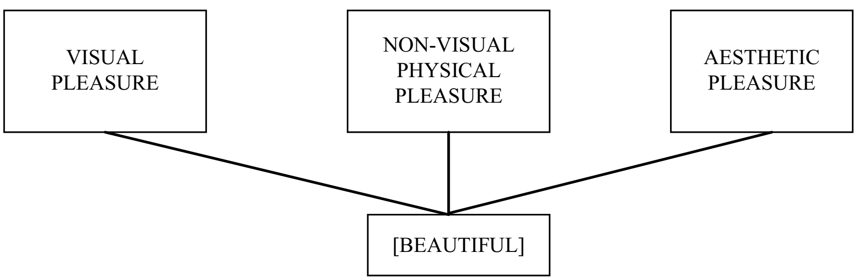

Figure 18.14 Partial primary cognitive model profile for [BEAUTIFUL]

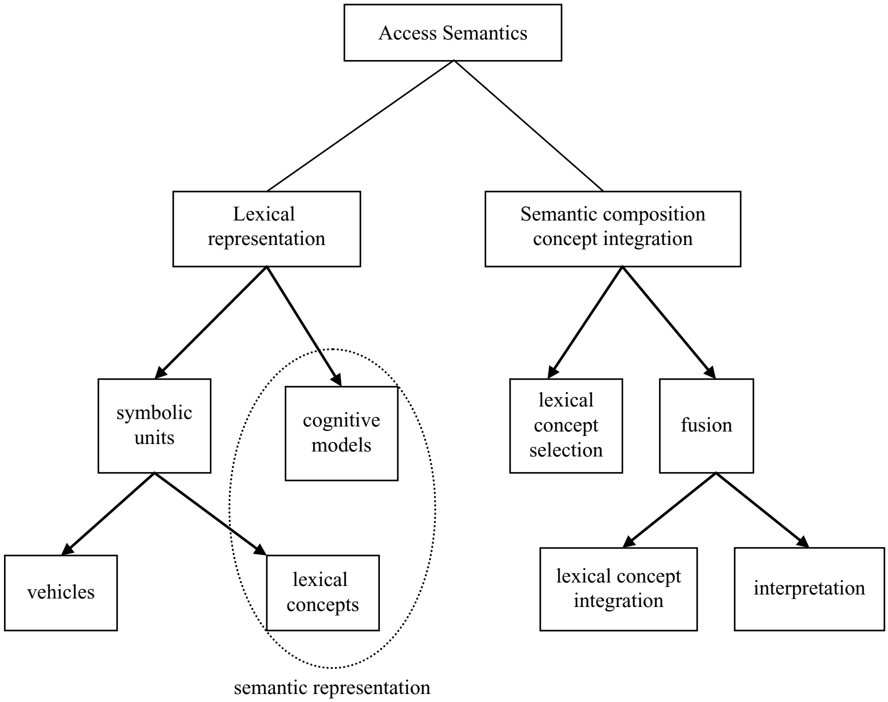

Figure 18.15 An overview of the architecture of Access Semantics

[BEAUTIFUL]. After all, the HOLIDAY DESTINATION cognitive model has to do with the nature and types of holiday opportunities that exist in France, while the NATION STATE cognitive model concerns the nature of France as a political entity.

In contrast, the GEOGRAPHICAL REGION cognitive model might include knowledge relating to the physical beauty, particularly the visual pleasure that derives from aspects of France as a geographical region. Hence, a match takes place between at least one of the primary cognitive models accessed via [BEAUTIFUL] and the GEOGRAPHICAL REGION cognitive model accessed via the [FRANCE] lexical concept. For this reason, a match is established between the primary cognitive model profile accessed by [BEAUTIFUL] and the GEOGRAPHICAL REGION cognitive model accessed by [FRANCE]. This results in an informational characterisation 'geographical region' for [FRANCE]. By way of summarising the discussion in the foregoing, Figure 18.15 provides an overview of the architecture of Access Semantics.

SUMMARY

This chapter has introduced the theory of **Access Semantics**, also referred to as the **theory of lexical concepts and cognitive models** (or **LCCM theory**, for short), named after the two theoretical constructs central to the theory: the

lexical concept and **cognitive model**. Within Access Semantics, the range of (lexical and compositional) semantic phenomena addressed are collectively referred to as **meaning construction**; hence Access Semantics is an attempt to account for the role of language in facilitating meaning construction. The essential insight of Access Semantics Theory is that semantic structure – the conventional semantic knowledge associated with words and other lexical units – is encoded by **referential vehicles** (e.g. word forms and grammatical constructions) which provide **access** to conceptual (i.e. multimodal) knowledge, thereby facilitating the construction of simulations. The novelty of Access Semantics lies in the fact that it provides a detailed account of the linguistically instantiated processes of integration which allows language to build complex semantic units which structure and influence the way in which access takes place. Within the theory, the lexical concept, a unit of semantic structure, encodes a **lexical profile**, which includes **selectional tendencies** – knowledge concerning the semantic arguments and grammatical patterns and constructions with and within which it can appear. An **open-class lexical concept** provides access to an **access site**, a set of **primary cognitive models**, in the conceptual system, which can become activated during the process of meaning construction. These primary cognitive models afford indirect access to a set of secondary cognitive models. Together the primary and secondary cognitive models constitute the semantic potential of a lexical concept. During meaning construction, a number of compositional processes apply enabling a **conception** to arise, which amounts to a linguistically mediated simulation. **Lexical concept selection** must first take place, followed by integrative and interpretive processes which together are referred to as **fusion**. Once lexical concepts have undergone **integration**, they are subject to **interpretation**. This is a constraint-based process whereby cognitive models across **cognitive model profiles** are subject to a process referred to a **matching**, in order to provide an **informational characterisation** of given lexical concept. This is an iterative process, resulting in a linguistically mediated simulation.

FURTHER READING

Overviews of Access Semantics

- **Evans (2006)**. This is an article-length overview of the architecture of Access Semantics.
- **Evans (2009)**. A book-length overview, and the definitive treatment of Access Semantics.

Applications of Access Semantics

- **Evans (2010b)**. An article length application to figurative language understanding.

- **Evans (2013b)**. A book-length application to temporal frames of reference (t-FoRs).
- **Evans (2015c)**. An article-length application to the polysemy of spatial semantics, including decision principles for distinguishing between senses/lexical concepts.

DISCUSSION QUESTIONS

1. According to Access Semantics, what are the design features of human meaning construction?
2. What are the reasons, and evidence, for thinking that there is a principled distinction between semantic representations in the linguistic and conceptual systems, also known as semantic structure versus conceptual structure?
3. What are the respective roles of the two representational systems in meaning construction? And how do they interface with one another in achieving meaning construction?

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Mental spaces and discourse meaning

This chapter introduces **mental spaces theory**: an account of meaning construction that is somewhat orthogonal to Access Semantics, presented in the previous chapter. In this chapter, I consider how larger units of language such as sentences and especially texts (units of **discourse** larger than the sentence) are meaningful. Moreover, mental spaces theory treats **discourse meaning construction** as a process that is fundamentally conceptual in nature. From this perspective, units of language work as 'partial instructions' for the construction of complex but temporary conceptual domains, assembled as a result of ongoing discourse. These domains, which are dubbed **mental spaces**, are linked to one another in various ways, allowing speakers to 'link back' to mental spaces constructed earlier in the ongoing linguistic exchange. From this perspective, meaning is not a property of individual sentences, nor simply a matter of their interpretation relative to the external world. Instead, meaning arises from a dynamic process that entails creating a **lattice of mental spaces**, recruiting content from conceptual structure. Hence, from the perspective of mental spaces theory, semantic structure amounts to little more than impoverished prompts for the recruitment of conceptual structure, marshalled by the mechanics of mental space construction. Discourse meaning arises, on this account, during the process of mental space construction, and conceptual structure assembled within mental spaces becoming linked and associated with conceptual structure that populates other mental spaces within a mental spaces lattice.

Mental spaces theory was developed by Gilles Fauconnier in two landmark books, *Mental Spaces* (1994), first published in English in 1985, and a later book, *Mappings in Thought and Language*, published in 1997. While mental spaces theory has subsequently continued to be developed by others, notably Dancygier and Sweetser (2009), Fauconnier later went on to extend his work on mental spaces by developing a theory of lexical and conceptual creativity, with colleague Mark Turner: **conceptual blending theory**, which I address in the next chapter. In key respects, Fauconnier's seminal contribution to the formation and development of cognitive linguistics, as an enterprise, can be viewed in analogous terms to the three 'founding fathers': Lakoff, Langacker and Talmy. Alongside Charles Fillmore, Fauconnier's influence remains highly conspicuous, with his ideas and pioneering theories forming the basis for much ongoing theoretical, descriptive and empirical research conducted by today's cognitive linguists.

1 Key assumptions of mental spaces theory

Before approaching the technical details of mental spaces theory, in this section I introduce the key assumptions that underpin this theoretical approach. As Fauconnier's account represents a reaction to the truth-conditional model of sentence meaning adopted in Formal Semantics, I begin with a very brief reminder as to the nature of Formal Semantics (recall my more detailed overview of this approach in Chapter 14). I then consider the perspective on 'meaning' taken by mental spaces theory, before considering the theoretical assumptions of mental spaces theory.

1.1 Formal Semantics revisited

Formal Semantics works by establishing 'truth conditions' of a sentence: the state of affairs that would have to exist in the world, real or hypothetical, for a given sentence to be true. For example, relative to a situation or 'state of affairs' in which the cat stole my breakfast, the sentence: *The cat named Jimmy stole my breakfast* is true, while the sentence *The cat named Jimmy did not steal my breakfast* is false. The truth-conditional approach is not concerned with empirical truth but rather with establishing a model of meaning based on 'what the world would have to be like' for a given sentence to be true. In other words, it is not important to find out whether the cat stole my breakfast or not, nor indeed whether I even have a cat named Jimmy. What is important is the fact that speakers know 'what the world would have to be like' for such a sentence to be true. Establishing the truth conditions of a sentence, then, enables sentences to be compared, and the comparison of their truth conditions gives rise to a model of (some aspect of) their meaning.

For example, if the sentence *The cat named Jimmy stole my breakfast* is true of a given situation, the sentence *My breakfast was stolen by the cat named Jimmy* is also true of that situation. These sentences stand in a relation of **paraphrase**. According to the truth-conditional model, they 'mean the same thing' (at least in semantic or context-independent terms) because they share the same truth conditions: they can both be true of the same state of affairs. Compare the two sentences we saw earlier: *The cat named Jimmy stole my breakfast* and *The cat named Jimmy did not steal my breakfast*. These two sentences stand in a relation of **contradiction**: they cannot both be true of the same state of affairs. If one is true, the other must be false, and vice versa. These examples illustrate how truth conditions can be used to model meaning relationships between sentences, such as paraphrase (if A is true B is true, and vice versa) and contradiction (if A is true B is false, and vice versa).

While Formal Semantics does not rely on empirical truth – you don't have to witness a cat named Jimmy stealing my breakfast in order to understand that the sentences discussed above stand in the kinds of meaning relationships described – the approach nevertheless relies on the **objectivist thesis**. This holds that the function of language is to represent an objectively defined external world. In contemporary truth-conditional approaches, this objective external reality may be mediated by mental representation (external reality as it is construed by the human mind), but in order for a formal truth-conditional model to work, it requires certain objectively defined primitives and values. Furthermore, as we saw in Chapter 14, this kind of approach to linguistic meaning assumes the principle of compositionality: the meaning of a sentence is built up from the meaning of the words in the sentence together with the way in which the words are arranged by the grammar. According to this view, then, the semantic meaning of a sentence is the output of this compositional process and is limited to what can be predicted from the context-independent meanings of individual words and from the properties of the grammar. Any additional meaning, such as the inferences a hearer can draw from the utterance of a particular sentence within a particular context, falls outside the immediate concerns of semantic theory, and reside in the domain of pragmatics. From this perspective, semantics is concerned with what words and sentences mean, while pragmatics is concerned with what speakers mean when they use words and sentences in situated language use, and how hearers retrieve this intended meaning.

1.2 The nature of meaning in mental spaces theory

In contrast to Formal Semantics which relies on the objectivist thesis, mental spaces theory adopts the **experientialist perspective** common to cognitive linguistic approaches to conceptual structure presented in Chapter 8. According to this view, external reality exists, but the way in which we mentally represent the world is a function of embodied experience (recall the discussion of the thesis of embodied cognition in Chapter 8). Thus, for Fauconnier, meaning construction proceeds not by 'matching up' sentences with objectively defined 'states of affairs', but on the basis of linguistic expressions 'prompting' for highly complex conceptual processes which construct meaning based on sophisticated encyclopaedic knowledge. Indeed, mental spaces theory makes three fundamental assumptions about the nature of meaning, which I outline in this section.

First, the meanings 'encoded' in language – the semantic structure associated with linguistic units – are partial and incomplete representations of conceptual structure. For example, we saw in Chapter 8 that conceptual structure is underpinned by information derived from multimodal brain states, including exteroceptive and interoceptive experience. While the representations of this experience that make up our conceptual system (including frames, domains, ICMs, conceptual metaphors and so on) are less rich in detail than perceptual experience itself, the representations encoded by semantic structure are still further reduced in detail. For example, one can mentally simulate (that is, mentally rehearse or imagine) the stages involved in taking a penalty kick in a football match. In contrast, semantic representation is specialised for expression via a symbolic system. This means that the linguistic system, which consists of spoken, written or signed symbols, 'loses' much of the richness associated with the multimodal character of conceptual structure. By way of analogy, if we were to take the 22.2 stream digital surround sound reproduction available with ultra-high-definition TVs, and compress the sound produced by those twenty-four speakers through a single speaker, not only would some of the sounds be lost (for example, the bass track, background sounds and the experience of 'moving' sounds), but the nature and detail of the remaining sounds would also be significantly impoverished: the mono sound becomes a very partial and incomplete clue to what the original sounds might have been like.

In a similar way, although semantic structure 'encodes' conceptual structure, mental spaces theory assumes that the format of semantic structure ensures that language can only ever provide minimal clues to the precise simulation intended by the speaker. In short, language provides impoverished meaning, and primarily functions as **prompts** for the construction of richer patterns of **conceptualisation** (also known as simulations) by the hearer. The cognitive linguist, Mark Turner, and Fauconnier's collaborator, has expressed this idea in the following way:

> Expressions do not mean; they are prompts for us to construct meanings by working with processes we already know. In no sense is the meaning of [an] . . . utterance 'right there in the words.' When we understand an utterance, we in no sense are understanding 'just what the words say'; the words themselves say nothing independent of the richly detailed knowledge and powerful cognitive processes we bring to bear. (Turner 1991: 206)

Second, mental spaces theory assumes that conceptualisation emerges from language use in context. It follows that there is no principled distinction between semantics and pragmatics. As we have seen, formal approaches, for instance, often assume that assigning meaning to an utterance is a two-stage process. In the first stage, context-independent word meanings are decoded by the hearer and composed into the context-independent semantic representation of a sentence. In the second stage, the utterance undergoes pragmatic processing which brings to bear information relating to context, background knowledge and inferences made by the hearer regarding speaker intentions (I presented one version of how that occurs with my overview of relevance theory, in Chapter 15). In contrast, mental spaces theory assumes that conceptualisation is guided by discourse context, which forms an integral part of the meaning construction process. According to this view, meaning construction is localised and situated, which entails that pragmatic (context-dependent) information and knowledge inform and guide the meaning construction process. Thus, while pragmatic knowledge may be qualitatively distinct from semantic knowledge (the impoverished information encoded by linguistic prompts), semantic knowledge is only meaningful in context. Hence, Fauconnier rejects the assumption that there are distinct 'semantic' and 'pragmatic' stages in meaning construction.

Finally, mental spaces theory assumes that conceptualisation relies upon complex conceptual processing, which involves **conceptual projections**. These include conceptual metaphors, conceptual metonymies and the process of **schema induction**. This is the process whereby our conceptualisations are elaborated and enriched by the application of large-scale and pre-assembled knowledge structures which serve a contextualising function. Schema induction is of central importance for the mental spaces approach to meaning construction, as we will see in this chapter. Conceptual projection mechanisms like metaphor, metonymy and schema induction establish **mappings**.

As we saw in Part II of the book, a mapping connects entities in one conceptual region with another. These mappings can be highly conventionalised, as in the case of primary conceptual metaphors (Chapter 13), or they can be constructed 'on-line' for purposes of local understanding. Fauconnier summarises this position as follows:

> Language, as we use it, is but the tip of the iceberg of cognitive construction. As discourse unfolds, much is going on behind the scenes: New domains appear, links are forged, abstract meanings operate, internal structure emerges and spreads, viewpoint and focus keep shifting. Everyday talk and commonsense reasoning are supported by invisible, highly abstract, mental creations, which . . . [language] . . . helps to guide, but does not by itself define. (Fauconnier 1994: xxii–xxiii)

In sum, for Fauconnier, meaning is not simply pre-existing stored knowledge encoded by language. Instead, meaning construction is seen as a complex process that takes place at the conceptual level. Words and grammatical constructions are merely partial and impoverished prompts upon which highly complex cognitive processes work giving rise to rich and detailed simulations. In his pioneering work on meaning construction, Fauconnier contends that much of what goes on in the construction of meaning occurs 'behind the scenes'. He argues that language does not encode thought in its complex entirety, but encodes rather rudimentary instructions for the creation of rich and elaborate ideas. It is because the principles and strategies that guide this conceptualisation process are largely unseen that the rather simplistic view has arisen that meaning construction is achieved by simply 'decoding' the meaning inherent 'in' language. Fauconnier dubs the unseen conceptualisation processes that are involved in meaning construction **back-stage cognition**.

1.3 An overview of mental spaces theory

According to Fauconnier, meaning construction involves two processes:

i) the building of mental spaces; and
ii) the establishment of mappings between those mental spaces.

In mental spaces theory, the mapping relations are guided by the local discourse context, which means that meaning construction is always situated or context-bound. Fauconnier defines mental spaces as 'partial structures that proliferate when we think and talk, allowing a fine-grained partitioning of our discourse and knowledge structures' (Fauconnier 1997: 11). As we shall see, the fundamental insight that this theory provides is that mental spaces partition meaning into distinct conceptual regions or 'packets'.

Mental spaces are regions of conceptual space that contain specific kinds of information. They are constructed on the basis of generalised linguistic, pragmatic and cultural strategies for recruiting information. However, because mental spaces are constructed 'on-line', they result in unique and temporary 'packets' of conceptual structure, constructed for purposes specific to the ongoing discourse. The principles of mental space formation and the relations or mappings established between mental spaces have the potential to yield unlimited meanings. For example, consider the following utterance similar to one discussed by Fauconnier (1997):

(1) If I were your father I would smack you.

This utterance gives rise to a **counterfactual** conceptualisation. That is, it sets up a scenario that runs counter to a presupposed reality. This scenario represents a mental space. Intuitively, you can think of a mental space as a 'thought bubble', rather like the strategy cartoonists use to reveal the inner thoughts of their characters. Crucially, mental spaces theory holds that you can have many 'thought bubbles' working simultaneously.

Depending on the context, the utterance in (1) can give rise to different counterfactual scenarios. This is because the context guides mapping operations between the state of affairs that holds in reality and the states of affairs that are set up in different versions of the counterfactual scenario. Imagine that a childminder, Susan, utters the sentence in (1) after the child in her care, James, is particularly unruly. I consider, here, three distinct possible interpretations of (1) in order to examine how mental spaces theory accounts for them.

1.3.1 The lenient father interpretation

The lenient father interpretation can be paraphrased as follows: 'your father should be stricter'. In this interpretation, the childminder Susan thinks that the unruly child's father should demonstrate more authority and punish the child by smacking him. In terms of mapping operations between reality and the counterfactual scenario, this interpretation is derived by Susan, with her stricter disposition, 'replacing' the father with his more lenient disposition.

This mapping is partial in the sense that the child's father remains the same in all other respects: he has a beard, rides a bike, gets home at the same time in the evening and so on. What changes in this counterfactual scenario is that the father is now less tolerant of the child's unruly behaviour and smacks the child. A consequence of this interpretation is that in the reality scenario, which is presupposed by the counterfactual scenario, the father is being critically compared to the speaker Susan. Because the childminder would smack the child, by implication the failure of the father to smack the child is interpreted as a fault on his part. In this way, the counterfactual scenario entails consequences for how we view the father and his approach to parenting in reality.

1.3.2 The stern father interpretation

The stern father interpretation can be paraphrased as follows: 'you're lucky I'm not as strict as your father'. In this interpretation, it is the father, who has a stricter disposition, who is replacing the childminder Susan. In short, Susan is advising the child that he is lucky that she is looking after him rather than his father, because otherwise the child would have been smacked.

In this interpretation, it is the father who is strict and Susan who is lenient in reality, and it is the father who assumes Susan's place in the counterfactual scenario. The implication of this counterfactual scenario for reality might be that where the father would smack the child, Susan exhibits greater restraint. This interpretation might therefore imply a positive assessment of Susan in her role as childminder.

1.3.3 The role interpretation

The role interpretation can be paraphrased as follows: 'the only reason I'm not smacking you is because I'm not allowed to'. In this interpretation, Susan is saying that if she could assume the role of the child's father then she would smack the child. This interpretation assumes nothing about the child's father who may (or may not) smack the child in reality. Instead, this counterfactual scenario replaces the father role with Susan. In this counterfactual scenario, Susan-as-father would smack the child. The implication of this interpretation for reality is that it comments on Susan's role and the limitations that it entails: in her role as childminder, she is socially and/or legally prohibited from smacking the child.

1.3.4 Discussion

Several important points emerge from this discussion of example (1). First, the same utterance can prompt for a number of different interpretations, each of which arises from different mappings between reality and the counterfactual scenario that is constructed. Second, each of these mappings brings with it different implications for how we view the participants in reality (for example, criticism versus a positive assessment and so on). Finally, this example substantiates the assertion of mental spaces theory that meaning is not 'there in the words' but relies on the conceptual processes that make connections between real and hypothetical situations. These processes result in representations that are consistent with, but only partially specified by, the prompts in the linguistic utterance.

Of course, the precise interpretation constructed will depend upon the precise details of the context in which it is uttered, upon the speaker's intentions and upon how these intentions are interpreted by the hearer. For example, if James has a father who is far stricter than his childminder in reality, he might be most likely to construct the second of these possible interpretations.

2 The architecture of mental space construction

As we have seen, in mental spaces theory, linguistic expressions are seen as underdetermined prompts for processes of rich meaning construction: linguistic expressions have **meaning potential**. Rather than 'encoding' meaning, linguistic expressions represent partial **building instructions**, according to which mental spaces are constructed. Of course, the actual meaning prompted for by a given sentence will always be a function of the **discourse context** in which it occurs, which entails that the meaning potential of any given sentence will always be exploited in different ways dependent upon the discourse context. In this section, I consider in detail the cognitive architecture that underlies this process of meaning construction.

2.1 Space builders

According to mental spaces theory, when we think and speak we set up mental spaces. Mental spaces are set up by **space builders**, which are linguistic units that either prompt for the construction of a new mental space or shift attention back and forth between previously constructed mental spaces. Space builders can be expressions such as prepositional phrases (*in 1966*, *at the shop*, *in Fred' s mind' s eye*, *from their point of view*), adverbs (*really*, *probably*, *possibly*, *theoretically*), connectives (*if . . . then . . .*; *either . . . or . . .*) and subject–verb combinations that are followed by an embedded sentence (*Fred believes* [*Mary likes bananas*], *Mary hopes . . .*, *Susan states . . .*), to name but a few. Space builders prompt the hearer to 'set up' a scenario beyond the 'here and now', whether this scenario reflects past or future reality, reality in some other location, hypothetical situations, situations that reflect ideas and beliefs, and so on.

2.2 Elements

Mental spaces are temporary conceptual domains constructed during ongoing discourse. These spaces contain **elements**, which are either entities constructed on-line or pre-existing entities in the conceptual system.

The linguistic expressions that represent elements are noun phrases (NPs). These include linguistic expressions such as names (*Fred*, *Elvis*, *Lady Gaga*, *Elizabeth Windsor*, *Theresa May*, *James Bond*), descriptions (*the Queen*, *the Prime Minister*, *a synthetic emerald*, *a Whitehouse intern*, *an African elephant*) and pronouns (*she*, *he*, *they*, *it*).

NPs can have **definite interpretation** or **indefinite interpretation**. NPs that have definite interpretation include those that occur with the definite article the (*the sleepy koala*) and names (*Margaret Thatcher*, *James Bond*). NPs that have indefinite interpretation include those occurring with the indefinite article *a* (*a sleepy koala*) and 'bare plurals' (*koalas*). NPs with indefinite interpretation typically introduce new elements into the discourse: elements that are unfamiliar or have not already been mentioned in the conversation (*James has been assigned a new car.*). NPs with definite interpretation are said to function in the **presuppositional mode**, because they presuppose existing knowledge. This means that they refer to elements that are already accessible: elements familiar to speaker and hearer, or already part of the conversation (*The new car lacks an ejector seat!*).

In mental spaces theory, elements introduced in the presuppositional mode are said to be **propagated**: they spread to neighbouring spaces. This process of propagation is governed by the **Optimisation Principle**. This principle allows elements, together with their properties and relations, to spread through the network or lattice of mental spaces, unless the information being propagated is explicitly contradicted by some new information that emerges as the discourse proceeds. This principle enables mental space configurations to build complex structures with a minimum of explicit instructions.

2.3 Properties and relations

In addition to constructing mental spaces and setting up new or existing elements within those spaces, meaning construction also processes information about how the elements contained within mental spaces are related. Space builders specify the **properties** assigned to elements and the **relations** that hold between elements within a single space. Consider example (2).

(2) In that play, Othello is jealous.

The space builder in example (2) is the phrase *in that play*, which sets up a mental space. In Figure 19.1 I diagram the mental space using a circle and label this mental space PLAY to show that the mental space represents the 'world' inside the play. The name *Othello* introduces an element into the mental space, which I label 'a', and the expression *jealous* assigns a property to the element (JEALOUS). This information is captured in the 'dialogue box' next to the mental space.

Now consider example (3).

(3) In the picture, a witch is riding a unicorn.

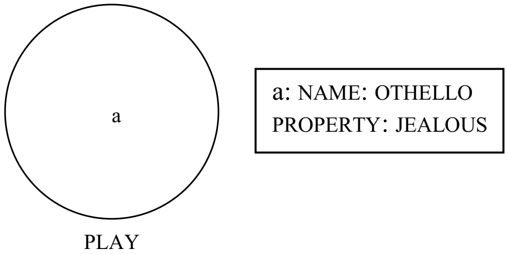

Figure 19.1 *In that play, Othello is jealous*

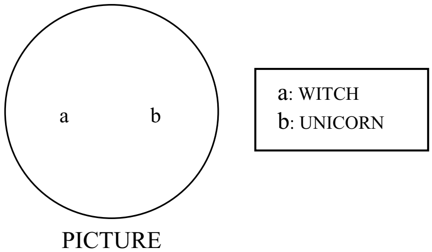

Figure 19.2 *In the picture, a witch is riding a unicorn*

Again, the prepositional phrase (PP) *in the picture* is a space builder that sets up a mental space which I label PICTURE in Figure 19.2. This shows that the mental space relates to the 'world' inside the picture. Two new elements are introduced: *a witch* and *a unicorn*. These are introduced as 'new' in the discourse because they have indefinite interpretation. In Figure 19.2, 'a' represents the element prompted for by the expression *witch*, and 'b' the element prompted for by the expression *unicorn*.

Thus far, the mental space in Figure 19.2 is only a partial representation of the sentence, because while it tells us that the picture contains a witch and a unicorn, it does not tell us whether a relation holds between them nor does it describe the nature of that relation. Mental spaces are internally structured by existing knowledge structures: frames and idealised cognitive models. The space builders, the elements introduced into a mental space and the properties and relations prompted for **recruit** this pre-existing knowledge structure, a process that I identified above as schema induction.

For example, the space builder in sentence (3) prompts for the recruitment of a frame for PICTURES. The elements introduced prompt for the recruitment of frames relating to WITCHES AND WITCHCRAFT, and MYTHICAL CREATURES such as UNICORNS. Finally, the expression *is riding* expresses a relation between the two elements and prompts for the RIDE frame. The RIDE frame brings with it two participant roles, one for a RIDER and one for the ENTITY RIDDEN. The RIDER role is mapped onto element 'a', introduced by the expression *witch*, and the ENTITY RIDDEN role is mapped onto element 'b', introduced by the expression *unicorn*. This establishes a relation between the two elements in the

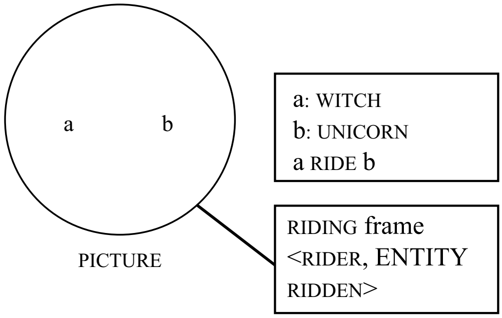

Figure 19.3 Schema induction

mental space. The completed mental space for example (3) with the additional structure resulting from schema induction is illustrated in Figure 19.3.

2.4 Mental space lattices

Once a mental space has been constructed, it is linked to the other mental spaces established during discourse. At any given point in the discourse, one of the spaces is the **base**: the space that remains accessible for the construction of a new mental space, as I discuss in more detail below. As discourse proceeds, mental spaces proliferate within a network or lattice as more schemas are induced and links between the resulting spaces are created. This is illustrated in Figure 19.4. The circles represent the mental spaces and the dotted lines indicate links between spaces. The base is the space at the top of the lattice.

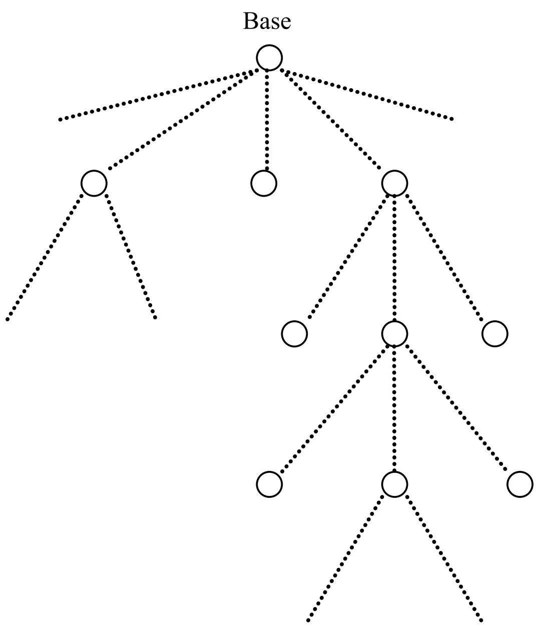

Figure 19.4 A lattice of mental spaces

2.5 Counterparts and connectors

In order to explain how different mental spaces are linked to one another, we begin by exploring the idea that elements within different mental spaces can be linked. Elements in different spaces are linked by connectors which set up mappings between **counterpart** elements. Counterparts are established on the basis of **pragmatic function**: when two (or more) elements in different mental spaces have a related pragmatic function, they are counterparts. One salient type of pragmatic function is **identity**. For instance, in Ian Fleming's novels, *James Bond* is the name of the fictional British spy character, and *007* is the code name used by the British Secret Service (MI6) to identify this spy. The pragmatic function relating the entities referred to as *James Bond* and *007* is co-reference or identity. Hence, both expressions refer to the same individual, and together form a **chain of reference**. Elements in different mental spaces that are co-referential (counterparts related by identity) are linked by an **identity connector**. To illustrate the linking of **counterparts** in two separate mental spaces by an identity connector, consider example (4).

(4) James Bond is a top British spy. In the war, he was an officer in the Royal Navy.

Each sentence in (4) sets up its own mental space, although it is not always the case that every sentence need do so. The criterion for setting up a new mental space is whether the utterance contains a new space builder. As this example, in (4), illustrates, not every mental space is introduced by an explicit space builder. For example, the base space introduced by the first sentence in (4) is established by our background knowledge that James Bond is a fictional character in the book or movie being described. The expression *James Bond* induces the schema that is associated with this knowledge. This shows that background knowledge can function as an implicit space builder. If this space builder were made explicit, the sentence might begin: *In the* book . . . or, *In the* movie . . . When a mental space lacks an explicit space builder, it does not receive a label such PLAY or BOOK, as this information is implicit.

In the first sentence in (4), the first mental space is set up by the introduction of the element corresponding to the name *James Bond*. This entity is assigned the property introduced by the indefinite NP *a top British spy*, which describes James Bond rather than introducing a separate entity because the two expressions are connected by *is*. This mental space is the base space. In the second sentence, the PP *in the war* is a space builder which constructs a new WAR space. This mental space also features an element, introduced by *he*, which also has a property assigned to it, *an officer in the Royal Navy*. Notice that *he* refers to the same entity as *James Bond*.

In linguistics, the process whereby one expression relies on another for full interpretation is called **anaphora**. The dependent expression (*he*) is termed an **anaphor** and the expression it relies upon for its meaning (*James Bond*) is referred to as the **antecedent**. The establishment of a link between an anaphor and an antecedent is a type of inference, an interpretation we 'compute' on the basis of establishing **coreference** between the two expressions. Anaphora relies on inference because an expression such as *he*, unlike the name *James Bond*, lacks the semantic properties to uniquely define its **referent**: it might, in principle, refer to any male entity. This means that the hearer has to 'work out' which entity it refers to by searching the context for a likely candidate.

2.6 The Access Principle

In an example such as (4), an identity connector is set up between the anaphor *he* and the antecedent *James Bond*. The elements a_1 and a_2 in Figure 19.5 are counterparts and are linked by an identity connector. This connector provides access to a counterpart in a different mental space. It is important to point out that the identity connector (which is represented as a line linking a_1 and a_2 in Figure 19.5) is not overtly introduced into the representation by any linguistic expression. Instead, the identity connector represents a mapping, a conceptual 'linking' operation established by the inference.

Fauconnier formalises this structuring property of mental space configurations in terms of the **Access Principle**. This states that 'an expression that names or describes an element in one mental space can be used to access a counterpart of that element in another mental space' (Fauconnier 1997: 41). This means that connectors are a type of conceptual projection – much like conceptual metaphors and metonymies. However, in contrast to conventional conceptual metaphors and metonymies, these are temporary, set up in the 'here-and-now' for purposes of mental space construction.

One consequence of the Access Principle is that expressions referring to a particular counterpart can typically provide access to entities in mental spaces

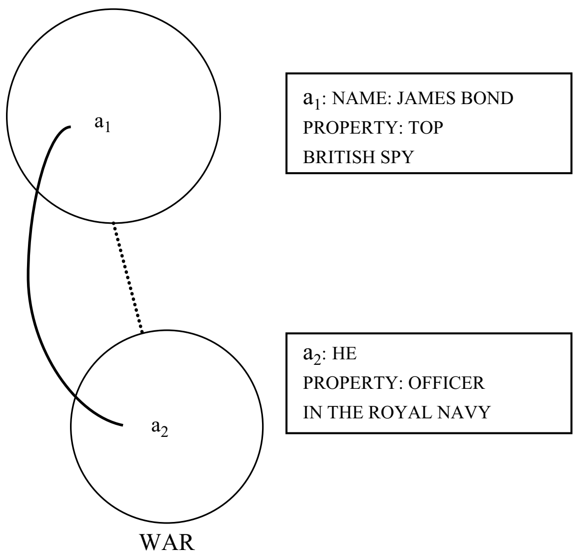

Figure 19.5 Linking counterparts

in either direction. Hence, connectors can 'link upwards' or 'link downwards' between spaces. When this occurs, the connector is said to be **open**. For example, the element corresponding to the anaphor *he* in example (4) serves as the **trigger** to access the element corresponding to the element a (*James Bond*), the **target**, in the base. In this example, the connector 'links upwards' to a previously established space. Access can also 'link downwards' from one mental space to a subsequently established space. To illustrate, let's now add example (5) to the text in (4):

(5) James Bond served on HMS *Espionage*.

This sentence adds structure to the WAR space by prompting for a new frame to be added containing information regarding WARSHIPS and the relationship between naval officers and the ships they serve on. Because the expression *James Bond* is used, which corresponds to element 'a' in the base space, the counterpart of element 'a' (labelled a_1) in the WAR space is accessed. New information can then be added with respect to element A_1. In this example, element 'a' in the base space, which is identified by *James Bond*, is the trigger for element a_1, the target, which is in the WAR space. In this way, a_1 in the WAR space is accessed via the base space.

Another way of thinking about this is to say that the space that is in 'focus', the WAR space – the space where structure is being added – is accessed from the perspective of the base space. This additional structure and the direction of the connector is represented in Figure 19.6.

Another consequence of the Access Principle is that multiple counterparts can be accessed. This is illustrated, in the next example, which relates

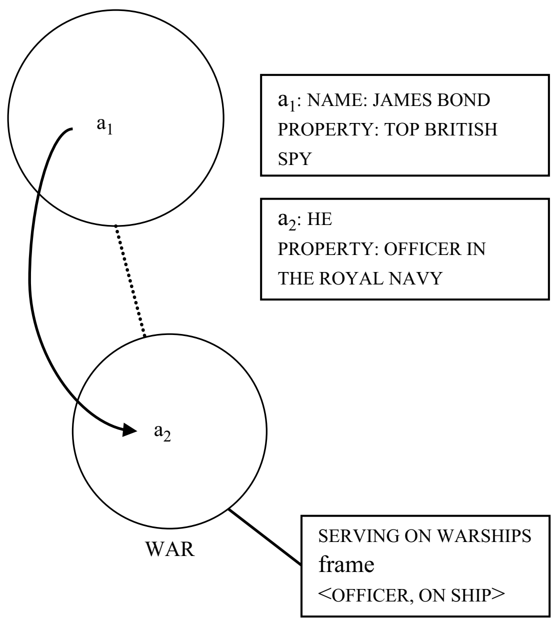

Figure 19.6 Directionality of connectors

to a fictitious movie about the life of the famous British film director Alfred Hitchcock. In his movies, Hitchcock invariably made a cameo appearance as a minor character. In the fictitious movie, Hitchcock is played by Orson Welles:

(6) In the movie Orson Welles played Hitchcock, who played a man at the bus stop.

This sentence contains the space builder *in the movie*. This sets up a MOVIE space containing the characters *Hitchcock* and *the man at the bus stop*. As we have seen, a mental space either represents the base space or is constructed relative to a base space; the base space contains **default information** currently available to the discourse context, including contextually relevant background frames. The base space for example (6) relates to the film set, which includes the director, the actors and so on. This information is not provided by specific linguistic expressions in example (6), but is supplied by schema induction arising from our knowledge of the MOVIE frame which also sets up connectors between actors and the characters they play.

In the base, which represents the reality space, both the element introduced by *Orson Welles* and the element introduced by *Hitchcock* are present. This is default information: both individuals exist as actors in the reality space. In the MOVIE space, based on our knowledge of the MOVIE frame, the information provided by *played* instructs us to link Orson Welles the actor (in the base) with Hitchcock the character (in the MOVIE space) as counterparts, linked by an **actor–character connector**. This is represented by connector 1 in Figure 19.7.

In addition, while Hitchcock is identified as a character in the movie space (by virtue of the actor–character connector), he is also identified as an actor

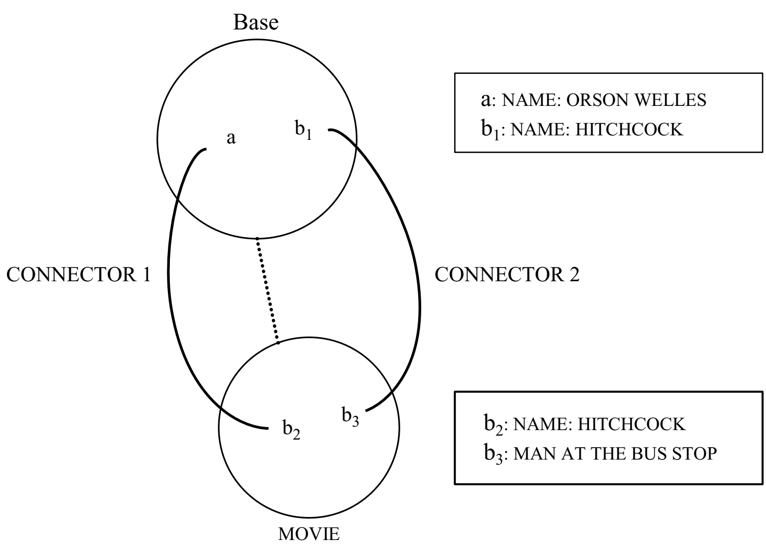

Figure 19.7 Hitchcock and the movie

by the subsequent part of the sentence: *who played a man at the bus stop*. This relation between Hitchcock-as-character (established in the MOVIE space) and Hitchcock-as-actor (established in the base space) is set up by the expression *who*, which is an instruction to set up a connector between these two counterparts. This is represented by connector 2 in Figure 19.7.

Now suppose we add example (7) to the information stablished in (6):

(7) Hitchcock liked himself in that movie.

This sentence is ambiguous. It could mean either that (the real) Hitchcock liked the character played by Orson Welles (Hitchcock-as-actor), or that he liked the man at the bus stop (Hitchcock-as-character). That is, from the perspective of the base, b_1 (the real) *Hitchcock* can be linked either to counterpart b_2 in the MOVIE space (Hitchcock-as actor, introduced by *who*) or to counterpart b_3 in the MOVIE space (*a man at the bus stop*). This is illustrated in Figure 19.8, which shows that the ambiguity in the sentence arises from the fact that b_1 (the real) *Hitchcock* has two potential connectors which link it to two counterparts in the MOVIE space.

In short, b_1 (*Hitchcock*) is a trigger with two targets established by pragmatic function: i) the connector linking b_1 with b_2 (Hitchcock-as-actor, introduced by *who*), which is established by virtue of an identity connector; and ii) the connector linking b_1 (*Hitchcock*) with b_3 (*the man at the bus stop*), which is established by an actor–character connector. Crucially, the ambiguity is a function of the mapping possibilities across mental spaces.

As this discussion reveals, the originality of mental spaces theory is that it offers a plausible account of how language prompts for different referential

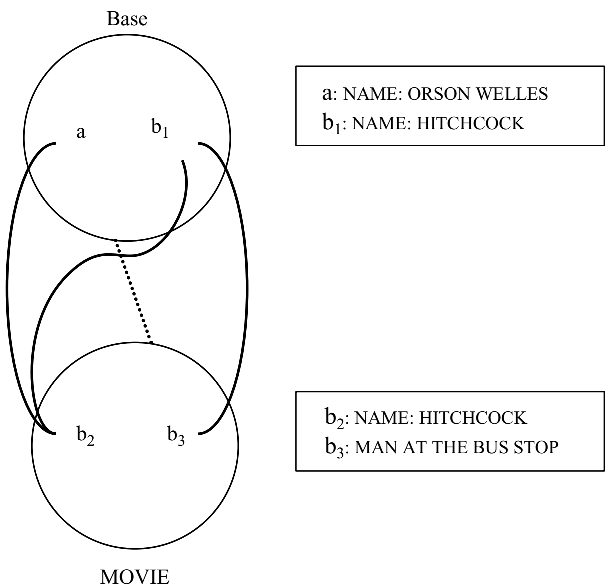

Figure 19.8 Two connectors to one element

possibilities. According to Fauconnier, it is precisely because we partition discourse into distinct mental spaces, with mappings holding between elements in different mental spaces, that we are able to construct the complex patterns of reference illustrated here.

Indeed, one of the challenges for truth-conditional theories of meaning is that **referential ambiguities** cannot be straightforwardly accounted for. This is because Formal Semantics relies upon the idea that each sentence has a truth value that can be assessed relative to a stable and objectively defined 'state of affairs', as I discussed earlier. A truth-conditional approach would be forced to claim that each interpretation arising from example (7) has a different set of truth conditions, which is inconsistent with the view that the meaning of a sentence can be modelled in terms of its truth or falsity relative to a given state of affairs.

In short, given a state of affairs in which Hitchcock liked the character Hitchcock-as-actor in the movie, the sentence in (7) would be simultaneously true (on the corresponding interpretation) and false (on the interpretation that Hitchcock liked the man at the bus stop). This gives rise to a logical inconsistency, because this model holds that a sentence cannot simultaneously be true and false in relation to the same state of affairs. In contrast to this view, because mental spaces theory holds that elements are set up in mental spaces rather than in some objectively defined 'state of affairs', no inconsistency arises in a single element having two distinct counterparts: it is possible, and even likely, that two or more distinct interpretations of a single sentence may coexist simultaneously.

2.7 Roles and values

An important aspect of mental spaces theory is its treatment of NPs with definite interpretation, an issue that also relates to potential ambiguity. As we have seen, NPs of this kind include common nouns co-occurring with the definite article (*the President*) or proper nouns (*James Bond*). Mental spaces theory claims that NPs with definite interpretation do not have **rigid reference**, which means that they may or may not refer to a unique referent. This is illustrated by the following examples, based on Fauconnier (1994: 39):

(8) a. The president changes every four years.
b. Your car is always different.

The sentences in (8) are ambiguous. Example (8a) could mean that every four years the person who is president changes in some way, for instance goes greyer, puts on weight, becomes insane and so on. Alternatively, (8a) could mean that every four years the person who serves as president changes. Similarly, (8b) could mean that every time I see your car, some aspect of the car has changed; it might have had a respray, acquired some new hubcaps and so on. Alternatively, this sentence could mean that you have a new car every time I see you.

Ambiguities like these illustrate that NPs with definite interpretation can either have what Fauconnier calls a **role reading** or a **value reading**. For example, the role reading of *the President* relates to the position of president, regardless of who fills it (our second interpretation of (8a)). The value reading relates to the individual who fills the role (our first interpretation of (8a)). Roles and values both introduce elements into mental spaces, but each gives rise to different mapping possibilities. This is illustrated by example (9):

(9) Donald Trump is the President. Barack Obama thinks he is still the President and Donald Trump is a business mogul.

In the base, the elements *Donald Trump, President* and *Barack Obama* are all present. These are default elements established by the discourse or by encyclopaedic knowledge. This is indicated by the fact that they have definite reference, which shows that they are not set up as new elements but are pre-existing. In this base, *Donald Trump* is a value element linked to the role element *President*. There is a role–value relationship holding between the two elements, which are co-referential. This relationship could be established on the basis of background knowledge, but in (9) it is explicitly signalled by the first sentence.

This relationship is captured in Figure 19.9 by the dotted arrows between the value element *Donald Trump* and the role element *the President*. The second sentence sets up a new space, because it contains the space builder *Barack Obama thinks* . . . In Barack Obama's BELIEF space, *he* (which is linked to *Donald Trump* by an identity connector), corresponds to the value element

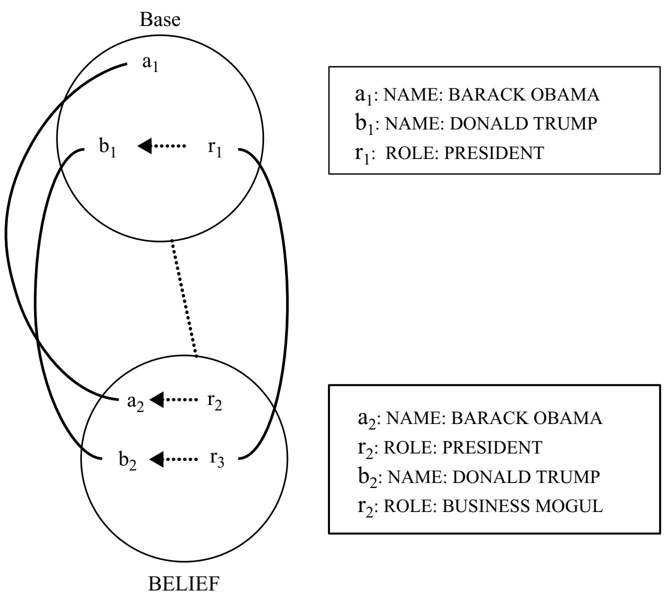

Figure 19.9 Roles and values

linked to the role element *the President*, while *Donald Trump* corresponds to the value element linked to the role element *business mogul*. Figure 19.9 illustrates the interpretation of roles and values in example (9).

3 An illustration of mental space construction

In this section, I analyse a short text so that we can apply some of the aspects of mental space construction that have been introduced so far. Although this text is quite simple, it nevertheless involves mental spaces construction of considerable complexity.

(10) Fido sees a tortoise. He chases it. He thinks that the tortoise is slow. But it is fast. Maybe the tortoise is really a cat.

As we have seen, mental space construction always proceeds by the establishment of a base that represents the starting point for any particular stage in the discourse. We can think of 'stages' in discourse as topics of conversation. Elements are introduced into the base by indefinite descriptions or are identified as pre-existing by definite descriptions or by non-linguistic factors such as **contextual salience**. Salience can arise in a number of ways, for example if the speaker is referring to something that is visible or familiar to both speaker and hearer (*Pass me the scissors*) or something they have been discussing previously (*I found the book*). The first sentence in (10) provides a definite description, *Fido*. This is in presuppositional mode, which signals that the element *Fido* is present in the discourse context. Observe that we can make this assumption regardless of whether we have access to the previous discourse context.

If (10) is part of a spoken story, for example, we probably already know who or what Fido is. But if (10) begins a written story, we 'construct' this background context. This element is therefore set up in the base space as part of the background. Moreover, Fido is a name, and background knowledge tells us that it is a name typically associated with a male dog. We can therefore deduce that the expression refers to a dog.

There is also an indefinite description in this sentence: *a tortoise*. The indefinite description introduces a new element to the discourse, and this is set up in the base space. The verb *see* introduces a relation between the two elements based on a SEE frame which involves at least two participant roles: SEER and SEEN. This frame is projected to the base space by means of schema induction, and the SEER role is mapped onto *Fido* (element a_1) while the SEEN role is mapped onto *a tortoise* (element b_1). This is illustrated in Figure 19.10.

The second sentence employs the anaphors *he* and *it*. Because we already know from background knowledge that the name *Fido* refers to a male animal, *he* identifies a_1 in the base space and *it* refers to the animal whose sex has not been identified: element b_1. The verb *chase* prompts for further structure to be added to the base space: the projection of the CHASE frame via schema

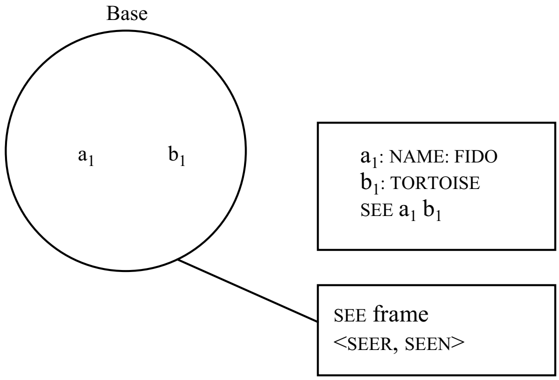

Figure 19.10 *Fido sees a tortoise*

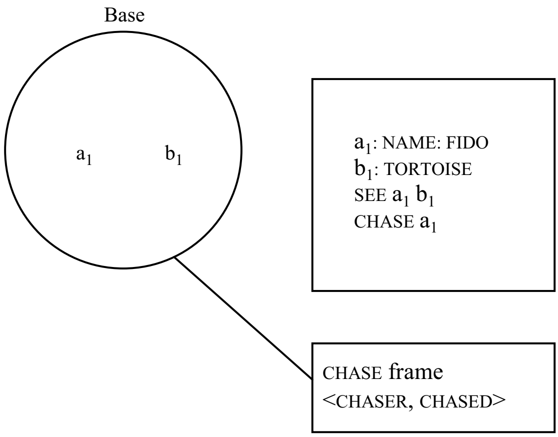

Figure 19.11 *He chases it*

induction. As with the SEE frame, CHASE also has two participant roles: CHASER and CHASED. These are mapped onto a_1 and b_1, respectively. This is illustrated by Figure 19.11.

The third sentence contains the space builder, *he thinks that*. This sets up a new BELIEF space which is established relative to the base. *He* prompts for a_2, a counterpart of a_1 (*Fido*), while *the tortoise* introduces an element in the presuppositional mode because this element has already been introduced into the discourse by the indefinite expression *a tortoise*. This prompts for a counterpart in the base: *the tortoise* introduces element b_2, counterpart of b_1 (*a tortoise*). In both cases, the pragmatic function that links the counterparts is the identity relation. The Access Principle entails that connectors are established between the counterparts and the Optimisation Principle ensures that information in the base space is automatically transferred to the new belief space. This means that the properties and relations holding for the counterparts of a_1 and b_1 – namely a_2 and b_2 – are set up in the BELIEF space. This includes the participant roles that follow from the SEE and CHASE frames. In addition, the

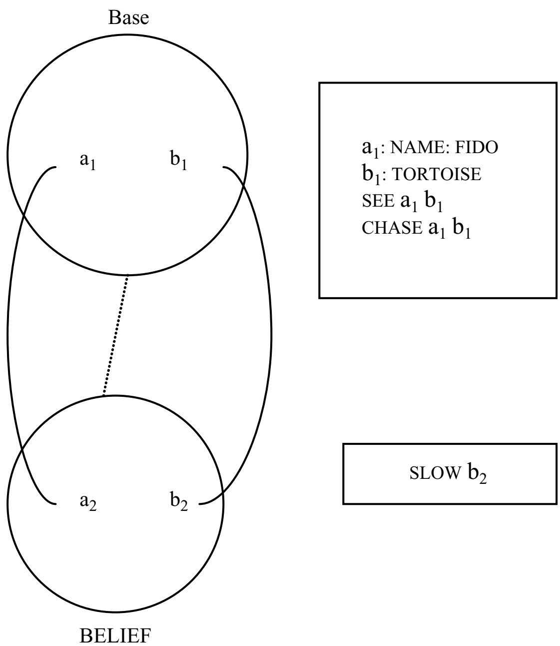

Figure 19.12 *He thinks that the tortoise is slow*

property SLOW is associated with b_2 (*the tortoise*) in Fido's BELIEF space. This is represented by Figure 19.12.

In the fourth sentence, new information is added which states that the tortoise is fast. Because this information relates to reality, it is added to the base space rather than to Fido's BELIEF space. The use of *but*, which introduces a **counter-expectational interpretation**, overtly signals that the Optimisation Principle does not apply to this information, which means that the information that the tortoise is fast is limited to the base space. This is because information in the BELIEF space, namely that the tortoise is slow, contradicts information in the base. In this way, the Optimisation Principle prevents contradictory information (that the tortoise is fast) from spreading to the BELIEF space: Fido cannot simultaneously think that the tortoise is slow and that the tortoise is fast. This is illustrated in Figure 19.13.

The final sentence includes the space builder *maybe*. This sets up a POSSIBILITY space. In this space, the counterpart of the tortoise (b_1) is a cat (b_3). The expression *really* signals that this POSSIBILITY space is set up from the perspective of the base space rather than from the perspective of Fido's BELIEF space, because the base space is the reality space (see Figure 19.14).

As this relatively simple example demonstrates, even a short piece of discourse involves active participation on the part of the hearer/reader in terms of the construction of a number of different mental spaces in which linked but potentially contradictory information can be held. This model goes some way towards explaining the complex cognitive operations that take place in the background, during meaning construction, and shows how language prompts for knowledge within the conceptual system.

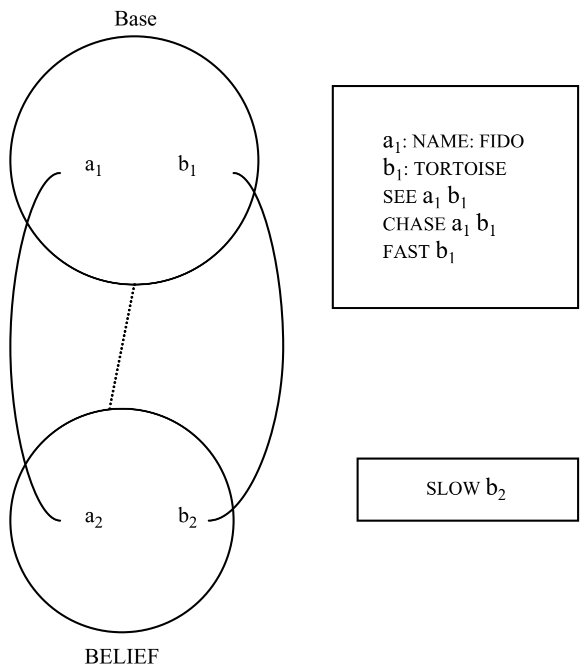

Figure 19.13 *But it is fast*

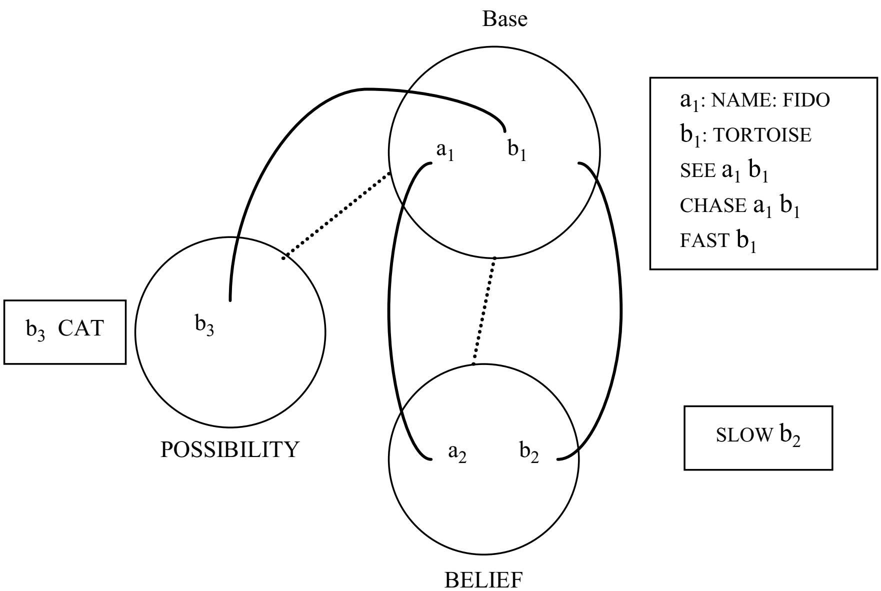

Figure 19.14 *Maybe the tortoise is really a cat*

4 The dynamic nature of meaning construction

In this section I focus on the dynamic aspect of meaning construction. This relates to the way in which **interlocutors** (discourse participants) keep track of the mental spaces that have been set up during ongoing discourse, including the content of the various spaces, the links between them and their sequence. Language assists in this process in two main ways: i) the grammatical tense–aspect system signals **time reference** (the location in time of one mental space relative to another); and ii) the grammatical system of **epistemic modality** signals **epistemic distance**. Epistemic modality is a type of grammatical marking that reflects the speaker's knowledge or opinion concerning the likelihood, possibility or certainty of the proposition expressed by a sentence. Epistemic modality therefore concerns the reality status of one space with respect to another. Because tense, aspect and modality are often closely interwoven within the grammatical systems of languages, this area is often abbreviated to the 'TAM' system. Hence, in this section, I explore the mental spaces theory approach to these two aspects of the TAM system.

4.1 Tense and aspect in English

I begin by looking at how the English tense–aspect system prompts for information relating to the timing of events. To begin with the fundamentals, tense is a feature of the closed-class system, usually marked morphologically on verbs or independent inflection words. Tense marks a sentence with information concerning the time of the event described relative to the moment of speaking. Present tense signals that the time referred to and the time of speaking are equivalent. Past tense signals that the time referred to precedes the time of speaking. Future tense signals that the time referred to follows the time of speaking. Linguists often use a relatively simple representational system to capture the relationship between event time and time of speaking called the **Speech-Event-Reference (SER) system** (Reichenbach 1947). In this system, **S** stands for **moment of speaking** and **R** stands for **reference time** (the time referred to in the utterance).

(11) Past tense: $R < S$
Present tense: $S = R$
Future tense: $S < R$

In English, present and past tense are marked on the verb with suffixes, but in the present tense this suffix is only marked on the third person singular *he/she/it* form in the case of most verbs (for example, *I/you/we/they sing* vs *she sing-s*). However, the 'irregular' verb *be* shows a wider range of present tense forms (*I am*, *you/we/they are*, *he/she/it is*). Past tense is marked on many verbs by the suffix *-ed* (for example, *I played*). Strictly speaking, English lacks a future tense, because there is no bound morpheme indicating future time that forms part of the same grammatical system as present and past tense. However, English has a number of ways of referring to future time, including the use of the modal verb *will*, for example *I will sing*.

Tense interacts with grammatical aspect. Unlike tense, aspect does not refer to the time of the event described relative to the moment of speaking. Rather, it describes whether the event is viewed as 'completed' or 'ongoing'.

The traditional term for a 'completed' event is **perfect aspect** and traditional terms for an 'ongoing' event include the terms **imperfect** or **progressive aspect**.

In English, perfect aspect is introduced by the **auxiliary verb** *have* (for example, *I have finished*) and progressive aspect is introduced by the auxiliary verb *be* (for example, *I am singing*). Aspect can be a difficult system to get to identify, not least because the verbs *have* and *be* do not always function as auxiliary verbs. They can also function as **lexical verbs**. The distinction between auxiliary and lexical verbs is that the former are followed by another verb form called a **participle** (*I am singing*; *She has finished*), while the latter are not (*I am hungry*; *She has brown eyes*).

In the SER system, aspect is represented as the interaction between R and **E**, which stands for **Event**. In the case of perfect aspect, the entire, completed event is located prior to the reference time; this indicates that, relative to the time referred to in the utterance, the event is viewed as 'completed':

(12) Perfect aspect: $E < R$

Progressive aspect is represented in the SER system as **B** . . . **F** (which stand for **Beginning** and **Finish**, respectively). These 'surround' the reference time, indicating that the event is viewed by the speaker as ongoing relative to the time referred to in the utterance:

(13) Progressive aspect: $B < R < F$

Tense and aspect can 'cut across' one another within the tense–aspect system. As such, they can be combined to produce a large number of different permutations. Some of these are shown in example (14), together with the relevant SER 'timeline' diagrams:

(14) a. James Bond has outwitted the villain (now).
⟵E – – R = S⟶ PRESENT PERFECT
b. James Bond had outwitted the villain.
⟵E – – R – – S⟶ PAST PERFECT
c. James Bond will have outwitted the villain (by teatime).
⟵S – – E – – R⟶ FUTURE PERFECT
d. James Bond is outwitting the villain.
⟵B – – R = S – – F⟶ PRESENT PROGRESSIVE
e. James Bond was outwitting the villain.
⟵B – – R – – F – – S⟶ PAST PROGRESSIVE
f. James Bond will be outwitting the villain.
⟵S – – B – – R – – F⟶ FUTURE PROGRESSIVE

The aspect of each example can be identified according to whether the 'verb string' contains *have* (perfect) or *be* (progressive). Observe that these auxiliaries also require the verb that follows them to assume a particular form. The perfect auxiliary *have* requires the next verb to be in its 'past' or **perfect participle** form. As an aside, the term 'past participle', from traditional grammar, is somewhat misleading as it implies that the past participle is restricted to past tense contexts. As examples (14a) and (14c) illustrate, this is not the case. It can also be difficult to identify the past participle since it often looks just like the past tense form (for example, *outwitted*). Nevertheless, certain verbs have distinct past tense/past participle forms (for example, *I* <u>wrote</u> [past tense] versus *I have* <u>written</u> [past participle]).

The progressive auxiliary *be* requires the verb that follows it to occur in the 'present' or **progressive participle** form, which ends in *-ing*; as with the nomenclature 'past' participle, the use of 'present' is similarly misleading: participles are not finite verb forms; hence, they can occur in past, present or future contexts. Nevertheless, these verb forms are termed participles because they form a subpart of a tense–aspect configuration, and crucially they cannot 'stand alone' without an auxiliary verb (for example, **I written*; **I singing*).

The tense of each example can be identified by the form of the auxiliary verb. If this verb is present, past or future (the latter marked by *will*), the whole clause has that tense property. For example, (14a) is in the present tense because the auxiliary *have* is in the (third person singular) present tense form *has*. Although the event is viewed as completed, it is viewed from the perspective of the moment of speaking; this is why present perfect configurations can be modified by the temporal expression *now*. Example (14b) is in the past tense because the auxiliary *have* is in its past tense form: *had*.

4.2 The tense–aspect system in mental spaces theory

From the perspective of mental spaces theory, the function of the tense–aspect system is to serve **discourse management**. In so doing, the system facilitates three types of mental spaces, referred to, in the theory, as: **viewpoint**, **focus** and **event**. These theoretical constructs relate to the status of mental spaces in discourse. While the base represents the mental space which serves as the starting point for a particular stage in the discourse, and to which the discourse can return, the viewpoint is the mental space from which the discourse is currently being viewed and from which other spaces are currently being built. The focus is the mental space where new content is being added, and the event mental space represents the time associated with the event being described. While the focus and event spaces often coincide, as we will see, they can sometimes diverge. As discourse progresses, the status of mental spaces as base, viewpoint, focus or event can shift and overlap. In order to illustrate these ideas, consider the following text, in which the verb strings are underlined:

(15) Monica <u>is</u> 26. She <u>has lived</u> in The Netherlands. In 2010 she <u>lived</u> in Amsterdam. She currently <u>lives</u> in Leiden. Next year she <u>will move</u> to The Hague. The following year she <u>will move</u> to England. By this time, she <u>will have lived</u> in The Netherlands for five years.

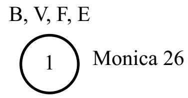

Figure 19.15 *Monica is 26*

I will construct a mental spaces theory representation of this text beginning with the base (B). The base space is also the initial viewpoint (V) and the focus (F), as we add new information to the base, namely that Monica is 26 years of age. Time reference is now (E), as signalled by the present tense 'is'. This is illustrated in Figure 19.15, which represents the first space constructed by this text (space 1). In this section, I simplify the mental spaces diagrams by omitting the dialogue boxes, given that my objective here is not to illustrate the establishment of elements, links, properties or relations, but to work out how the sentences in the discourse set up mental spaces that shift the status of previously constructed spaces with respect to base, viewpoint, focus and event.

The second sentence, *She has lived in The Netherlands*, keeps the base in focus, as it adds new information of current relevance. This is signalled by the use of the present perfect *has lived*. The present tense auxiliary form *has* signals that we are building structure in space 1 which thus remains the focus space. However, the structure being built relates to an event that is complete (or past) relative to space 1, signalled by the past participle *lived*. This is set up as space 2. In this way, perfect aspect signals that focus and event diverge. Put another way, the present perfect *has lived* signals that knowledge of a completed event has current relevance. Because the focus space, 'now' (space 1), is also the perspective from which we are viewing the completed event, the focus space (space 1) is also the viewpoint. This is illustrated by Figure 19.16.

The third sentence, *In 2010 she lived in Amsterdam*, contains the space builder *in 2010*. This sets up a new space, which is set in the past with respect to the viewpoint space which remains in the base (space 1). This new space (space 3) is therefore the event space. Because we have past tense marking, the focus shifts to the new space. This is illustrated in Figure 19.17.

The fourth sentence, *She currently lives in Leiden*, is marked for present tense. This returns the focus to the base space (space 1). The base also remains the viewpoint, because this is now the perspective from which the lattice is being viewed. Because the time reference relates to this space, this is also the event space. This is illustrated in Figure 19.18.

The fifth sentence, *Next year she will move to The Hague*, is marked for future tense. Together with the future tense, the space builder *next year* sets up a new

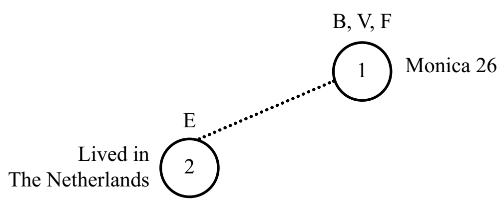

Figure 19.16 *She has lived in The Netherlands*

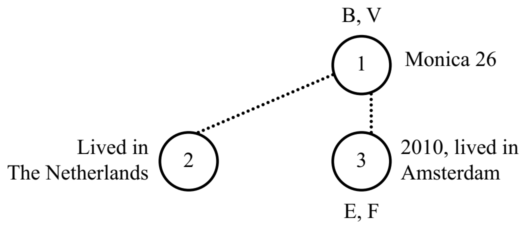

Figure 19.17 *In 2010 she lived in Amsterdam*

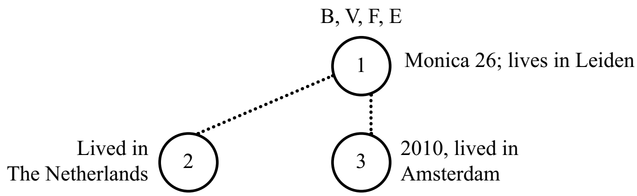

Figure 19.18 *She currently lives in Leiden*

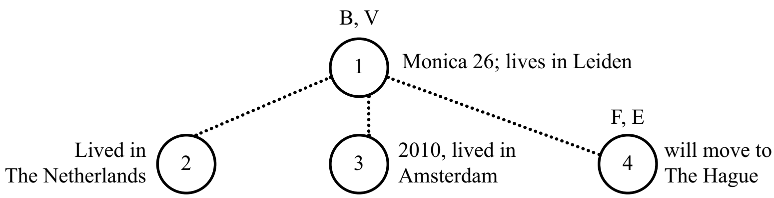

Figure 19.19 *Next year she will move to The Hague*

space which is the current focus space (space 4). The event described in this space is future relative to the viewpoint, which remains in the base (space 1). This is illustrated in Figure 19.19.

In the penultimate sentence, *The following year she will move to England*, the space builder *the following year* sets up a new space which is the current focus space containing the information that Monica will move to England (space 5). The future marker signals that the event is future relative to the base (space 1). However, the space builder *the following year* also shows that the new event space (space 5) is also future relative to space 4, from which the current space under construction is viewed. Hence, the viewpoint shifts from the base to space 4. This is illustrated in Figure 19.20.

In the final sentence, *By this time, she will have lived in The Netherlands for five years*, the use of the future perfect auxiliary *will have* signals that the space in focus is the future space, space 5. However, the structure being built relates to a completed event, signalled by the past participle form *lived*. The future perfect *will have lived* therefore establishes an event space (space 6) that relates to a completed event: an event that is past with respect to the focus space. Thus, the time of the event space diverges from the time of the focus space with respect to which it is relevant. This means that the focus

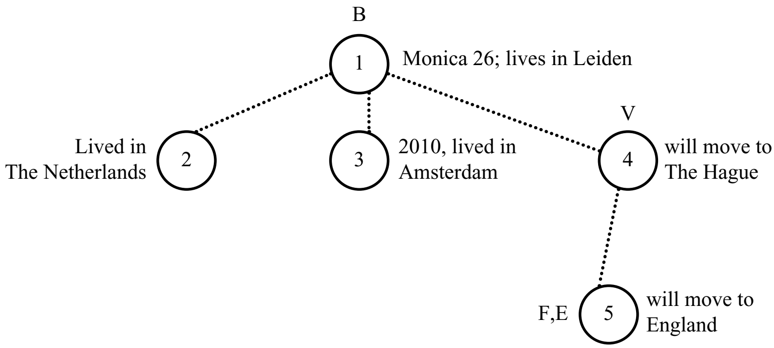

Figure 19.20 *The following year she will move to England*

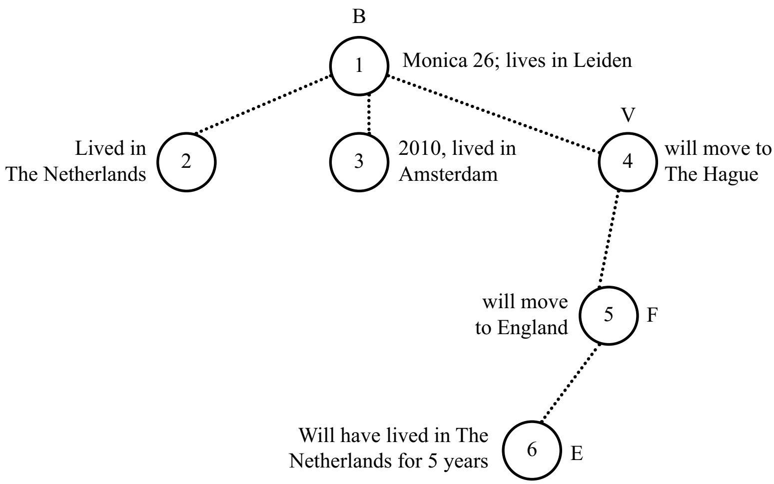

Figure 19.21 *By this time, she will have lived in The Netherlands for five years*

remains in space 5 where structure is being added. The viewpoint remains in space 4 because it is from the perspective of her time in The Netherlands that this sentence is viewed. At this point in the discourse, as Figure 19.21 illustrates, the base, viewpoint, focus and event all relate to distinct spaces.

The use of the future marker, *will*, in this final sentence shows that the current space is still connected to the base space to which the discourse could return. For instance, if the discourse continued with the sentence, *But at present Monica is happy in The Hague*, this would return viewpoint, focus and event to the base.

As this discussion reveals, the tense–aspect system serves to manage the perspective from which an utterance is made. In particular, we have seen that while temporal adverbials such as *in 2010* set up new spaces, it is the tense–aspect system that signals the perspective from which a particular mental space is viewed, providing prompts for shifts in viewpoint.

Before concluding this discussion of the tense–aspect system, I briefly dwell on progressive aspect. As noted earlier, this is signalled in English by

Table 19.1 The role of tense and aspect in discourse management

	Present (simple)	Past (simple)	Future (simple)	Perfect	Progressive
Focus	X	X	X	Not X	Not X
Viewpoint	X	X's parent	X's parent	X's parent or grandparent	X's parent or grandparent
Event	X equivalent to V	X before V	X after V	X is completed with respect to F	X contains F

the progressive auxiliary *be* and the progressive participle, ending in *-ing* (e.g. *Monica is writing a letter*, which illustrates the present progressive). As with perfect aspect, progressive aspect signals that event and focus spaces diverge. While the perfect signals that a completed event has current relevance in the focus space, progressive aspect signals that the focus space occurs during the event space. Thus, the focus space for the sentence *Monica is writing a letter* contains a schematic event that receives its complete temporal profile only in the event space. (For full details, see Cutrer's (1994) mental spaces account of the tense–aspect system.). Table 19.1 summarises the functions of tense and aspect in terms of discourse management. In this table, X refers to a given mental space and the term 'simple' means that the relevant sentence that builds the space is not marked for aspect.

4.3 Epistemic distance

In addition to its time reference function, tense can also signal epistemic distance – as we first saw in Chapter 2, polysemy is not restricted to the open-class semantic system: tense, as part of the closed-class semantic system also exhibits polysemy. Consequently, the tense system has a range of distinct schematic meanings associated with it (e.g. Tyler and Evans 2001b). One illustration of this point relates to the use of tense in hypothetical constructions such as 'if A then B', which I briefly discuss in this section (see Dancygier and Sweetser 2009). Consider example (16).

(16) If the President agrees with the senator's funding request, then the senator has nothing to worry about.

A and B refer to the two propositions that make up this complex sentence. In example (16), A stands for the antecedent: *the President agrees with the senator's funding request* and B stands for the consequent: *the senator has nothing to worry about.*

According to mental spaces theory, 'if A then B' constructions set up two successive spaces in addition to the base which is the reality space. The two successive spaces are termed the **foundation** space and the **expansion** space. The foundation space is a hypothetical space set up by the space builder *if.*

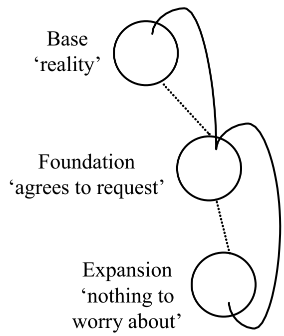

Figure 19.22 Foundation and expansion spaces

The expansion space is set up by the space builder *then*. While the foundation space is hypothetical relative to the base, whatever holds in the expansion space amounts to 'fact', relative to the foundation space, in the sense that it is entailed by the information in the foundation space (see Figure 19.22). Hence, if A (the foundation) holds, then B (the expansion) follows.

In order to uncover the role of 'if A then B' constructions in epistemic distance, consider the sentences in example (17).

(17) a. If I win the lottery, I will buy a Rolls-Royce.
b. If I won the lottery I would buy a Rolls-Royce.

The first sentence expresses a neutral **epistemic stance** while the second expresses **epistemic distance**. Epistemic stance relates to the speaker's assessment of how likely a particular foundation–expansion sequence is relative to a particular reality base space. As we have seen, the term 'epistemic' relates to the speaker's knowledge or opinion concerning likelihood, possibility, certainty or doubt, and the terms 'epistemic stance' and 'epistemic distance' both rely on the speaker's metaphorical 'distance' from a particular state of affairs: the speaker's 'position' or judgement regarding the likelihood of a particular situation coming about. Notice that in sentence (17a), the *if* clause is in the present tense, although it refers to (hypothetical) future time. This example illustrates that the English present tense is not restricted to referring to present time. In (17a), the speaker is making no assessment in relation to epistemic distance; this sentence is purely hypothetical. In short, the speaker takes a neutral or 'open' position with respect to the likelihood of winning the lottery. Observe that this sentence would be appropriate in a context in which the speaker regularly plays the lottery and therefore has a chance of winning.

The sentence in (17b) is also a hypothetical, but here the speaker is indicating epistemic distance by virtue of the use of the past tense in the *if* clause. This sentence might be uttered in a scenario in which the speaker doesn't actually play the lottery, or judges his or her chances of success as vanishingly remote. This type of *if . . . then* sentence, which refers to a highly improbable situation, is termed a **counterfactual**.

Finally, compare the form of the modal verbs in the *then* clauses in these two examples. The form *will* in (17a) is traditionally described as the present tense form, while the form *would* in (17b) is described as the past tense form.

As the examples in (17) illustrate, the tense system can be used for more than signalling reference time. It can also be used to signal epistemic stance. The examples considered so far have not been marked for grammatical aspect: (17a) is in the 'simple present' and (17b) is in the 'simple past'. However, if we introduce perfect aspect into the *if* clause, the result is striking. Consider the following example:

(18) If I had won the lottery, I would have bought a Rolls-Royce.

This counterfactual example is in the past perfect form and is therefore marked for both past tense and perfect aspect. The result is increased epistemic distance. This example might be appropriate in a context where the speaker had in fact played the lottery but lost.

SUMMARY

In this chapter I have introduced **mental spaces theory**, a cognitive linguistics approach to discourse meaning construction. This theory is associated most prominently with the influential work of Gilles Fauconnier. According to this theory, meaning construction is a process that is fundamentally conceptual in nature. Sentences constitute highly impoverished and **partial instructions** for the construction of highly complex and intricate conceptual **mental space lattices** which are temporary, can be more or less detailed and are assembled as a result of ongoing discourse. These temporary domains, called **mental spaces**, are linked in various ways and contain **elements** that are also connected, allowing speakers to keep track of **chains of reference**. From this perspective, meaning is not a property of individual sentences nor of their interpretation relative to some objectively defined 'state of affairs' as in Formal Semantics. Instead, meaning arises from a dynamic process of **back-stage cognition**, termed **conceptualisation**. While our conceptualisations may or may not be about the 'real world', we keep track during ongoing discourse of elements, **properties** and **relations** in the complex mental space configurations assembled as we think and speak. From this perspective, sentences cannot be analysed in isolation from ongoing discourse, and semantic meaning, while qualitatively distinct, cannot be meaningfully separated from pragmatic meaning. Hence, meaning construction is a dynamic process, and is inseparable from context. Finally, because meaning construction is fundamentally conceptual in nature, we must also take account of the general cognitive processes and principles that contribute to this process. In particular, meaning construction relies on mechanisms of **conceptual projection** including **matching** of **counterparts**, linked by mental space **connectors**. In this chapter, we saw how mental spaces theory accounts for a diverse range of linguistic phenomena relating to meaning at the level of sentence and text, including **referential ambiguities** and the role of **tense and aspect** in **discourse management** and in **epistemic distance**.

FURTHER READING

Foundational texts

- **Fauconnier (1994)**. First published in English in 1985 based on a previously published French text, this is the foundational book-length treatment, introducing the main tenets of mental spaces theory. The 1994 reissued edition provides a new preface that traces some of the original motivations for the developments of the theory and provides an accessible introduction to some of the key ideas.
- **Fauconnier (1997)**. This book is perhaps more accessible than the 1994 *Mental Spaces*. Not only does it revise and extend the basic architecture, it also provides an overview of some of the key insights of the earlier work, and shows how the mental spaces framework has been extended giving rise to conceptual blending theory (discussed in the next chapter).

Applications of mental spaces theory

- **Cutrer (1994)**. In her doctoral thesis, Cutrer investigated how tense and aspect give rise to dynamic aspects of mental space construction.
- **Dancygier and Sweetser (2009)**. A detailed application of mental spaces theory to constructional meaning construction in the realm of English conditional constructions. A sophisticated and compelling treatment which also advances the theoretical basis of the theory.
- **Fauconnier and Sweetser (1996)**. This volume contains a collection of articles by prominent cognitive linguists who apply mental spaces theory to a range of linguistic phenomena including grammar, metaphor, lexical polysemy, deixis and discourse.

DISCUSSION QUESTIONS

1. What are the main claims of mental spaces theory?
2. What is the mental spaces view concerning the distinction between semantics and pragmatics? And what are the reasons for thinking this?
3. How do the views of meaning in Formal Semantics and mental spaces theory compare and contrast?

20

Conceptual blending and semantic creativity

The subject of this chapter is the theoretical approach referred to either as **conceptual integration theory** or **conceptual blending theory**. The theory provides an account of **conceptual integration**, resulting in semantic and conceptual **blends**, hence the two competing names for this perspective. In this chapter, I will refer to it as **blending theory**. This approach derives from two traditions within cognitive linguistics: conceptual metaphor theory (Chapter 12) and mental spaces theory, presented in the previous chapter. In terms of its architecture and in terms of its central concerns, blending theory is most closely related to mental spaces theory, and can be seen, in part, as an extension of this approach. This is due to its focus on dynamic aspects of meaning construction and its dependence upon mental spaces and mental space construction as part of its architecture. However, blending theory is, nevertheless, a distinct approach that has been developed to account for phenomena that mental spaces theory and conceptual metaphor theory cannot adequately account for. Moreover, blending theory adds significant theoretical sophistication of its own.

As with mental spaces theory, blending theory views semantic structure encoded by language as providing impoverished prompts for meaning construction processes that primarily involve conceptual processes, 'above' the level of language, requiring integration of conceptual structure. But over and above that, the novel insight of blending theory is that meaning construction typically involves integration of structure that gives rise to more than the sum of its parts. Blending theorists argue that this process of conceptual integration or **blending** is a general and basic cognitive operation which is central to the way we think.

For example, as we saw in Chapter 11, the category PET FISH is not simply the intersection of the categories PET and FISH (Fodor and Lepore 1996). Instead, the category PET FISH selectively integrates aspects of each of the source categories in order to produce a new category with its own distinct internal structure. This is achieved by conceptual blending.

One of the key claims of cognitive linguistics, particularly as developed in research on conceptual projection (by conceptual metaphor and metonymy researchers), is that human imagination plays a crucial role in cognitive processes and in what it is to be human. This theme is further developed by Gilles Fauconnier and Mark Turner, the pioneers of blending theory. Blending theory was originally developed in order to account for the role of language in meaning construction, particularly 'creative' aspects of meaning construction such as novel metaphors, counterfactuals and so on. However, recent research carried out by a large international community of researchers with an interest in blending theory has given rise to the view that conceptual blending is central to human thought and imagination, and that evidence for this can be found not only in human language, but also in a wide range of other areas of human activity, such as art, religious thought and practice, and scientific endeavour, to name but a few. Blending theory has been applied by researchers to phenomena from disciplines as diverse as literary studies, mathematics, music theory, religious studies, the study of the occult, linguistics, cognitive psychology, social psychology, anthropology, computer science and genetics.

In their (2002) book, *The Way We Think*, Fauconnier and Turner argue that our ability to perform conceptual integration or blending may have been the key mechanism in facilitating the development of advanced human behaviours that rely on complex symbolic abilities, a contention developed further by Turner in his (2014) book *The Origin of Ideas*. These behaviours include ritual, art, tool manufacture and use, and language.

1 The origins of blending theory

The origins of blending theory lie in the research programmes of Gilles Fauconnier and Mark Turner. While Fauconnier had developed mental spaces theory in order to account for a number of traditional problems in meaning construction, as we saw in the previous chapter, Turner approached meaning construction from the perspective of his studies of metaphor in literary language (e.g. 1991; Lakoff and Turner 1989). Fauconnier's and Turner's research programmes converged on a range of linguistic phenomena that appeared to share striking similarities and that resisted straightforward explanation by either of the frameworks they had developed. Fauconnier and Turner both observed that in many cases meaning construction appears to derive from structure that is apparently unavailable in the semantic or conceptual structure that functions as the input to the meaning construction process. Blending theory emerged from their attempts to account for this observation.

I begin my overview of blending theory with two examples of the kind of linguistic phenomenon that motivated the development of this approach.

1.1 Problem 1: metaphor

The following example is metaphorical in nature, and yet cannot be straightforwardly accounted for by conceptual metaphor theory:

(1) That surgeon is a butcher.

Within the conceptual metaphor tradition, examples such as (1) have been explained on the basis of a mapping from a source domain onto a target so that the target is understood in terms of the metaphorically projected structure, as described in Chapter 12. Applying this explanation to the example in (1), the target domain SURGEON is understood in terms of the source domain BUTCHER. In the source domain we have a butcher, a cleaver and an animal's carcass that the butcher dismembers. In the target domain we have a surgeon, a scalpel and a live but unconscious patient on whom the surgeon operates. The mappings are given in Table 20.1.

The difficulty that this example poses for a classic conceptual metaphor account is that the sentence in (1) actually implies a negative assessment (Grady et al. 1999). Although butchery is a highly skilled profession, by conceptualising a surgeon as a butcher we are evaluating the surgeon as incompetent. This poses a difficulty for conceptual metaphor theory because this negative assessment does not appear to derive from the source domain BUTCHER. While the butcher carries out work on dead animals, there is considerable expertise and skill involved, including detailed knowledge of the anatomy of particular animals, knowledge of different cuts of meat and so on. Given that butchery is recognised as a skilled profession, questions arise concerning the conceptual origin of the negative assessment arising from this example. Clearly, if metaphor rests on the mapping between pre-existing knowledge structures, the emergence of new meaning as a consequence of this mapping operation is not explained by conceptual metaphor theory: how does the negative assessment of incompetence arise from conceptualising one highly skilled professional in terms of another?

This example points to powerful aspects of human cognition. Language and thought are not strictly compositional in the sense that they are **additive**. In short, this suggests that meaning construction cannot rely solely upon 'simple' conceptual projection processes such structuring one conceptual region in terms of another, as in the case of conceptual metaphors, or establishing connectors between counterparts in mental spaces. In example (1), the negative assessment is obvious and appears to be the driving force behind describing a surgeon as a butcher. Yet, this negative evaluation seems to be contained in neither of the 'input' domains associated with the metaphor; it is not present in either the BUTCHER or the SURGEON domains. Blending theory accounts for the

Table 20.1 Mappings for SURGEON IS A BUTCHER

Source: BUTCHER	mappings	Target: SURGEON
BUTCHER	→	SURGEON
CLEAVER	→	SCALPEL
ANIMAL CARCASSES	→	HUMAN PATIENTS
DISMEMBERING	→	OPERATING

emergence of novel meaning, such as this, by adopting the view that meaning construction involves **emergent structure**: meaning that is more than the sum of its component parts.

1.2 Problem 2: counterfactual disanalogies

Fauconnier and Turner also observed that mental space configurations often appeared to be more than the sum of their parts; moreover, problematic cases, such as counterfactual disanalogies – cases where a counterfactual scenario leads to the highlighting of divergence (a disanalogy) between two scenarios – cannot be straightforwardly explained using the standard theoretical architecture of mental spaces theory. To illustrate, consider the following counterfactual:

(2) In France, Bill Clinton wouldn't have been harmed by his relationship with Monica Lewinsky.

The typical reading associated with (2) is that if Bill Clinton – the 42nd President of the United States, who served from 1993 to 2001 – had been the president of France, and had had an extramarital relationship with a staff member, then he would not have been politically harmed. In the United States, Clinton was harmed; he was the subject of an official investigation by a special prosecutor who was granted extraordinarily wide-ranging powers to investigate a sitting president. A report was then presented to Congress resulting in Clinton's impeachment by the House of Representatives, a serious form of censure.

The standard way of accounting for this sentence in the mental spaces framework would be to set up a base mental space in which Clinton, as the president of the US, is linked to the role US President, has an affair with Lewinsky and is impeached. *In France* is a space-builder which sets up a new counterfactual space with respect to the base. In the FRANCE space, there are counterparts of Clinton, and Lewinsky, but this time in France. Hence, Clinton is linked to the role FRENCH PRESIDENT. However, in FRANCE, the extramarital affair does Clinton no harm. This is diagrammed in Figure 20.1.

The problem with this mental spaces account is the following: it is unclear how the inference is derived that Clinton would not have suffered reputational and political harm by virtue of having an affair, as French President. Moreover, it is further unclear how this counterfactual sets up a comparison, which highlights a disanalogy between French versus American political views and life; a president of France can have an affair, without this impacting on the president's political function, while in the United States this was not Clinton's experience.

2 Towards a theory of conceptual integration

In attempting to account for examples such as these, Fauconnier and Turner took aspects of the two frameworks they had been involved in

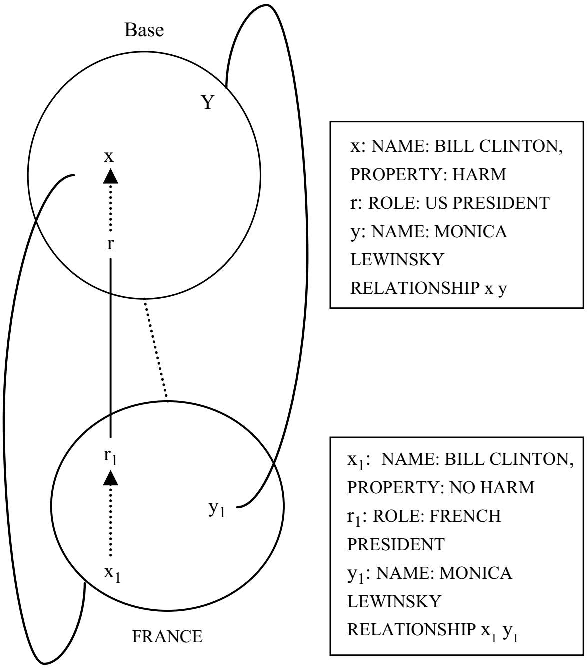

Figure 20.1 *In France, Bill Clinton wouldn't have been harmed by his affair with Monica Lewinsky*

developing – conceptual metaphor theory in the case of Turner (e.g. Lakoff and Turner 1989), and mental spaces theory in the case of Fauconnier (e.g. 1994), and produced a new theory of integration networks.

2.1 The nature of integration networks

An **integration network** is a mechanism for modelling how emergent structure, or meaning, might come about. Fauconnier and Turner suggest that an integration network consists of **inputs** in which elements in each input are linked by mappings (see Figure 20.2). In this respect, blending theory draws upon conceptual metaphor theory. Recall that conceptual metaphor theory represents a **two-domain model** in which domains are linked by conventional mappings relating comparable elements.

From mental spaces theory, Fauconnier and Turner took the idea that the conceptual units that populate an integration network should be mental spaces

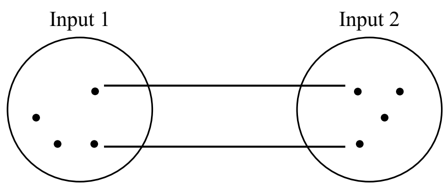

Figure 20.2 Mappings of elements across inputs

rather than domains of knowledge, as in conceptual metaphor theory. As we have seen in previous chapters, domains of knowledge are relatively stable pre-existing knowledge structures, while mental spaces are temporary structures created during the on-line process of meaning construction. Therefore, the initial focus in blending theory was to account for local and dynamic meaning construction, a focus that is inherited from mental spaces theory.

Moreover, integration networks in blending theory are not simply two-space entities. Because these networks represent an attempt to account for the dynamic aspects of meaning construction, they are multiple-space entities, just like mental space lattices. One of the ways in which this model gives rise to complex networks is by linking two (or more) **input spaces** by means of a **generic space**. The generic space provides information that is abstract enough to be common to both (or all) the inputs. Indeed, Fauconnier and Turner hypothesise that integration networks are in part licensed by interlocutors identifying the structure common to both inputs that licenses integration. Elements in the generic space are mapped onto counterparts in each of the input spaces, which motivates the identification of **cross-space counterparts** in the input spaces. This is illustrated in Figure 20.3.

A further distinguishing feature of an integration network is that it consists of a fourth **blended space** or blend. This is the space that contains new or emergent structure: information that is not contained in either of the inputs. This is represented by the blended space in Figure 20.4. The blend takes elements from both inputs, as indicated by the broken lines, but goes further in providing additional structure that distinguishes the blend from either of its inputs. In other words, the blend derives structure that is contained in neither input. In Figure 20.4, this emergent structure or 'novel' meaning is represented by the **elements** in the blended space that are not connected to either of the inputs.

2.2 That surgeon is a butcher: the blending theory account

Having set out the basic architecture of blending theory, I outline an analysis of the SURGEON AS BUTCHER metaphor from a blending theory perspective. As noted by Grady et al. (1999), blending theory is able to account for the negative

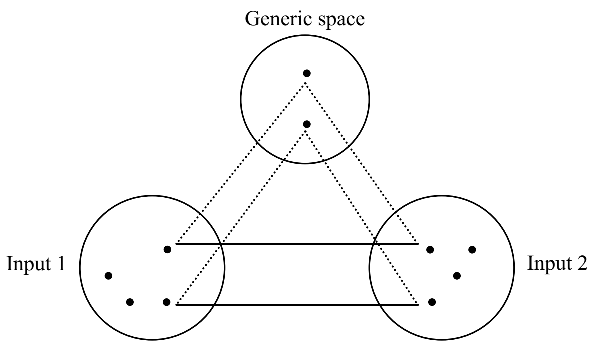

Figure 20.3 Addition of a generic space

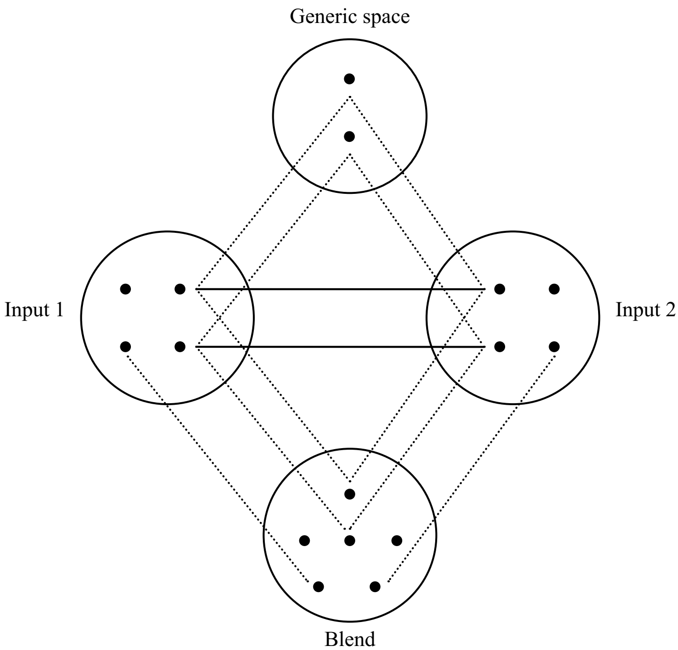

Figure 20.4 A basic integration network (adapted from Fauconnier and Turner 2002: 46)

assessment associated with this utterance by allowing for emergent structure. This follows from the fact that, while a blend contains structure projected from both inputs, it also contains additional structure projected from neither. In the input space for BUTCHER, we have a highly skilled professional. However, in the blend, these skills are inappropriate for performing surgery on human patients. While surgeons attempt to save lives, butchers perform their work on dead animals. While the activity performed by butchers is dismembering, the activity performed by surgeons typically involves repair and reconstruction, and so on. The consequence of these contrasts is that in the blend a surgeon who is assessed as a butcher brings inappropriate skills and indeed goals to the task at hand and is therefore incompetent. This emergent meaning of incompetence represents the additional structure provided by the blend.

The emergent structure provided by the blend includes the structure copied from the input spaces, together with the emergent structure relating to a surgeon who performs an operation using the skills of butchery and is therefore incompetent. This individual does not exist in either of the input spaces. The structure in the blend is 'emergent' because it emerges from structure in the inputs to produce an entity unique to the blend. Furthermore, it is precisely by virtue of the mismatch between goal (healing) and means (butchery), which exists only in the blend, that the inference of incompetence arises. This means that all the structure in the blend can be described as emergent, even though its 'ingredients' are provided by the input spaces.

Finally, I address the role of the generic space in this integration network. As I noted earlier, the generic space contains highly schematic information which serves as a basis for establishing cross-space mappings between the two input

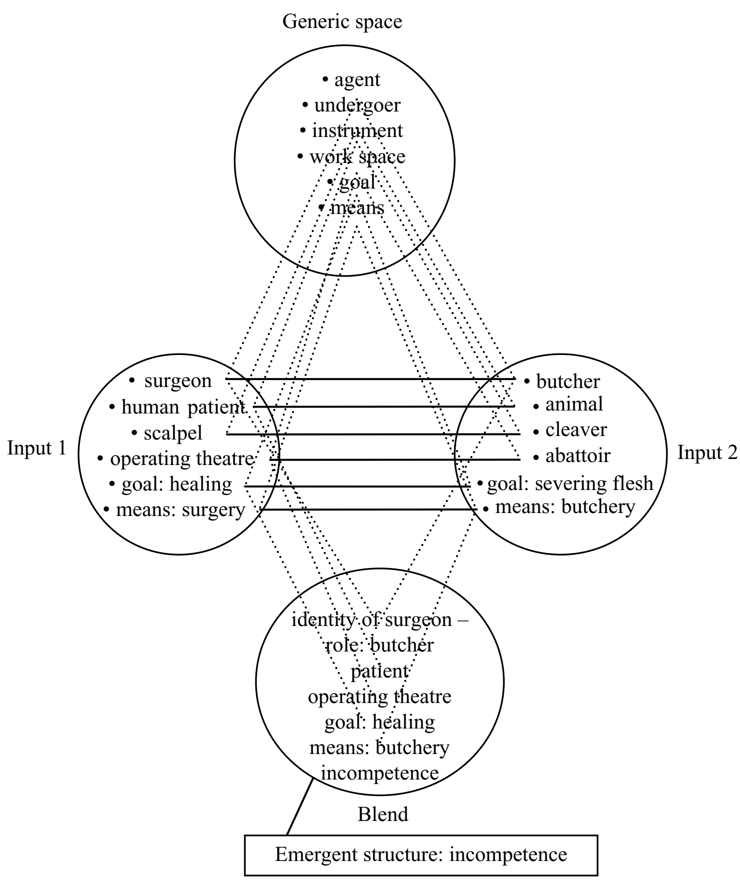

Figure 20.5 Blend for SURGEON as BUTCHER

spaces. As such, the generic space facilitates the identification of counterparts in the input spaces by serving as a 'template' for shared structure. It is these counterparts that can then be projected to the blend. The integration network for this blend is illustrated in Figure 20.5.

2.3 Bill Clinton as French President: the blending theory account

Now let's consider the blending account of the analogical disanalogy example, in (2), which I reproduce below:

(2) In France, Bill Clinton wouldn't have been harmed by his relationship with Monica Lewinsky.

As with the SURGEON AS BUTCHER metaphor, this counterfactual prompts for a complex conceptualisation that is more than the sum of its parts. In particular, it involves the conceptual blending of counterparts in order to produce a blend in which Clinton is not politically harmed by his relationship with Lewinsky, an emergent meaning that does not exist in either of the inputs that give rise to it.

The integration network for this expression includes two inputs. One input space contains Clinton, Lewinsky and their relationship. This space is structured by the frame AMERICAN POLITICS. In this frame, there is a role for American President, together with certain attributes associated with this role such as moral virtue, a symbol of which is marital fidelity. In this space, marital infidelity causes political harm. In the second input space, which is structured by the frame FRENCH POLITICS, there is a role for French President. In this frame, it is an accepted part of French public life that the President sometimes has an extramarital affair. In this space, marital infidelity does not result in political harm. The two inputs are related by virtue of a generic space, which contains the generic roles country, head of state, sexual partner and citizens. The generic space establishes cross-space counterparts. The blended space contains Bill Clinton and Monica Lewinsky, as well as the roles French President and mistress of French President, with which Clinton and Lewinsky are, respectively, associated. Crucially, the frame that structures the blend is FRENCH POLITICS rather than AMERICAN POLITICS. It follows that in the blend, Clinton is not politically harmed by his marital infidelity. However, because the inputs remain connected to the blend, structure in the blend can project back towards the inputs, giving rise to a disanalogy between the US and France. The integration network for this blend is represented in Figure 20.6.

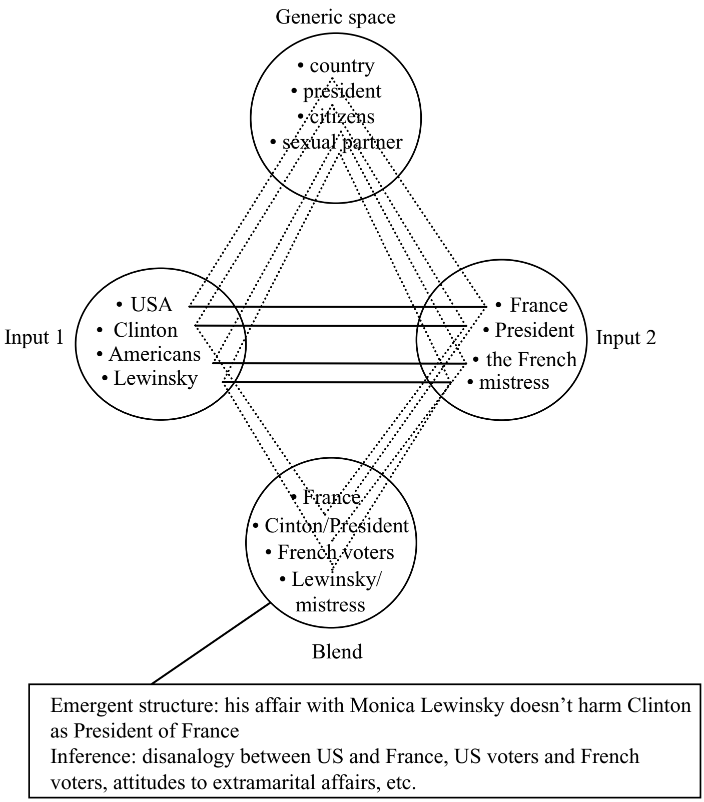

Figure 20.6 Clinton as president of France blend

The disanalogy between the United States and France is an important consequence of the counterfactual. The point of the utterance is to emphasise the difference between US and French attitudes, and perhaps moral values, with respect to the behaviour of their politicians in their personal lives. In the US, Clinton was censured for his attempts to keep his affair secret. In France, an affair would not have harmed him politically. The disanalogy is achieved by constructing a counterfactual through blending. An important advantage that blending theory has over mental spaces theory is that we now have a mechanism that accounts for how structure is recruited and integrated in order to produce emergent structure: novel and highly creative scenarios such as counterfactuals.

3 The nature of blending

One of Fauconnier and Turner's central claims is that blending is a general and ubiquitous operation, central to human cognitive capabilities. In keeping with the Cognitive Commitment (Chapter 2), Fauconnier and Turner argue that conceptual blending is central not just to language, but to human thought in general. In this section I consider in more detail the elements involved in conceptual blending.

3.1 The elements of conceptual blending

I begin by sketching out the processes that give rise to conceptual blending and proceed in the next subsections to explore in detail how these processes apply in both linguistic and non-linguistic phenomena. We saw above that an integration network consists of at least four spaces: a generic space, two inputs and a blended space. We also saw that the generic space establishes **counterpart connectors** between input spaces, which are represented as the bold lines in integration network diagrams. These connections are established by **matching**, the conceptual operation responsible for identifying cross-space counterparts in the input spaces. Connectors between matched elements are then established, which, as we saw in the previous chapter, is a form of conceptual projection. Connectors can be established between matched elements on the basis of identity or role (as we saw in the Clinton as French President example), or based on metaphor (as we saw in the SURGEON AS BUTCHER example).

The input spaces give rise to **selective projection**: not all the structure from the inputs is projected to the blend, but only the matched information, which is required for purposes of local understanding. For example, in the Clinton as French President example, the fact that the role French President has a value in reality (for instance, Emmanuel Macron) is not projected to the blend. Neither is the fact that Clinton speaks English rather than French, nor the fact that he is unlikely to have considered becoming president of France, nor the fact that he is ineligible and so on. In other words, much of the structure in the inputs is irrelevant to, or even inconsistent with, the emergent meaning under construction. This type of information is therefore not projected into the blend. Selective projection is one reason why different language users, or even the same language user on different occasions, can produce different blends from the same inputs. In short, the process of selective projection is not deterministic but flexible. That said, projection, like the other aspects of blending, is subject to a set of **governing principles**, a subject to which I return later in the chapter.

In blending theory, there are three component processes that give rise to emergent structure: i) **composition**; ii) **completion**; and iii) **elaboration**. The first involves the composition of elements from separate inputs. In the Clinton as French President example, composition brings together the value Bill Clinton with the role French President in the blend, resulting in Clinton as French President. Similarly, the SURGEON AS BUTCHER blend composes the elements projected from the SURGEON input with those projected from the BUTCHER input.

The second process, completion, involves schema induction. As I showed in the previous chapter, schema induction involves the unconscious and effortless recruitment of background frames. These complete the composition. For example, in the Clinton as French President example, the process of completion introduces the frames for FRENCH POLITICS and FRENCH MORAL ATTITUDES. Without the structure provided by these frames, we would lose the central inference emerging from the blend, which is that his affair with Lewinsky would not harm Clinton in France. This process of schema induction is dubbed 'completion' because structure is recruited to 'fill out' or complete the information projected from the inputs in order to derive the blend.

Finally, elaboration is the on-line processing that produces the structure unique to the blend. This process is sometimes called **running the blend**.

A further consequence of conceptual blending is that any space in the integration network can, as a result of the blend, undergo modification. For example, because the inputs remain connected to the Clinton as French President blend, the structure that emerges in the blend is projected back to the input spaces. This is called **backward projection**, and is the process that gives rise to the disanalogy between the USA and France. In such a case, the inputs are modified by the blend: a powerful contrast is established between the nature of French and American moral attitudes, as they pertain to the behaviour of politicians. Moreover, while integration networks are typically set up in response to the needs of local meaning construction, blends can, if salient and useful, become conventionalised within a speech or cultural community.

The processes that I have discussed in this section represent the **constitutive principles** of blending theory and are summarised in Table 20.2. As we will see later in the chapter, these processes also serve to constrain conceptual blending in important ways.

3.2 Further linguistic examples

In this section, I consider some further examples of blending presented by Fauconnier and Turner, and look at how the processes described in the previous section might apply.

Table 20.2 Constitutive principles of blending theory

Constitutive principles
Matching and counterpart connections
Generic space
Blending
Selective projection
Emergent meaning
Composition
Completion
Elaboration

3.2.1 Boat race

Consider the example (3) from a news report in *Latitude 38*, a sailing magazine (Fauconnier and Turner 2002: 64).

(3) As we went to press, Rich Wilson and Bill Biewenga were barely maintaining a 4.5 day lead over the ghost of the clipper *Northern Light*.

This example relates to a 1993 news story in which a modern catamaran, *Great American II*, sailed by Wilson and Biewenga, set out on a route from San Francisco to Boston. A record for this route had been set in 1853 by the clipper *Northern Light*, which had made the journey in 76 days and 8 hours. This record still held in 1993.

The utterance in (3) sets up an integration network in which there are two input spaces: one relating to the journey of the modern catamaran in 1993 and the other relating to the original journey undertaken by *Northern Light* in 1853. The generic space contains schematic information relating to boats and journeys, which motivates matching operations and thus cross-space connections between the two inputs. In the blend, we have two boats: the catamaran *Great American II* and *Northern Light*. Moreover, in the blend the two boats are engaged in a race, in which the catamaran is barely maintaining a lead over *Northern Light*. As Fauconnier and Turner observe, no one is actually 'fooled' by the blend: we do not interpret the sentence to mean that there are actually two boats from two different periods in history engaged in a real side-by-side race. Despite this, we achieve invaluable inferences as a result of setting up the conceptual blend. Indeed, it is only by virtue of blending that we can compare the progress of the catamaran against that of its 'rival' *Northern Light*, which set the original record over a century earlier. This blend is illustrated in Figure 20.7.

In achieving this blend, the first process to occur is selective projection from the inputs to the blend. Not all the information in the input spaces is projected. For example, information is not projected relating to weather conditions, whether the boats have cargo or not, the nature of the clipper's crew, what the crew ate for supper and so on. Instead, information is projected that

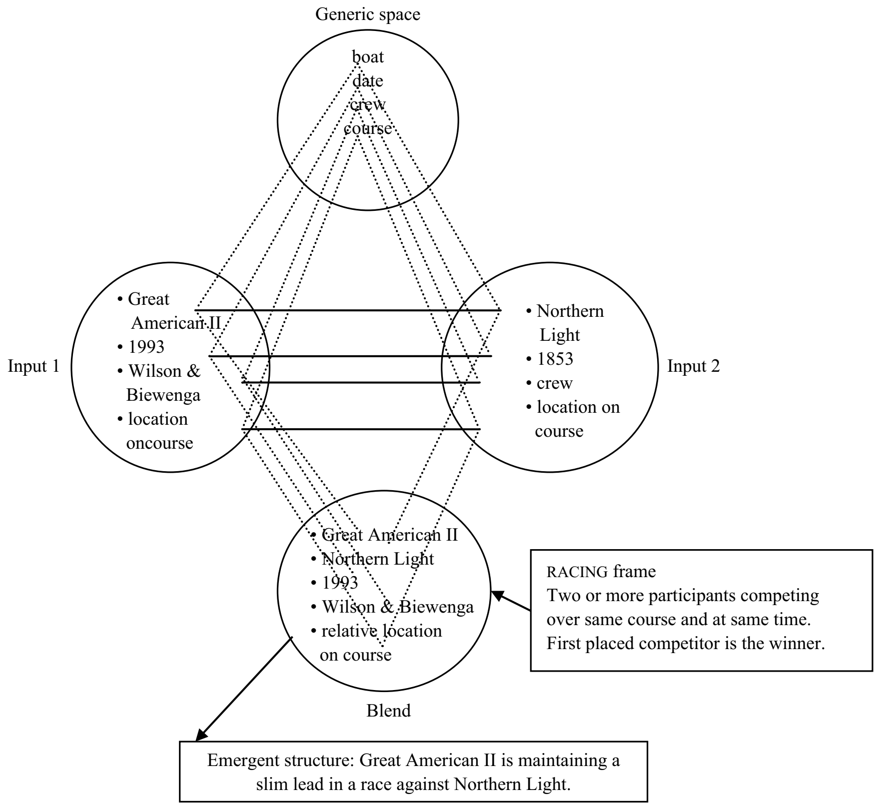

Figure 20.7 Boat race blend

is sufficient to accomplish the inference. For example, we only project the 1993 time frame.

Second, the structure that is selectively projected into the blend is composed and completed. The schema induction that occurs at the completion stage adds the RACE frame to the blend and thus provides further structure: in a race there are two or more competitors, and the first to complete the course is the winner.

Next, upon running the blend, the additional structure emerges that has arisen as a result of composition and completion. In Figure 20.7, this emergent structure is appended to the blend in the box beneath the blended space. Once this has occurred, we can think of the two boats as competitors in a race and compare their relative progress. Finally, as a result of backward projection the blend modifies the input spaces. For example, by 'living in the blend', the crew of the catamaran, their support team and others who are monitoring their progress can experience a range of emotions attendant upon participating in or watching a race, even though the 'race' is an imaginative feat.

3.2.2 XYZ constructions

In this section, I examine an example that shows how the conceptual blending approach can be applied to the closed-class semantic system, namely a grammatical construction. The XYZ construction is a grammatical construction specialised for prompting for conceptual integration. Consider the examples in (4) (Turner 1991: 199).

(4) a. Money is the root of all evil.
b. Brevity is the soul of wit.
c. Politics is the art of the possible.
d. Religion is the opiate of the masses.
e. Language is the mirror of the mind.
f. Vanity is the quicksand of beauty.
g. Necessity is the mother of invention.
h. Death is the mother of beauty.
i. Children are the riches of poor men.

As Turner notes, these examples all share a form first noted by Aristotle in the *Poetics*. The form consists of three elements, which Turner labels X, Y and Z. These are all noun phrases, as illustrated in (5). Two of the elements, Y and Z, form a possessive construction (bracketed) connected by the preposition 'of '. The purpose of the construction is to propose a particular perspective according to which X should be viewed.

(5) <u>Children</u> are [<u>the riches</u> of <u>poor men</u>]
[X] [Y] [Z]

In (5), for example, we are asked to view children as the riches of poor men, which results in a number of positive inferences relating to the 'value' of children. In addition to the elements X, Y and Z, the construction prompts for a fourth element, which Turner (1991) labels W. In order to understand children (X) in terms of riches (Y) we are prompted to construct a conceptual relation between children (X) and poor men (Z) and a parallel relation holding between riches (Y), and those who possess riches, namely rich men. This is the missing element (W), which is a necessary component to the interpretation of this construction: in the absence of a Y–W (RICHES–RICH MEN) relationship parallel to the X–Z (CHILDREN–POOR MEN) relationship, there is no basis for viewing children (X) and riches (Y) as counterparts. This idea is illustrated in (6).

(6) a. CHILDREN ↔ POOR MEN
[X] [Z]
b. RICHES ↔ RICH MEN
[Y] [W]

Turner (1991) originally analysed XYZ constructions as metaphors. However, the development of blending theory offered a more revealing analysis. In the integration network for *Children are the riches of poor men*, the two domains from Turner's original metaphor analysis are recast as input spaces. One input space contains the elements rich men (W) and riches (Y), and the other input space contains the elements poor men (Z) and children (X). The generic space contains the schematic information men and possessions. This generic structure maps onto appropriate elements in both inputs and sets up cross-space connectors between counterparts in the input spaces, establishing cross-space commonalities and motivating integration within the blended space. In the blend, not only are certain elements from the inputs projected and integrated (the elements X, Y and Z), but their integration results in emergent structure that does not exist in either of the inputs: Children are the riches of poor men. In neither of the inputs does there exist a conjunction between children of poor men and riches of rich men. This integration network is represented in Figure 20.8.

3.2.3 Formal blends

The XYZ blend is a **formal blend**. Formal blends involve projection of specific lexical forms to the blended space and rely, partly, upon formal (lexical or grammatical) structure for their meaning. Hence, part of the meaning of a given XYZ blend arises from the meaning conventionally associated with the XYZ construction. I will look in more detail at the schematic semantics associated with grammatical constructions in Part IV of the book.

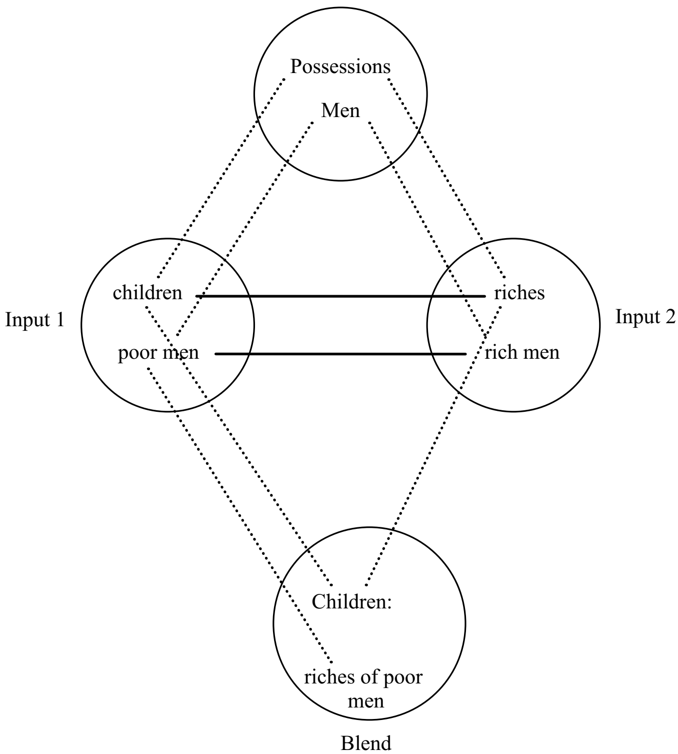

Figure 20.8 An XYZ blend

A further example of formal blending is **compounding**, the process of blending two (or more) free morphemes to give rise to a new word. Recall from Chapter 6 that new words come into language on a remarkably regular basis. By providing an account of compounding, blending theory also offers an insight into this aspect of language change. The formal blend I consider here is the expression *landyacht*. According to Turner and Fauconnier (1995) this novel noun–noun compound relates to a large and expensive luxury car. It consists of two input spaces relating to the lexical forms *land* and *yacht*, and the conventional range of meanings associated with the lexical items.

However, projection to the blend is selective. Only a subset of the meanings associated with *land* and *yacht* are projected to the blended space, together with the forms (the expressions *land* and *yacht*) themselves. Hence, Fauconnier and Turner suggest that linguistic forms as well as their associated lexical concepts can be projected into the blended space. When a lexical item is projected to the blend, this is known as **word projection**. As a result of composition, the forms as well as their projected meanings are integrated, giving rise to a new form *landyacht* with a distinct meaning: 'a large expensive luxury car'. Figure 20.9 illustrates the derivation of this compound, a process that could equally explain the PET FISH example that I discussed in Chapter 11 (Fodor and Lepore 1996).

3.2.4 Non-linguistic examples

The examples considered thus far have illustrated how blending theory accounts for the on-line meaning construction arising from linguistic prompts, including formal linguistic units such as grammatical constructions and

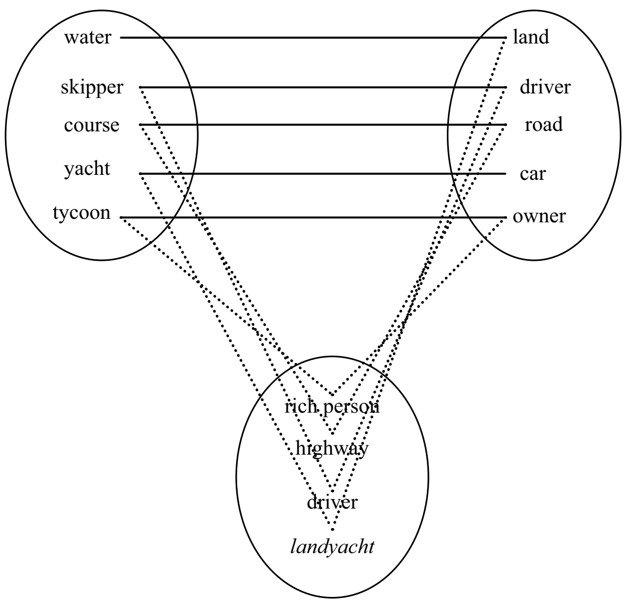

Figure 20.9 Blend for *landyacht*

compounds. However, although blending is a conceptual operation that can be invoked by language and that can also affect linguistic forms themselves, the blending operation itself – the constitutive principles that make it up – is held to be independent of language. Evidence for this comes from the domain-general way in which blending applies. In this subsection, I consider some examples which illustrate conceptual blending at work in non-linguistic aspects of human thought and behaviour.

Computer desktop

When we interact with modern computers we often do so via a computer 'desktop'. That is, we have icons on our computer screens that represent folders, files, a wastepaper basket and so on. By selecting a particular icon from the computer 'desktop' we are able to tell the computer what we want it to do. The computer 'desktop' is a sophisticated blend which integrates structure from the domain of offices and the workplace, including files, folders, wastepaper baskets and recycle bins. By providing an interface that translates the complex algorithmic operations that run the computer into simple commands, the blend allows us to understand and interact with our computer.

However, the blend also features a range of novel characteristics that are unique to the blend. For instance, in veridical offices we do not normally keep the wastepaper basket or recycle bin on top of our desks. Moreover, as pointed out by Fauconnier and Turner (e.g. 2002), in the version of the desktop blend that applies to the Apple operating system (iOS), the 'trashcan', as well as facilitating file deletion, is also the means of ejection: in order to eject the disk, the user must drag the disk icon on the screen into the 'trashcan'. This directly contradicts knowledge from the domain of offices and workplaces where we are unlikely to place important files in the bin in order to retrieve them.

Of course, the computer 'desktop' is facilitated by language in the sense that we rely upon linguistic expressions such as *desktop*, *file* and *folder* to talk about our interaction with computers. Nevertheless, the blend is achieved by integrating conceptual structure from the domains of offices and computer operations, and relies upon iconic rather than linguistic representations, such as an image of a file or a folder, in order to prompt for these conceptual domains.

Talking animals

In many art forms, from oral and written literature from around the world to Disney cartoons, there are instances of talking animals. In Mark Turner's (1996) book *The Literary Mind*, in which he examines the conceptual basis of the parable story form, Turner observes that talking animals represent highly sophisticated conceptual blends.

Consider, for instance, George Orwell's satirical parable *Animal Farm*. This novel describes an event in which farm animals lead a rebellion to overthrow the cruel farmer. In the novel, the animals talk, think, behave and feel in the same way as humans. In reality, we have no experience of talking animals. Although animals communicate in a number of sophisticated ways, we have no experience of animals manipulating a complex spoken symbolic system such as human language for interactive communication.

Our ability to imagine talking animals is an example of **anthropomorphism**, where human characteristics are attributed to non-human entities. This is attested in human folklore all over the world. According to Turner, this fundamental aspect of human cognition arises from conceptual blending, where one of the input spaces is the HUMAN frame and the other is the frame relating to the non-human entity, here ANIMALS. In neither of the inputs do animals talk; this characteristic only emerges in the blend. This also provides an illustration of how blends can become conventionalised: it is not necessary for us to create a new blend each time we read about a fictional talking animal or watch one in a cartoon. Instead, we have a schematic blend for talking animals that is highly conventionalised in our culture and is continually reinforced and modified.

Rituals

Sweetser (2000) discusses the role of conceptual blending in human ritual. She argues that one purpose of ritual is to depict a particular scenario. If the ritual affects the scenario it represents, it is said to have a **performative function** or to exhibit **performativity**, an idea that derives from Austin's (1975) influential work on speech acts. Sweetser argues that performativity is an important aspect of many rituals in the sense that the function of ritual is to bring about a desired state of affairs as a consequence of performing a physical or linguistic act. As an example of performative ritual, Sweetser discusses the Holy Communion service in the Christian Church. The consumption of the bread and the wine (which represent the body and the blood of Christ) represents a spiritual union between the human and the divine. In addition, Sweetser observes that: 'it certainly must also be seen as intending to causally bring about this spiritual union via the consumption of the bread and the wine' (Sweetser 2000: 314). That is, the ritual of consuming bread and wine, through blending, is conceptualised as effecting union between the human and the divine. In one input space we have bread and wine and the ordinary act of consumption, in another we have the flesh and blood of Jesus Christ. In the blend, the bread and wine represent (or literally become) the flesh and blood of Christ, depending upon the denomination in question. In the blend, the act of consumption has a performative function, serving to bring about a union between the profane (the human worshipper) and the sacred (Jesus Christ). This ritual is based on the events depicted in the New Testament relating to the Last Supper: a meal shared by Jesus and his disciples prior to his arrest. However, the Last Supper was itself a celebration of Passover, an ancient Jewish ritual in which the blood of a newborn lamb was ingested and the flesh eaten in order to commemorate the Angel of Death sparing Jewish newborn babies when the Jews were slaves in ancient Egypt. Thus, the ritual of the Holy Communion is a complex blend, relying on historically earlier blends.

It is also the case that rituals often employ **material anchors** for the blend (Fauconnier and Turner 2002; Hutchins 1996). In short, the material anchors embody and facilitate the blend. In the case of Holy Communion, the bread and the wine are material anchors, and our interaction with these both embodies and facilitates the blend (the union between the human and the divine). Similarly, the wedding ring in the western marriage ritual is a material anchor. The ring both embodies the blend, representing an unbroken link, and also has a performative function as part of a ritual: the act of placing the ring (which embodies an unbroken link) on the betrothed's finger serves, in part, to join two individuals in matrimony.

4 Vital relations and compressions

An important function of blending is the provision of global insight. In other words, a blend is an imaginative feat that allows us to 'grasp' an idea by viewing it in a new way. According to Fauconnier and Turner (2002), conceptual blending achieves this by reducing complexity to **human scale**: the scope of human experience. This is illustrated, in Evans (2015a: chapter 7). For example, imagine that you are attending a lecture on evolution. The lecturer then states the following: 'Imagine that the history of the planet Earth is condensed into a twenty-four hour day. Life began around 4 am, dinosaurs emerged at 10.56 pm, and humans arrived on the scene at 11.58 pm, just before midnight.' This notion is illustrated in Figure 20.10.

Representing the 4.6 billion years of the Earth's evolutionary time as a single twenty-four-hour day reduces complexity to a scale that we as humans can comprehend. This is achieved by compressing diffuse structure – billions of years

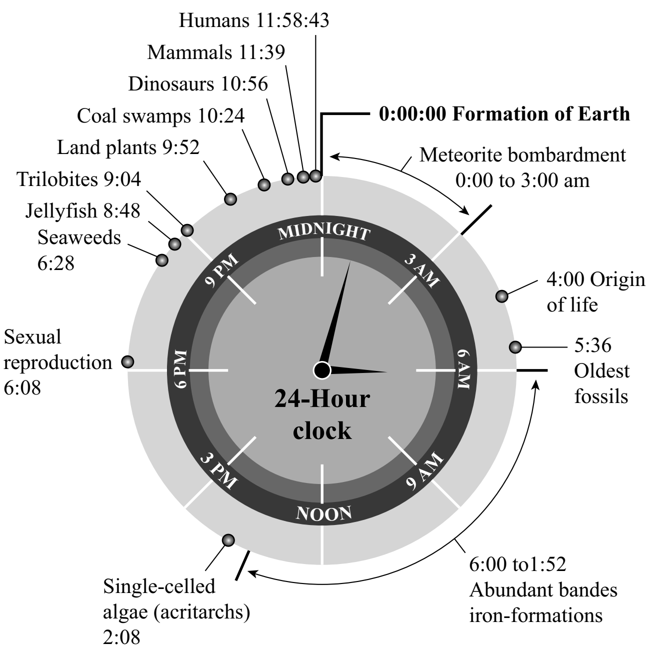

Figure 20.10 Evolution as a twenty-four-hour day (adapted from Evans 2015a: 175)

Table 20.3 Goals of blending

Overarching goal of blending
Achieve human scale
Notable sub-goals
Compress what is diffuse
Obtain global insight
Strengthen vital relations
Come up with a story
Go from many to one

of evolutionary time – into a more compact, and thus a less complex, structure. This achieves human scale, because the twenty-four-hour day is perhaps the most salient temporal unit for humans. This conceptual blend achieves **global insight** by facilitating the comprehension of evolutionary time, since we have no first-hand experience of the vast timescales involved. Indeed, Fauconnier and Turner argue that the primary objective of conceptual blending is to achieve human scale. This in turn relates to a number of sub-goals (see Table 20.3).

By explaining blending in terms of these goals, Fauconnier and Turner subscribe to the view that blending provides humans with a way of 'making sense of ' many disparate events and experiences. In this respect, the motivation for conceptual blending is not dissimilar from the explanation put forth in conceptual metaphor theory, which held that the human mind tends toward construal of the abstract in terms of the concrete, and that this tendency is an attempt to 'grasp' what is elusive in terms of what is familiar. In this section, I consider how blending achieves these goals by the **compression** of **vital relations**.

4.1 Vital relations

In the previous chapter, we saw that counterparts can be established between mental spaces, and that connectors are set up that link the counterparts. I described this process as a type of conceptual projection which involves mappings between spaces. In this chapter I have referred to the identification procedure as 'matching'. In blending theory, Fauconnier and Turner refer to the various types of connector as vital relations. A vital relation is a link that matches two counterpart elements or properties. Fauconnier and Turner propose a small set of vital relations, which recur frequently in blending operations. From this perspective, what makes a connector a 'vital' relation is its ubiquity in conceptual blending.

Vital relations link counterparts in the input spaces and establish what Fauconnier and Turner dub **outer-space relations**: relations in which two counterpart elements are in different input spaces. Vital relations can also give rise to compressions in the blend. This means that the blend 'compresses the distance' or 'tightens the connection' that holds between the counterparts in the outer-space relation. This relation is compressed and represented as an **inner-space relation** in the blend: a counterpart relation inside a single

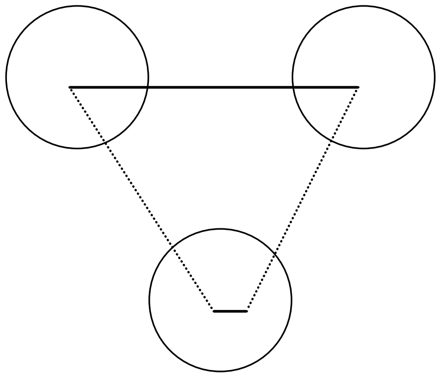

Figure 20.11 Compression of outer-space relation into inner-space relation in the blend (adapted from Fauconnier and Turner 2002: 94))

mental space. As we saw earlier in relation to the example illustrating the blending of evolutionary time into the timescale of a single day, the timescale of evolution is **compressed** into the timescale of a single day. This kind of compression, resulting in a reduced scale, is called **scaling**. The process of compression is illustrated in Figure 20.11.

According to Fauconnier and Turner, it is by means of the mechanism of compression that blending achieves human scale, together with the various sub-goals set out in Table 20.3. According to this perspective, conceptual blending represents an indispensable imaginative feat underlying human thought and reasoning.

4.2 A taxonomy of vital relations and their compressions

Fauconnier and Turner (2002) provide a taxonomy of vital relations together with a discussion of the ways in which they can be compressed. I consider some of these below.

4.2.1 TIME

Because events are temporally situated, TIME can function as a vital relation that connects two (or more) events across input spaces. For example, in the Boat race blend discussed above, the two input spaces relate to events from different time periods, 1853 and 1993. In the blend, this outer-space vital relation is compressed so that the two events are viewed as **simultaneous**. This is another example of scaling which reduces the ‘distance’ between individual events. TIME can also be compressed by **syncopation**. Syncopation reduces the number of events in a temporal ‘string’. This is illustrated by example (7).

(7) My life has consisted of a few notable events: I was born, I fell in love in 2003 and was briefly happy, in 2010 I met my future husband. We got married a year later. As I look back, the time since seems to have disappeared in housework and drudgery.

In this not altogether happy account, the narrator compresses time to reduce her life to 'a few notable events'. Compressions involving scaling and syncopation are also evident in non-linguistic phenomena. For example, the pictorial representation of evolutionary development, such as that given in Figure 20.10, enables us to select just a few notable events in evolution, such as the emergence of humans; this represents compression by syncopation.

4.2.2 SPACE

Also evident in the Boat race blend is the scaling of the outer-space vital relation SPACE. In the two inputs, each of the boats occupies a unique spatial location. Indeed, the course followed by *Northern Light* may have been some miles distant from the course followed by *Great American II*. However, in the blend the outer-space relation is compressed so that the two boats are following the same course. As a result of the compression of SPACE, it is possible to talk about *Northern Light* 'catching up with' and even 'overtaking' *Great American II*. This is only possible if the two boats are following more or less the same spatial path.

4.2.3 REPRESENTATION

Another kind of vital relation that can hold between input spaces is REPRESENTATION. While the vital relations discussed above relate counterparts of a similar kind (for instance, TIME relates two EVENTS), REPRESENTATION relates one entity or event with another entity or event that represents it, but may be of a different kind. For instance, imagine that a physics teacher is trying to explain the Solar System to a class of high-school children using coloured ping-pong balls to represent the Sun and the planets around the Sun:

(8) This yellow one, that's the Sun. This red one, that's Mars, it's the fourth planet from the Sun. Here's Earth, the blue one.

In the blend, the yellow ping-pong ball *is* the Sun. The outer-space relation has been compressed, and gives rise to the inner-space vital relation UNIQUENESS, which provides a way of understanding two spatially distinct entities as the same individual entity. This shows how an outer-space vital relation (in this case, REPRESENTATION) can give rise to a different inner-space vital relation in the blend (in this case, UNIQUENESS).

4.2.4 CHANGE

The outer-space relation CHANGE can also be compressed into the inner-space relation UNIQUENESS. Consider the example of scaling in (9).

(9) The ugly duckling has become a beautiful swan.

In this example, CHANGE, which occurs over time, is compressed so that an ugly duckling and a beautiful swan are understood as the same individual.

4.2.5 ROLE–VALUE

This is a vital relation that links roles with values. Compression of the ROLE–VALUE outer-space relation also results in UNIQUENESS in the blend. For example, consider the role QUEEN and the value ELIZABETH II. In the blend, compression results in UNIQUENESS so that the role and the value also result in a single entity which can be referred to as *Queen Elizabeth II*. As with the *landyacht* example, this is a formal blend that gives rise to a new expression as well as a new concept. Observe that once a series of such blends exists, for example KINGS OF ENGLAND, this series of individuals can be further compressed into an inner-space relation of UNIQUENESS , in which a series of individuals become conceptualised as a single unique individual. This is illustrated by example (10).

(10) After the Norman Conquest, the English King was French for centuries, until a quarrel with France. After that the King was English, and English once again became the language of Parliament.

In this example, compression into UNIQUENESS in the blend results in a single ENGLISH KING, who can be French at one point in time and English at another.

4.2.6 ANALOGY

ANALOGY is a vital relation established by ROLE–VALUE compression. Consider example (11).

(11) The city of Brighton is the closest thing the UK has to San Francisco.

In this example, there are two pre-existing blends in operation attached to two distinct integration networks. One blend contains the role CITY and the value BRIGHTON, and the other blend contains the role CITY and the value SAN FRANCISCO. Both blends are structured by the frame that relates to a cosmopolitan and liberal city by the sea. The compression of the role–value vital relations across these two blends from different integration networks establishes the ANALOGY between Brighton and San Francisco. Thus, ANALOGY is an outer-space vital relation holding between the two blends from distinct integration networks. These blends themselves serve as the inputs for a third integration network. In the new blend analogy is compressed into IDENTITY. Brighton and San Francisco can be described as 'analogues' because they share identity in the blend.

Example (12) illustrates another way in which the outer-space relation ANALOGY can be compressed. Consider example (12) which relates to the destructive computer virus *Mydoom*, the fastest email-based worm ever:

(12) Mydoom was one of the most notorious large-scale computer viruses of the noughties, spread by opening an email attachment.

The concept COMPUTER VIRUS is a conventional blend that emerges from the two input spaces DESTRUCTIVE COMPUTER PROGRAM and BIOLOGICAL VIRUS. The outer-space ANALOGY relation between DESTRUCTIVE COMPUTER PROGRAM and BIOLOGICAL VIRUS is compressed into a CATEGORY relation in the blend. The category relation is of the 'A is a B' type: DESTRUCTIVE COMPUTER PROGRAM is a VIRUS.

4.2.7 DISANALOGY

The outer-space relation DISANALOGY can be compressed into the inner-space relation CHANGE. This can then be further compressed into UNIQUENESS in the blend. Example (13) illustrates this process.

(13) My tax bill gets bigger every year.

This example relates to a blend of a series of distinct and disanalogous (different) tax bills. As a result of the blend, the outer-space relation of DISANALOGY is compressed into CHANGE: in the blend the differences between the individual bills received each year are understood in terms of CHANGE as a result of the yearly increases. This inner-space relation can be further compressed into UNIQUENESS: in the blend there is a single tax bill that continues to change and increase. This shows how inner-space relations can also undergo compression ('reduction') into vital relations that further facilitate the process of achieving human scale.

4.2.8 PART-WHOLE

Example (14) represents a part-whole metonymy uttered by someone who is looking at a photograph of a woman's face.

(14) That's Jane Smith.

This example represents a part-whole metonymy because the speaker is identifying the whole person simply by her face. By viewing the metonymy in terms of a blend, a clearer picture emerges of how the metonymy is working. Metonymies like this consist of two input spaces: JANE SMITH and her FACE. A PART-WHOLE vital relation establishes these elements as counterparts in two input spaces. In the blend, the PART-WHOLE relation is compressed into UNIQUENESS.

4.2.9 CAUSE–EFFECT

The final vital relation I examine is CAUSE–EFFECT. An example of this vital relation, provided by Fauconnier and Turner, is the distinction between a burning log in a fireplace and a pile of ash. These two elements are linked in an integration network by the outer-space CAUSE–EFFECT relation, which connects the burning log (the CAUSE) with the pile of ash (the EFFECT). The CAUSE–EFFECT relation is typically **bundled** with the vital relation TIME which undergoes scaling, and with CHANGE which is compressed into UNIQUENESS. For example, imagine that a speaker points to the ashes and utters the sentence in (15).

(15) That log took a long time to burn.

In this example, a blend has been constructed in which TIME has been scaled and the log and the ashes have been compressed into a single unique entity. The CAUSE–EFFECT relation can also be compressed into the vital relation PROPERTY. For example, a consequence of wearing a coat is that the wearer is kept warm. However, when we describe a coat as 'warm', as in the expression *a warm coat*, we are compressing the CAUSE of wearing a coat with the EFFECT of being warm. In reality, the coat itself is not warm, but the vital relation is compressed into PROPERTY of the coat in the blend. Table 20.4 provides a summary of the vital relations and their compressions discussed in this section, which represent only a subset of the vital relations proposed by Fauconnier and Turner (2002).

4.3 Disintegration and decompression

I now briefly explore how compressions of outer-space relations achieves global insight as a consequence of the blend remaining connected to the rest of the integration network, including the input spaces. Recall my earlier discussion of the counterfactual Clinton as French President example. An important

Table 20.4 Summary of vital relations and their compressions

Outer-space vital relation	Inner-space vital relation (compression)
TIME	SCALED TIME
	SYNCOPATED TIME
SPACE	SCALED SPACE
	SYNCOPATED SPACE
REPRESENTATION	UNIQUENESS
CHANGE	UNIQUENESS
ROLE–VALUE	UNIQUENESS
ANALOGY	IDENTITY
	CATEGORY
DISANALOGY	CHANGE
	UNIQUENESS
PART–WHOLE	UNIQUENESS
CAUSE–EFFECT (bundled with TIME and CHANGE)	SCALED TIME
	UNIQUENESS
CAUSE–EFFECT	PROPERTY

inference resulting from this blend is the DISANALOGY between the inputs. The ROLE–VALUE vital relation holding between CLINTON (value) and FRENCH PRESIDENT (role) in the input spaces is compressed into UNIQUENESS in the blend (where Clinton is French President).

At the same time, the process of **disintegration** can 'unpack' the blend; this results in the backward projection of blended elements to the input spaces. Backward projection, or disintegration, results from the process of **decompression**, in which elements in the blend are separated. Observe that, although **analogy** between France and the US motivates the blend (in the input spaces, both countries have a president for head of state, and both American and French presidents have famously had extramarital affairs), the decompression of the blended elements gives rise to DISANALOGY. Indeed, while similarities can be exploited to create a blend, the same blend can be 'unpacked' to reveal dissimilarities. This follows from the fact that the elements projected back to the inputs have been 'affected' by blending. For example, the politically unharmed Clinton as French President is projected back to the input space, in which he experiences political harm. This gives rise to an outer-space relation of DISANALOGY between the US input space and the France input space. In this way, the integration network provides global insight as a result of the implications that the blend has for the input spaces that gave rise to it in the first place.

5 A taxonomy of integration networks

One of the insights developed by Fauconnier and Turner (1998, 2002) is the idea that there are a number of different kinds of integration network. Although Fauconnier and Turner propose a continuum that relates integration networks of various kinds, there are four points along the continuum that stand out. I briefly survey these four distinct types of integration network below.

5.1 Simplex networks

The simplest kind of integration network involves two inputs, one that contains a frame with roles and another that contains values. This is a **simplex network**. What makes this an integration network is that it gives rise to a blend containing structure that is in neither of the inputs. Consider example (16).

(16) John is the son of Mary.

This utterance prompts for an integration network in which there is one input containing a FAMILY frame with roles for MOTHER and SON. The second input contains the values JOHN and MARY. The integration network compresses the ROLE–VALUE outer-space relations into UNIQUENESS in the blend, so that John is the son and Mary the mother; and, hence, John is Mary's son. The motivation for the cross-space connections is the generic space which contains the elements female and male. These elements identify potential counterparts in the inputs. To reiterate, only one of the inputs (input 1) contains a

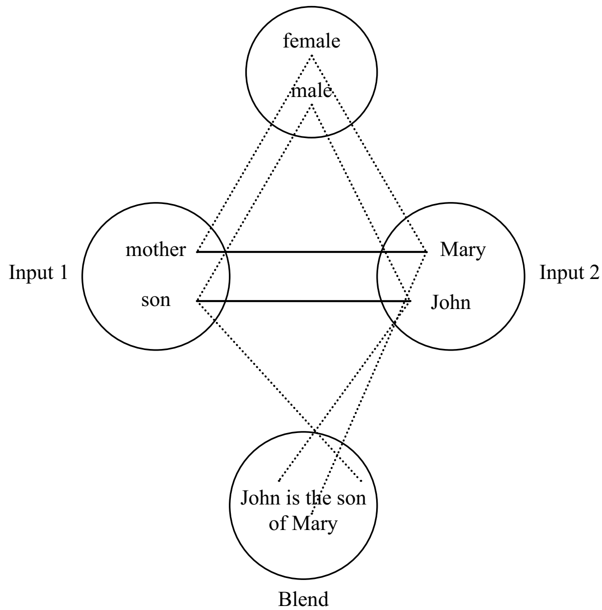

Figure 20.12 A simplex integration network

frame. The simplex network therefore represents an instance of basic framing (see Figure 20.12).

5.2 Mirror networks

The defining feature of a **mirror network** is that all of the spaces in the integration network share a common frame, including the blend. One example of a mirror network that I have already discussed in detail is the Boat race blend (recall example (3) and Figure 20.7). Each of the spaces in this example contain the frame in which a boat follows a course, including the blend, which has the additional schema relating to a RACING frame.

5.3 Single-scope networks

While in the simplex network only one of the inputs is structured by a frame, and in the mirror network all the spaces share a common frame, in the **single-scope network** both inputs contain frames, but each is distinct. Furthermore, only one of the input frames structures the blend. Consider example (17).

(17) Microsoft has finally delivered the knock-out punch to its web browser rival Netscape.

This sentence prompts for an integration network in which there are two inputs. In one input there are two business rivals, Microsoft and Netscape,

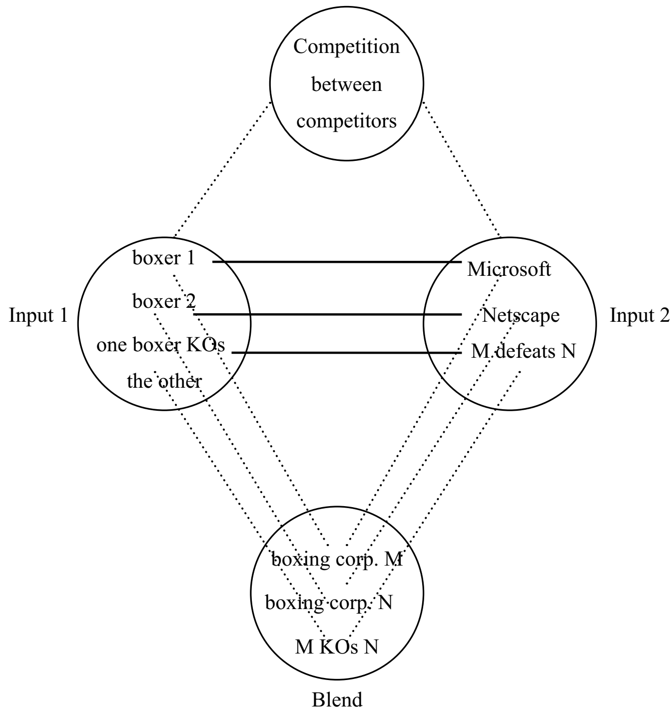

Figure 20.13 Structuring of focus input by inner-space projection from framing input (adapted from Fauconnier and Turner 2002: 130)

and Microsoft takes Netscape's market share. In the other input there are two boxers, and the first boxer knocks out the second. In the blend, Microsoft and Netscape are boxers, and Microsoft knocks out Netscape (see Figure 20.13).

What distinguishes this type of network is that only one frame (here, the BOXING frame rather than BUSINESS frame) serves to organise the blend. In short, the **framing input** provides the frame, including the roles for boxers, while the **focus input** provides the relevant elements: the values Microsoft and Netscape. An important function of single-scope networks is to employ pre-existing compressions in the framing input (input 1 in Figure 20.13) to organise diffuse structure from the focus input (input 2 in Figure 20.13).

The framing input is itself a blend that contains a number of pre-existing inner-space relations. These include compressions over TIME, SPACE and IDENTITY (different individuals perform as boxers, either as a hobby or as a career, and through shared identity give rise to the role boxer), among others, which are then compressed into a BOXING frame. This pre-existing blend functions as the framing input for the single-scope network in Figure 20.13, where input 1 contains a tightly compressed inner-space relation that includes just two participants, a single boxing space, a limited period of time (for example, twelve three-minute rounds) and a specific kind of activity. This inner-space relation, when projected to the blend, provides structure onto which a range of diffuse activities in the focus input can be projected: the input relating to BUSINESS RIVALRY between Microsoft and Netscape. The blend compresses the diffuse

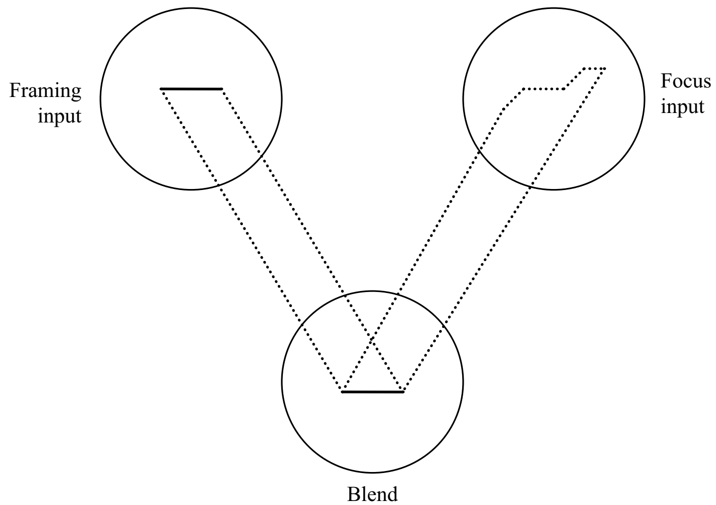

Figure 20.14 Single-scope network

nature of business rivalry as a result of the properties of the framing input. This function of single-scope networks in particular relates directly to one of the main sub-goals of blending presented in Table 20.3: to compress what is diffuse. Figure 20.14 illustrates this sub-goal.

Single-scope networks form the prototype for certain types of conceptual metaphor, such as compound metaphors. In essence, the source–target mapping in a conceptual metaphor is part of an integration network that results in a blend. From this perspective, many conceptual metaphors may be more insightfully characterised as blends. However, it does not follow that all metaphors are blends. While compound metaphors such as BUSINESS IS BOXING, or the more general mapping BUSINESS IS PHYSICAL COMBAT may be blends, it is less obvious that primary metaphors are blends. I return to this point below.

5.4 Double-scope networks

I now turn, finally, to **double-scope networks**. In this network type, both inputs also contain distinct frames, but the blend is organised by structure taken from each frame, hence the term 'double-scope' as opposed to 'single-scope'. One consequence of this is that the blend can sometimes include structure from inputs that is incompatible and therefore **clashes**. It is this aspect of double-scope networks that makes them particularly important, because integration networks of this kind are highly innovative and can lead to novel inferences. To illustrate, consider example (18).

(18) You're digging your own grave.

This idiomatic expression relates to a situation in which someone is doing something foolish that will result in unwitting failure of some kind. For instance, a business executive, who is considering taking out a loan that stretches his or her business excessively, might be warned by their accountant that the business risks collapse. At this point, the accountant might say:

(19) You're digging your own financial grave.

This double-scope blend has two inputs: one in which the business executive takes out a loan that the company can ill afford and another relating to grave digging. In the blend, the loan proves to be excessive and the company fails: the business executive and their business end up in a 'financial grave'. In this example, the inputs clash in a number of ways. For example, they clash in terms of causality. While in the business input, the excessive loan is causally related to failure, in the grave digging input, digging a grave does not cause death; typically it is a response to death. Despite this, in the blend, digging the grave causes DEATH AS BUSINESS FAILURE. This is an imaginative feat that blends inputs from clashing frames.

The reason the blend is successful, despite the clash, is that it integrates structure in a way that achieves human scale. Because the accountant's utterance gives rise to the DEATH AS BUSINESS FAILURE interpretation, the business executive is able to understand that the loan is excessive and will cause the business to fail. Hence the causal structure of the blend (the idea that digging the grave causes the failure) can be projected back to the first input space in order to modify it.

In the business input, the business executive can decide to decline the loan and thus save their business. In this way, the blend provides global insight, and thereby provides a forum for the construction and development of scenarios that can be used for reasoning about aspects of the world. According to Fauconnier and Turner, this enables us to predict outcomes, draw inferences and apply these insights back in the input spaces before the events constructed in the blend come about. For this reason, Fauconnier and Turner argue that blending, and double-scope blending in particular, is an indispensable tool for human thought. Table 20.5 summarises the properties of the four types of integration network I have presented in this section.

Table 20.5 Four types of integration network

Network	Inputs	Blend
Simplex	Only one input contains a frame	Blend is structured by this frame
Mirror	Both inputs contain the same frame	Blend is structured by the same frame as inputs
Single-scope	Both inputs contain distinct frames	Blend is only structured by one of the input frames
Double-scope	Both inputs contain distinct frames	Blend is structured by aspects of both input frames

6 Multiple blending

While I have, for the most part, assumed that integration networks consist of four spaces (generic space, two input spaces and the blend), it is common, and indeed the norm, for blends to function as inputs for further blending and re-blending. I illustrate this point in this brief section with a discussion of Fauconnier and Turner's (2002) example of the Grim Reaper blend.

The Grim Reaper is a highly conventional cultural blend, in which DEATH is personified as the GRIM REAPER. This blend derives from an integration network consisting of three inputs, one of which is itself a blend consisting of two prior inputs. The Grim Reaper, as depicted in iconography since medieval times, is represented as a hooded skeleton holding a scythe.

Consider the three inputs to the Grim Reaper blend. These relate to three agents: i) a REAPER, who uses a scythe to cut down plants; ii) a KILLER, who murders a victim; and iii) DEATH, which brings about the death of an individual. Observe that the third agent is non-human: DEATH is an abstract agent. In other words, DEATH-AS-AGENT is itself a metaphoric blend, in which DEATH and AGENCY (human animacy and volition) have been blended, giving rise to the personification of death. In the Grim Reaper blend, the agent is DEATH and this agent causes death by killing. The manner of killing is reaping (the use of the scythe). The reaper is 'grim' because death is the outcome of his reaping. This complex blend is illustrated in Figure 20.15.

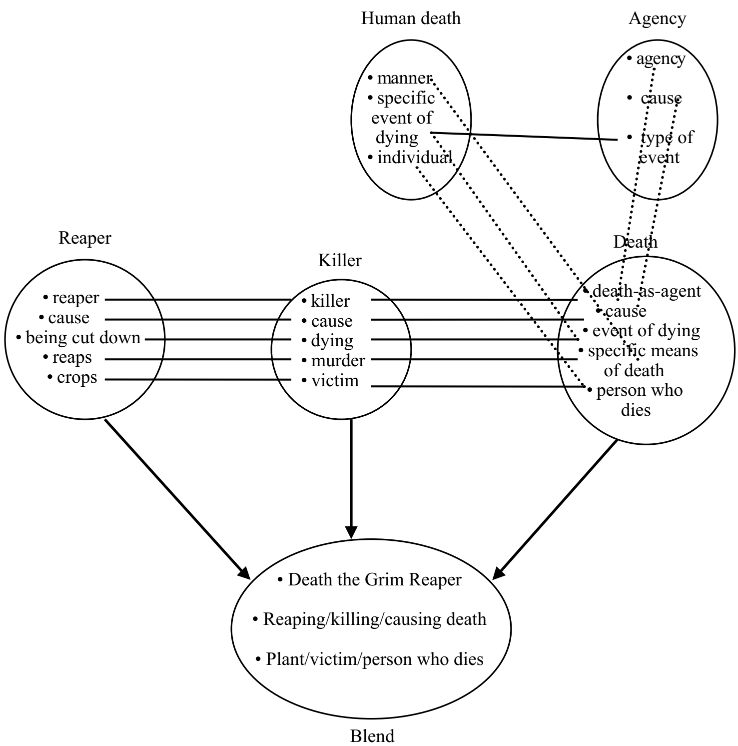

Figure 20.15 The Grim Reaper blend (adapted from Fauconnier and Turner 2002: 292)

Observe that the physical appearance of the Grim Reaper metonymically represents each of the three main inputs to the blend. The skeleton stands for death, which is the outcome; the hood that hides the reaper's face represents the concealment that often characterises killers; and the scythe stands for the manner of killing, deriving from the reaper input. Finally, the Grim Reaper emerges from the blend rather than from any of the input spaces.

7 Constraining blending theory

Of course, an important question that arises from blending theory concerns how this model of meaning construction is constrained. In particular, how is selective projection constrained so that we end up with the 'right' structure being projected to the blend? In order to address this issue, Fauconnier and Turner (2002) propose a number of **governing principles**, also known as **optimality principles** (Fauconnier and Turner 1998). I present these below (see Table 20.6), and briefly comment on just two of them in order to explain how selective projection is constrained.

These principles can be described as 'optimality' principles because blending is not a deterministic process. Instead, integration networks are established in order to achieve the goals I described in Table 20.3. Thus, depending on the precise structure available in a given integration network and the purpose of integration, there may be competing demands on the selective projection of structure to the blend. For example, consider a scenario in which a child picks up a replica sword in a military museum. In response to the expression of alarm on the face of the parent the curator remarks, 'Don't worry, the sword is safe', to which the parent rejoins, 'Not from him it isn't.' In this exchange, the curator intended that the sword would not cause the child harm. In this intended interpretation, the structure being projected relates to the potential harm that swords can cause, especially when handled by the inexperienced.

However, the parent rejects this blend and proposes a new one in which it is the sword, rather than the child, that is at risk from potential harm. This blend arises because the parent projects his or her personal knowledge of the child, and the child's ability to inflict damage on anything they come into contact with. This example illustrates how it is possible to obtain different blends from the same, or very similar, input spaces by virtue of differential selective projection.

I now, briefly, discuss two of the principles in Table 20.6 in order to provide a sense of how projections from the input spaces to the blend are selected. In essence, these governing principles optimise with respect to each other in order to achieve the goals of blending. For instance, the **topology principle** ensures that **topology** (the relational structure between and within the input spaces) is preserved in the blended space. The default means of achieving this preservation of topology is by projecting relational structure as it occurs in the outer-space relation.

For example, in the Boat race, the distance travelled between San Francisco and Boston for both *Northern Light* and *Great American II* is preserved and

Table 20.6 Governing principles of blending theory (Fauconnier and Turner 2002)

Governing principle	Definition
The topology principle	'Other things being equal, set up the blend and the inputs so that useful topology in the inputs and their outer-space relations is reflected by inner-space relations in the blend' (p. 327)
The pattern completion principle	'Other things being equal, complete elements in the blend by using existing integrated patterns as additional inputs. Other things being equal, use a completing frame that has relations that can be compressed versions of the important outer-space vital relations between the inputs (p. 328)
The integration principle	'Achieve an integrated blend' (p. 328)
The maximisation of vital relations principle	'Other things being equal, maximize vital relations in the network. In particular, maximize the vital relations in the blended space and reflect them in outer-space vital relations' (p. 330)
The web principle	'Other things being equal, manipulating the blend as a unit must maintain the web of appropriate connections to the input space easily and without additional surveillance of composition' (p. 331).
The unpacking principle	'Other things being equal, the blend all by itself should prompt for the reconstruction of the entire network' (p. 332).
The relevance principle	'Other things being equal, an element in the blend should have relevance, including relevance for establishing links to other spaces and for running the blend. Conversely, an outer-space relation between the inputs that is important for the purposes of the network should have a corresponding compression in the blend' (p. 333)

projected unchanged to the blend. The preservation of this topology highlights the differences between inputs that we seek to understand via blending, such as the different spatial locations at a given temporal point in the Boat race blend.

While the topology principle maintains the existing relational structure of the input spaces, this principle is at odds with the **maximisation of vital relations principle**. This principle serves, in part, to reduce outer-space vital relations to an undifferentiated single structure in the blend. This is the goal of compression. However, to fulfil the goals of blending, these two principles have to work in tandem, optimising the relative tensions they jointly give rise to in order to facilitate an optimal blend which best achieves the goals of blending. In this way, the governing principles work together to constrain, rather than to govern (in the sense of determining), what is projected to the blend by selective projection.

SUMMARY

In this chapter I have presented an overview of **blending theory**. This approach derives from mental spaces but differs in that it explicitly accounts for **emergent structure**: the idea that meaning construction often results in meaning that is 'more than the sum of its parts'. Blending is distinguished by an architecture that includes a **generic space**, two or more **input spaces** and a **blended space**. **Counterparts** between input spaces are connected by virtue of a **matching** operation, **compressed** and **selectively projected** to the blended space. Emergent meaning is derived via three constitutive principles called **composition**, **completion** and **elaboration**. While blending theory arose from concerns with linguistic structure and the role of language in semantic creativity meaning construction, conceptual blending is argued to be a fundamental cognitive operation that is central to general properties of human thought and imagination. Recent research suggests that blending may be fundamental to a wide range of non-linguistic human behaviour, including folklore and ritual among others.

FURTHER READING

Core texts

- **Fauconnier and Turner (1998)**. This paper, published in the journal *Cognitive Science*, examines some of the central principles of conceptual integration, and is the definitive article-length treatment of blending theory.
- **Fauconnier and Turner (2002)**. The definitive book-length introduction to blending theory by its two architects. Highly accessible.

Theoretical development of blending theory

- **Coulson (2000)**. Coulson is one of the leading scholars in blending theory. Her book addresses the role of blending in frame-shifting and on-line meaning construction.
- **Coulson and Oakley (2000)**. This special edition of the journal *Cognitive Linguistics* is devoted to articles on blending theory.
- **Fauconnier (1999)**. An important statement by Fauconnier on how blending theory embodies the assumptions and the methodology that characterise cognitive linguistics.
- **Fauconnier and Turner (2000)**. This paper examines how blending achieves compressions over vital relations, and thereby achieves one of its important sub-goals: the provision of global insight.
- **Oakley (2009)**. A book-length application of blending theory to attention phenomena, with relevance for the study of semiotics, linguistics and rhetoric.

- **Turner (2014)**. A book-length study of the way blending theory explains key features of human creativity, by one of the architects of the theory.

Blending in grammar

Fauconnier and Turner (1996); Mandelblit (2000); Turner and Fauconnier (1995). These articles apply blending theory to aspects of grammar such as compounds and grammatical constructions.

Metaphor, metonymy and blending

- **Fauconnier and Turner (1999); Grady (2005); Grady et al. (1999)**. These are all important papers that consider the way in which blending theory provides accounts of metaphor and metonymy. The paper by Grady et al. brings together Grady, a leading researcher in metaphor, and Oakley and Coulson, leading researchers in blending theory. This paper compares and contrasts conceptual metaphor theory and conceptual blending theory, concluding that the two approaches treat related but complementary phenomena.

Blending and polysemy

- **Fauconnier and Turner (2003)**. This paper argues that blending is an important mechanism in the development of lexical polysemy.

Blending and literary theory

- **Dancygier (2011)**. An important book-length study examining the nature of literary meaning deploying blending theory (as well as construction grammar). The book focuses on the notions of narrator and story, and provides a new perspective on narrative viewpoint.
- **Oakley (1998)**. Classic work on the application of blending theory to the graphic novel *Maus*.
- **Tobin (2018)**. A compelling book applying blending theory to elements of surprise in narrative fiction.
- **Turner (1996)**. Blending theory has provided literary theory with a new framework; the book by Turner has been highly influential in this field, with its application of blending theory, and other aspects of cognitive linguistics, to the study of parable in literature.

Other applications of blending theory

Blending theory has been applied to a wide range of disciplines, given its central focus on accounting for creativity. This highly partial sample of books illustrate, among other things, its application to magic **(Sørensen 2006)**, mathematics **(Woźny 2018)**, music **(Zbikowski 2003)**, the social sciences **(Turner 2002)** and even software design **(Imaz and Benyon 2006)**.

DISCUSSION QUESTIONS

1. What is the motivation for blending theory?
2. How is it similar to, and different from: i) mental spaces theory, and ii) conceptual metaphor theory?
3. What would be examples of conceptual blends that have become conventionalised, in language and/or culture? Can you think of other examples not mentioned in this chapter?

Part IV: Grammar

While Part I of the book provided an overview of the cognitive linguistics enterprise, in Part II, I examined the way in which cognitive linguists have examined **conceptual structure**. In Part III, I considered the way in which cognitive linguists have examined **semantic structure** – the semantic residue encoded by language which reflects these patterns of thought. In this part of the book, I consider the cognitive linguistics perspective on **grammar**. In contrast to the previous two parts of the book – which focused on the nature and organisation of the **conceptual system** (Part II), and the way in which the **linguistic system** interfaces with the conceptual system in the process of meaning construction (Part III) – this part of the book focuses directly upon the linguistic system itself.

As with cognitive linguistic approaches to conceptual structure, and semantic structure, there isn't a single unified cognitive linguistics approach to modelling the linguistic system, the grammar, of language users. Indeed, there are a number of different cognitive linguistics approaches and theories, which I present in this part of the book. However, as in earlier parts of the book, what distinguishes a cognitive linguistics approach to grammar, from a non-linguistic approach, is a set of guiding principles that inform the way in which cognitive grammarians model the linguistic system. The relevant guiding principles that inform cognitive linguistics theories of grammar are known as the **symbolic thesis** and the **usage-based thesis** (which I first introduced in Chapters 1 and 5, respectively), and which can be seen as outcomes of the two key commitments of the cognitive linguistics enterprise, as presented in Chapter 2.

Unlike formal approaches to grammar, which are **derivational** in nature, cognitive linguistics approaches, following these guiding principles, are **constructionist** in nature. The essential difference is that formal approaches view grammar as a system of rules, in which elements of language, such as words and morphemes, are inserted into rules, in order to build or derive a sentence each time we speak. From this perspective, the buildings blocks of the linguistic system are words and rules.

From the cognitive linguistics perspective, given the two key commitments, which entail the two guiding principles (the symbolic and usage-based theses), there is no principled difference between words and rules. The essential building block of language is the **construction**, a unit, stored in long-term memory, pairing form (a sound or unit of syntax) and a meaning (a unit of semantic structure). A construction can be a word, such as *dog*, a bound morpheme, such as the *-s* plural marker, an idiom, such as *He kicked the bucket*, or a schematic syntactic template, such as the **ditransitive construction** that I first introduced in Chapter 2. From this perspective, we build utterances from integrating or nesting more specific constructions within more schematic constructions. But in principle, all the units of language are form–meaning pairings.

There are a wide variety of broadly cognitive linguistic theories of grammar. These include **Word Grammar**, developed by Richard Hudson (e.g. 2007), **Cognitive Grammar**, developed by Ronald Langacker (e.g. 1987, 1991, 2008) and **Construction Grammar** (of various stripes), for instance, in one notable variety as developed by Adele Goldberg (e.g. 1995, 2006). While Cognitive Grammar and Construction Grammar view all constructions as, in principle, of equal standing, Word Grammar views constructions as, in essence, words. Our knowledge of constructions, thus, amounts to knowledge about the range of ways or, more specifically, the networks of uses, in which a word can be deployed. Hence, Word Grammar can be viewed as an outlier, in constructionist approaches, which privileges one type of construction, namely the word.

This part of the book is comprised of seven chapters. In Chapter 21, I address the two guiding principles of a cognitive approach linguistics approach to grammar: the symbolic thesis and the usage-based thesis. I introduce the idea that a speaker's knowledge of language is represented as a structured inventory of conventional symbolic units that subsumes both open-class and closed-class symbolic units. These represent qualitatively distinct endpoints on a lexicon–grammar continuum between specific (content) meaning and schematic (grammatical) meaning. This chapter also compares cognitive linguistics approaches to grammar with formal models of grammar.

In the next three chapters, Chapters 22–24, I provide a fairly detailed exemplification of Langacker's Cognitive Grammar. While I introduced Cognitive Grammar as a usage-based model, in Chapter 5, and Langacker's approach to semantic structure, with his account of domains and construal, in Chapter 16, here I examine how his theory accounts for linguistic knowledge.

In Chapter 22, I examine the way in which Cognitive Grammar divides linguistic expressions into two major categories: **nominal predications** and **relational predications**. The former accounts for nouns, which are schematically characterised as THING. Relational predications divide into two subcategories: **temporal relations** and **atemporal relations**. The former accounts for verbs, which are schematically characterised as PROCESS. Atemporal relations account for a number of word classes, including adjectives, adverbs, adpositions and non-finite verb forms, which can be schematically characterised as STATES. I also examine Langacker's account of determiners and quantifiers, which are characterised in terms of their **grounding function**.

In Chapter 23, I examine the nature of Cognitive Grammar as a constructionist approach, by exploring the structure of words, phrases and sentences. Cognitive Grammar defines a construction as any expression with complex symbolic structure, and approaches constituency and head-dependent relations from the perspective of **valence**, based on conceptual autonomy and conceptual dependence. This model of constituency accounts not only for phrase structure, but also for word structure. I also explore the way in which Cognitive Grammar models clause structure, and consider how complements and modifiers are distinguished and how transitivity, grammatical functions and case receive a semantic account based on Langacker's **action chain model**. Finally, I examine passive constructions, which are analysed in terms of **marked coding**, which effects a figure–ground (also known as TR–LM) reversal.

In Chapter 24, I present the Cognitive Grammar analysis of the English verb string, and see how the properties of lexical verbs, auxiliary verbs and tense morphemes are held to contribute to the meaning of the clause. The verb string is analysed in terms of a **grounding predication** – either a tense morpheme or a modal verb – and a clausal head, which can include a perfect construction, a progressive construction and a passive construction, as well as the content verb. In Cognitive Grammar, auxiliaries *have* and *be* are semantically related to non-auxiliary functions of the same verbs, and the past participle is also related to adjectival categories that share the same morphology. Tense and mood receive a unified semantic characterisation in terms of the epistemic model, and the polysemy of modals is accounted for in force-dynamic terms. Perfective and imperfective aspect share the same conceptual basis as count and mass nouns, and the passive voice, which effects a figure–ground reversal, is related to the semantic properties of the passive participle.

In the next two chapters I consider Construction Grammar. I begin, in Chapter 25, by considering how a constructional account is motivated, in the first place. This entails considering the properties of idiomatic expressions, which motivates the claim that grammatical constructions can be meaningful in part independently from the content words that instantiate them. In this chapter I present the pioneering work of Charles Fillmore and Paul Kay, who developed Construction Grammar.

In Chapter 26, I explore how a constructional approach to grammar can be extended to deal with regular as well as idiomatic clausal grammatical patterns. I focus primarily on Adele Goldberg's constructional approach and see that she defines a construction as any form–meaning pairing whose properties cannot be predicted by its subparts, a definition that includes simplex words. As with Langacker, Goldberg adopts the usage-based thesis, and assumes that knowledge of language consists of a structured inventory. Goldberg argues that certain clausal constructions have (schematic) meaning independent of the lexical items that instantiate them. Finally, I briefly compare other constructional accounts: notably **Radical Construction Grammar** and **Embodied Construction Grammar**.

In Chapter 27, I shift focus from a synchronic to a diachronic perspective and consider a type of language change known as **grammaticalisation**: a process that involves changes in the function or meaning of a linguistic unit, which evolves from content to grammatical, or from grammatical to more grammatical. These changes may result in layering or polysemy at certain stages in the grammaticalisation process, and are often accompanied by correlated changes in the phonological and morphological form of the unit.

21

What is a cognitive linguistics approach to grammar?

In this chapter I introduce the way in which cognitive linguists approach the study of grammar. I begin by examining, in the first instance, the two guiding principles of cognitive linguistic approaches. These are the symbolic thesis, and the usage-based thesis, both of which I initially introduced in Chapters 1 and 5, respectively, given their central importance to the cognitive linguistics enterprise more generally. I introduce and illustrate these principles before comparing and contrasting the cognitive linguistics approach to formal approaches to grammar.

1 Guiding principles

In this section I consider two central assumptions of the cognitive linguistics approach to grammar. These are listed below:

i) the symbolic thesis: the fundamental unit of grammar is a form–meaning pairing or symbolic unit;
ii) the usage-based thesis: the mental grammar of the speaker (his or her knowledge of language) is formed by the abstraction of symbolic units from situated instances of language use.

These principles, as with the principles that guide cognitive linguistics approaches to conceptual structure (Part II) and semantic structure (Part III) can be viewed as outcomes of the two key commitments described in Chapter 2: the Generalisation Commitment and the Cognitive Commitment. Recall that the Generalisation Commitment represents a commitment to the characterisation of general principles that account for all aspects of human language; and the Cognitive Commitment amounts to a commitment to establishing general principles for language that are consonant with what is known about the mind and brain from other disciplines. Indeed, the ultimate objective of a cognitive linguistics account of grammar is to model speaker knowledge of language in ways that are consistent with these two key commitments underlying the cognitive linguistics enterprise. From this perspective, language emerges from general cognitive mechanisms and processes.

1.1 The symbolic thesis

The symbolic thesis holds that the fundamental unit of **grammar** – a language user's mental repository of language – is a form–meaning pairing or **symbolic unit**. The symbolic unit has two poles: a **semantic pole** (its semantic structure) and a **phonological pole** (its form). The idea that language has an essentially symbolic function and that the fundamental unit of grammar is the symbolic unit (also known as the **construction**) has its roots in Saussure's theory of language. The Swiss linguist Ferdinand de Saussure (1857–1913) is often described as the 'father of modern linguistics'. Central to his theory was the view that language is a symbolic system in which the linguistic expression (sign) consists of a mapping between a concept (**signified**) and (an acoustic) signal (**signifier**), where both signified and signifier are psychological entities. While there are important differences between the Saussurean model and the symbolic thesis adopted by cognitive linguists, the notion of the Saussurean symbol can be seen as an antecedent of the cognitive linguistics position.

In terms of the symbolic thesis, the semantic pole corresponds to the 'signified' and the phonological pole to the 'signifier'. These are both 'psychological entities' in the sense that they belong within the mental grammar (system of linguistic knowledge) in the mind of the speaker, which Langacker (1987: 57) describes as a **structured inventory** of **conventional linguistic units**. To illustrate, recall Figure 1.1 from Chapter 1 which is repeated here as Figure 21.1.

As I observed in Chapter 1, the visual image of the cat in the lower half of the figure represents the concept CAT, which is the semantic pole of a symbolic unit. The phonological pole of this symbolic unit is the speaker's knowledge of the string of speech sounds that correspond to the concept CAT, represented by the IPA symbols [kæt].

The symbolic unit is represented in Figure 21.2. This reveals that a symbolic unit consists of semantic and phonological poles, and the symbolic link (or

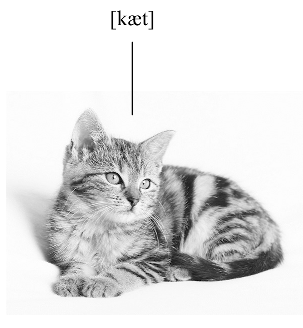

Figure 21.1 A symbolic unit consisting of form and meaning

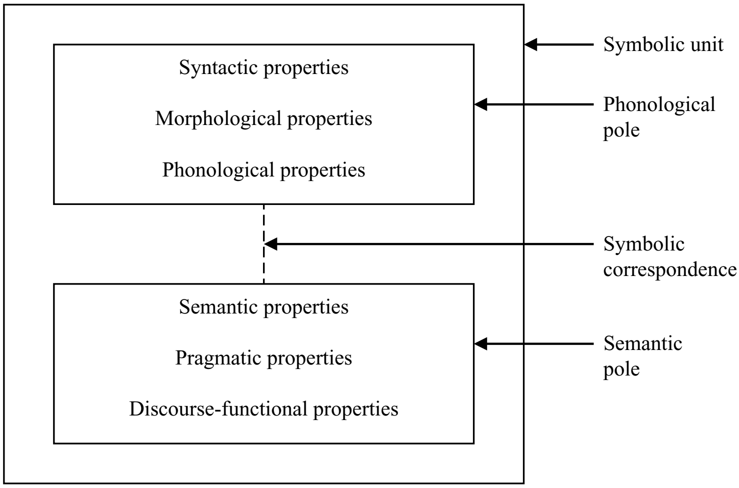

Figure 21.2 Anatomy of a symbolic unit (adapted from Croft 2001: 18)

correspondence) which relates these two poles. Moreover, this also reveals that each 'pole' has internal structure. For instance, if we think about spoken (rather than signed) language, the phonological pole consists of phonological content, in addition to knowledge relating to syntactic and morphological configurations. In terms of the semantic pole, as we saw when we considered Access Semantics (Chapter 18), for instance, semantic structure encompasses access to conceptual structure, as well as semantic knowledge relating to the semantic and grammatical units which the unit selects for, its **lexical profile**, as well as how a unit of semantic structure can be used – its pragmatic (discourse-functional) properties. What makes the unit 'symbolic' is that the relationship between the two poles is established by convention. Hence, the phonological (or formal) pole symbolically represents the semantic pole.

Needless to say, symbolic units can be expressed in different ways. In spoken language, the form is phonological: a string of speech sounds. However, language can be conveyed using different media: it can be written or signed, as in the case of sign languages. Language can even be conveyed using pictograms as in the case of the pictorial language **Bliss Symbolics** (see Evans 2017: Chapter 6). Hence, it follows that the idea of a symbolic unit does not relate solely to spoken language.

The adoption of the symbolic thesis has an important consequence for a model of grammar. Because the basic unit is the symbolic unit, meaning achieves central status in the cognitive linguistics approaches to grammar. This follows as, given the basic grammatical unit is the symbolic unit, then form cannot be studied independently of meaning. Hence, from the perspective of cognitive linguistics, the study of grammar constitutes the study of the full range of units that make up a language, from the lexical to the grammatical. For example, cognitive linguists argue that the grammatical form of a sentence is paired with its own (schematic) meaning in the same way that words such as *cat* represent pairings of form and (content) meaning. Compare examples (1) and (2).

(1) Monica stroked Tommy. ACTIVE

(2) Tommy was stroked by Monica. PASSIVE

In the English passive construction, illustrated in (2), the entity that undergoes the action, the PATIENT, is placed in subject position (before the verb). The sentence is also marked with a passive verb string, here *was stroked*. We can represent the generalised form of the passive construction as in (3).

(3) PATIENT 'passive verb string' *by* AGENT

According to cognitive linguists, this passive construction has its own schematic meaning that is independent of the specific words that 'fill' the construction. This meaning focuses attention on the PATIENT (e.g. what happened to Tommy) rather than the AGENT (e.g. what Monica did). The idea that grammatical units are inherently meaningful is an important theme in cognitive linguistic approaches to grammar and gives rise to the idea of the **lexicon–grammar continuum** – an idea I discussed in Chapter 10 (recall Figure 10.2) – in which content words such as *cat* and grammatical constructions such as the passive both count as symbolic units but differ in terms of the quality of the meaning associated with them – recall my earlier discussion of **analogue** (or multimodal) and **parametric** (or schematic) meaning/knowledge, from Chapter 18.

1.2 The usage-based thesis

The usage-based thesis holds that the mental grammar of the speaker (his or her knowledge of language) is formed by the abstraction of symbolic units from situated instances of language use. An important consequence of adopting the usage-based thesis is that there is no principled distinction between knowledge of language and use of language (**competence** and **performance** in Chomskyan Generative Grammar terms – recall my discussion of this distinction in Chapter 5), since knowledge emerges from use. From this perspective, knowledge of language is knowledge of how language is used.

The essential architecture of a cognitive linguistics approach to grammar is represented in Figure 21.3. This diagram captures the idea that the act of deploying a symbolic unit in any given **usage event** involves both **semantic space** (meaning) and **phonological space** (form). In this diagram, the 'grammar' box represents the conventionalised knowledge of language in the mind of the speaker, and the 'usage' box represents the usage event or utterance.

In intuitive terms, a usage event consists of speech sounds and their corresponding interpretations, hence the two boxes labelled 'simulation' and 'vocalisation'. The horizontal arrows represent **correspondences** between the conventionalised units of knowledge in the mind of the speaker and the (vocal or conceptual) systems they interact with in instances of situated language use. In short, the semantic pole of a linguistic expression corresponds to a unit of

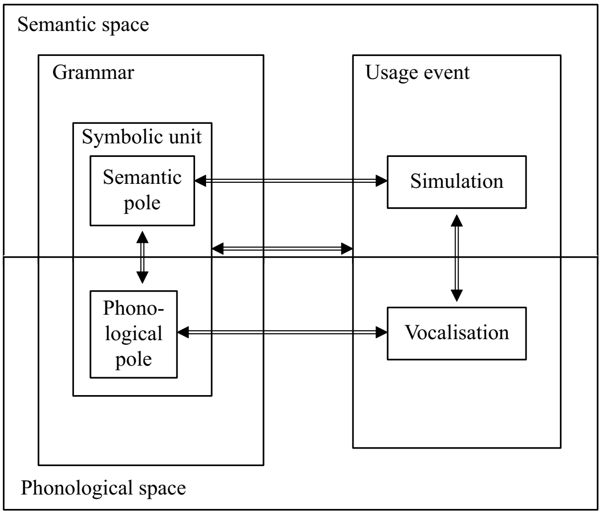

Figure 21.3 The cognitive linguistics model of grammar (adapted from Langacker 1987: 77)

semantic structure – and hence access to concepts in the conceptual system (as outlined, in slightly different terms, by the approaches discussed in Part II) – and the phonological pole of a linguistic expression corresponds to the string of sounds that realises it. The vertical arrows represent symbolic links which unite sound and meaning, or knowledge of sound and meaning. Finally, while knowledge of conventionalised units is represented in a separate box from usage events, this does not imply a distinction between competence and performance, as assumed in formal linguistics. Indeed, from the perspective of cognitive linguistics, usage gives rise to knowledge, which in turn underlies usage. This is indicated by the double-headed horizontal arrows in Figure 21.3.

As we saw in our discussion of the symbolic thesis, above, a central claim of cognitive approaches to grammar is that knowledge of language (the mental grammar) is represented in the mind of the speaker as an inventory of symbolic units (Langacker 1987: 73). But this inventory derives from use: it is only once an expression has been used sufficiently frequently and has become **entrenched** (acquiring the status of a habit or a cognitive routine) that it becomes a symbolic unit.

From this perspective, a unit is a symbolic entity that is not built compositionally by the language system but is stored and accessed as a whole. Furthermore, the symbolic units represented in the speaker's grammar are **conventional**. The conventionality of a linguistic unit relates to the idea that linguistic expressions become part of the grammar of a language by virtue of being shared among members of a speech community. Thus, conventionality is a matter of degree: an expression such as *cat* is more conventional (shared by more members of the English-speaking community) than an expression such as *goitre*. This is shared only by a subset of English speakers with specialist knowledge relating to the domain of medicine, or by those with experience of this particular condition – this expression refers to abnormal swelling of the thyroid gland, which can lead to a protrusion in the neck. The notions of entrenchment and conventionality emerge from the usage-based thesis.

The contents of this mental inventory – what Taylor (2012) aptly refers to as a 'mental corpus' – are not stored in a random way. The inventory is **structured**. For example, some units form subparts of other units which in turn form subparts of other units (for example, morphemes make up words and words make up phrases which in turn make up sentences). Indeed, symbolic units can be **simplex** or **complex** in terms of their symbolic structure. A simplex symbolic unit such as a morpheme may have a complex semantic or phonological structure, but is simplex in terms of symbolic structure if it does not contain smaller symbolic units as subparts. The word *cat* and the plural marker *-s* are examples of simplex symbolic units. Complex units vary according to the level of complexity, from words (e.g. *cats*) and phrases (e.g. *Monica's misty grey cat*) to whole sentences (e.g. *Jimmy licked the bowl clean*).

Moreover, our mental inventory of symbolic units is additionally structured in terms of the relationships that hold between the units. This is typically modelled, within cognitive linguistics, as a **network** of related units – recall my discussion of, for instance, Langacker's network conception in Chapter 17, involving **schemas**, **instances** and **prototypes**. These descriptions constitute ways of categorising symbolic units, such that they are conceived as forming a set of interlinking and overlapping relationships. Hence, in this network conception of symbolic units, there are three kinds of relation that hold between members of the network: i) **symbolisation** (the symbolic links between the semantic pole and the phonological pole that I described earlier); ii) **categorisation** (for example, the link between the expressions *ragdoll* and *cat*, given that RAGDOLL is a member of the category CAT, by virtue of it designating a breed of cat; and iii) **integration** (the relation between parts of a complex symbolic structure such as *ragdoll-s*).

2 Formal approaches to grammar

In this section, I present an overview of the characteristics of formal approaches to grammar. I do so, as cognitive linguistics, as we have seen earlier, can be viewed, in items of its theoretical and descriptive provenance at least, as having originated as a reaction to formal approaches. In addition, by presenting an overview of formal approaches to grammar here, this will enable us, in the following section, to more effectively compare and contrast cognitive linguistics with formal approaches to grammar.

2.1 Background: the rise of Transformational Grammar

The most prominent formal approach to grammar, at least in the Anglo-American tradition (in which cognitive linguistics is also situated), is Chomskyan Generative Grammar developed, in a number of iterations, since the 1950s, by Noam Chomsky and his followers. However, there are different traditions of generative grammars, some of which diverge significantly from Chomskyan generative approaches. In essence, a generative grammar is a finite set of logical rules, formulated in such a way as to be able to correctly capture the infinite set of grammatically well-formed expressions it is possible to produce in any human language. While this is broadly the goal of the Chomskyan generative tradition, it is also true of other formal or generative approaches to grammar, including **Head-driven Phrase Structure Grammar** (**HPSG**) and **Lexical Functional Grammar** (**LFG**). HPSG and LFG place the burden of explanation on information stored in the lexicon and assume only a single **monostratal** level of syntactic representation. In contrast, in the Chomskyan approach, the burden of explanation is placed on the syntax, which therefore assumes a **multistratal** system where 'underlying' and 'surface' syntactic structures are linked by generalised derivational processes.

Chomsky's earliest generative theory was referred to as **Transformational Grammar** – as it was predicated on a 'deep' and 'surface' syntactic structure, with logical rules facilitating **transformations**, modelled in terms of so-called **movement rules**. And this term is often still used as a cover term for later versions of Chomskyan generative approaches, including **minimalism**. Hence, I will use Transformational Grammar from this point on to exclusively refer to Chomskyan generative approaches, while the term **Generative Grammar** will refer to any formal theory of grammar.

Prior to the emergence of Chomskyan Transformational Grammar, the prominent approach in twentieth-century Anglo-American linguistics was **structuralism**, which viewed linguistics as the study of observable linguistic structure. This approach is associated with the American structuralists, such as Leonard Bloomfield (1887–1949), whose work focused upon field linguistics and attempts to characterise directly observable linguistic phenomena such as phonological and grammatical form. Bloomfield's 1933 book *Language* is regarded by many linguists as a model of careful and precise linguistic description. However, this approach had little to say about unobservable phenomena such as meaning or about the mental representation of language.

This began to change in the 1950s, when the behaviourist psychologist B. F. Skinner (1904–90), in his (1957) book *Verbal Behavior*, outlined a behaviourist theory of language acquisition, which held that children learnt language by complex processes of imitation, conditioned by positive reinforcement. Generative grammar approaches have their origins in Chomsky's (1957) book *Syntactic Structures*, in which he proposed – contrary to the behaviourist theory of language prevalent at that time – that humans are predisposed for language acquisition by virtue of a designated biologically instantiated cognitive system that later came to be known as **Universal Grammar**. For instance, in his (1959) review of Skinner's book, Chomsky argued (among other things) that the behaviourist theory failed to explain how children produce utterances that they have never heard before, as well as utterances that contain errors that are not present in the language of their adult caregivers (while Chomksy's review of Skinner made him famous, it was not without serious misunderstandings of Skinner's position, as I intimated in Chapter 7).

The emergence of Chomsky's Transformational Grammar provided the first mentalist or formal cognitive theory of human language, in the sense that it attempted to explore the psychological representation of language and to integrate explanations of human language with theories of human mind and cognition. For this reason, Chomsky's early work is often described as one of the catalysts of the 'cognitive revolution', coinciding with the birth of cognitive science as a discipline in its own right, uniting through common goals and research questions disciplines such as philosophy, psychology, linguistics and artificial intelligence.

However, while Transformational Grammar was first proposed by Chomsky in the late 1950s, it has itself, since that time, undergone a number of transformations. This has resulted, at various historical stages in models known as **Transformational Generative Grammar**, **Standard Theory**, **Extended Standard Theory**, **Revised Extended Standard Theory**, **Government and Binding Theory**, **Principles and Parameters Theory** and, most recently, the **Minimalist Program**.

2.2 Assumptions of Transformational Grammar

As we saw in Chapter 7, the Chomskyan approach is predicated upon the hypothesis that there is a specialised and innate cognitive system that represents unconscious knowledge of language, or competence. The idea that linguistic knowledge arises from 'drawing out what is innate in the mind' (Chomsky 1965: 51) amounts to a **rationalist view**, and contrasts with the **empiricist view**, adopted by cognitive linguistics, which holds that linguistic knowledge is constructed on the basis of experience and is independent of any specialised cognitive system.

Within Transformational Grammar, Universal Grammar is the model of the **initial state** of the innate **language faculty**: the system of linguistic knowledge that all humans bring to the process of acquiring their first language. In developing this mentalist theory of language, Chomsky holds that the object of linguistic study, given the objective of characterising competence, is the system of linguistic knowledge in the mind of the **idealised individual speaker**. This system of internalised linguistic knowledge is known as **I-language** (Chomsky 1986: 19–56). From this perspective, the externalised language of the speech community (**E-language**) is merely **epiphenomenal**, in the sense that it arises as the output of individual I-languages.

In Transformational Grammar, this innate language system is viewed as 'encapsulated' or **modular** and patterns of **selective impairment** – particularly when these illustrate **double dissociations** – are often seen as evidence for the encapsulation of such cognitive subsystems. Of course, such patterns are open to a range of interpretations (recall my discussion in Chapter 7). In addition, the language module itself is viewed as a modular system. Hence, there are held to be linguistic subsystems such as syntax, semantics and phonology; these are viewed as independent sub-modules within the language faculty.

The rationale for this view derives from the premise that the principles and processes, and the primitives over which each sub-module operates, are different in kind; for instance, the component knowledge types that make up the language faculty, phonological knowledge versus syntactic knowledge, are radically different and incommensurable. In addition, selective impairment within the language system itself is a frequent consequence of acquired left-hemisphere brain damage. For example, certain types of acquired **aphasia** (or language disorder) such as **anomia** (loss of content words) or **agrammatism** (loss of or damage to grammatical units and structures) has sometimes been claimed to selectively affect different aspects of the language system. This type of selective language impairment has sometimes been interpreted as evidence for the plausibility of a model in which subtypes of linguistic knowledge are organised separately within the cognitive system as well as being localised separately within the physical brain (although, see Evans 2014 for a critique of this perspective).

A simple representation of the hypothesised language module is shown in Figure 21.4. The levels of phonological form (PF) and logical form (LF) operate over the output of the syntax (sentence-level structures) with respect to phonological and semantic principles, respectively.

In Transformational Grammar, the existence of a language module is held to account for the rapid acquisition of language by human infants and for the existence of linguistic universals. The system is not open to conscious **introspection**. Rather, it can only be reconstructed on the basis of its output: human language itself. For this reason, native speaker **intuition** and judgement play a central role in this model. While speakers can rarely explain the rules that govern their native language, they can (often) rapidly judge what is possible in the language and what is not, thereby providing a body of data on the basis of which the linguist can attempt to model the system of knowledge that underlies those judgements. Transformational Grammar consists, in part, of a set of principles of language: statements that account for all possible (grammatical) linguistic structures, and which also rule out impossible (ungrammatical) structures within each of the sub-modules. This system of principles is described as 'generative' as it makes explicit the underlying knowledge that gives rise to the output.

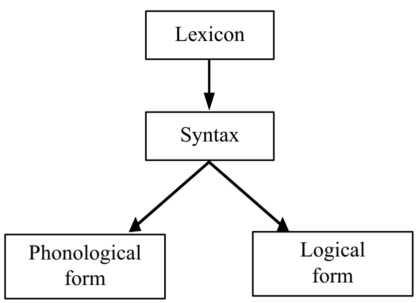

Figure 21.4 A modular view of the language system

2.3 The nature of Transformational Grammar

In Transformational Grammar lexical items are stored in the lexicon together with information about their phonological, semantic and core syntactic properties (such as word class and valence requirements). As a result of its interaction with generalised syntactic principles, this information gives rise to **deep structures**: syntactic structures in which the **core requirements** of the lexical items are satisfied in accordance with the syntactic principles. Deep structures typically correspond to **unmarked** active declarative sentences, the clause type that is traditionally viewed as the canonical or 'basic' syntactic structure within any given language. Non-canonical clause types such as passives and interrogative – where these involve syntactic reordering – are then derived by means of syntactic 'movement' or transformation and give rise to **surface structures**. As a simple illustration of these ideas, consider the relationship between the declarative clause in (4a) and the interrogative clause in (4b):

(4) a. Tommy has seen another cat.
    b. Has Tommy seen another cat?

In Transformational Grammar, the declarative structure in (4a) corresponds to the 'deep structure'. If the speaker intends to make a statement, no transformation is necessary and this deep structure is equivalent to the surface structure that the speaker actually produces. However, if the speaker intends to ask a question, the interrogative structure in (4b) is **derived** from the deep structure in (4a) by a syntactic transformation that raises the auxiliary verb *has* to a position in front of the subject *Tommy*. This transformation is illustrated by the tree diagram in Figure 21.5, which shows how the auxiliary verb raises to a clause-initial position created by the transformation. I return to discuss the status of tree diagrams in Transformation Grammar below.

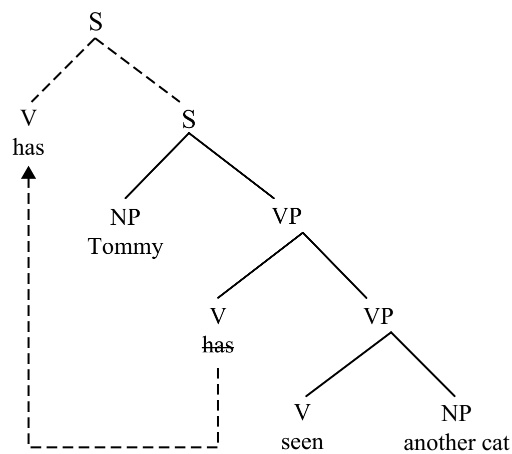

Figure 21.5 A syntactic transformation

Within the syntactic component (recall Figure 21.4), there are **phrase structure rules** that build syntactic structures. **X-bar syntax** is one approach to capturing generalised phrase structure rules. This was developed in Transformational Grammar in the 1970s, and a version of this approach remains in the current approach. The X-bar approach replaces category-specific phrase structure rules (separate sets of rules for building NPs, verb phrases (VPs) and so on), with a small set of category neutral rules, where **hierarchical** (head-dependent) **relationships** are universal but linear precedence (word order) relations are subject to cross-linguistic variation. The existence of a small set of category-neutral rules within Universal Grammar is motivated on the basis of **economy of representation**: a small set of category-neutral rules eliminates **redundancy** and thus accounts for the efficiency of the language system both in terms of how it is acquired and in terms of how it underlies language use. A small set of category-neutral rules is also motivated on the basis of **learnability**: the fewer the rules, the more rapidly the child will fully acquire the grammatical system of his or her native language.

The tree diagram in Figure 21.6 represents the structure that is built by X-bar rules, where X^0 is the head of a phrase and XP its phrasal level. An important constraint on this structure is that it is (maximally) **binary branching**. This constraint is also motivated on the basis of learnability: the fewer the structures the grammar can build, the more rapidly the child can fully acquire the system of his or her native language.

In the X-bar model, X is a variable that can be instantiated by any word class. For example, if X is a noun, XP is a noun phrase; if X is a verb, XP is a verb phrase and so on. The structure in Figure 21.6 is used to model the relationships between **heads** and **dependents** – specifiers, complements and modifiers are types of dependent. In principle, the phrase is limited to a single **specifier** (e.g. the determiner in a noun phrase), head and **complement**, but may contain an unlimited number of **modifiers**. Nevertheless, the existence of ditransitive verbs – to be discussed in more detail in Chapter 26 – has proven a challenge to this highly constrained syntactic model. Certain parts of this structure are 'optional' in the sense that not every phrase will contain some, all or any dependents, and some phrases will contain more than one **adjunct** (or modifier). That said, the minimal requirement for a phrase is the head.

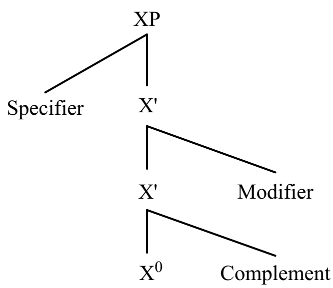

Figure 21.6 X-bar structure

An important development within Transformational Grammar has been the extension of the X-bar structure from content phrases such as the NP and the VP to grammatical units such as the determiner phrase (DP) and the clause or tense phrase (TP). This means that the same basic X-bar structure is used to model clauses as well as phrases; indeed, the extension of the X-bar model to a range of functional categories was one of the defining features of the Principles and Parameters framework. According to this, the universal properties of human language are attributable to the shared principles of Universal Grammar, while cross-linguistic variation relates to **parameter setting**: the typological characteristics of each language arise from 'options' within a set of well-defined **parameters of variation**.

In the early 1990s, Chomsky proposed some radical changes to Transformational Grammar, which together constitute the basis for the ongoing research framework known as the Minimalist Program. Figure 21.7 represents the Minimalist model of Transformational Grammar.

A key difference between the Minimalist model and the model assumed within the Principles and Parameters framework concerns the elimination of 'deep structure' and 'surface structure' as distinct levels of syntactic representation. Instead, a single syntactic component described as the **computational system** derives syntactic structures from sets of lexical items (including both lexical and functional categories) and maps these structures onto two distinct **interface levels**: the phonological level (PF), which interfaces with the articulatory-perceptual performance system (phonology), and the semantic level (LF), which interfaces with the conceptual–intentional performance system (meaning). In principle, the lexical items themselves, consisting of phonological, semantic and formal features, encode all the information required for the derivation, so that principles operating over the derivation remain maximally simple and general.

Indeed, according to Chomsky (2000) there are only two basic operations that occur within the computational system: **Merge** and **Agree**. Merge is a basic structure-building operation that is driven largely by the lexical properties of the predicational item(s) within the set of lexical items. This operation assembles phrase markers (tree structures) from pairs of syntactic objects, beginning with the head-complement structure, then merging the resulting structure with its specifier, and finally combining the resulting phrase markers into larger structures.

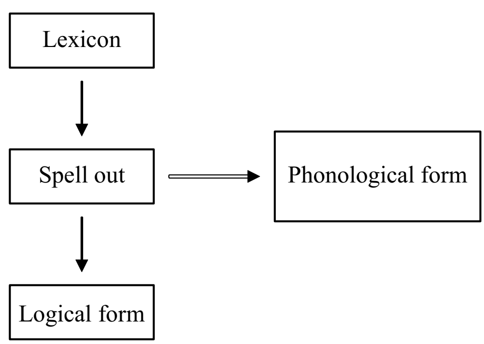

Figure 21.7 The Minimalist model

The second operation, Agree, matches the morphosyntactic features of two elements within the structure. This process involves features such as category selection features, **phi-features** (e.g. person, number, gender), case, tense-aspect, and interrogative or *wh*-features. The **matching** of these features has to take place within a local configuration, and it is this requirement that motivates syntactic transformations. Consider the examples in (5) by way of illustration.

(5) a. Monica asked whether Tommy really loved her.
    b. Monica asked [what] Tommy really wanted [_].

In example (5a), the embedded clause selected by the verb *ask* has an interrogative feature because of the semantics of *ask*. This explains why it takes a complementiser with a *wh*-feature (*whether* as opposed to *that*). Transformational Grammar assumes that *wh*-expressions such as *what* in (5b) have a *wh*-feature that needs to be locally matched with a functional head (complementiser) in the left periphery of the clause. This explains why the *wh*-expression, which 'originates' as the object of *want*, raises to clause-initial position. Because the *wh*-feature only needs to be **spelled out** – made explicit – by one unit in the clause (the fronted *wh*-expression), the *wh*-complementiser remains implicit in (5b), which explains why the sentence **Monica asked what whether Tommy really wanted* is ungrammatical in English, although other *wh*-fronting languages allow both components to be spelled out. This is an example of **parametric variation**.

Finally, it should be noted that Transformational Grammar is not intended as a model of language processing, but as a model of linguistic knowledge that interfaces with performance (production and comprehension) systems. Hence, the notion of a syntactic transformation can be viewed as a metaphor that attempts to capture similarities between related constructions both within and between languages, and hence an attempt to model the otherwise unseen aspects of human cognition that underlie those similarities.

3 Comparison with cognitive linguistics approaches to grammar

Any theory of grammar can be characterised with respect to three parameters: **assumptions**, **objectives** and **methodology**. The assumptions of a theory reflect the philosophical orientation of that theory in terms of how it views the nature of the relationship between language, thought and world. The objectives of a theory reflect what that theory seeks to establish, describe or explain. Methodology concerns the ways in which the theory sets about achieving those objectives. In light of this, Tables 21.1 and 21.2 present a summary of these parameters as applied to cognitive linguistics and Transformational Grammar, respectively. In the remainder of this section, I compare and contrast these two perspectives in a little more detail.

Table 21.1 Characteristics of a cognitive linguistics approach to grammar

Assumptions	Objectives	Methodology
• Empiricist view • Cognitive commitment • Generalisation commitment • Embodied cognition thesis • Symbolic thesis • Usage-based thesis: symbolic units reflect use • Grammar is a structured inventory • Lexicon–grammar continuum • Constructions have meaning: scaffolding metaphor • Redundancy is natural	• To demonstrate that grammar is meaningful • To account for both regular and irregular phenomena • To develop a model of language that reflects cognition	• Search for converging evidence • Take account of diachronic evidence • Examine both regular and irregular patterns • Avoid extreme formalism • Prohibit 'underlying' representations in accounting for grammatical phenomena

Table 21.2 Characteristics of Transformational Grammar

Assumptions	Objectives	Methodology
• Rationalist view • Universal Grammar • Modularity thesis • Autonomy of syntax thesis ('words and rules') • Computational system: rules build structure • Constructions are epiphenomenal: building-block metaphor • Economy prohibits redundancy • Competence determines performance	• To describe Universal Grammar • To account for grammaticality • To uncover and explain generalisations • To develop a formal model	• Native speaker intuition • Small-scale cross-linguistic comparison • Focus on 'core' phenomena • Often rely upon 'underlying' representations in accounting for grammatical phenomena

3.1 Lexicon–grammar continuum versus autonomous syntax

As we have seen, in cognitive linguistics syntax is not autonomous. This follows from the view that syntax forms part of a continuum together with lexicon and morphology. This continuum consists of symbolic units of varying shapes and sizes. In contrast, in Transformational Grammar the syntactic component mediates between form and meaning, whereas in cognitive linguistics, grammatical structures are just another kind of meaningful symbolic unit, albeit schematic nature. Furthermore, in formal approaches to grammar, the symbols that operate within the syntax component of language (the computational system in the Minimalist Program) are meaningless. Indeed, many of the features that drive the Merge (and other) operations in the Minimalist Program are described as **uninterpretable features**, which have to be eliminated in the course of the derivation to avoid an ungrammatical output. Category selection features work in this way, for example: a verb 'arrives' in the syntax with selection features (e.g. the verb *kiss* selects a complement with the category N), and this selection feature is eliminated from the representation when the verb is merged with a complement bearing the appropriate feature. If this feature is not eliminated (for instance, if the verb fails to get its NP object), the result is ungrammatical. These features, thus, serve only to create a well-formed grammatical output, regardless of the semantics of that output, and the syntax operates blindly and automatically over these features. In contrast, in cognitive linguistics approaches to grammar the symbolic units that comprise the grammatical system are meaningful and serve a structuring function.

3.2 Inventory versus derivational system

Cognitive linguistics approaches share with formal approaches to grammar the objective of modelling speaker knowledge. Yet, despite this shared goal, the nature of the two approaches differs considerably. While the formal approaches posit a computational system that generates (builds or derives) well-formed grammatical structures without recourse to meaning, the cognitive linguistics approaches (e.g. both Cognitive Grammar and Construction Grammar) posit an inventory of symbolic units containing 'schematic templates'. These templates are formed as a consequence of regular use and are thus entrenched. When a speaker forms or interprets new structures, he or she does so not by applying a set of rules or principles, but by comparing the new structure with existing templates, and by taking into account the goals of the communicative exchange, the context and so on. Moreover, while formal approaches, especially Transformational Grammar, capture generalisations and define well-formedness (or grammaticality) as the output of precisely stated rules and principles, cognitive linguistics approaches capture generalisation and define well-formedness (or conventionality) as the result of a categorisation process.

3.3 The status of constructions

The term 'construction' is used rather differently in cognitive linguistics and formal approaches to grammar. In cognitive linguistics, it refers to a symbolic unit, which may be as small as a morpheme, or as big as a clause, that is stored 'whole' within the inventory of symbolic units that represents the speaker's knowledge of language. Moreover, for cognitive linguists, the construction is primitive, in the sense that it does not represent the output of any more fundamental linguistic unit or process. In formal approaches, the term 'construction' is usually applied only to clauses, and, in Transformational Grammar, carries with it the sense that the structure has been 'built' by the application of grammatical structure-building rules and transformational rules. Hence, the construction is treated as epiphenomenal, as it emerges as the output of more fundamental primitives and processes (the 'words and rules' model).

3.4 Schemas versus rules

A further point of contrast between the two theories concerns the distinction between schemas and rules, which follows from a number of points that I have already discussed, both in this chapter and indeed earlier in the book (for instance, my discussion of schemas in Chapters 5 and 17). Consider the Cognitive Grammar schema for plural nouns in (6).

(6) [[[THING]/[. . .]]-[[PL]/[s]]]

The question that arises here concerns how the presence of a schema such as (6) in the grammar is different from a derivational rule, since both aim to capture the same aspect of speaker knowledge. The difference lies in the directionality of the relationship between the schema or rule on the one hand, and the specific expressions that correspond to it on the other. In Transformational Grammar, the rule precedes and thus determines the specific expressions that instantiate it. In cognitive linguistics, the schema does not give rise to the instance but follows from it: the schema represents a pattern that emerges from entrenched units as a consequence of usage. Of course, novel uses represent an exception to this generalisation in the sense that they are **sanctioned** by existing schemas. In these ways, both types of theory seek to account for well-formedness.

3.5 Redundancy versus economy

In cognitive linguistics, generalisations result from recurring patterns of usage that enable the speaker to arrive at a 'higher-order' schema. This means that both schemas (the cognitive linguistics counterpart of rules) and instances of those schemas (instantiations of specific constructions) coexist in the grammar, and the schema is therefore an expression of the generalisation that emerges from patterns of usage. In contrast, formal linguists argue that forms that can be derived from the application of a generalised rule need not be listed in the grammar. For example, if the rule 'N + *s*' derives plural nouns, then specific instances such as *cats*, *ragdolls* and *nebelungs* need not be listed in the grammar in addition to their singular counterparts, because the singular nouns plus the generalised rule can straightforwardly derive the plural forms. This **rule/list dichotomy** is motivated on the basis of **economy**: it is argued that language must be a maximally economical system in order to be acquired and manipulated so rapidly, hence the model should avoid redundancy. Indeed, this economy-driven approach lies at the heart of Chomsky's Minimalist Program.

3.6 Conventionality versus regularity

A related difference between the formal and cognitive linguistics approaches concerns the nature of the phenomena each model attempts to account for. Formal approaches to grammar have tended to focus on the statement of general rules that account for grammaticality or well-formedness in any given language, and in human language in general. For this reason, generative theories of grammar tend not to be concerned with 'idiomatic' or 'fixed' expressions, just as formal theories of meaning – recall my discussion in Chapter 14 – have not been concerned with 'non-compositional' or 'figurative' language. Since conventional or idiomatic expressions such *by and large* or *kick the bucket* clearly have complex syntactic structure, they are atypical lexical items. Given that such expressions often fail to conform to general patterns of syntactic structure (see my discussion in Chapter 25), they are not accounted for by this component of the grammar either.

In Transformational Grammar, for instance, such expressions are considered peripheral (and hence uninteresting), as they do not reveal general and productive patterns. Instead, the Transformational Grammar focuses upon 'core' phenomena (word order, major clause types, case and agreement patterns, and so on). This is because **generalisation** is a primary objective of this approach, which emerges as a consequence of its central research goal, which is to characterise Universal Grammar.

In contrast, cognitive linguistics approaches to grammar view conventional and idiomatic expressions as a central part of what it means to know and to use a language. Indeed, these 'irregular' expressions are not viewed as unusual or problematic because cognitive linguists do not assume a rule/list dichotomy. Instead, all expressions, 'regular' or 'irregular', form part of a speaker's inventory of linguistic knowledge and must be accounted for.

3.7 'Scaffolding' versus 'building blocks'

This point of contrast relates to the status of compositional structure. As we have seen, Transformational Grammar assumes that rules give rise to constructions, which Langacker (1987) describes in terms of the **building-block metaphor**. In short, formal approaches to grammar view linguistic elements as having a componential structure: sub-modules of the language faculty are each conceived as having a complex internal structure, which may consist of structural 'building blocks' such as articulatory features, morphemes or grammatical categories, or which may consist of semantic 'building blocks' such as semantic primitives. Langacker contends that while these 'building blocks' may serve a useful practical function as classificatory features, they are epiphenomenal. As such, they are a symptom of the status of a given linguistic expression within a complex network of meanings and forms, but are not themselves the foundations of either meaning or structure within linguistic expressions.

In contrast, as we have seen, the usage-based model holds that entrenched instances give rise to units of language, namely schemas. Despite this important difference, cognitive linguists do acknowledge that complex structures are recognised by speakers as having compositional structure. Indeed, it is the recognition of recurring structural patterns that enables speakers to create novel grammatical constructions. Langacker proposes an alternative to the building-block metaphor that encompasses both compositional and non-compositional units: the **scaffolding metaphor**.

In Langacker's theory of Cognitive Grammar, for instance, component structures are described as **immanent** – that is, residing within – the complex grammatical construction, regardless of whether the compositionality is recognised by the speaker. Langacker argues that entrenchment decreases the salience of compositionality. For example, we are less aware of the well-entrenched noun *computer* as a complex construction than we are of a less well-entrenched or novel instance such as *striver*. The compositional structure of a grammatical construction may be essential to the initial creation or construction of that expression, but once the construction is entrenched and gains the status of a unit, this compositional scaffolding is no longer required. Despite this, the compositional structure remains immanent: we may still recognise the compositionality of well-entrenched units, but it does not follow that we 'build them from scratch' each time we use them. The fact that certain complex constructions do not conform to the prototypical patterns of compositionality does not present a problem in this model. For example, we might argue that the compound noun *ragdoll* or the idiomatic expression *take a catnap* represent cases where the individual components are no longer recognised as making a contribution to the construction as a whole, and that these expressions have therefore been reanalysed as simplex units, at least at the semantic pole.

3.8 Constraints on models of grammar

Cognitive linguistic and formal approaches also differ to a considerable extent in terms of the constraints placed upon the model of grammar developed. Because of its emphasis on economy and generalisation, formal models place strict constraints upon grammatical constructions and processes. This is particularly evident in its emphasis on the relatedness of constructions. For example, Transformational Grammar assumes that all clause types are constructed according to the same general principles, which, consequently, share a similar underlying structure. Furthermore, it is assumed that non-canonical clause types such as interrogative clauses, passive clauses and cleft clauses are related to, and therefore derived from, more basic underlying clause structures. In order to preserve these assumptions, Transformational Grammar admits 'invisible' and semantically empty elements. Invisible elements lack phonetic realisation but are thought to be present for semantic or structural reasons. Consider the examples in (7).

(7) a. Monica wanted [her husband to see the world].
b. Her husband wanted [_____ to see the world].

Example (7a) contains an embedded clause, and the NP *Monica* is the subject of the embedded clause (she is doing the wanting). In Transformational Grammar, (7b) is also assumed to include an embedded subject that has no phonetic realisation. This invisible embedded subject is represented by the underscore. This assumption preserves the view that both examples share a parallel structure. Semantically 'empty' elements include so-called 'dummy' elements. For example, the 'dummy' subject *it* in *it surprised her that Jimmy refused the food* has no referential content. Hence, while generative approaches to grammar place severe constraints on grammatical constructions and processes, by so doing, this allows a proliferation of 'invisible' and 'dummy' elements in order to preserve generalisations.

In contrast, cognitive linguistics adopts the inverse position: 'invisible' or 'semantically empty' elements are not permitted, but constructions, related and unrelated, proliferate. For example, in Cognitive Grammar, Langacker posits what he dubs the **Content Requirement**. This prohibits invisible or semantically empty elements, although symbolic units can be implicit (for example, lexical class schemas, such as THING as the semantic pole of the lexical category *noun*). This follows as even implicit symbolic units are meaningful, albeit schematic – as we saw in the previous part of the book, and as we will see in detail in the next chapter.

The Content Requirement also prohibits abstract 'underlying' structures. The consequence of this is to reduce the need for constraints being placed upon grammatical constructions, which thereby proliferate. But, as cognitive linguistic approaches to grammar view redundancy as natural and, consequently, are less concerned with capturing generalisations, these approaches require less theoretical machinery.

3.9 Sanctioning and grammaticality

Any model of grammar must account for how speakers know what counts as a well-formed or grammatical utterance in his or her language. In cognitive linguistics approaches, well-formedness is accounted for on the basis of conventionality. Recall that the grammar is conceptualised not as an abstract system of rules, but as an inventory of symbolic units. Moreover, these symbolic units are derived from language use. Hence, cognitive linguists capture generalisations – and define well-formedness – on the basis of a categorisation process. For example, if the structure of an utterance produced by a speaker can be categorised as an instance of an existing schema, it is well-formed. Langacker, in his theory of Cognitive Grammar, deploys the term **sanction** to refer to this categorisation process. For example, **coding** is the process whereby a speaker searches for a linguistic expression in order to express an idea. If the symbolic unit the speaker arrives at matches units existing in his or her inventory, this represents a case of sanction and thus well-formedness. The ability of language users to create novel units, according to the patterns of their language, is accounted for by extrapolation from an existing pattern in the inventory.

Langacker (1987: 72) provides the example of a child describing a pie as *apricoty*. Although this is a novel form in the sense that it is not conventionalised, it clearly corresponds to a productive pattern in the inventory: many adjectives contain the derivational suffix *-y* (e.g. *fruity*, *funny*, *stinky*). Because well-formedness is conceived in terms of conventionality, and conventionality is a matter of degree, it follows that well-formedness is also a matter of degree.

For instance, Langacker demonstrates that acceptability of passive constructions depends on a number of factors, which give rise to **graded grammaticality judgements**. Consider the following examples of passive constructions. As mentioned earlier in the book, a question mark before the sentence indicates that the sentence is not perfectly well-formed but may be acceptable. Two question marks indicate somewhat less acceptability. This convention is used in a system with asterisks which, as we have seen, indicates complete ungrammaticality.

(8) a. This delectable dish was enjoyed by Tommy and Jimmy.
    b. ?A delectable dish was enjoyed by Tommy and Jimmy.
    c. ??Delectable dishes were enjoyed by Tommy and Jimmy.

The examples in (8) become progressively less acceptable as the subject of the sentence moves from being definite or **individuated** to becoming less definite or individuated. In (9), the examples become progressively less acceptable the less the verb relates to a prototypical physical action.

(9) a. Jimmy was kissed by Tommy.
    b. ?Jimmy was wanted by Tommy.
    c. ??Jimmy was resembled by his brother.

3.10 Emphasis on formalism

Finally, an important point of difference between formal and cognitive linguistics approaches, as the term 'formal' itself suggests, is a divergence on the level and nature of formalism. Formalism in linguistics is the practice of adopting a metalanguage for the description of natural language phenomena, and often involves the manipulation of abstract symbols and rules. As we saw in Chapter 14, Formal Semantics adopts logic as a metalanguage for the description of linguistic meaning, and the tree diagrams, transformational rules and abstract features of Chomsky's Transformational Grammar approach to syntactic theory are also components of a formal metalanguage for describing the grammatical properties of human language. In generative or formal theories of grammar – generative theories are, by definition, formal – formalism has a status beyond description, however. It is also the basis of the model of speaker knowledge and must therefore work like a perfect 'machine' (efficient, economical and automatic) to generate the correct forms and interpretations. Formal approaches therefore necessarily involve a level of abstraction. Although the adoption of an abstract metalanguage and a computational or algorithmic system of rules has certain advantages (it is precise, unambiguous and universally applicable), cognitive linguists argue that the level of abstraction adopted within, for instance, Transformational Grammar in fact obscures and even misrepresents the reality of human language. Cognitive linguistics approaches therefore tend to eschew the use of abstract symbols and rules.

4 Three cognitive linguistics approaches to grammar

There are three main cognitive linguistics approaches to grammar that I explore in this part of the book. I briefly introduce each of these, in this section. These three approaches are as follows:

i) Cognitive Grammar;
ii) Construction Grammar(s);
iii) Cognitive linguistics theories of grammaticalisation.

4.1 Cognitive Grammar

Cognitive Grammar is the theoretical framework developed by Ronald Langacker. This is arguably the most detailed theory of grammar to have been developed within cognitive linguistics and to date has been the most influential. Langacker's approach seeks to model the cognitive mechanisms and principles that motivate and license the formation and use of symbolic units of varying degrees of complexity. Langacker argues that lexical and grammatical forms constitute a single structured inventory of conventionalised linguistic units, which represents knowledge of language in the mind of the speaker.

4.2 Construction Grammars

There are a number of varieties of so-called Construction Grammars. I will primarily focus on the two most influential variants, while briefly discussing others, at various points. The first is the original theory of Construction Grammar, developed by Charles Fillmore, Paul Kay and their colleagues. In part, Construction Grammar is motivated by the fact that certain complex grammatical constructions (e.g. idioms like *kick the bucket* or *throw in the towel*) have meaning that cannot be predicted on the basis of their subparts and might therefore be 'stored whole' rather than 'built from scratch'. I will also examine the version of Construction Grammar developed by Adele Goldberg in her research.

As already intimated above, Cognitive Grammar can also be classified as a constructional approach to grammar, as Langacker also adopts a

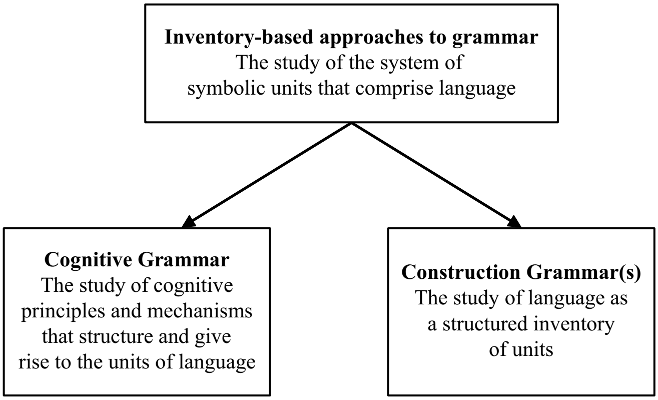

Figure 21.8 Inventory-based approaches to grammar

constructionist view of certain types of grammatical unit. However, as we will see in later chapters, Langacker defines the construction in a slightly different way from theories of Construction Grammar. Nevertheless, Cognitive Grammar and Construction Grammars share another feature in common that is the hallmark of cognitive approaches to grammar: both are what I dub **inventory-based approaches** to the study of linguistic units. By this, I mean that both types of approach view the grammar as an inventory of symbolic units rather than a system of rules or principles. This amounts to the claim that the language system does not work predominantly by 'building' structure for each occasion of use (as in formal approaches to grammar) but by 'storing' it, and repurposing these on each occasion of use. Figure 21.8 summarises the main similarities and differences between Cognitive Grammar and Construction Grammar(s).

4.3 Cognitive linguistics theories of grammaticalisation

The final group of theories that I investigate in this part of the book are cognitive linguistic approaches to **grammaticalisation** (sometimes referred to as **grammaticisation**): the process of language change whereby grammatical or closed-class elements evolve gradually from the open-class system. Grammaticalisation is also of interest to typologists, because patterns of grammatical change can inform their explanations of current patterns in language. I consider three representative approaches in Chapter 27.

SUMMARY

I began this chapter by introducing the two guiding principles of a cognitive linguistics approach to grammar. The first, the **symbolic thesis**, contends that the fundamental unit of grammar is a form–meaning pairing or symbolic unit; the second, the **usage-based thesis** holds that the mental

grammar of the speaker (his or her knowledge of language) is formed by the abstraction of symbolic units from situated instances of language use. I also, in this chapter, presented some explicit comparisons between cognitive linguistics and **generative** or **formal approaches** to grammar. I did so, having introduced the background assumptions and theoretical architecture of Chomskyan **Transformational Grammar**, the leading formal or generative approach to grammar. I set out the **assumptions**, **objectives** and **methodology** of cognitive linguistics approaches, and compared these with those of Transformational Grammar. While both traditions share the common objective of modelling the representation of knowledge of language in the mind of the speaker, they diverge in a number of ways. These include a **lexicon–grammar continuum** versus **autonomous syntax**; positing an **inventory of symbolic units** versus a **derivational computational system**; a divergence in the status of **constructions** – primitives for cognitive linguistics, while epiphenomenal for generativists; a distinction in positing **schemas** versus **rules**; and a number of divergent views as to the nature and status of a model of grammar, including cognitive linguists privileging **redundancy** over **economy**, **conventionality** over **regularity**, and viewing a grammar in terms of **scaffolding** versus **building blocks**, and a divergence in terms of privileging **sanctioning** versus **grammaticality** to understand **grammatical well-formedness**. Further, I examined the nature of **constraints**, imposed by the two traditions, on their respective models of grammar, and considered their respective degrees of emphasis in terms of level of **formalism**. Finally, the chapter also briefly introduced the three main cognitive linguistics approaches to be considered in the remaining chapters in this part of the book: **Cognitive Grammar**, **Construction Grammar** and **grammaticalisation**.

FURTHER READING

Introductory texts

- **Croft and Cruse (2004)**. This textbook has useful chapters on construction grammars and the usage-based model.
- **Hilpert (2014)**. A highly accessible introductory textbook to Construction Grammar, and its application to English.
- **Lee (2002)**. This textbook provides a very basic introduction to cognitive linguistics. Some chapters relate to grammatical issues including constructions, nouns and verbs, and it also has a chapter on language change.
- **Radden and Dirven (2006)**. Provides a novel, cognitively oriented introduction to English grammar.
- **Taylor (2002)**. This detailed and highly accessible textbook provides a comprehensive overview of Langacker's theory of Cognitive Grammar.

Theoretical overviews

The following provide relatively accessible overviews of the three cognitive approaches to grammar discussed in this part of the book, by prominent cognitive grammarians.

- **Goldberg (2006)**. In addition to providing a clear rationale for adopting a constructionist approach, the book also considers how constructions are acquired.
- **Heine (1997)**. An excellent introduction to grammaticalisation by one of the pioneers in the field. The book takes a comparative, cross-linguistic approach, and applies key ideas from cognitive linguistics to the evolution of grammar.
- **Langacker (2008)**. A single-volume introduction to Cognitive Grammar, written by the architect of the theory.

DISCUSSION QUESTIONS

1. What are the guiding principles of cognitive linguistics approaches to grammar, and what do they entail?
2. How would you summarise the main assumptions of a cognitive linguistics approach to grammar? How would you summarise the main assumptions of Transformational Grammar?
3. Provide details of the ways in which cognitive linguistics approaches contrast from Chomskyan Transformational Grammar.

22

Cognitive Grammar I: lexical classes

In previous parts of the book, I have introduced key elements of Langacker's (1987, 1991, 2008) theory of Cognitive Grammar. Indeed, Langacker, along with Lakoff and Talmy is widely considered to be one of the 'founding fathers' of cognitive linguistics. As such, his contribution to the wider cognitive linguistics enterprise is as important as his significant contribution to the study of grammar. Hence, I introduced Cognitive Grammar in Chapter 5, in the context of the usage-based view of language adopted within cognitive linguistics. In Chapter 16, I introduced Langacker's theory of domains, in the context of the encyclopaedic view of semantic structure central to cognitive linguistics approaches to meaning. And in Chapter 17, I briefly introduced the network conception, proposed by Langacker, in the context of semantic network approaches adopted in cognitive linguistics.

In this and the following two chapters I now focus on specific descriptive accounts provided by Langacker, in accounting for three core areas of grammar. These are **lexical classes** (the present chapter), **constructions** (Chapter 23), and key aspects of the verb string, notably **tense, aspect, mood** and **voice** (Chapter 24). I do so in order to provide a further introduction to Langacker's theory of Cognitive Grammar.

According to Langacker's account of lexical classes, linguistic expressions divide into two broad categories: **nominal predications** and **relational predications**. This distinction relates to the nature of the schematic meaning encoded by nouns and noun phrases (nominals) on the one hand, and by other lexical classes such as verbs, adjectives, prepositions and so on (relations) on the other. Recall from Chapter 16, that the term **predication** relates to meaning and refers to the semantic pole of a symbolic unit. Nominal predications are **conceptually autonomous**, which means that they relate to conceptually independent entities such as CAT or WOMAN: the linguistic expressions *cat* or *woman* invoke concepts that are independently meaningful. In contrast, relational predications are **conceptually dependent**, which means that they rely on other units to complete their meaning, which are relational in nature. For

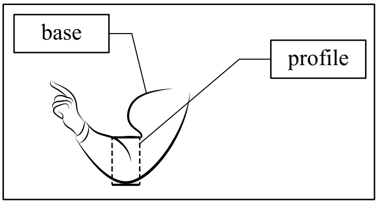

Figure 22.1 Profile/base organisation for *elbow*

example, in a sentence such as *Jimmy hid Mr Greeny under the bed*, the verb *hid* relates the conceptually autonomous entities JIMMY, MR GREENY and BED, establishing a relationship involving 'hiding' between them. Similarly, *under* establishes a spatial relation between MR GREENY and BED.

Central to Langacker's account of nominal versus relational predications is the distinction between **profile** and **base**, an idea that I first introduced in Chapter 16. To recap, words have **profile/base organisation**. For example, the expression *elbow* profiles a substructure within the larger structure ARM, which is its base. This idea is illustrated by Figure 22.1. Because the predication necessarily includes both the profile and the base, the base represents the **full scope of predication** associated with an expression.

1 The semantic basis of word classes

The formal linguistics, **distributional approach** to the characterisation of word classes defines lexical classes in terms of their structural distribution in a sentence; in short, what makes a noun grammatically distinct from a verb, for instance, concerns its syntactic behaviour. In contrast, as Langacker subscribes to the symbolic thesis – which holds that all units of language consist of form–meaning pairings – he takes the view that semantic characterisations of the major word classes are possible. Furthermore, Langacker adopts the cognitive linguistics perspective on categorisation (Chapter 11), contending that the formal approach to grammatical category membership, in terms of **necessary and sufficient conditions**, should be abandoned in favour of a **prototype model**. Langacker argues that grammatical categories, much like conceptual categories, display **prototype effects** and that a semantic characterisation of the category prototypes is therefore uncontroversial.

Indeed, Langacker argues that it is only problematic to define nouns in terms of THINGS (matter) and verbs in terms of PROCESSES (action) if we assume that these rather specific semantic properties should hold for all members of the category, an idea that follows from a necessary and sufficient conditions model of categorisation. It is for this reason that a semantic characterisation of word classes is traditionally disfavoured in comparison to a structural characterisation based on morphological features and syntactic distribution.

However, the idea that prototypical nouns and verbs might have a semantic characterisation is not at the heart of Langacker's proposal. The crux of his proposal is rather that all nouns and verbs have a 'schematic semantic characterization' (Langacker 2002: 60), and furthermore that these characterisations are universal. To illustrate the idea that word classes can be described in terms of schematic meaning, consider the following examples:

(1) a. Monica loves cats.
    b. Monica's love for stray cats is rather worrying.

(2) a. Monica destroyed the files.
    b. Her destruction of the files was regrettable.

Although the verb *love* in (1a) and the noun *love* in (1b) might be difficult to distinguish in terms of **content meaning**, Langacker argues that they do encode different meanings because they encode different **construals** of the scene – recall from my discussion of construal, in Chapter 16, that this provides a linguistically encoded **focal adjustment**, informally, a 'way of seeing'. The same argument applies to the verb *destroy* in (2a) and the noun *destruction* in (2b). As construal is central to the choices that speakers make about how a scene is linguistically 'packaged', this in turn explains the availability of related yet distinct constructions. For example, the nominal expressions in (1b) and (2b) involve the process of reification, which construes what Langacker calls a PROCESS (action) in terms of what he calls a THING (matter). As we will see in this chapter, construal is central to Langacker's theory of word classes.

2 Nominal predications: nouns

The challenge for a semantic account of the noun class is to provide a characterisation of a category that includes a very wide range of concept types. Consider the underlined nouns in the following examples.

(3) a. Monica sent a <u>letter</u> to her <u>husband</u>.
    b. Her <u>computer</u> was making a strange <u>noise</u>.
    c. Monica tried to teach her husband first-order <u>logic</u>.
    d. The only bad thing about Jimmy is his <u>weight</u>.
    e. The <u>explosion</u> in her computer scared the cats.
    f. Monica's <u>love</u> for Tommy's blue eyes began on a <u>Tuesday</u>.

While some nouns (e.g. *letter* and *computer*) are objects, others (e.g. *husband*) encode a relation between two people. The noun *noise* expresses a physical sensation, while a noun such as *logic* refers to a group of abstract formal systems deployed in disciplines including philosophy, mathematics and linguistics. The noun *weight* expresses a scalar concept, while the noun *explosion* describes an event. The noun *love* encodes an emotion, while the noun *Tuesday* refers to a point in time. As this small set of examples illustrates, the rich, content meanings of members of the noun class is extremely disparate, and it is unlikely that a semantic account of the noun class that rests upon content meaning is an achievable goal.

However, Langacker argues that a semantic account is better based on what, earlier in the book, I referred to as **schematic** or **parametric** meaning (see Chapter 18). As we have seen at various points in the book, cognitive linguists distinguish between rich, multimodal aspects of meaning – **analogue concepts** – and schematic aspects of meaning – **parametric concepts**. The distinction is reflected in terms of open-class versus closed-class semantic systems – and in particular, the **lexicon–grammar continuum** elaborated in detail when dealing with Talmy's theory of Cognitive Semantics (Chapter 10).

In fact, Langacker views meaning in terms of a continuum ranging from the highly specific, with rich content, to the highly schematic. If we move along the scale towards **schematicity**, abstracting out points of difference, this is where, he argues, a semantic characterisation of the noun class resides – recall my discussion of **instance-schema** relations in Chapters 9, 17 and more briefly in the previous chapter.

Langacker argues that physical objects are the prototypical referents for the noun category; but, as with any category, there are central and prototypical members. Langacker therefore proposes a highly schematic characterisation of the noun class: a noun encodes a **region** in some **domain**, and a count noun encodes a **bounded region** in some domain (recall my discussion of Langacker's theory of domains in Chapter 16). A region is defined as a 'set of interconnected entities' (Langacker 2002: 67). Sometimes the entities that comprise the region are **homogeneous** at least as far as the boundary (for example, *bleep*, *pond*) and sometimes they are **individuated** (for example, *bicycle*, *cat*, *piano*, *constellation*).

On Langacker's account, a region is bounded if there is some inherent limit to the set of entities that constitute it. For example, a CONSTELLATION is bounded because it is a bounded region in a 'bigger picture' of SKY. A mass noun encodes an **unbounded region** in some domain. The concepts encoded by mass nouns can also differ in terms of how homogeneous or individuated the entities are that compose them (compare *water* and *furniture*, for example). Because count nouns are bounded they are **replicable**, which is why they can be counted; this property does not hold for mass nouns.

Indeed, this characterisation also applies to more abstract nouns. For instance, examples of abstract count nouns that designate a region in the domain of TIME include *moment* and *period*. However, some nouns evoke a combination of domains, termed a **domain matrix**. For example, *flash* profiles a region in the domains TIME, COLOUR and VISION. As Langacker observes, *flash* is bounded in TIME but not in VISION. Hence, a *flash* must be very brief in terms of TIME, but can expand to take up our whole visual field, so **bounding** need only apply in one of the domains evoked by the expression. This is thus termed the **primary domain**, as it is most definitional for the profile of the predication.

Langacker also points out that count nouns such as *second*, *hour*, *week*, *month* and *year* do not evoke the **basic domain** of TIME directly, but evoke **abstract domains** that humans have constructed in order to 'measure' time (recall from Chapter 16, that basic domains are directly grounded in embodied experience). We might refer to these domains as CLOCK (in the case of *seconds*, *minutes* and *hours*) or **calendar** (in the case of *days*, *weeks*, *months* and *years*).

2.1 Bounding

Langacker (2002: 65–9) raises a number of important points in relation to the notion of **bounding**. First, bounding must be defined within rather than by the scope of predication or domain evoked by the expression. He illustrates this point with the visual example *I see NP*, which limits the scope of predication of the NP to whatever is contained within the speaker's VISUAL FIELD. Langacker's examples concern a scene in which the speaker is standing in front of a wall upon which a large red spot is painted against a white background. If the speaker is standing far enough from the wall to see both the red spot and the white background, the speaker will describe what he or she sees in the following way:

(4) I see a red spot.

Observe that *a red spot* is an NP with the count noun *spot* as its head. This is consistent with the fact that the red area is bounded within the field of vision (because the speaker can see the 'edges' of the red spot) which is equivalent to the scope of predication of the NP.

Now imagine that the speaker approaches the wall and stands so close to it that the red spot fills the visual field. The speaker may now describe what he or she sees as follows:

(5) I see red.

In this example, *red* is a mass noun, which is consistent with the fact that the red area is unbounded within the visual field of the speaker which is equivalent to the scope of predication of the NP. Crucially, in both scenarios, the red spot is bounded *by* the visual field in the sense that it is not experienced outside the visual field. However, this is not sufficient for the speaker to construe the red spot as bounded in both scenarios. Indeed, if this were the case, any noun relating to the domain of VISION would have to be bounded and therefore a count noun, which is clearly not the case. As this example illustrates, bounding must occur within the relevant domain.

Langacker's second point concerning bounding is that it is does not necessarily entail sharply delineated boundaries. While some count nouns such as *January* or *nose* designate regions with clearly defined boundaries, others, such as *season* or *midriff*, designate regions with **fuzzy boundaries**. This is consistent with the nature of categories in general, as we saw in Chapter 11.

Langacker's third point is that bounding is often a function of construal rather than of objective reality. Whether a region of a given domain is bounded or not sometimes depends on how we construe it rather than upon its inherent properties. Consider the examples in (6).

(6) a. Tommy licked frantically at the spot on his white fur.
    b. Monica met with her husband at their favourite spot for dinner.

In example (6a), *spot* designates an area on the cat's fur that has inherent boundaries perceived within the visual field. We know that if a cat gets dirt on its fur, the mark has 'edges'. On the other hand, *spot* in (6b) does not designate an area with inherent or readily perceivable boundaries. Instead, bounding is imposed upon the area by construal.

Finally, Langacker observes that the term region must be defined as 'a set of interconnected entities' in order to account for count nouns such as *team*, *group*, *family* and so on. This is because it is less straightforward to think of these as regions in the sense of having a clear 'shape', such that they occupy a distinct area of space. Self-evidently, members of your family make up your FAMILY even when each of them is on a different continent. This illustrates the importance of **interconnection** to the notion of 'region'. In light of this discussion, Langacker (2002: 69) formalises his schematic characterisation of the noun category as follows:

(7) a. A 'count noun' designates a region that is bounded within the scope of predication in its primary domain.
b. A 'mass noun' designates a region that is NOT specifically bounded within the scope of predication in its primary domain.

The modifier 'specifically' in (7b) relates to the fact that the nominal expression itself does not specify bounding, regardless of whether the mass evoked by the expression is bounded in reality. Consider the following examples:

(8) a. This astronomer studies the prospect of water on Mars.
b. Monica bought water yesterday from the supermarket.

As these examples demonstrate, the mass noun *water* can be used to refer to a mass that has no boundaries imposed on it by the context, as in (8a). In this case, the result is **generic construal**: the noun designates 'water in general'.

However, mass nouns are often used to designate a mass that does have boundaries imposed on it by the context, as in (8b). In this context, Monica did not buy 'water in general' but a specific amount, probably contained by glass or plastic bottles. The contrast between these two examples illustrates that the regions designated by mass nouns can be externally bounded. Yet, this does not affect their conception as unbounded masses.

Langacker argues that bounding is only one parameter that distinguishes the regions designated by count and mass nouns. Other parameters include **homogeneity** versus **heterogeneity**, **expansibility** and **contractibility** versus **replicability**.

2.2 Homogeneity versus heterogeneity

Homogeneity concerns whether a region consists of entities that are all alike (e.g. *oxygen* or *water*, which have the property of homogeneity), or entities that are dissimilar (e.g. *bicycle*, which consists of heterogeneous subparts including *wheel*, *frame*, *handlebars* and so on, and thus has the property of heterogeneity). While the entities that constitute the regions designated by mass nouns are typically homogeneous, the entities that constitute the regions designated by count nouns are typically heterogeneous. Of course, there are exceptions to this generalisation. While *bicycle* is a good example of a count noun that has heterogeneous structure, *pond* is not. Equally, while *water* is a good example of a mass noun that has homogeneous structure, *furniture* is not. Given that Langacker's characterisation does not rest upon necessary and sufficient conditions, such exceptions are unproblematic, and indeed might be expected on the assumption that linguistic categories reflect the prototype structure of the conceptual categories that they evoke.

2.3 Expansibility and contractibility versus replicability

Expansibility and contractibility are properties of the regions designated by mass nouns. For example, *sand* can designate an entire desert or a single grain of sand, and *water* can designate a whole sea or a single drop of water. It follows that any subpart of the region designated by a mass noun is still an instance of that category: a grain of sand is still SAND. It is clear, then, that the property of expansibility and contractibility is closely related to that of homogeneity and the absence of bounding.

The same is not true for typical count nouns. If we contract a BICYCLE to its smallest subpart, we might get a cog or a spring or a screw: this is no longer a *bicycle*. If we expand BICYCLE, we don't get more BICYCLE, because a bicycle has inherent boundaries. Instead, we get more bicycles. Thus, an increase to the region designated by *bicycle* results in what Langacker terms replicability. This is closely related to bounding, and is reflected in the linguistic system by the fact that count nouns can be counted and pluralised, and can co-occur with the indefinite article.

2.4 Abstract nouns

While the prototype for the noun category concerns physical objects, Langacker's schematic characterisation of nouns in terms of bounded or unbounded regions does not entail that nouns refer to physical objects. As we saw in Chapter 16, many domains do not relate to physical entities but to abstractions, such as LOVE, HOPE and HAPPINESS. Indeed, Langacker observes (1987: 207) that the fact that the count/mass distinction holds for abstract nouns suggests that these might also be characterised in terms of bounded/unbounded regions.

For example, *hope* can be pluralised and can take the singular indefinite article (e.g. *He hasn't got a hope*; *her hopes and dreams*), while *happiness* cannot (**a happiness*; **happinesses*). Nouns such as *hope* are referred to as **deverbal nominalisations**, which means that they are nouns derived from verbs. These are argued to have a PROCESS (action rather than matter) as their base, and encode an 'episode' bounded in time by a beginning and a finish. Langacker

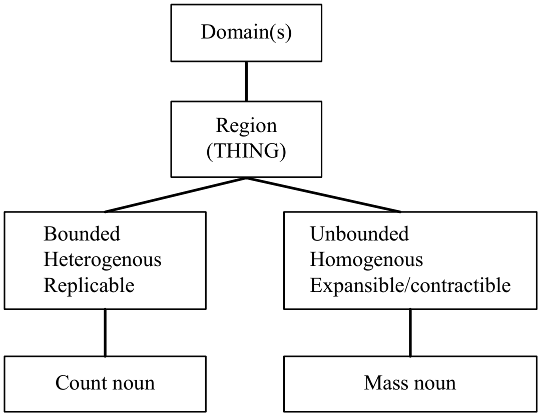

Figure 22.2 The semantic basis of the lexical class: noun

(1987: 208) compares the count noun *jump* with the mass noun *jumping*. The count noun profiles a single episode of the process that makes up its base, while the mass noun, because it is unbounded in time, gives rise to a generic reading (e.g. *jumping is tiring*). Figure 22.2 summarises the semantic properties which distinguish the regions designated by mass nouns and count nouns.

As I have observed at earlier points in the book (notably Chapters 5 and 21), entrenched patterns of use give rise to what Langacker terms **schemas** in Langacker's theory. The noun class schema is represented in (9). Langacker uses the term THING to represent the schematic semantic content of the noun schema at the semantic pole, and because this is a maximally general schema, the content of the phonological pole is unspecified.

(9) [[THING]/[. . .]]

3 Nominal versus relational predications

Recall my examples earlier, in (1) and (2) above, which provide evidence of noun–verb pairs such as *love* (V) and *love* (N) or *destroy* and *destruction*. The semantic similarity of pairs such as these forms part of the argument by formal linguists against the possibility of a semantic characterisation of word classes.

Langacker, argues, however, that difference between *destroy* and *destruction* does not lie in their specific or content meaning. Rather, Langacker contends that the difference lies in how each member of the pair construes and profiles that content meaning. Langacker summarises the difference between nominal and relational predications as follows:

> A nominal predication presupposes the interconnections among a set of conceived entities, and profiles the region thus established. On the other hand, a relational predication presupposes a set of entities, and profiles the interconnections among these entities. (Langacker 2002: 74–5)

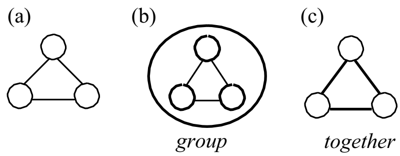

Figure 22.3 Nominal versus relational predication (adapted from Langacker 2002: 75)

Langacker illustrates this distinction by comparing the noun *group* with the adverb *together* – a relational predication. These expressions share the same semantic content, which is represented in Figure 22.3(a). The circles represent the entities and the lines the interconnections. The noun *group* profiles the entities and the whole that they comprise (the region occupied). This is indicated by the bold type in Figure 22.3(b) In contrast, the adverb *together* profiles the interconnections between the entities and is thus a relational predication (Figure 22.3(c)).

It follows from this characterisation of nominal versus relational predications that while nominal predications designate a region, relational profiles designate an **interconnection**, which typically involves two or more entities. According to Langacker, there is always an asymmetry between the interconnected entities, and this asymmetry relates to **prominence**, which in turn relates to **trajector–landmark** (**TR–LM**) organisation, an idea I introduced in Chapter 16.

Langacker describes relations as conceptually dependent because they profile interconnections which cannot be conceived independently of the entities they connect. Furthermore, relational predications bring with them the schematic representation of the entities that they interconnect, which display a TR–LM asymmetry. Langacker (1987: 219) states that there are four possible patterns in terms of TR–LM combinations, which are summarised in Table 22.1.

The four possibilities are illustrated in example (10).

(10) a. the package on the table
b. Monica writes fast.
c. Tommy went out before Jimmy came in.
d. Monica thinks Tommy is pretty.

In (10a), the relational predication, underlined, relates two THINGS, *package* and *table*, which correspond to the TR and LM, respectively. The adverb *fast* in (10b) profiles a relation between a PROCESS (*writes*) and a THING, where the

Table 22.1 Trajector–landmark combinations in relational predications

Trajector (TR)	Landmark (LM)	Examples
THING	THING	*on, (to) love*
PROCESS	THING	*fast*
PROCESS	PROCESS	*before*
THING	PROCESS	*want, think*

region on a scale of speed profiled by *fast* is construed as a THING and is implicit in the relational predication itself. I revisit the idea that adjectives and adverbs are characterised by implicit TRs below. In (10c), the relational predication profiles a TR–LM relationship between two PROCESSES (*Tommy went out*, versus *Jimmy came in*). In (10d) *thinks* profiles an interconnection between a THING, the TR (*Monica*), and a PROCESS, the LM (*Tommy is pretty*).

4 Relational predications: temporal versus atemporal relations

In Cognitive Grammar, Langacker divides relational predications into two subcategories: **temporal relations** and **atemporal relations**. These two types of relational predications relate to a distinction Langacker terms **summary scanning** versus **sequential scanning**. **Scanning** is viewed as a type of cognitive processing that occurs in two distinct modes. In the summary scanning mode, the stimulus is scanned cumulatively which gives rise to a static construal. In Langacker's terms, atemporal relations (encoded by adpositions, adjectives, adverbs, infinitives and participles) fall into this category.

Nevertheless, 'atemporal' does not mean that the linguistic expression is prohibited from making reference to the domain of TIME. On the contrary, many linguistic expressions that Langacker characterises as atemporal relations evoke the domain of TIME. Instead, the term 'atemporal' can be thought of as equivalent to static in time. Consider the examples in (11).

(11) a. Her husband is late.
b. Tommy is annoying her now.

In (11a) the adjective *late* evokes the domain of TIME, as does the adverb *now* in (11b). However, neither of these expressions evokes a PROCESS. Instead, they construe time in terms of a property (11a) or a point (11b), both of which are static.

In the sequential scanning mode, on the other hand, the stimulus is scanned sequentially. Crucially, no two subparts of the resulting construal are the same, which gives rise to the simulation with the status of a process. This scanning mode is evoked by temporal relations, which Langacker therefore calls PROCESSES. This is how Langacker characterises finite verb forms.

As we have seen, language users make choices over how they decide to portray scenes and ideas in linguistic terms. As such, summary versus sequential scanning is a matter of construal, although some situations lend themselves more readily to one type of construal than the other. Consider the examples in (12).

(12) a. Jimmy destroyed the feathered toy secretively.
b. His destruction of the toy was secretive.

Example (12a) construes the scene as a PROCESS, and thus employs sequential scanning. In this example, *destroyed* is conceived as a dynamic PROCESS that is carried out in a certain manner, expressed by the adverb *secretively*. In contrast, (12b) construes the scene as a STATE, and thus employs summary scanning. Here, *destruction* is conceived as a THING that has the property expressed by the predicative adjective *secretive*.

4.1 Temporal relations: verbs

Langacker characterises finite verb forms (PROCESSES) in the following terms:

> A processual predication involves a continuous series of states . . . each of which profiles a relation; it distributes these states through a continuous span . . . of conceived time; and it employs sequential scanning for accessing this complex structure. A process contrasts with the corresponding atemporal relation by having a 'temporal profile', defined as the span of conceived time through which the profiled relationship is scanned sequentially. (Langacker 2002: 81)

Langacker presents no direct psychological evidence that verbs are processed differently from other parts of speech; nevertheless, he does offer several motivations for this characterisation. First, it captures the fact that verbs typically (although not always) express dynamic events. This in turn explains the 'temporal' nature of verbs, and why verbs are directly marked for time by means of the tense system, an issue to which I return in Chapter 24. Furthermore, Langacker argues that the schematic characterisation of verbs is in keeping with the objectives of Cognitive Grammar, in that 'conceptual content is less important than how this content is construed and accessed' (Langacker 2002: 81). Langacker's objective is not to provide a specific semantic characterisation for prototypical nouns and verbs (although we might conclude that this is one outcome of his analysis). Rather, his aim is to provide a schematic characterisation for all members of the word classes, which relies crucially upon independently established cognitive operations and semantic and conceptual structure. Langacker also argues that his theory achieves **descriptive adequacy** by distinguishing different kinds of relational predications and by enabling generalisations to be made about the behaviour of certain grammatical categories. A model of language achieves descriptive adequacy if it accurately models the tacit knowledge that underlies speaker intuitions about what is possible in language.

4.1.1 Simple and complex temporal relations

Temporal relations (processes) can be divided into two subcategories: **simple temporal relations** and **complex temporal relations**. Consider the examples in (13).

(13) a. Jimmy loves fish-flavoured snacks. SIMPLEX
b. Jimmy is eating the fish-flavoured snacks. COMPLEX

Both examples involve temporal relations (PROCESSES) because they construe scenes that hold over a given span of time (in both cases, the span of time includes the time of speaking, hence the present tense). The difference between the two examples is that while (13a) designates a **stative process**, (13b) designates a **dynamic process**. The terms 'stative' and 'dynamic' refer to types of lexical aspect – as first discussed in Chapter 10. 'Stative' indicates that the situation remains constant throughout the timespan, while 'dynamic' means that the situation involves some change over time. In (13a), for example, *love* designates a PROCESS that involves a stable and constant relation between the TR *Jimmy* and the LM *fish-flavoured snacks*. In (13b), on the other hand, *eat* designates a PROCESS that involves inherent change in the relation between the TR *Jimmy* and the LM *the fish-flavoured snacks*. The PROCESS of eating involves initial, medial and final stages, and at each of these stages the relation between the TR and the LM is different. Processes that involve no internal change are therefore described as 'simple', while processes that involve internal change are described as complex. As this discussion indicates, the TR–LM organisation that is evident in the structure of clauses emerges from the schematic TR–LM organisation that is part of the meaning of a verb, given that a verb expresses a relation (see Table 22.1). The class schema for verbs is represented in (14).

(14) [[PROCESS]/[. . .]]

4.2 Atemporal relations

Unlike the nominal and temporal categories, each of which characterises a single word class, the atemporal relation subsumes a range of word classes. These classes have two properties in common. First, they profile a RELATION rather than a THING and are thus distinct from nouns. Second, as we saw earlier, the relation they profile is atemporal in the sense that it is cumulatively scanned and gives rise to a construal that is static in time. In this respect, atemporal relations are distinct from finite verb forms. However, in the same way that the sequentially scanned temporal relation can be simple or complex, the cumulatively scanned atemporal relation can also be simple or complex.

4.2.1 Simple and complex atemporal relations

A **simple atemporal relation** designates a STATE. Some examples are given in (15).

(15) a. That ragdoll cat is <u>beautiful</u>.
b. That <u>beautiful ragdoll cat</u>
c. He writes <u>beautifully</u>.
d. The cat dishes <u>in</u> the sink

The **predicative adjective** in (15a) describes a STATE, as does the **attributive adjective** in (15b). The difference between these two examples is that (15a) is a clause, where the adjective collaborates with the copular verb in forming the predicate of the clause. In contrast, (15b) is a noun phrase that profiles a THING (*ragdoll cat*), and the adjective modifies the head noun. I consider **heads** and **modifiers** in more detail in the next chapter; but in essence, we can think of the attributive adjective as having a noun as its TR. In contrast, while the adverb in (15c) also describes a STATE, it modifies a verb, or takes a PROCESS as its TR.

A **complex atemporal relation** encodes a complex static scene. Compare the examples in (15) with those in (16).

(16) a. the sand all <u>over</u> the floor
b. the last contestant <u>to reach the finishing line</u>

Observe that the preposition *over* in (16a) involves a **multiplex TR**. It follows that the relation encoded by this preposition is complex, because it profiles all the points in space at which the TR *the sand* and the LM *the floor* are related. In this example, the atemporal relation is still cumulatively scanned but gives rise to a more complex cognitive representation which consists of a 'bundle' of properties.

A second example of a complex atemporal relation is the *to*-infinitive in the noun phrase in (16b). The base of this infinitival subordinate clause is a PROCESS, but due to summary scanning this expression is relational and atemporal and can therefore take on a modifying role, much like an adjective; similar to an adjective, this infinitival subordinate clause has a noun (*contestant*) as its TR. I return to **non-finite verb forms** below.

4.2.2 Adjectives and adverbs

At this point, I examine how adjectives and adverbs are considered to be relations, given that they only seem to interact with a single participant. After all, in examples (15a) to (15c) the adjective and the adverb only describe the state of a single entity or act: the ragdoll cat or the act of writing.

Given Langacker's claim that relational predications always have a prominent participant (the TR), the ragdoll cat and the act of writing constitute the TR in these examples. According to Langacker, in these expressions, the LM is implicit in the relational predications themselves. For example, we might paraphrase (15a) in terms of the ragdoll cat being 'in a state of beauty'. In this sense, the ragdoll cat is the TR and the LM is 'the state of beauty', which is part of the relational predication itself. While this is the typical case for adjectives, compare example (15a) with example (17).

(17) That nebelung cat is fond of his food.

In this example, the predicative adjective *fond* participates in profiling a relation between two entities: *that nebelung cat* and *his food*. Adjectives, such as these are sometimes described as **transitive adjectives** because, much like **transitive verbs**, they can take a complement. Other examples include *proud* and *envious*. It is also worth emphasising that an atemporal relation that profiles a STATE may well have a PROCESS as its base. For example, in the sentence: *That bowl is broken*, the adjective *broken* profiles the end state in a PROCESS. This explains why past participle forms can often function as adjectives.

4.2.3 Adpositions

Example (15d) provides us with a more prototypical case of a relational predication. In this example, the preposition *in* profiles a spatial relation between the TR (*the cat dishes*) and the LM (*the sink*). Furthermore, this is a simple atemporal relation because it describes a STATE.

4.2.4 Participles

As we saw with example (16b), Langacker analyses non-finite verb forms as atemporal relations; participles are verb forms such as *written* and *eating* that cannot occur as the main verb in a sentence, but require an auxiliary verb. This property of participles is illustrated in examples (18)–(20).

(18) a. Jimmy has eaten too many bowls of food.
b. *Jimmy eaten too many bowls of food.

(19) a. That bowl of food was eaten by Jimmy.
b. *That bowl of food eaten by Jimmy.

(20) a. Jimmy is eating a bowl of food.
b. *Jimmy eating a bowl of food.

In example (18a), *has* is the perfect aspect auxiliary and is followed by the participle *eaten*. In example (19a), *was* is the passive voice auxiliary, and is also followed by the participle *eaten*. In example (20a), *is* is the progressive aspect auxiliary and is followed by the participle *eating*. As the (b) examples show, the participles cannot occur as the main verb in a sentence without the relevant auxiliary. Participles are described as non-finite verb forms because they are not marked for tense. In each of the (a) examples in (18)–(20), it is the auxiliary verb that is marked for tense. In (18a), *has* is in its present tense form. Observe that if we change the auxiliary to the past tense form, the participle stays the same, which explains why it is described as non-finite:

(21) Jimmy had eaten many bowls of food.

Equally, in (19a), the passive auxiliary is in its past tense form, and in (20a) the progressive auxiliary is in its present tense form. The fact that participles are non-finite means that they can only occur without an auxiliary verb in subordinate clauses, where they often perform a modifying function. Compare example (20b) with example (22).

(22) The huge bowl of food eaten by Jimmy made him ill.

In this example, the passive participle *eaten* heads an adverbial 'subordinate clause' which modifies *bowl of food*. The fact that it is a modifier explains why it can be removed from the sentence without affecting its well-formedness (*The huge bowl of food made him ill*). The main verb in this sentence is *made*, which is a finite (past tense) verb form. The subordinate clause describes a property of *the huge bowl of food* but profiles a STATE rather than a PROCESS.

However, the passive participle *eaten* in (22) has a PROCESS as its base and profiles the end STATE in that PROCESS. In Langacker's model, participles are derived from PROCESSES by the affixation of the relevant morphology (*-ing*, *-en* and so on), and this has the effect of 'suspending the sequential scanning of the verb stem' (Langacker 2002: 82). This converts a PROCESS into an ATEMPORAL RELATION.

4.2.5 Infinitives

Infinitives occur in two forms. The *to*-infinitive is illustrated in example (23a). This is restricted to occurring in embedded clauses in English. The **bare infinitive** – the same as the *to*-infinitive without the *to* – is illustrated in (23b) and (23c). As these examples show, the bare infinitive occurs after modal verbs (23b) and in imperative clauses (23c).

(23) a. She wants Jimmy to eat less.
b. He can eat an inordinate amount.
c. Eat just one more bowl, Jimmy!

The infinitive is termed as such as it is another non-finite verb form; much like participles, it is not marked for tense. Should past tense forms be substituted for the infinitives in (23), the results are ungrammatical.

(24) a. *She wants Jimmy to ate less.
b. *He can ate an inordinate amount.
c. *Ate just one more bowl, Jimmy!

Langacker extends the same analysis for participles to infinitives, viewing both types of non-finite verb form as atemporal relations. While the English bare infinitive is restricted to occurring with modal auxiliaries and in imperative clauses, the *to*-infinitive patterns in a similar way to participles, occurring in subordinate clauses.

While the notion of atemporal relations enables a characterisation of adjectives, adverbs, adpositions and non-finite verb forms, we should be cautious about viewing these word classes as discrete and mutually exclusive categories. As atemporal relations, these word classes are characterised as members of one broad category whose properties may overlap. For example, we have seen that adjectives, adverbs and prepositions can all profile STATES, and we have also seen that expressions headed by different word classes can modify nouns. The examples in (25) illustrate the latter point.

(25) a. those lovely blue eyes
b. those blue eyes on that ragdoll
c. those cat toys bought in haste

In (25a), the noun *eyes* is modified by the adjective (phrase) *lovely*. In (25b), the same noun is modified by the prepositional phrase *on that ragdoll*. In (25c), *cat toys* is modified by an adverbial subordinate clause headed by the passive participle *bought*. The schematic representation of the atemporal relation is given in (26). Following Langacker, I represent the atemporal relation as STATE.

(26) [[STATE]/[. . .]]

5 Lexical classes: an overview

In this section, I briefly summarise the Cognitive Grammar model of word classes, based on the preceding sections. What we have seen is that a noun designates a THING and a verb designates a temporal relation, a PROCESS. Nouns and verbs therefore comprise two of Langacker's major word classes. The third major class contains atemporal relations, STATES. An adjective designates an atemporal relation and has a THING as its TR, while an adverb designates an atemporal relation and has a RELATION as its TR. The relation can either be a PROCESS (temporal relation) or a STATE (atemporal relation), as adverbs can also modify adjectives (e.g. *incredibly funny*). The two subclasses adjective and adverb are somewhat unique in the sense that their LM is implicit in the relation itself. An adposition designates an atemporal relation that has its LM elaborated by the nominal predication that either precedes it (in the case of postpositions) or follows it (in the case of prepositions). Non-finite verb forms designate atemporal relations that have either a THING or a PROCESS as their LM, since these expressions can modify either nouns, verbs or clauses.

In the foregoing, I have adduced three class schemas, which are represented in (9), (14) and (26). These are represented by the diagrams in Figure 22.4, which summarise the schematic semantic content of each of the three major categories. In Figure 22.4(a), the circle represents the THING that a nominal predication

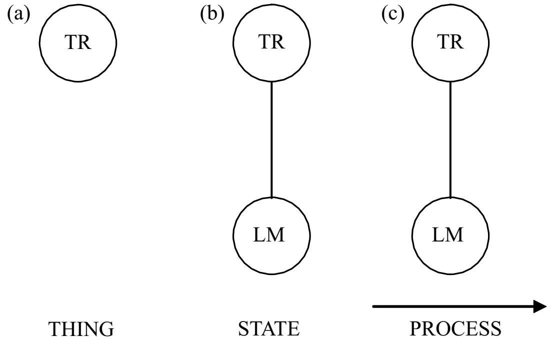

Figure 22.4 Semantic representation of the three major word classes (adapted from Langacker 1987: 220)

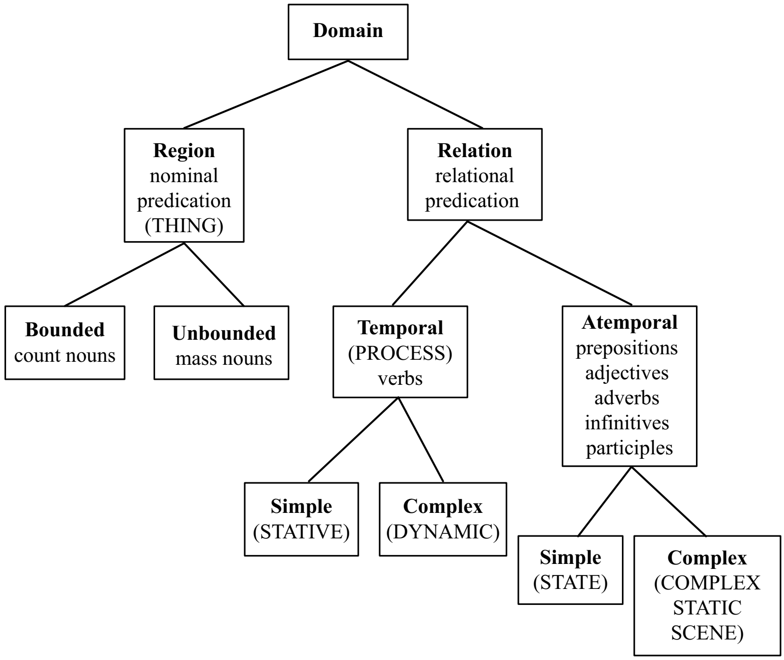

Figure 22.5 The Cognitive Grammar model of lexical classes

designates. In Figure 22.4(b), the atemporal relation is represented as a line connecting TR and LM, which are part of the schematic representation of an atemporal relation. For example, if the atemporal relation is a preposition, the TR and the LM are the two nouns related by the preposition. In Figure 22.4(c), the temporal relation, or PROCESS, is also represented as a relation connecting TR and LM. The crucial difference between the atemporal relation (STATE) and the temporal relation (PROCESS) is that the latter is specified as having a temporal profile. Hence, PROCESS is sequentially scanned through time; this is represented by the arrow in the diagram. In Figure 22.5, I provide a summary of the way in which lexical classes are modelled in Cognitive Grammar.

6 Nominal grounding predications

While this chapter has largely focused on the major lexical classes, the question that naturally arises concerns how Langacker accounts for some of the other much less 'contentful' closed word classes. Given that Cognitive Grammar views grammatical elements as part of the same continuum as the open-class elements, it follows that Langacker provides an integrated account. Indeed, I have already shown that adpositions receive the same characterisation as open-class words such as adjectives and adverbs in Langacker's Cognitive Grammar.

In this section, I briefly explore Langacker's account of **determiners** and **quantifiers**. In essence, Langacker argues that each **speech event** involves a **ground** – an idea I first introduced in Chapter 16 – which consists of place and time of speaking, the participants in the speech event and the shared knowledge between them. Hence, **grounding** is the process whereby linguistic expressions are linked to the ground. In Cognitive Grammar, determiners and quantifiers are examples of grammatical elements that serves this function. Specifically, they serve a grounding function for nouns, and hence are specifically **nominal grounding predications**. (I will consider the way in which verbs are grounded in the next chapter.)

According to Langacker, determiners, such as the definite and indefinite articles (*a*/*the*), ground nominal expressions by profiling an instance of a category (*a cat*) and by indicating information such as whether participants are already familiar with the referent (*the cat*), or whether the referent is present in the immediate physical context (*that cat*). This explains why many of the determiner subcategories have deictic properties, particularly the **demonstrative determiners** (expressions such as *this* and *that* which both inflect for number), and encode spatial deixis, and **possessive determiners** (expressions such as *my* and *your*), which encode person deixis. Consider some examples:

Demonstrative determiners

(27) a. Give him back <u>that</u> toy!
b. <u>These</u> toys are his.

Possessive determiners

(28) a. <u>Our</u> cat is sick.
b. <u>Your</u> cat has fleas.
c. <u>Their</u> cat is a brute.

As with determiners, quantifiers – expressions such as *any*, *no*, *some*, *enough*, *every* and *each* – quantify the noun in terms of number or amount. Quantifiers also perform a grounding function by profiling the number or amount of the entity out of a larger mass. Consider some examples.

(29) a. <u>all</u> my colleagues
b. <u>both</u> her cats

In Cognitive Grammar, grounding predications such as those underlined are not viewed as a distinct word class. Instead, grounding predications are seen as schematic categories for the class that they interact with. For example, Langacker (2002: 322) argues that 'the grounding predication of a nominal profiles a thing and is thus itself a schematic nominal'. Hence, the determiner or quantifier is represented not as a distinct category, but as a highly schematic noun phrase, inextricably linked to the category of nominal predications. This characterisation is consistent with the fact that the same determiner and quantifier forms can often function as pronouns, a common pattern cross-linguistically. This is illustrated by the examples in (30) and (31).

(30) a. Monica loves these cats.
b. Monica loves these.

(31) a. Jimmy wants some food.
b. Jimmy wants some.

Langacker contends that the base of a grounding predication is a **grounding relation**. This is supported by the fact that these expressions can be paraphrased in terms of atemporal relations which also reveal the schematic meaning associated with these closed-class elements. This idea is illustrated by the examples in (32). Notice that these paraphrases reveal that the base of a grounding predication such as *my* is a relation between the nominal (X) and the speaker (*me*).

(32) a.	the X	'X is known to us'
b.	this X	'X near me'
c.	that X	'X far from me'
d.	my X	'X belonging to me'

Langacker (2002) argues that the difference between a determiner and the atemporal relation that paraphrases it is a matter of construal. While the atemporal relation makes explicit the ground, rendering the ground a matter of **objective construal**, the profile of the determiner is restricted to the grounded entity. In the latter case, then, the ground is implicit and a matter of **subjective construal** – I introduced these two types of construal in Chapter 16. Furthermore, although the base of a grounding predication is a relation, the grounding predication itself profiles a schematic grounded entity. When the grounding predication combines with a noun, the noun elaborates the grounded entity and contributes its content meaning to the NP. The schematic representation of a nominal grounding predication is given in (33).

(33) [[[GROUND]/[. . .]] / [[THING]/[. . .]]]

This schematic representation differs from those provided earlier in the chapter, in terms of its complexity. This follows as it represents a schematic phrase rather than a schematic word. Moreover, it is to the relationship between words and more complex expressions that we turn in the next chapter.

SUMMARY

In this chapter I explored the Cognitive Grammar approach to word or **lexical classes**. We began with a discussion of Langacker's approach to **open-class** and **closed-class** expressions forming a **lexicon–grammar continuum** of **symbolic units** within the **inventory** that represents speaker knowledge of language. We saw that Langacker advocates a semantic characterisation of both open-class and closed-class expressions, where the former are characterised by content, **specific** or analogue meaning and the latter by **schematic** or parametric meaning. In this approach, linguistic expressions are divided into two major categories: **nominal predications** and **relational predications**. The former accounts for nouns, which are schematically characterised as designating **things**. While nominal predications **profile** a **region** in some **domain** and can be described as **conceptually autonomous**, **relational predications** profile relations between those entities upon which they are **conceptually dependent**. Relational predications therefore have a schematic **trajector (TR)** and **landmark (LM)** as part of their representation. Relational predications divide into two subcategories: **temporal relations** and **atemporal relations**. The former accounts for finite verb forms which are schematically characterised as PROCESSES. Atemporal relations can be schematically characterised in terms of STATES and account for a number of word classes including adjectives, adverbs, adpositions and non-finite verb forms. Finally, we saw how Langacker's approach can be extended to account for determiners and quantifiers, which are characterised in terms of their **grounding** function but which do not constitute an independent category. Instead, these are viewed as schematic nominals or noun phrases.

FURTHER READING

Overviews of cognitive grammar

The following are all book-length expositions of Cognitive Grammar by Langacker.

- **Langacker (1987)**. Not for the faint-hearted, this is the first, and most comprehensive, overview of the architecture of Langacker's theory of Cognitive Grammar.
- **Langacker (1991)**. This volume applies the theoretical model developed in the first (1987) volume to a range of linguistic phenomena from English and other languages.
- **Langacker (2002)**. First published in 1991, this volume is a collection of some of Langacker's most important papers and describes the architecture of Cognitive Grammar. Chapter 1 provides a particularly useful introduction to some of the key ideas that underpin the theory.
- **Langacker (1999b)**. This volume is a collection of papers that chart developments in Cognitive Grammar subsequent to the 1991 volume.
- **Langacker (2008)**. Dubbed a 'basic introduction', this book cannot, in truth, be considered to be 'basic'. Nevertheless, it is an excellent single-volume primer to all the key aspects of the theory and its application to a variety of linguistic phenomena.

- **Langacker (2010)**. A collection of papers by Langacker on more recent developments in Cognitive Grammar.
- **Langacker (2012)**. A distilled and abridged version of the 2008 book, which focuses on the core claims of Cognitive Grammar.

Introductory texts

These books each include additional coverage of the content presented in this chapter.

- **Lee (2002)**. Chapter 8 provides an accessible introduction to the count noun/mass noun distinction.
- **Radden and Dirven (2006)**. Chapter 2 introduces nominal and relational profiles. Chapter 4 elaborates the semantic basis of nominal predications and discusses the count noun/mass noun distinction. Chapter 5 provides an in-depth discussion of the role of determiners in grounding, and Chapter 6 focuses on quantification. Chapter 7 investigates the role of atemporal relations as nominal modifiers. Chapter 8 presents a detailed discussion of the aspectual distinctions between situation types which subsumes my discussion of temporal relations.
- **Taylor (2002)**. A number of chapters of this excellent textbook provide more in-depth discussion of the material covered in this chapter. Chapter 9 presents a range of approaches to word classes and Chapter 11 maps out Langacker's theory of nominal and relational predications. Chapter 17 presents a taxonomy of symbolic units and Chapters 18–19 explore nominal predications in more detail.

Word classes in cognitive grammar

The following are all chapters and/or papers by Langacker that deal with the contents of this chapter in more detail.

- **Langacker (1987)**. Chapter 5 of this book focuses on nominal predications and Chapter 6 on atemporal relations. Chapter 7 explores complex atemporal relations and processes.
- **Langacker (1991)**. Part I of this book (Chapters 1–4) concentrates on nominal predications in greater descriptive detail than Volume I (Langacker 1987). Quantification is discussed in Chapters 2 and 3.
- **Langacker (2002)**. Chapter 3 of this book presents an overview of Langacker's theory of word classes and defines nominal and relational predications.
- **Langacker (2008)**. Chapters 4 and 5 provide detailed coverage of issues presented in this chapter. Chapter 4 discusses lexical classes, while Chapter 5 focuses on major subclasses. Chapter 10 focuses on nominal grounding.

DISCUSSION QUESTIONS

1. What, in your view, makes Langacker's Cognitive Grammar 'cognitive'?
2. What assumptions does Langacker make in arguing that lexical classes themselves are symbolic assemblies – conventional, albeit abstract schemas, consisting of form and meaning?
3. What is the distinction between a 'nominal predication' and a 'relational predication'? Provide details and examples.

23

Cognitive Grammar II: constructions

In this chapter, I present the Cognitive Grammar account of grammatical constructions. In so doing, I consider how the relationships between the component parts of complex words, phrases and clauses are accounted for. I begin by focusing on the nature of grammatical constructions at the phrase level, and at the word level, exploring the nature of the units that comprise grammatical constructions and the nature of the relationships between them. In particular, I will consider the Cognitive Grammar approach to the traditional distinction between **heads** and **dependents**. In Cognitive Grammar, the head of a construction is termed the **profile determinant**, and the relations between the components of a construction are described in terms of conceptual **autonomy** and **dependence** – ideas I introduced in the previous chapter. I also consider the nature of **agreement**, and examine how autonomy and dependence give rise to clauses, and how **valence**, **transitivity**, **grammatical functions** and **case** are accounted for in Cognitive Grammar. As we shall see, the way symbolic units are combined, in order to create larger units, has a semantic basis in Cognitive Grammar. This follows from the symbolic thesis, which posits that symbolic units are conventional form–meaning pairings.

1 Constituency in symbolic units

As we saw in Chapter 21, symbolic units can be **simplex**, as in the case of morphemes, or **complex** to varying degrees, as in the case of morphologically complex words, phrases or sentences. In Cognitive Grammar, any unit having complex symbolic structure – as opposed to complex semantic or phonological structure – is dubbed a **construction**. As such, Langacker does not refer to simplex symbolic units as constructions. Figure 23.1 represents a taxonomy of symbolic units according to Langacker.

That said, and as is evident from Figure 23.1, there is some overlap between words and constructions, given that complex words count as constructions in Cognitive Grammar. This entails that there will be some overlap, in this

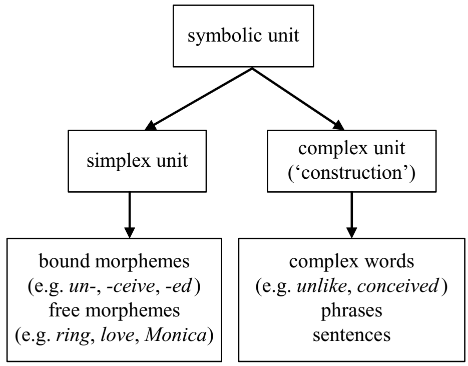

Figure 23.1 Symbolic units in Cognitive Grammar

chapter, between the Cognitive Grammar account of (simplex) words and (complex) constructions.

In Cognitive Grammar, a complex composite symbolic structure is a construction, which could be a complex word, a phrase or a clause. It follows that **constituency** – the combination of smaller subparts into larger, more complex units – is the result of the combination of symbolic structures. As Langacker (2002: 293) observes, 'in this regard, the only difference between morphology and syntax resides in whether the composite phonological structure . . . is smaller or larger than a word'. Most theories of grammar explicitly attempt to account for constituency; this follows as, for many theorists, constituency represents a fundamental structural property of language. In Cognitive Grammar, constituency receives a semantic account in terms of TR–LM organisation.

For example, an expression such as *grey cat* brings together two semantic poles: *grey* designates, or more precisely, profiles a subpart of the COLOUR SPECTRUM, and brings with it as part of its structure a schematic TR. This schematic TR is specified only as PHYSICAL OBJECT, which is a schematic instance of THING. Thus, part of the meaning of *grey*, which is an instance of the lexical class adjective, is that it relates to some entity, a TR, which is grey. While the TR is not specified, we know that *grey* is relational in this way (it has to be a property of something), which is part of what it means for *grey* to be an adjective. *Cat* designates a specific type of PHYSICAL OBJECT, along with its other far richer encyclopaedic specifications, and hence can serve as a TR as it is a THING. The association of these two semantic poles within the expression maps the semantically specific *cat* onto the schematic semantic TR of *grey*. At the phonological pole, the association of the two simplex symbolic units entails that they are pronounced sequentially, one after the other.

In this way, the expression results from the combination of two simplex symbolic units, by virtue of the semantic pole of cat **elaborating**, informally, 'filling in' or 'matching', the schematic TR that constitutes part of the semantic pole of grey. The result is that a construction is formed – *grey cat* – whose constituent symbolic units are *grey* and *cat*.

2 Phrases as constructions

In this section, I consider how phrase-level grammatical constructions are formed. Constructions of this sort are **composite structures** consisting of **component structures** between which **valence relations** hold. The term **valence** (or 'valency') usually refers to the number of participants a relational symbolic unit, such as a verb, requires in order to complete its meaning. For example, a verb such as *die* only involves a single participant (for example, *He died*) whereas a verb such as *love* involves two (for example, *Monica loves Tommy*). These ideas are illustrated by Figure 23.2 which shows the structure of the prepositional phrase (PP) *under the bed*. This diagram shows that the composite structure (PP) *under the bed* is comprised of the component structures *under*, *the* and *bed*, which are related by valence.

In Cognitive Grammar, there are four main factors that determine valence:

i) correspondence;
ii) profile determinacy;
iii) conceptual autonomy versus conceptual dependence; and
iv) constituency.

In this section, I address each of these in order to show how phrase-level constructions are comprised. Before doing so, I briefly introduce the traditional terms 'head' and 'dependent' – important theoretical notions used to account for phrase structure – before looking at how Langacker accounts for these phenomena in Cognitive Grammar.

2.1 Heads and dependents

The 'head' of a phrase is a word-level constituent (a single word) that determines the categorical status of the phrase (for example, a noun heads a noun phrase). In addition, the head determines the core meaning of the phrase, and selects its dependents (the elements it co-occurs with inside the phrase). Consider the following example:

(1) a girl in the vegetable garden petting a cat

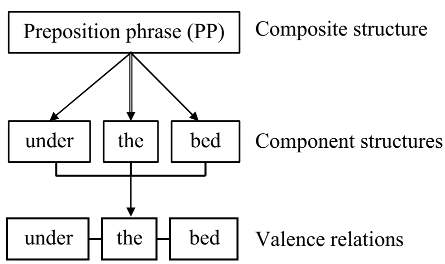

Figure 23.2 Composite and component structures

This is a noun phrase that contains three nouns: *girl*, the compound noun *vegetable garden* and *cat*. However, only one of these heads the phrase. The head of the phrase can be uncovered by our intuitions about what this phrase describes. It describes a kind of girl, not a kind of cat or a kind of vegetable garden. These nouns are parts of the dependents of the head. In addition, the head of a noun phrase is revealed by subject–verb agreement:

(2) The girl petting cats is over there.

Note that it is the singular noun *girl* rather than the plural noun *cats* that agrees with the verb, which is in the singular third person form *is* rather than the plural *are*. It follows that we can reduce the noun phrase to its head (plus determiner in the case of a single count noun) and preserve its basic import: *a girl*.

In traditional terms, dependents divide into two main categories: **complements** and **modifiers**. Complements are phrase-level units that 'complete' the head both in semantic and structural terms. For example, a preposition is often incomplete without the noun phrase that follows it, in which case the noun phrase is the complement of the preposition. Modifiers, on the other hand, are 'optional' phrase-level units that provide additional information of a more incidental kind. In example (1), *in the vegetable garden* and *petting a cat* modify the noun *girl*. For any theory of grammar, then, it is necessary to model these phrase-internal relationships.

2.2 Correspondence

Correspondence captures the idea that the component structures within a composite structure or construction share some common aspects of their structure. This 'sharing', or correspondence, arises from the ways in which the TR–LM organisation of the component structures interacts. For example, consider the prepositional phrase *under the bed* from Figure 23.2. While the NP *the bed* is a nominal predication, the preposition *under* is a relational predication. This entails that *under* only becomes fully meaningful when it relates two entities which are represented as part of its meaning in terms of a schematic TR and LM. There is a correspondence between the LM of *under* and the profile of *the bed*. The LM of *under* is a schematic representation of some THING in SPACE. The profile of *the bed* 'fills in' or **elaborates** this schematic LM and the prepositional phrase as a whole inherits its specificity or content meaning from the NP. In the same way, a noun elaborates the schematic TR of an attributive adjective, as we saw earlier in our discussion of the NP *grey cat*.

2.3 Profile determinacy

Profile determinacy relates to which of the component structures determines the profile of the composite structure as a whole. Consider once more the prepositional phrase *under the bed*. This construction contains *under*, which profiles a RELATION, and *the bed*, which profiles a THING. That said, the phrase as a whole *under the bed* profiles a RELATION rather than a THING in the sense that it describes a property of some entity in terms of its location in space.

The composite structure has this meaning because the preposition is the profile determinant of the construction. Profile determinacy relates to the traditional grammatical term 'head', which determines the core meaning as well as the grammatical category of the phrase that it heads. In Cognitive Grammar terms, the profile determinant is the element that determines the profile of the entire phrase that it participates in. The term 'profile' of course relates to meaning, but since word classes receive a schematic semantic characterisation within Cognitive Grammar (as we saw in the previous chapter), the term 'profile determinant' also subsumes word class.

Now consider what happens should our PP *under the bed* occur as a component structure of a yet more complex construction such as *that toy under the bed*, in (3). When the PP *under the bed* modifies a noun (e.g. *toy*), the profile determinant of the whole construction is the noun *toy*. This means that the construction as a whole is an NP, a construction that profiles a THING. At this point, it is useful to introduce labelled brackets which show the subparts of the construction.

(3) $[_{\text{NP – THING}}$ that toy $[_{\text{PP – RELATION}}$ under $[_{\text{NP – THING}}$ the bed]]]

As this example shows, phrasal constructions have a 'layered' structure, where each 'layer' has a different profile determinant.

2.4 Conceptual autonomy versus conceptual dependence

In Cognitive Grammar, conceptual autonomy versus conceptual dependence explains the asymmetry that is traditionally described in terms of heads and dependents. I discussed these terms in Chapter 21. In the previous chapter, we saw that nominal predications are defined in terms of conceptual autonomy, whereas relational predications are defined in terms of conceptual dependence. This idea is extended to account for the relationships between the subparts of a construction. Langacker defines dependence in the following terms: 'One structure, D, is dependent on the other, A, to the extent that A constitutes an elaboration of a salient substructure within D' (Langacker 1987: 300). This means that the component structure that provides the elaboration is conceptually autonomous (e.g. *cat* in *grey cat*, or *the bed* in *under the bed*), while the structure that is elaborated is dependent, because it requires elaboration in order to become fully meaningful (e.g. *grey* in *grey cat*, or *under* in *under the bed*). Langacker dubs the schematic aspect of a component structure that is elaborated in a valence relation the **elaboration site**. As we have seen, there are two main types of dependent: complements and modifiers.

2.4.1 Complements

In Cognitive Grammar, a complement is a 'component structure that elaborates the head' (Langacker 2002: 297). Thus, when the dependent component is the profile determinant, and the profile determinant is elaborated and thus dependent on the structure that elaborates it, we have what is traditionally referred to as a **head–complement structure**.

For example, in a prepositional phrase such as *under the bed,* the preposition *under* – the profile determinant – is dependent, and its complement is the autonomous NP *the bed* which elaborates its LM. In this conception of the head–complement relation, the complement is conceptually autonomous and the head or profile determinant is conceptually dependent because it relies upon the complement to elaborate its LM. Note that this is consistent with the intuition behind the traditional term 'complement', which involves a constituent that 'fills out' or 'completes' the meaning of a head within a phrase.

2.4.2 Modifiers

In Cognitive Grammar, a modifier is a 'component structure that is elaborated by the head' (Langacker 2002: 297). Hence, the modifier is a relational predication that requires the head to elaborate some aspect of its schematic structure. This type of relationship gives rise to what is traditionally described as a **head–modifier structure**.

For example, in the NP *that toy under the bed*, the profile determinant *toy* is autonomous and *under the bed* is dependent (having a schematic TR that requires elaboration). The head *toy* elaborates the schematic TR of *under the bed*. This means that *under the bed* is a modifier rather than a complement. In this, the autonomous component is the profile determinant because the head does not require the modifier to complete its meaning. This follows, either because the profile determinant is conceptually autonomous (the prototypical nominal predication, as in my example: *That toy under the bed*), or because it is a relational predication (e.g. a verb) that already has its meaning completed by a complement. Table 23.1 summarises the Cognitive Grammar model of heads and dependents in terms of conceptual autonomy and conceptual dependence.

2.4.3 Comparison with dependency in formal linguistics

As an aside, I briefly, here, examine how Langacker's view of grammatical dependency differs from the view adopted by formal linguists. In formal

Table 23.1 Head-dependent relations in Cognitive Grammar

Head-dependent relations	
Complement	A conceptually autonomous component structure that **elaborates** the profile determinant, which is conceptually dependent. This gives rise to a head–complement structure.
Modifier	A conceptually dependent component structure that is **elaborated by** the profile dependent, which is conceptually autonomous. This gives rise to a head–modifier structure.

approaches, complements and modifiers depend upon the head rather than the other way around. The term 'dependent' has its roots in a selection-based perspective adopted by formal approaches.

For example, the presence of a preposition entails the presence of an NP, so the preposition is said to **select** or **subcategorise** for the NP. Equally, the presence of a transitive verb entails the presence of an object which is a type of complement; hence, the verb is said to select or subcategorise for that phrase. This information is stored in the lexicon in **selection frames**. An example of what the syntactic element of the selection frame for *in* might look like is given in (4).

(4) *in* P [_ NP]

This lexical entry states that *in* is a member of the category preposition and occurs in a syntactic context where it is followed by a noun phrase (the underscore represents the position of the preposition itself within the resulting structure: it precedes the NP).

In the selection model of head-dependent relations, both complements and modifiers are dependent upon the head for their presence in the structure: complements are selected and modifiers are added optionally to provide additional information about the head. In Cognitive Grammar, the head is dependent upon the complement to elaborate its schematic LM, but the modifier is dependent upon the head to elaborate some schematic aspect of its structure.

2.5 Constituency

The final factor that contributes to the Cognitive Grammar account of valence is constituency. This relates to the construction of progressively more complex composite structures. For example, consider again the NP *the toy under the bed*. In traditional terms, the head of this NP is *toy* and the prepositional phrase *under the bed* is a modifier. Within the PP *under the bed*, the preposition *under* is the head and *the bed* is its complement. In Cognitive Grammar terms, the NP's profile determinant *toy* is autonomous while its modifier *under the bed* is dependent because it relies on *toy* to elaborate its schematic TR. In contrast, the profile determinant of the PP *under the bed* is dependent because it requires the autonomous unit *the bed* to elaborate its schematic LM. These constituents or component structures together give rise to the composite grammatical construction *the toy under the bed*, which is a nominal predication. In Cognitive Grammar, constituency is a feature of all constructions from complex words to phrases to clauses.

2.6 The prototypical grammatical construction

In Cognitive Grammar, the prototypical grammatical construction involves two component structures; hence, regardless of the 'order' in which constructions are composed, their internal constituency tends to reflect 'layers' that can be described in terms of binary relations.

For example, in the NP *that toy under the bed*, the PP 'layer' *under the bed* involves a relation between P *under* and NP *the bed*, while the larger NP 'layer' *that toy under the bed* involves a relation between N *toy* and PP *under the bed*. In the prototypical grammatical construction, one of the component structures is a RELATION and the other a THING. The RELATION is dependent and is the profile determinant. The THING is autonomous and serves to elaborate the schematic aspect of the dependent unit's structure. This prototype represents the head–complement structure, which corresponds to the PP structure and, as we will see below, it also corresponds to the structure built around a verb and its arguments which gives rise to the clause.

That said, the head–modifier structure departs from the prototype despite the fact that it is a frequently attested structure. It does so as it involves a RELATION (the modifier) that is not the profile determinant. Langacker (1987: 326) proposes that the head–modifier relation holds the status of a 'secondary prototype'.

In contrast, the grammatical relation **apposition** represents a more extreme departure from the prototype. Apposition involves two grammatically parallel words or phrases, placed side by side, which mean the same thing. An example might be the child's word *puppy dog*, which refers to a juvenile dog. This example departs from the prototype as it relates to two conceptually autonomous THINGS, and does not contain a RELATION. Moreover, it is unclear, in this example, which THING constitutes the profile determinant: the referent is both a puppy and a dog.

3 Words as constructions

In this section, I turn to the Cognitive Grammar account of word structure, in order to show how the notions of autonomy, dependence and elaboration are applied to account for the composition, or construction, of complex words.

To do so, I focus on bound grammatical morphemes. These are generally divided into two subcategories: i) *derivational morphemes*, which are typically category changing (for example, *employment*, which derives a noun from a verb); and ii) *inflectional morphemes*, which mark a grammatical subclass of the category (for example, *cat-s*, which marks the plural subclass of the noun). In keeping with Generalisation Commitment (recall my discussion in Chapter 2), Langacker (2002: 291) assumes there to be no sharp dichotomy between inflectional and derivational grammatical morphemes.

3.1 Phonological autonomy and dependence

In Cognitive Grammar, grammatical morphemes are maximally specific at the phonological pole: they are specified for phonetic content. This follows, because a schema such as PLURAL NOUN, or (THING), for instance, has a relatively stable phonological realisation (regular plural nouns in English end in some allophone of *-s*). In contrast, the schema for NOUN (or THING) does not have a predictable phonological form. In Cognitive Grammar, **affixes** and

non-segmental morphemes (for example, tones) are described as **phonologically dependent**. In Cognitive Grammar, the **root** is the smallest phonologically autonomous unit within a composite structure, and a **stem** is defined as 'an autonomous phonological structure at any level within a word' (Langacker 1987: 345). For example, in the word *character-istic-ally*, *character* is the root as well as the stem to which *-istic* is affixed, and *characteristic* in turn forms the stem to which *-ally* is affixed.

3.2 Semantic autonomy and dependence

At the semantic pole, grammatical morphemes have only schematic meaning. For example, the derivational morpheme *-er* has the information AGENTIVE NOUN (or THING) at the semantic pole, and the inflectional morpheme *-en* as in *broken* has CHANGE OF STATE PROCESS as its base, and profiles the end result STATE. Because (most) derivational morphemes determine the category of the composite structure, they are the profile determinants. This means that category-changing derivational morphemes are themselves schematic instances of the word class that they derive. For example, *-er* (as in *driver*) is a schematic THING, *-ise* (as in *stigmatise*) is a schematic PROCESS, *-y* (as in *sticky*) is a schematic STATE and so on.

Langacker also applies this analysis to inflectional morphemes. For example, it is the plural morpheme *-s* that lends its profile PLURAL NOUN (or THING) to the composite grammatical construction; the inflectional morpheme is therefore the profile determinant and is itself a schematic NOUN or THING. Of course, the English derivational prefixes (e.g. *un-* in *unlikely*) are not category-changing, which suggests that they do not qualify as profile determinants. Taylor (2002: 274) suggests that these might best be analysed as modifiers, a point to which I return later in the chapter.

3.3. Prototypical stems and affixes

Langacker observes that autonomy and dependence tend to mirror one another at the semantic and phonological poles; if a unit is phonologically dependent it is likely to be semantically dependent as well. Moreover, if it is phonologically autonomous, it is also likely to be semantically autonomous. This means that it is often possible to describe whole symbolic units as autonomous or dependent. On the basis of the observations made thus far in relation to morphological structure, the properties of prototypical stems and affixes are summarised in Table 23.2.

Despite these patterns, there are exceptions to the generalisation that both poles of a symbolic structure will have the same status with respect to autonomy or dependence. Langacker provides the example of unstressed **clitic pronouns** attached to prepositions (for example, when *with her* is pronounced *with'er*, with main stress on the preposition). The clitic pronoun is phonologically dependent but remains semantically autonomous regardless of whether it has clitic status because it elaborates the preposition's schematic LM.

Table 23.2 Properties of prototypical stems and affixes

Stem	Affix
phonologically autonomous	phonologically dependent
has greater phonological 'weight'	has less phonological 'weight'
semantically autonomous	semantically dependent
semantically specific	semantically schematic
open-class elements	closed-class elements

3.4 Composite structure

Langacker applies the same view of valence, described earlier in the case of phrases, to the construction of complex words. Constituency or composite structure within words is thus accounted for in terms of correspondences between (semantically) autonomous and dependent units, and these correspondences are accounted for in terms of elaboration.

For example, the agentive nominal suffix *-er* is a semantically (and phonologically) dependent profile determinant which has a schematic PROCESS as its TR. This schematic PROCESS is elaborated by the stem (e.g. *teach*), which is semantically (and phonologically) autonomous. In several respects, the relationship between the dependent head and the autonomous stem is rather like the relationship between the dependent head and the autonomous complement within phrases, where the dependent head requires additional structure to complete its meaning. In contrast, the derivational prefix *un-* in *unlikely* or *unlovable*, while both semantically and phonologically dependent, is not a profile determinant. While this prefix also requires a semantically autonomous stem to elaborate its schematic TR (a schematic STATE), it does not head the resulting construction. In this respect, the prefix behaves more like a modifier within a phrase: it is a dependent unit that adds additional information to an autonomous head.

3.5 Constructional schemas

I now turn to the schematic representation of constructions containing the grammatical morphemes we have discussed in this section. Two examples of constructional schemas that capture the properties of complex words are represented in (5). While (5a) represents the schema for agentive nouns (illustrating derivational morphology), (5b) represents the schema for plural nouns (illustrating inflectional morphology).

(5) a. Agentive noun (e.g. *driver*, *lover*, *singer*)
$[_{\text{THING}}$ [PROCESS/. . .] [ER/-*er*]]
b. Plural noun (e.g. *cats*, *toys*, *shoes*)
$[_{\text{THING}}$ [THING/. . .] [PLURAL/-*s*]]

As we saw in earlier chapters, the information on the left of the slash represents the semantic pole and the information on the right represents the phonological pole. Each component unit is contained inside square brackets. For example, the constructional schema in (5a) says that the construction, which as a whole represents a schematic THING, consists of two component parts. The first component part is some member of the verb class, which is schematically represented at the semantic pole as PROCESS but which has no phonological specification because this is a generalised class schema. The second component part is a unit that also has a schematic representation at the semantic pole (ER represents the semantics of AGENTIVE NOUN), but has a specific representation at the phonological pole.

As we saw in Chapter 17, when I briefly introduced Langacker's network conception, constructional schemas are not distinct from other more specific instances of constructions, in a language user's mental inventory of linguistic knowledge. As such, there is no principled distinction between the schemas that capture generalised patterns of structure and the specific instances that give rise to those schemas. The sole difference lies in the extent to which the representation is semantically specific. Thus, the schemas belong within the same complex network that contains the instances. For example, the schema for agentive nouns (5a) is connected within the network to specific instances, as well as to other schemas to which it is related (for example, the schema for plural nouns in (5b), given constructions such as *lovers*), and ultimately to the noun class schema.

Given the network conception of constructions, adopted in Cognitive Grammar, novel constructions are **sanctioned** (licensed) by schemas – an idea I introduced in Chapter 5, when discussing Cognitive Grammar as a usage-based model. Langacker argues that the schema is what enables the speaker to recognise a pattern and hence judge the well-formedness of a novel construction by analogy. For example, consider the following units which are recognised as pairs due to links within the network: *search–searcher; love–lover; examine–examiner; complain–complainer*. As we have seen, these and others like them give rise to the schema represented in Figure 23.3 which enables the speaker to derive a novel construction such as *striver*. Moreover, the claim that novel instances are sanctioned by schemas is not restricted to word-level constructions, but also applies to phrase and clause-level constructions.

3.6 An example: agreement

Grammatical agreement relates to features such as person, number and gender. For example, if a noun is already marked as plural by the plural morpheme *-s* (for example, *cat-s*), the presence of a plural demonstrative determiner that

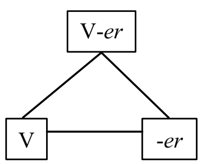

Figure 23.3 The agentive nominal schema (adapted from Langacker 1987: 446)

'agrees' with the plural noun (for example, *those cats*) duplicates the same information. Equally, if the subject of a clause is marked for third person singular by the pronoun *he*, *she* or *it*, the presence of the third person singular suffix on the present tense verb form (for example, *she love-s*) also duplicates the same information.

As agreement morphemes are (inflectional) grammatical morphemes, it follows from our discussion in this section that agreement morphemes are represented in Cognitive Grammar as independent symbolic units, which have schematic meaning. Langacker (2002: 308) represents the agreement construction schema as follows:

(6) Agreement construction schema
[[[A/a][X/x]] [[B/b][X′/x′]]]

The elements [A/a] and [B/b] represent the words that carry the agreement morphemes, and [X/x] and [X′/x′] represent the agreement morphemes themselves. As before, the information on the left of the slash represents the semantic pole and the information on the right the phonological pole. The substructures of this highly schematic schema can be instantiated by members of any word class. For example, in the plural noun phrase *those cats*, [A/a] is instantiated by *those* and [B/b] is instantiated by *cats.* [X/x] represents the plural feature of *those*, which exhibits **fusional morphology**: the plural designation associated with *those* features is not represented by a separate morpheme. [X′/x′] represents the plural morphology on *cats*. The construction *those cats*, an instance of the constructional schema in (6), is shown in (7):

(7) Instance of the agreement construction schema: *those cats*
[$_{\text{THING}}$ [$_{\text{THING}}$ [GROUND/*those*] [PLURAL/Ø] [THING [CAT/*cat*] [PLURAL/-*s*]]]]

Note that in (7), the semantic pole of the determiner *those* is represented as GROUND because the determiner is a grounding predication. Its plural morpheme is represented as Ø because the plural determiner exhibits fusional morphology.

4 Clauses as constructions

Having considered the way in which Cognitive Grammar accounts for the structure of words and phrases, I now consider the structure of clauses and sentences. I begin by examining the way in which valence operates at the clause level; and I do so by comparing clauses headed by prototypical content verbs with those headed by the copular verb *be*. I also briefly consider embedded clauses in the structure of complex sentences. I will then look at Langacker's account of transitivity, grammatical functions and case, before turning, finally, to the Cognitive Grammar analysis of passive constructions.

4.1 Valence at the clause level

Recall that, in Cognitive Grammar, valence is described in terms of correspondences between the component structures that make up a grammatical construction. These correspondences are accounted for in terms of autonomy, dependence and elaboration. As an illustration of how these ideas can be applied to the clause, consider the verb *see*. This verb expresses a temporal relation or PROCESS and has a schematic TR and LM as part of its representation. The schematic TR and LM are the elaboration sites. In a clause such as (8), the NP *Monica* elaborates the schematic TR of *see* and the NP *her blue-eyed cat* elaborates the schematic LM.

(8) Monica saw her blue-eyed cat.

Because the verb relies on the two NPs to elaborate its schematic TR and LM, the verb is conceptually dependent and the two NPs are conceptually autonomous. As this example illustrates, the Cognitive Grammar account of the constituency of the clause rests upon the same assumptions as the account of word structure and phrase structure. The only difference is that the component parts of these grammatical constructions become increasingly complex as we move from word, via phrase, to clause. As we saw in the last section, the pattern of autonomy and dependence illustrated by example (8) represents the prototypical grammatical construction where a dependent RELATION (here, the verb) relies on an autonomous THING to elaborate some schematic aspect of its structure. While *see* is a typical transitive verb, which has two elaboration sites, intransitive verbs such as *die* have only one elaboration site which corresponds to the TR, and ditransitive verbs such as *give* have three elaboration sites. I return to each of these clause types in more detail below.

Recall that Langacker describes valency relations as binary, an idea that captures the 'layered' structure of complex constructions. This idea also accounts for the 'layered' structure of the clause. The dependent verb and the autonomous object combine to form a complex unit (VP), of which the verb is the profile determinant. As such, the VP profiles a PROCESS. The object elaborates the schematic LM of the verb. This is an instance of the head–complement relation. However, the resulting PROCESS (VP) remains a dependent unit, since the verb still has a schematic TR that requires elaboration. The VP then combines with the subject which elaborates its TR. This also represents the prototypical valence relation between a dependent RELATION and an autonomous THING, despite the fact that it is not strictly speaking a head–complement relation since the dependent relation is itself a complex grammatical construction. In Cognitive Grammar terms, however, the valence relation between V and object NP is the same as the valence relation between VP and subject NP: in both cases, the profile determinant is a PROCESS, and in both cases that PROCESS requires the NP to elaborate some aspect of its schematic structure. The resulting construction still profiles a PROCESS, which means that the verb is the profile determinant or head of the clause as a whole, an idea that is central to

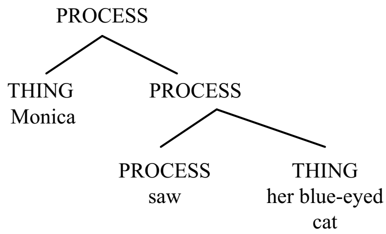

Figure 23.4 PROCESS as profile determinant of the clause

many theories of grammar. The structure of the prototypical transitive clause is illustrated in Figure 23.4.

While this account might imply that the construction of a clause is a 'step-by-step' process, recall that the usage-based model assumes that even clause-level constructions are stored as wholes if they represent well-entrenched units, and thus give rise to schemas that mirror their structure. From this perspective, viewing a construction in terms of the 'order' in which it is 'built' is rather meaningless.

4.1.1 Arguments versus modifiers

The participants that are required by the verb to complete its meaning are described as the **arguments** of the verb, with the verb being the **predicate** or semantic core of the clause. (Note: this sense of the term 'predicate' should not be confused with the traditional grammar sense of the term which refers to the entire verb phrase.) As we have seen, arguments of the verb are autonomous. Consider the examples in (9).

(9) a. Monica put the files in the bin.
 b. Jimmy saw the bird outside the window.

In (9a), the verb *put* requires three participants to complete its meaning and therefore has three elaboration sites, a schematic TR (elaborated by *Monica*), a schematic LM (elaborated by *the files*) and a schematic 'destination', also known as the secondary landmark. In Cognitive Grammar terms, the verb is conceptually dependent upon the arguments which elaborate its sites.

Arguments are often given labels in terms of **semantic roles**. For example, the NP *Monica* which elaborates the schematic TR has the role AGENT, which describes an entity that acts with volition and intention. The NP *the files* that elaborates the LM has the role MOVER, which is Langacker's term for an entity that undergoes a change of location. The relational unit (PP) *in the bin* elaborates the schematic destination or secondary landmark and has a LOCATION role. (I discuss semantic roles in more detail in the next section, where I will examine how they interact with the grammatical functions subject and object.) While Langacker terms both the subject, *Monica*, and the object *the files* in (9a) **nominal complements**, he identifies the PP *in the bin* as a **relational complement** because its profile determinant is a RELATION.

Example (9b) has a rather different structure from example (9a). This is because the PP *outside the window* does not elaborate any part of the verb's substructure. The verb *see* requires two arguments to elaborate its schematic TR (*Jimmy*) and its schematic LM, (*the bird*). This means that the PP is a clausal modifier or adverbial. In other words, the verb is autonomous in relation to this PP. It is the modifier that is conceptually dependent in this type of relationship. The modifier relies on the verb plus its arguments, the clause-level PROCESS, to elaborate its schematic PROCESS TR. This explains the optionality of such modifiers in contrast to the obligatory presence of subjects and objects.

Clause-level modifiers are not always PPs. They can also be adverb phrases (AdvP; *very sincerely*), NPs (*these days*) or other clauses (*licking the bowl clean*). What these all have in common is that they have a schematic PROCESS as part of their meaning which is elaborated by the (main) clause.

4.1.2 Copular clauses

Some clauses do not contain a prototypical content verb. These are **copular clauses** headed by the 'linking' or **copula** verb *be*, which takes a **subject predicative complement**. Consider the examples in (10).

(10) a. Monica is $[_{\mathrm{NP}}$ a cat lover].
b. Monica is $[_{\mathrm{A}}$ happy].
c. Monica is $[_{\mathrm{PP}}$ in the garden].

The bracketed constituent in each example is referred to as the subject predicative complement, because it defines or describes the subject, occurs as the complement of *be* and is predicative in the sense that it contributes the semantic core of the clause.

Given that most grammatical theories, including Cognitive Grammar, view the lexical verb as the 'heart' of the clause, questions arise concerning the formation of copular clauses. In some formal linguistics approaches to grammar, the copula verb *be* is treated as a semantically empty verb that does not have independent argument structure (in other words, does not behave as a predicate). This semantically empty verb licenses the combination of subject and predicate (NP, adjective phrase (AP) or PP) by enabling the formation of a clause, which it does by contributing finiteness (in English, main clauses have to be finite). From this perspective, the copula 'mediates' between subject and predicate by licensing a well-formed finite clause structure, complete with agreement, tense and so on. This entails that the copula verb has a subject and a complement in structural terms, even though the constituents in these positions are not semantically related to the copula. Instead, the subject and the predicative complement are semantically related.

The Cognitive Grammar account is reminiscent of the formal account in the respect that the verb *be* is described as maximally schematic. According to this analysis, the verb *be* designates a schematic stative PROCESS. However, the verb *be* has its own semantic structure in Cognitive Grammar: like a contentful lexical transitive verb, it has a schematic TR and LM. These are elaborated by subject NP and by either nominal (10a) or relational predications (10b)–(10c), respectively. That is, *a cat lover* is a nominal complement of the verb *be* in (10a), while *happy* in (10b) and *in the garden* in (10c) are relational complements of the verb *be*. Langacker points out that the correspondences between the subparts of the copular construction entail that the subject is not only subject of the verb *be*, but also subject of each component part of the VP and subject of the VP as a whole. In this way, the Cognitive Grammar analysis captures the same intuition as the formal analysis concerning the predicative nature of the subject complement and the semantic relationship between subject and complement.

It is important to point out that the status of the bracketed units in (10) is rather different from the status of these units in other types of constructions. For example, while it is not unusual for an NP such as *a cat lover* to occur either as subject or object of a clause headed by a lexical verb, there is an important difference between its occurrence in that type of construction and its occurrence as a subject complement. This difference relates to grounding. Consider the following examples:

(11) a. I met a cat lover the other day.
b. A cat lover appeared in an animal documentary.

In (11a), *a cat lover* is the direct object. In (11b), the same NP is the subject. In both these examples the NP is grounded; the indefinite article *a* grounds the noun and the resulting NP, and designates a specific individual, even though this individual is not familiar to the hearer. In cases such as these, the NP is a referring expression, which means that the speaker uses the expression to pick out a specific individual in the world.

In contrast, the NP *a cat lover* in (10a) is not grounded. An indefinite predicate nominal, in other words an indefinite noun phrase that functions as subject complement, is not a referring expression. Instead, it describes a property of the subject and in this respect might more accurately be characterised as a relational predication than a nominal predication (see Langacker 1991: 65–6). This idea captures its predicational role in the clause but raises questions about the nature of the autonomy–dependence relation between the predicate nominal and the copula.

Observe that if the predicate nominal is marked as definite, something interesting happens to the clause:

(12) a. Monica is the cat lover.
b. The cat lover is Monica.

The definite NP *the cat lover* in (12a) is now grounded, which means that it now functions as a referring expression and picks out a particular individual that is equivalent to *Monica*. This type of copular clause is described as **equative** rather than predicative and is characterised by reversibility (12b). As Taylor (2002: 361–2) observes, it is not clear why the ungrounded predicate nominal in examples such as (10a) should have an article at all in light of this discussion. Indeed, languages including French, German and Spanish omit the article in constructions like this, and some English expressions also license the absence of the article:

(13) a. She was Queen of England.
b. John will be chair today.
c. Susan was class prefect at school.

Observe that what the constructions in (13) share in common is that the predicate nominal designates a unique role: the expectation is that there is only one Queen of England, chairperson, class prefect and so on. Despite these differences between predicate nominals on the one hand and subjects and objects on the other, the NPs in all these functions share the same property of conceptual autonomy in relation to the verb (with the possible exception of the indefinite predicate nominal), hence their status as complements in Cognitive Grammar.

In contrast, an attributive adjective (14a) and a predicative adjective (14b), while both profiling ATEMPORAL RELATIONS, do not have the same status with respect to autonomy and dependence. The attributive adjective *funny* in (14a) is dependent in relation to the autonomous noun and therefore a modifier. The predicative adjective *funny* in (14b) is autonomous in relation to the dependent copula verb and is therefore a complement:

(14) a. that funny ragdoll
b. That ragdoll is funny.

It is worth observing here that not all adjectives can occur in both attributive and predicative positions (15). Furthermore, some that can occur in both positions take on a distinct sense in each position (16).

(15) a. ?The unwell cat
b. The cat is unwell.

(16) a. my late grandfather
b. My grandfather was late.

4.1.3 Embedded clauses

Clauses can function as subparts of complex sentences. When this happens, the (subpart) clause is termed an **embedded clause** or a **subordinate clause**. This is illustrated by the examples in (17) where the embedded clauses are bracketed.

(17) a. Monica thought [that Tommy was difficult to handle].
b. [That Tommy was difficult to handle] was a well-known fact.
c. the idea [that Tommy was difficult to handle]
d. the cat claws [that she clipped]

e. Tommy could make [Monica seethe].
f. Monica wanted [Tommy to be happy].
g. [Seething over a cat like Tommy] was not unusual.
h. [Shrugging her shoulders], she got on with her day.
i. [Feted by adoring cat breeders], Tommy carried on washing himself.

These examples provide a representative sample of some of the types of embedded clauses possible in English. Although these constructions might look somewhat complicated, they in fact represent construction types which we have already considered. This follows as clauses can perform the same kinds of grammatical functions as smaller grammatical constructions such as nominal expressions.

In (17a), the embedded clause is the object, while in (17b) it is the subject. In (17c), the embedded clause is the complement of a noun because it completes its meaning, while in (17d) it is a nominal modifier. This is called a relative clause and is identifiable as such by the fact that we can substitute *which* for *that* (*the cat claws which she clipped*), which is not possible in (17c) (**the idea which Tommy was difficult to handle*). In examples (17a) to (17d), the embedded clauses are all finite. This means that, with the exception of the relative clause, they are all capable of functioning as independent clauses. It follows from this that they are PROCESSES. In examples (17e) to (17i), the embedded clauses are non-finite. In (17e), for example, the embedded verb is in its bare infinitive form (compare **Tommy could make Monica seethes*), while in (17f) the embedded verb is in its *to*-infinitive form. In both these examples, the embedded clause is the object. In examples (17g) to (17i), the embedded clauses contain participles and lack subjects. In (17g) the embedded clause is the subject, while in examples (17h) and (17i) the embedded clause is an adverbial clause or modifier.

4.2 Grammatical functions and transitivity

Langacker characterises grammatical **transitivity** – whether a verb takes an object, and how many objects it takes – in terms of what he refers to as the prototypical **action chain model** – an idea I first introduced in Chapter 16. According to this model, the prototypical TR is the **energy source** and the prototypical LM is the **energy sink**. Langacker (2002: 208) describes the prototypical action in terms of what he calls the **billiard-ball model**. This idea relates to the fact that we experience motion, that motion is driven by energy; while some entities have an inherent capacity for energy, other entities only receive energy from external entities. The 'billiard-ball' metaphor expresses the idea of energy transfer from one entity to another. According to this model, energy is transferred from AGENT (A) to PATIENT (P), and results in a change of state for the PATIENT. Figure 23.5 depicts the action chain model.

According to Langacker, the unmarked active transitive clause with third-person participants represents the prototypical action from a canonical viewpoint or perspective. This means that a sentence such as *Monica stroked Tommy* represents the prototypical action.

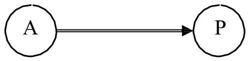

Figure 23.5 The prototypical action model (adapted from Langacker 2002: 211)

This characterisation of the transitive clause has implications for how the grammatical functions **subject** and **object** are viewed in Cognitive Grammar. From the perspective of formal linguistics, for instance, just as formalists reject a semantic characterisation of word classes, they also reject a semantic characterisation of subject and object. Instead, these core grammatical functions are described in terms of distribution (e.g. in English, the subject precedes the main verb and the object follows it) and morphology (e.g. the subject pronoun is marked for nominative case while the object pronoun is marked for accusative case). I have summarised the distributional (or structural) criteria for English subjects and objects in Tables 23.3 and 23.4, respectively, from the perspective of formal linguistics.

In contrast, in Cognitive Grammar, the grammatical functions subject and object receive a schematic semantic characterisation (just as we saw with lexical classes, in the previous chapter). In the prototypical action chain, the subject, which elaborates the schematic TR of the verb, is characterised as the volitional energy source. The object, which elaborates the schematic LM of the verb, is the passive energy sink. The transfer of energy between the participants in a scene can be, Langacker contends, described in terms of the action chain model.

4.2.1 Grammatical functions and the transitive clause

In an action chain, different participants can be profiled, an issue I briefly addressed when I introduced the notion of construal in Chapter 16. This has

Table 23.3 Structural criteria for English subject

Structural criteria for English subject
(Canonical) subject position in English is clause-initial
Subject inverts with auxiliary/modal verbs to form questions
Subject agrees with the verb in person and number
Subject pronoun shows subject (or nominative) case

Table 23.4 Structural criteria for English object

Structural criteria for English object
Object position in English is after the verb
Object can move to clause-initial position to become the grammatical subject of a passive sentence
Object pronoun shows object (or accusative) case
Indirect object precedes direct object, unless the indirect object is expressed as PP

consequences for how the clause is structured. Consider the examples in (18), which reflect different construals of the same scene.

(18) a. Tommy swiped Jimmy with a firm paw.
b. A firm paw swiped Jimmy.
c. Jimmy was swiped.

The act of swiping Jimmy involves an AGENT (*Tommy*), a PATIENT (*Jimmy*) and an INSTRUMENT (*a firm paw*). In example (18a), each component of this action chain is profiled. The energy is transferred from the AGENT, *Tommy*, via the INSTRUMENT, *a firm paw*, to the PATIENT, *Jimmy*. In (18b), on the other hand, only the INSTRUMENT, *a firm paw*, and the PATIENT, *Jimmy*, are profiled. Despite this, the AGENT is understood as part of the base (or scope of predication) of (18b) because we know that cats generally lack the inherent volition required for self-swiping. In (18c), only the PATIENT is profiled, but nevertheless the AGENT and the INSTRUMENT are understood as part of the base. The action chain that underlies all these clauses can be represented as in Figure 23.6, where the circles represent each of the participants and the arrows represent the transfer of energy.

As we have seen, the difference between the clauses in (18) concerns which elements of the action chain are profiled. Langacker represents profiling in these diagrams with bold type. For example, because all the participants in the action chain are profiled in (18a), all parts of the diagram are in bold (Figure 23.7). Examples (18b) and (18c) are represented by Figures 23.8 and 23.9, respectively.

As these diagrams illustrate, the subject of the clause in each case is the participant that is closest to the energy source out of the participants profiled.

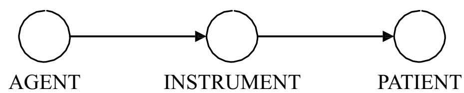

Figure 23.6 Prototypical action chain (adapted from Langacker 2002: 217)

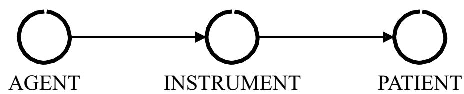

Figure 23.7 Action chain for (18a) (adapted from Langacker 2002: 217)

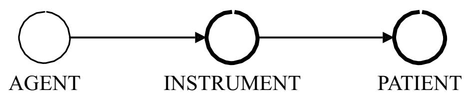

Figure 23.8 Action chain for (18b) (adapted from Langacker 2002: 217)

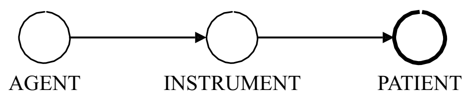

Figure 23.9 Action chain for (18c) (adapted from Langacker 2002: 217)

Hence, when the active clause profiles both AGENT and instrument as well as PATIENT, the AGENT (as energy source) will be subject. When the clause profiles only INSTRUMENT and PATIENT, the INSTRUMENT will be subject and so on.

Related proposals have been made by Dowty (1991) who has sought to explain semantic roles in terms of a PROTOTYPE model. Dowty (1991) proposes an **AGENT proto-role** and a **PATIENT proto-role**. Each proto-role is characterised not by a set of necessary and sufficient conditions, but attributes that a prototypical agent or patient will display. In this approach, the prototypical agent is characterised by volition, sentience and movement and by causing a change of state to be effected in relation to another participant. In contrast, the prototypical patient is characterised by being stationary relative to another participant, by being causally affected by another participant and by undergoing a change of state that may be incremental in nature.

A number of researchers, including Fillmore (1968), have proposed a **thematic hierarchy**, which makes predictions concerning the likelihood of a given semantic role occurring as subject of a clause. The hierarchy can be understood as a **prototypicality scale**, with prototypical subjects on the left and less prototypical subjects on the right. An example of a simple thematic hierarchy is given in (19). This hierarchy predicts that if a language permits any given semantic role in subject position (e.g. INSTRUMENT), it will also allow every semantic role to the left in subject position (PATIENT, BENEFACTIVE and AGENT).

(19) AGENT > BENEFACTIVE > PATIENT > INSTRUMENT > LOCATION

Indeed, Langacker's proposals capture the predictions stated by Fillmore's (1968) thematic hierarchy in terms of the 'billiard-ball' or transfer of energy model.

Nevertheless, the examples I have considered so far encode physical acts and therefore energy transfer. Consequently, they lend themselves to illustrating the 'billiard-ball' model. As Langacker observes, however, not all clauses are so straightforwardly characterised in terms of energy transfer. Consider the examples in (20).

(20) a. She saw Tommy through the window.
b. She thought about his bright blue eyes.
c. She loved him.

In these clauses, the subject *she* is not an AGENT but an EXPERIENCER. This semantic role describes a conscious and sentient participant who participates in mental or emotional rather than physical activity. Verbs of perception and cognition therefore have EXPERIENCER subjects. Hence, the object (*Tommy*; *his bright blue eyes*; *him*) can be characterised as the STIMULUS. There is no sense in which the subject of these clauses act with volition or transfers energy in the direction of the object. Despite this, Langacker (2002: 221) suggests that these clauses display the same asymmetry found in clauses describing the prototypical action. While the asymmetry in an action chain arises from the direction of the energy flow, the asymmetry in the EXPERIENCER–STIMULUS relation arises from the fact that the EXPERIENCER is conscious and sentient and is thus responsible for establishing mental 'contact' with the STIMULUS by creating a cognitive representation of the experience.

However, some clauses do not encode this asymmetry in terms of 'directionality' (either in terms of energy or 'mental contact'). Consider the examples in (21).

(21) a. Her favourite cat resembles a cherub.
  b. A cherub resembles her favourite cat.

These clauses are stative. Furthermore, the participants in the relations that they profile are reversible, suggesting that there is no inherent asymmetry between the participants in these relations. However, and on the contrary, the very fact that we can reverse the clauses demonstrates that it is possible to construe either participant as TR. This entails that the clauses still encode TR–LM asymmetry. In this case, the asymmetry arises from the construal – which participant the speaker chooses to focus attention upon – rather than from the semantics of the verb.

More generally, this discussion shows that while the prototypical subject has properties such as inherent energy and volition, not all subjects have these attributes. The attribute that all subjects do share, in Cognitive Grammar, is that they construe a given participant as TR.

In analogous fashion, while the prototypical direct object is characterised as the PATIENT or 'energy sink', not all objects can be characterised in this way. For example, in the sentence *Jimmy's antics amuse Monica enormously*, the object *Monica* is an EXPERIENCER rather than a PATIENT. The attribute that all objects share, in Cognitive Grammar, is that they construe a given participant as 'second-most prominent' (Langacker 2002: 225). In short, the object designates the most prominent aspect of the ground which is the **primary landmark**.

4.2.2 Intransitive clauses

Given the prototypical action chain, the subject is 'upstream' in terms of energy flow and the object is 'downstream' from the subject. It follows that a clause can have a subject but no object, but not vice versa. According to Langacker, this is because an object is only meaningful in relation to a subject, while a subject, as TR, is independently meaningful and can thus participate in processes where there is no second participant. Langacker suggests that this accounts for the properties of intransitive clauses. Here, the subject does not interact with a second participant in some PROCESS. Rather, the subject interacts with itself, as in (22a), or interacts with the ground by undergoing a change of state that 'changes the world' as in (22b). This explains why intransitive verbs, such as predicative adjectives, still profile a RELATION.

(22) a. Jimmy slept.
b. Monica's computer exploded.

4.2.3 Ditransitive clauses

To conclude my discussion on transitivity, I turn to ditransitive clauses. As we first saw in Chapter 2, ditransitives are so-called as they contain two objects: a direct object and an indirect object. This is illustrated by example (23).

(23) Monica gave Tommy a kiss.

The question that arises in relation to ditransitive (also known as **double-object**) constructions concerns how the indirect object (*Tommy*) might be semantically characterised, given the schematic semantic account of subjects and direct objects adopted in Cognitive Grammar. Langacker (1991: 326) argues that a thematic characterisation is most appropriate for indirect objects, since this function shows a greater thematic consistency than the functions subject and object. In short, Langacker suggests that this grammatical function might be characterised in terms of its semantic role; the semantic role of indirect objects appear to be less schematic (and hence, more specific) than subjects and objects. For example, verbs of transfer like *give* or *send* have an indirect object with the semantic role RECIPIENT (24a), while verbs of perception typically have an indirect object with the role EXPERIENCER (24b):

(24) a. Monica gave her husband a new phone.
b. Tommy showed Monica his belly.

I return to ditransitive clauses in Chapter 26, where we will see that this type of construction has been of particular interest to researchers in Construction Grammar.

4.3 Case

In formal approaches to grammar, **case** is often described as the grammatical feature which signals the grammatical function of a word or phrase within a clause. Indeed, Transformational Grammar, for instance, contends that case relates to purely grammatical features of language, which cannot be semantically characterised, but are viewed instead as arising from purely structural factors within the clause. For instance, from this perspective, nominative and accusative case in English receive a purely configurational characterisation: nominative case is licensed in the subject position of a finite clause and accusative case is licensed in the complement position of lexical verbs and prepositions. In keeping with the symbolic thesis central to Cognitive Grammar, Langacker contends that case, as with the grammatical functions subject and object, do indeed have a semantic characterisation.

4.3.1 Correlated and uncorrelated case systems: a definition

Langacker contends that there are two types of case system. A **correlated system** is based on the relative 'degrees of prominence' of each of the participants. For example, nominative (subject case) and accusative (object case) in English might be viewed in these terms, where nominative or subject case corresponds to the TR and object or accusative case to the LM. An **uncorrelated case system** is based on **semantic role archetypes** rather than grammatical functions. For example, Basque has instrumental case and locative case, which are examples of case marking that rest on semantic roles rather than grammatical functions. In reality, most languages represent some combination of the two systems.

4.3.2 Correlated case systems: a case study

We focus our discussion here on two examples of correlated cases systems, since these arguably represent a greater challenge to a semantic account of case than uncorrelated systems. Langacker proposes a Cognitive Grammar account of the typological difference between **nominative/accusative** case systems and **ergative/absolutive** case systems, in terms of how the case system marks the relative degrees of prominence of each of the participants in the clause.

While English has a nominative/accusative case system, this is only evident in its personal pronouns. Hence, I illustrate this discussion with a comparison of two languages that mark case on noun phrases headed by common nouns as well as pronouns. These two languages are German, which has a nominative/accusative case system, and Basque, which has an ergative/absolutive case system. In order to simplify the comparison, the subject of a transitive verb is labelled A (for AGENT). The object of a transitive verb is labelled O (for object). The subject of an intransitive verb is labelled S (for subject). Clearly, a case system only needs to distinguish A and O (the subject and object of a transitive clause), as S and A cannot co-occur (a clause cannot simultaneously be transitive and intransitive), and S and O do not co-occur (an intransitive clause does not have an object).

When a language marks S and A in the same way, but marks O differently, this constitutes a nominative/accusative case system. This is illustrated by the following German examples. Observe that German marks case on the NP by marking determiners and adjectives with case morphemes, rather than the head noun (examples (25) and (26) are both from Tallerman 1998: 154–5).

(25)	a.	Der	gross-e	Hund	knurrt			
		the.NOM	big.NOM	dog	growled			
		'[The big dog]$_S$ growled'						
	b.	Der	gross-e	Hund	biss	den	klein-en	
		the.NOM	big.NOM	dog	bit	the.ACC	small.ACC	
		Mann						
		man						
		'[The big dog]$_A$ bit [the small man]$_O$'						

As with English, the German case system has one type of case for subjects (nominative), regardless of whether the clause is transitive (25b) or intransitive (25a), and another type of case for objects (accusative).

In contrast, if a language marks the intransitive subject S and the object O in the same way (absolutive), but marks the transitive subject A differently (ergative), then we have an ergative/absolutive system. This is illustrated by the following Basque examples:

(26) a. Gixona-k liburûa erosi dau
man-ERG book.ABS buy AUX.3s
'[The man]$_A$ has bought [the book]$_O$'
b. Gixonâ etorri da
man.ABS come AUX.3s
'[The man]$_S$ has come'
c. Gixonâ ikusi dot
man.ABS see AUX.1s
'[I]$_A$ have seen [the man]$_O$'

As these examples reveal, Basque is a subject, object, verb (SOV) language. Example (26c) begins with the object because the subject is not expressed in this clause. Like many languages with a rich inflectional system (notice that the AUX word is marked with the person and number of the subject), the subject can be left out of the main clause as long as it can be retrieved from the context.

According to Langacker (2002: 247), there are two important similarities between the two types of system. First, both systems encode the relative prominence of participants by distinguishing subject and object where these co-occur: in the transitive clause. Second, both systems reflect the asymmetry that Langacker characterises in terms of the action chain. The difference between nominative/accusative languages and ergative/absolutive languages, according to Langacker, can be characterised in terms of the 'starting point' each case system reflects. A nominative/accusative system 'starts' with the energy source (subject), hence both transitive and intransitive subjects are marked in the same way (nominative), and a distinct case is only necessary if a second 'downstream' participant is involved. In contrast, an ergative/absolutive language 'starts' with the relationship between the verb and its 'closest' argument. In an intransitive clause, this is the subject, but in a transitive clause this is the object. Hence, an ergative/absolutive system marks object and intransitive subject with the same case (absolutive), and a distinct case (ergative) is only necessary if a further participant is involved moving 'outwards' from the core of the clause.

In intuitive terms, then, the nominative/accusative system works 'from the top down', while an ergative/absolutive system works 'from the middle out'. This account is based on the assumption that a verb is most closely associated with its object, an idea that is reflected in the traditional partition of the clause into subject and predicate and an idea that remains prominent in most current theories of grammar.

4.4 Marked coding: the passive construction

Hitherto in this chapter I have discussed **unmarked** clause types. In contrast, the passive construction is one example of what Langacker dubs **marked coding**. **Markedness** concerns the extent to which a given construction can be described as 'typical' or 'representative' of the grammar of a language. It is a widely held view that the active transitive declarative clause represents the unmarked clause type. Indeed, typologists classify languages in terms of word order patterns by looking at the properties of this clause type.

For example, English is described as a subject, verb, object (SVO) language because the active transitive declarative clause has subject, verb and object in this order (despite the fact that marked constructions such as **clefts** may reflect a different order). Indeed, it is worth observing that in Transformational Grammar, the active transitive declarative clause is treated as the 'underlying' structure from which other clause types are derived (recall my discussion of Transformational Grammar in Chapter 21).

An important issue, in issues relating to markedness, concerns how to identify 'typical' or 'representative' grammatical constructions. Typologists define markedness according to a number of parameters, including **distributional potential** (Croft 2003). A construction with greater distributional potential is unmarked in comparison to a construction that has a more restricted distributional potential. For instance, in terms of voice (active versus passive), while most verbs can occur in the active voice, a more restricted set of verbs can occur in the passive voice. Hence, active voice is unmarked while passive voice is marked. An asymmetry in terms of frequency of use is predicted and statistical corpus studies often form the basis of typological approaches to markedness.

Langacker (2002: 226) characterises an unmarked construction as 'the most natural construal of an event on the basis of its conceptual content'. For example, the active transitive clause views the energy source as the figure, or most prominent participant. Passive clauses, in contrast, represent an alternative or marked construal of a given event. This is motivated by discourse goals: the speaker intends to draw the hearer's attention to a given participant by making that participant prominent. Compare the examples in (27).

(27) a. Tommy nuzzled Jimmy.
b. Jimmy was nuzzled by Tommy.

In example (27a) the AGENT is prominent, the TR; this clause construes the event from the perspective of what Tommy did. In example (27b), the PATIENT is prominent, the TR; this clause construes the event from the perspective of what happened to Jimmy.

In short, the passive clause represents an instance of TR–LM reversal: the PATIENT is construed as the TR and realised as the subject of the clause; in contrast, the AGENT is demoted to background status and realised as a dependent modifier.

SUMMARY

In this chapter, we have explored the way in which Cognitive Grammar accounts for grammatical compositionality, in building **constructions** – **component structures** – from less complex symbolic units – **constituent structures**. In keeping with the symbolic thesis adopted by Cognitive Grammar, all elements of grammar, including **grammatical functions** such as **subject** and **object**, have a semantic characterisation. The chapter considered how the theoretical constructs central to Cognitive Grammar, including notions such as **trajector (TR)–landmark (LM)** asymmetry, **profile/base** organisation, and construal account for constructions at the level of the **phrase**, complex **words** and **clauses**. I introduced the Cognitive Grammar approach to **constituency** and **head-dependent relations** in phrases, from the perspective of **valence**, which relies on the idea of **conceptual autonomy** and **conceptual dependence**. Crucially, autonomy versus dependence is independent from the status of a given component as **profile determinant**, so that the latter notion only partially overlaps with the traditional notion of head. I also showed that this model of constituency is held to account not only for **phrase structure** but also for **word structure**. The chapter also considered how autonomy and dependence give rise to **clause level constructions**, as well as accounting for the distinction between **complements** and **modifiers** at the clause level. I also considered how **transitivity**, grammatical functions and **case** are semantically characterised in Cognitive Grammar by means of the **action chain model**. Finally, we briefly addressed **passive constructions** and saw that these are analysed in Cognitive Grammar in terms of **marked coding** which effects a TR–LM reversal.

FURTHER READING

Introductory texts

- **Lee (2002)**. Chapter 5 of this textbook focuses on grammatical constructions but only the early part of Lee's chapter is relevant to the present discussion. He focuses mainly on the Construction Grammar approach, to which I return in Chapters 25 and 26.
- **Radden and Dirven (2006)**. A number of chapters in this textbook are relevant to the present chapter. In particular, Chapter 2 provides a basic introduction to the clause, and Chapter 11 looks at marked coding.
- **Taylor (2002)**. Chapter 12 of this textbook explores valence, autonomy and dependence and constituency. This chapter contains particularly useful discussion of the differences between complements and modifiers. Chapter 12 discusses grammatical constructions, valence, heads and dependents. Chapters 14–16 focus on morphological structure and

Chapter 21 focuses on clause structure. Chapter 17 is also extremely useful as it presents a typology of symbolic units according to the properties of content/schematicity, autonomy/dependency, valence and complexity.

Constructions in Cognitive Grammar

- **Langacker (1987)**. Chapter 8 of this volume discusses valence, compositionality, autonomy and dependence. Chapter 9 concentrates on morphological structure.
- **Langacker (1991)**. Chapter 4 includes a discussion of nominal inflection and agreement. Chapter 7 discusses transitivity and outlines a schematic characterisation of the major grammatical functions: subject, direct object and indirect object. Chapter 8 focuses on marked coding and Chapter 9 discusses case systems. Chapter 10 discusses embedded clauses, along with other complex sentence types.
- **Langacker (2002)**. Chapter 3 considers aspect and Chapter 4 focuses on the passive construction. Chapter 6 sets out Langacker's account of valence. Chapter 9 discusses transitivity, grammatical functions and case, and includes a detailed discussion of semantic roles. Chapter 11 discusses constructional schemas, constituency, the head-dependent relation, grammatical morphemes and agreement.
- **Langacker (2008)**. Chapters 6 and 7 provide an overview of Langacker's approach to constructions. Chapter 6 provides a general characterisation, while Chapter 7 focuses on the four factors that characterise constructions: correspondences, profiling, elaboration and constituency. Chapters 11 and 12 examine clause structure and complex sentences, respectively.
- **Langacker (2010)**. Chapter 1 provides a chapter-length overview of the Cognitive Grammar approach to constructions.

DISCUSSION QUESTIONS

1. What is the nature of a construction in Cognitive Grammar?
2. What is the nature of trajector–landmark, and profile/base organisation? And what roles do they play in accounting for constructions in Cognitive Grammar? Give examples.
3. What does it mean to provide a semantic account of grammatical functions such as subject and object? What is the Cognitive Grammar account of these notions?

24

Cognitive Grammar III: the verb string

I conclude my investigation of Cognitive Grammar, in this chapter, by focusing on the verb string, a central feature of the English clause. In the previous chapter I presented the Cognitive Grammar account of grammatical constructions, examining how the relationships between the lexical verb and its dependents are captured in terms of autonomy and dependence. I now focus more closely on both the structural and semantic properties of the verb group within the clause.

I begin by contextualising my discussion with an overview of the properties of English verb forms, central to what follows in the remainder of the chapter. I then explore what is dubbed the **clausal head**, in Cognitive Grammar: a string of verbs that can include a **perfect construction**, a **progressive construction** and a **passive construction**, as well as the **lexical** (or **content) verb**. I then then look at how **tense** and **mood** are analysed in terms of a grounding predication, and receive a semantic account in terms of what is dubbed the **epistemic model**. Finally, I present Langacker's account of **lexical aspect** in verbs, which Langacker describes in terms of two broad categories: **perfective** PROCESSES and **imperfective** PROCESSES. This **aspectual distinction** is accounted for in a similar way to the count and mass noun distinction I presented in Chapter 22: in terms of the nature of the component parts of the PROCESS and in terms of bounding.

1 English verbs: a brief overview

English verbs can, broadly, be divided into lexical (or content) verbs and **auxiliary verbs**. Lexical verbs such as *adore* are open-class elements, while auxiliary verbs belong to the closed class of verbs.

Further, English auxiliaries can be divided into two subcategories: **modal auxiliaries** and **primary auxiliaries**. Modal auxiliaries such as *can* and *must* are responsible for introducing **epistemic mood** (relating to knowledge) or **deontic mood** (relating to obligation or permission) into the clause. The

Table 24.1 Verb forms in English

Infinitive	(to) be	(to) write	(to) go	(to) sing	(to) put
1s present	**am**	write	go	sing	put
2s present	**are**	write	go	sing	put
3s present	**is**	**writes**	**goes**	**sings**	**puts**
1pl present	are	write	go	sing	put
2pl present	are	write	go	sing	put
3pl present	are	write	go	sing	put
1s past	**was**	**wrote**	**went**	**sang**	put
2s past	**were**	wrote	went	sang	put
3s past	were	wrote	went	sang	put
1pl past	were	wrote	went	sang	put
2pl past	were	wrote	went	sang	put
3pl past	were	wrote	went	sang	put
Progressive participle	**being**	**writing**	**going**	**singing**	**putting**
Past participle	**been**	**written**	**gone**	**sung**	put

primary auxiliaries *have* and *be* introduce **grammatical aspect** and passive voice: while *have* introduces **perfect aspect**, *be* introduces either **progressive aspect** or **passive voice**. Each type of auxiliary requires the verb that follows it to occur in a certain form: the modal requires a bare infinitive (e.g. *must write*); the perfect auxiliary requires a 'past' or **perfect participle** (e.g. *have written*) and the passive auxiliary requires the same form (e.g. *be written*). The progressive auxiliary requires a 'present' or **progressive participle** (e.g. *be writing*). As I mentioned, earlier, in Chapter 19, the traditional labels 'past' and 'present' participle are rather misleading as these participles can occur in past, present or future contexts.

Table 24.1 summarises the forms available to English verbs. As this table demonstrates, a single verb form in English is typically compatible with subjects that reflect a wide range of different person and number features, exceptions being the third person singular present tense form, and the richer set of forms representing the verb *be*. This explains why English does not usually license implicit subjects in main clauses (because the person and number features of the subject are not usually marked on the verb). Recall that only past and present tense forms are finite (marked for tense), while infinitives and participles are non-finite.

2 The clausal head and the grounding predication

According to Langacker (1991), the traditional partition of the verb string into auxiliary verb(s) on the one hand and lexical verb on the other does not correctly reflect the semantic division of labour within the verb string. While it is clear that auxiliary verbs have a number of properties that distinguish them from lexical or content verbs, Langacker proposes that the verb string should be partitioned into **grounding predication** and clausal head. The grounding predication is the part of the verb string that is responsible for finiteness. In English, this is either the first element in the verb string (a modal verb) or is attached to the first element in the verb string (a tense morpheme). The remainder of the verb string, including any other auxiliary verb(s) together with the content verb, makes up the clausal head. This is illustrated by example (1).

(1)	She	[must]	[have been strangling]	the cat.
		GROUNDING PREDICATION	CLAUSAL HEAD	

Should the sentence contain a modal, as in example (1), none of the other verbs in the string is **finite**, which is to say, marked for tense. In the absence of the modal, the first verb in the string is finite. In example (2a), the perfect auxiliary *have* is finite (present tense) while in example (2b) the progressive auxiliary *be* is finite (past tense). If the lexical verb is the only verb in the string, this verb is finite; in (2c) the lexical verb *sing* occurs in its past tense form.

(2) a. Someone has been singing badly (as if strangling the cat).
  b. Someone was singing badly (as if strangling the cat).
  c. Someone sang badly (as if strangling the cat).

As the examples in (2) demonstrate, it is not always possible to separate a tense morpheme from the verb. This is because some English verb forms mark grammatical distinctions by vowel changes, known technically as **ablaut**. For example, consider the following variations of the verb (*to*) *sing*: *She is singing as if strangling the cat*, versus *She sang as if strangling the cat*. Cases where the tense morpheme can be separated from the verb are the third person singular present tense form of most verbs (*walk-s*), and the past tense form of some verbs (*walk-ed*).

3 The clausal head

In this section, I concentrate on Langacker's account of the clausal head. I return to the clausal grounding predication in the following section.

3.1 The clausal head complex

Within the clausal head, the lexical verb provides the content meaning. The leftmost verb functions as the profile determinant for the entire clause; Langacker dubs this verb the **grounded verb**, because it is under the direct control of the grounding predication. For example, as seen in (2), the leftmost verb, lexical or auxiliary, is marked for tense in the absence of a modal verb. Langacker's (1991: 198) representation of the organisation of the complex clausal head in English is represented in (3a).

(3) a. [*have* [PERF$_4$ [*be*$_1$ [*-ing* [*be*$_2$ [PERF$_3$ [V]]]]]]]
  b. Tommy must [have been being chased].

In the representation in (3a), *have* is the perfect auxiliary and PERF represents the perfect participle morphology (e.g. *-ed* or *-en*). The subscripts represent the different senses of the perfect participle in perfect constructions (PERF_4) and passive constructions (PERF_3), which are elaborated below. Analogously, the subscripts on the *be* auxiliaries indicate the different senses of this verb in progressive constructions (be_1) and passive constructions (be_2). The morpheme *-ing* represents the 'present' or progressive participle. Finally, V represents the content verb. Observe that the modal is not included in this representation of the verbal complex. And this follows, recall, because, if the clause contains a modal verb, it functions as the grounding predication.

The example in (3b) illustrates a verb string that contains all the elements in this complex clausal head (bracketed). The verb *have* is the perfect auxiliary; the verb *been* is the perfect participle (PERF_4) form of the progressive auxiliary (be_1); the verb *being* is the progressive participle (*-ing*) form of the passive auxiliary (be_2). Finally, the verb *chased* is the perfect participle (PERF_3) form of the lexical verb (V), which is required by the passive auxiliary. This verb form, which I dub the **passive participle**, is semantically related to the perfect participle in Langacker's analysis, hence its 'PERF' label.

As this example demonstrates, the elements that make up the **clausal head complex** (3a) do not occur separately in the verb string, but are 'glued together' by morphology. That said, not all clausal heads are as complex as the example in (3). Some clauses might just contain a single finite lexical verb. I examine the component parts of this complex clausal head in more detail below.

As Langacker (1991: 199) observes, a number of striking patterns emerge from the representation in (3a). First, moving from right to left, the elements alternate between phonologically autonomous and phonologically dependent units. For instance, the content verb is phonologically autonomous while the perfect participle morphology is a dependent (affixal) form. The passive auxiliary is phonologically autonomous while the progressive participle morphology *-ing* is a dependent (affixal) form and so on.

Second, and as we saw in Chapter 22, participles, as non-finite verb forms, are classified as ATEMPORAL RELATIONS. This entails that the phonologically dependent forms in (3a) (participial morphemes) have ATEMPORAL RELATIONS at their semantic poles. In contrast, Langacker argues that the phonologically autonomous forms (the auxiliary verbs *have* and *be*, together with the content verb) have TEMPORAL RELATIONS (PROCESSES) at their semantic poles. Hence, the primary auxiliaries *have* and *be* are semantically related to their non-auxiliary (lexical) counterparts.

Third, at each 'level' in the increasingly complex clausal head construction, the leftmost element functions as the profile determinant, so that the constructions within this representation also alternate between PROCESS and ATEMPORAL RELATION, which in turn has consequences for how the complex construction can function within a larger construction. While a construction with the status of PROCESS can function as a clausal head, a construction with the status of ATEMPORAL RELATION can modify a noun. The possibilities are illustrated in Table 24.2.

Table 24.2 Clausal head complex (adapted from Langacker 1991: 198–9)

Example	Construction	Relation type
Monica will **cherish** Tommy	[v]	PROCESS
a **cherished** cat	[perf$_3$ [v]]	ATEMPORAL RELATION
Tommy should **be cherished**	[*be*$_2$ [perf$_3$ [v]]]	PROCESS
any cat **being cherished**	[-*ing* [*be*$_2$ [perf$_3$ [v]]]]	ATEMPORAL RELATION
Tommy must **be being cherished**	[*be*$_1$ [-*ing* [*be*$_2$ [perf$_3$ [v]]]]]	PROCESS
*a cat **been being cherished**	[perf$_4$ [*be*$_1$ [-*ing* [*be*$_2$ [perf$_3$ [v]]]]]]	ATEMPORAL RELATION
Tommy must **have been being cherished**	[*have* [perf$_4$ [*be*$_1$ [-*ing* [*be*$_2$ [perf$_3$ [v]]]]]]]	PROCESS

Notice that these clausal examples all contain a modal verb. This makes it easier to show the clausal head independently from the grounding predication. As this pattern illustrates, the only example that is not well-formed concerns the penultimate combination, where PERF4 is restricted to co-occurring with the perfect auxiliary *have*. As Langacker observes, this model of the verb string explains why auxiliaries and their participles have to occur in pairs within a clause: *have* + V-PERF$_4$ make a **perfect construction** (e.g. *have cherished*); *be*1 + V-*ing* make a **progressive construction** (e.g. *be cherishing*); and *be*$_2$ + V-PERF$_3$ make a passive construction (e.g. *be cherished*). The reason why these elements have to occur in pairs within the clause is because each construction headed by the participle (without its auxiliary) has the status of an ATEMPORAL RELATION. While this can occur as modifier, it cannot occur as a clausal head. Thus, the auxiliary verb is required to contribute its own profile to the construction, which then has the status of a PROCESS and can head a clause. This follows as the PROCESS profile contributed by the auxiliary still requires grounding (by a modal or a tense morpheme), which explains why a non-finite auxiliary cannot occur as the first element in a verb string (e.g. **Monica have cherished Tommy*).

3.2 The passive construction: [be$_2$ [PERF$_3$ [V]]]

In Cognitive Grammar auxiliaries are not viewed as 'purely grammatical' elements but represent an extension from the other uses of that verb. This means that they receive a semantic characterisation, as does the participial morphology. According to Langacker, the morpheme PERF$_3$, which gives rise to the passive participle (the perfect participle that occurs in passive constructions such as *be cherished*), imposes a construal upon the construction whereby a TR–LM reversal is effected.

For this to be possible, the content verb must have both a TR and an LM; hence, it must be a transitive (or ditransitive) verb. The morpheme PERF$_3$ (e.g. *-ed* in *cherished*) is both phonologically and conceptually dependent and has a schematic

PROCESS as its TR, which in turn has a schematic TR and LM. The autonomous content verb (e.g. *cherish*) elaborates the schematic PROCESS of PERF_3.

The resulting construction [PERF_3 [V]] (e.g. *cherished*) is headed by PERF_3, and, as a participle, has the status of an ATEMPORAL RELATION that specifies the TR–LM reversal characteristic of a passive construction. According to Langacker, the passive participle morpheme PERF3 belongs to a network of PERF morphemes which have related, yet distinct, meanings. For instance, I have already observed that PERF_4 is the perfect participle morpheme which occurs in perfect constructions – an idea to which I return below. Langacker proposes that PERF_1 is the form found in stative adjectival constructions such as (4). This form is related to intransitive verbs.

(4) Jimmy's toy is broken.

Self-evidently, the verb *break* can also be transitive (e.g. *Tommy broke Jimmy's toy*); but, the fact that we can say *Jimmy' s toy broke* demonstrates that it can also be intransitive. The fact that PERF_1 combines with intransitives means that, unlike the passive PERF_3, this form doesn't involve a TR–LM reversal, as intransitive verbs don't specify an independent LM. In contrast, the form that Langacker terms PERF_2 also participates in stative adjectival constructions, but is related to transitive verbs and does effect a TR–LM reversal:

(5) Monica left Tommy reassured (by her cuddles).

It is because PERF_2 relates to transitive verbs that we interpret *Tommy* as the LM of the transitive verb *reassured* and *her cuddles* as the TR. As a result of the TR–LM reversal *Monica* occurs here elaborating the TR of the atemporal relation *reassured*, and *her cuddles* need not be present in the construction.

Now let's consider the other key component of the passive construction, the passive auxiliary *be*$_2$. This also occurs in a network of related yet distinct uses of the same verb, which profiles a schematic imperfective PROCESS. The basic form of *be*, which Langacker dubs *be*$_1$, functions as the copula, which, as I showed in the previous chapter, serves to construe a nominal or simple ATEMPORAL RELATION as a PROCESS. According to Langacker *be*$_1$ also functions as the progressive auxiliary, which construes a complex ATEMPORAL RELATION as a PROCESS. When the passive auxiliary *be*$_2$ combines with the passive participle containing PERF_3, its role is also to construe an ATEMPORAL RELATION as a PROCESS.

3.3 The progressive construction: [*be*$_1$ [-*ing* [V]]]

Langacker describes the progressive construction in the following terms:

> [T]he progressive construction always views a perfective process from an internal perspective and thereby renders it imperfective . . . Viewing a process from an internal perspective is a matter of restricting its profile to a series of component states that does not include the initial and final states. (Langacker 1991: 209)

On this account, the meaning of the progressive participle morpheme *-ing* lies in its restriction of the sequence of events that make up a PROCESS to just the 'middle' stages, thereby construing it as an ongoing event. Langacker suggests that *-ing* also renders the sequence of states identical and thereby suspends sequential scanning, which results in a complex ATEMPORAL RELATION. By itself, the resulting construction [*-ing* [V]] (e.g. *hoping*) can perform a modifying function (e.g. *hoping, she submitted the job application*), but cannot head a clause (**Susan hoping at the moment*). When *be*$_1$ combines with [*-ing* [V]], it imposes its PROCESS profile on the resulting construction [*be*$_1$ [*-ing* [V]]] (e.g. *be hoping*), which can then head a clause.

3.4 The perfect construction: [*have* [PERF$_4$ [V]]]

I conclude my discussion of the clausal head by considering the perfect construction. Here, PERF$_4$ represents the 'past' or perfect participial morphology (e.g. *-ed* in *opened*), which gives rise to an atemporal relation. The perfect auxiliary *have* imposes its PROCESS profile upon this construction, giving rise to the perfect construction [*have* [PERF$_4$ [V]]] (e.g. *have opened*), which can then function as clausal head. As we have seen, the perfect construction encodes an event as 'completed' with respect to a given reference point in time. Compare example (6a), which is in the present perfect, with (6b), which is in the simple past.

(6) a. The recruiters have opened Monica's LinkedIn applications.
b. The recruiters opened Monica's LinkedIn applications.

The difference between these two examples is clear: while example (6a) might be used in a context where the LinkedIn recruiters have just opened Monica's job applications, example (6b) locates the event(s) at a more distant point in time. Langacker (1991: 212) therefore suggests that the function of the perfect is to encode **current relevance**. In considering how the perfect auxiliary *have* is linked to other senses of the same verb, Langacker compares it to examples such (7).

(7) We have a lot of changeable weather.

This example illustrates the content meaning of lexical *have*. Prototypically, lexical *have* encodes a relationship of POSSESSION, but in example (7) it also evokes two other salient aspects of meaning. First, example (7) makes reference to a spatial reference point, where the spatial location of the object (*a lot of changeable weather*) is interpreted on the basis of the spatial location of the subject (*we*), which is salient because it makes reference to a person, or a group of people, and thus serves as a spatial reference point.

Second, this type of construction also encodes what Langacker calls **potential relevance**: the construction does not necessarily describe the current relation between the subject and the object; we could utter (7) on a tranquil, sunny day, for example, hence describing a relation that is a potential (if not a veridical) aspect of the subject's experience.

On the basis of a comparison of the perfect auxiliary *have* with lexical *have* in constructions such as (7), Langacker identifies the semantics of auxiliary *have* as evoking i) a temporal (rather than spatial) reference point, and ii) current (rather than potential) relevance. These semantic properties of auxiliary *have* are related to the spatial reference point and the potential relevance that lexical *have* evokes in (7).

Moreover, the perfect construction need not occur in the present tense, as it does in (7). This is illustrated by example (8), which is in the past perfect.

(8) The LinkedIn recruiters had opened Monica's applications.

Indeed, we see from this example that 'current relevance' is not restricted to the present tense (the time of speaking). The event of opening job applications is understood relative to the temporal reference point that is evoked by the construction or provided by the context. As such, whether the temporal reference point is in the past, present or future, the completed event is construed as 'currently relevant' relative to that temporal reference point.

To further illustrate this point, observe that the perfect construction is often used in contexts where the relevance of the completed event to some immediately preceding or following event is emphasised. This is illustrated by the contrast between (9a) and (9b).

(9) a. Monica had just fixed Jimmy's toy when the sun came out.
b. Monica fixed Jimmy's toy. Then the sun came out.

Now let's consider the 'division of labour' between the component parts of the perfect construction [*have* [PERF$_4$]]. Here, we observe that the perfect participle morpheme PERF$_4$, much like the other instances of PERF, imposes its profile as an ATEMPORAL RELATION on the content verb. Unlike the passive PERF$_3$, it does not impose a TR–LM reversal. Rather, Langacker characterises the meaning of PERF$_4$ as **temporal anteriority**.

This notion should not be confused with past tense, which also makes reference to past time; as we have seen, the perfect construction can occur in the present tense. Regardless of its tense properties, the perfect construction construes an event as completed and furthermore emphasises the event's completion. In (9a), for example, it is the end stage of the fixing event that is salient in relation to the temporal reference point (when the sun came out). In this respect, Langacker argues that PERF$_4$ shares a further aspect of its meaning with the other instances of PERF, which is that all four variants emphasise the terminal stage of an event.

Finally, while I have discussed, in this section, the passive, progressive and perfect constructions individually, these are not separate or unrelated constructions; in Cognitive Grammar all form part of a network of verb-string constructions which may display greater or lesser complexity. As we have seen in Table 24.2, and example (3) for instance, it is possible for all three constructions to co-occur in one complex construction, where their properties are closely interwoven.

4 The clausal grounding predication

As noted above, Langacker divides the verb string into the grounding predication and clausal head. I repeat example (1), this exemplifies this distinction:

(1)	She	[must]	[have been strangling]	the cat.
		GROUNDING PREDICATION	CLAUSAL HEAD	

As the English modal is phonologically autonomous, examples such as this provide a straightforward illustration of the different roles played by the grounding predication, in this example, the modal *must*, and the clausal head: *have been strangling*.

That said, an important caveat is in order: not all sentences contain modal verbs. In such a sentence, **grounding** is achieved, not via a modal verb, but, rather, by tense. Recall from Chapter 22, that Langacker defines grounding in terms of the grammatical system that relates a speech event to its participants, the time of speaking and the immediate physical context. In sentences where the grounding is achieved via a tense morpheme, the grounding predication is phonologically dependent as it attaches to the first verb that makes up the clausal head. Hence, in many constructions, then, the distinction between grounding predication and clausal head is blurred by the fact that they may be, for this reason, morphologically bound together.

4.1 Grounding: a recap

I introduced the notion of ground in Chapter 16, in the context of my discussion of Langacker's notion of construal; and I first discussed the idea of grounding predications in Chapter 21. As we saw, grounding forms the basis of the Cognitive Grammar account of the relationship between nouns and determiners. Indeed, nouns and verbs are widely recognised as the most widely attested lexical classes in the languages of the world, hence their central status in Cognitive Grammar. Furthermore, verbs head clauses represent a typologically widely attested construction type. Langacker contends that noun phrases and finite clauses – clauses marked for tense – share the fact that they are grounded. Each speech event involves a ground, which consists of place and time of speaking, the participants in the speech event and so on: grounding is the process whereby linguistic expressions are linked to the ground. Determiners ground nominal expressions by profiling an instance of a category (*a cat lover*), and by indicating information such as whether participants are already familiar with the referent (*the cat lover*), or whether the referent is present in the immediate physical context (*this/that cat lover*). Accordingly, this explains why many determiners (in particular, demonstrative and possessive determiners) have **deictic properties**: they rely upon aspects of the ground in order to be fully interpreted.

In analogous fashion to nouns being grounded by determiners, finite clauses are grounded by tense and by modals which link the PROCESS designated by the clause to the specific usage event. As a deictic category, tense situates the PROCESS relative to the time of speaking, while the modal verbs establish the 'reality' status of the designated PROCESS from the speaker's perspective. In the same way that a nominal grounding predication is represented in the network as a schematic nominal or THING, the clausal grounding predication is represented in the network as a schematic verb or PROCESS. Hence, before presenting the Cognitive Grammar account of clausal grounding, I provide a brief recap of modality and tense, before returning to the nature of grounding.

More generally, grounding as a grammatical phenomenon reveals two things about Cognitive Grammar. First, grammatical phenomena, in keeping with the symbolic thesis, are meaningful; they encode semantic content, albeit of a highly schematic kind. Second, grounding, which links the speech event to its extra-linguistic context, entails that factors that traditionally fall under the purview of pragmatics are held to be directly encoded in the grammatical system of language. By asserting that grammatical phenomena such as determiners, quantifiers, modal verbs and tense markers serve to provide a grounding function, Langacker thereby provides direct confirmation that cognitive linguists view semantic and pragmatic phenomena as occupying a continuum, rather than being distinct types of meaning (recall my discussion of this issue in Chapter 16).

4.1.1 Modality

As I observed earlier in the chapter, modality is usually divided into two broad categories: epistemic and deontic. As we saw in Chapter 19, epistemic modality is a type of grammatical marking that encodes the speaker's judgement relating to his or her knowledge about the possibility, likelihood or certainty of the proposition expressed by the sentence. This is what the English modal verbs *will*, *can* and *might* express in the sentences in (10).

(10) a. Monica will be here soon. EPISTEMIC MODALITY
b. Her husband can make epic burritos.
c. She might open a bottle of coke zero.

Deontic modality expresses the speaker's judgement relating to obligation (moral or social), permission or prohibition. This is what the English modal verbs *must* and *should* express in the examples in (11).

(11) a. Monica must get away from all this. DEONTIC MODALITY
b. Her husband should try and love her more.

That said, the English modal verbs don't neatly divide into two categories according to which type of modality they express; their interpretation can be rather protean, influenced by their context of use. For example, *must* expresses epistemic modality in example (12a) and *can* expresses deontic modality in example (12b).

(12) a. The cats must have been play fighting again. EPISTEMIC
b. You can now put the vacuum cleaner away. DEONTIC

Modal auxiliaries do not inflect in the usual way for tense or aspect (**musted*, **musting*), nor do they have a third person singular -*s* form (*she *musts*). Modals also lack an infinitive form (**to must*), and must occur as the first verb in a verb string (**I am musting . . .*), followed by the bare infinitive form of the next verb in the string (**she must went*). With the exception of *must*, the English modals occur in pairs (*can–could*; *may–might*; *shall–should*; *will–would*). These are traditionally described as present and past tense forms on the basis of 'sequence of tense' patterns.

For example, a past tense verb in a main clause tends to require a past tense verb in a complement clause; compare (13a) with (13b). As examples (13c) and (13d) show, the modals sometimes pattern in a similar way.

(13) a. I thought Jimmy loved Mr Greeny.
b. *I thought Jimmy loves Mr Greeny.
c. I thought Monica could at least cook an egg.
d. *I thought Monica can at least cook an egg.

That said, the so-called 'past' modal forms are not restricted to past tense contexts. For example, consider uses like *I' d like to help* or *I could do it if you'd let me*. Despite these difficulties in pinning down the tense properties of the modal verbs, they are usually considered to be finite verb forms because they pattern together with tensed verb forms in grounding a main clause verb string.

4.1.2 Tense

As I showed in some detail in Chapter 19, tense refers to the grammatical marking of time relative to the time of speaking. As such, a language is only described as having tense when it has a distinct morphological verb form that indicates past/present/future time. English is usually described as having two tenses: past and present (non-past). While past tense describes an event that took place prior to the point of speaking (14), the present tense is not restricted to describing an event that is concurrent with the moment of speaking (15).

(14) a. Monica took Tommy to the vet yesterday.
b. The vet had closed for lunch.

(15) a. Jimmy is under the bed.
b. You'll never guess what happened yesterday; Jimmy refuses to get in his carrier, so Monica chases him. He slips on the wooden floor and crashes into a plant pot, which smashes to smithereens.

c. The vet opens at 9 am tomorrow.
d. Jimmy wails whenever Monica takes him to the vet.

While (15a) describes an event that is taking place at the time of speaking, (15b) illustrates the historical use of the simple present, where it can be used to narrate a sequence of events that took place in past time. The simple present form in (15c) describes an event that is located in future time. Finally, the simple present in (15d) is not interpreted as meaning that Jimmy is wailing right now, but that he habitually wails when taken to the vet. The fact that the simple present in English can be used to refer to past, present and future time, as well as encoding habitual events (a type of aspect), has led some linguists to prefer the label non-past.

Future tense expresses reference to future time, but English has no future tense, as it lacks a verb form inflected for future. Rather, English has a range of different ways of referring to future time, some of which are illustrated in (16).

(16) a. Monica will leave tomorrow.
b. Monica is leaving tomorrow.
c. Monica leaves tomorrow.
d. Monica is going to leave tomorrow.

4.2 The epistemic model

In order to provide a semantic account of tense and the modals, Langacker invokes an idealised cognitive model or ICM (as introduced in Chapter 11), which he dubs the **epistemic model**. The term 'epistemic', as we saw in Chapter 19, relates to knowledge systems. The epistemic model is illustrated in Figure 24.1.

In this model, the large circle represents immediate reality, which we can think of as 'here and now'. This represents the ground in which the speech event occurs. The small shaded circle represents the language user. The term 'reality' pertains to knowledge represented in the conceptual system of the individual rather than to an objective external reality. The horizontal line running through the centre of the diagram represents TIME, which Langacker

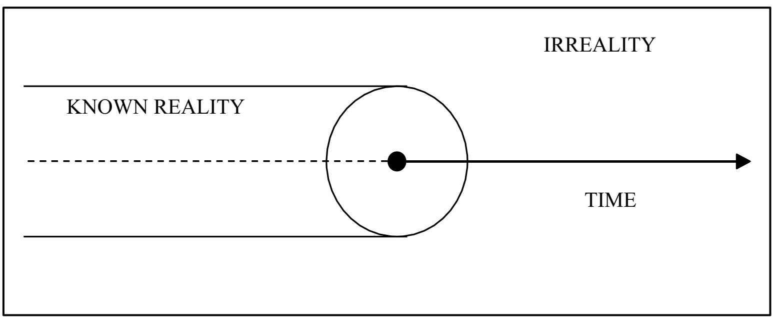

Figure 24.1 The epistemic model (adapted from Langacker 1991: 242)

(1991: 242) describes as 'the axis along which reality evolves'. The dotted line represents TIME 'before now' and the continuous line represents TIME 'after now'. Although in reality 'now' is momentary, speech events tend not to be momentary, so that 'now' as construed for linguistic purposes may be a significant period of time. This is represented by the portions of the time line inside the large circle.

It may already be clear how this model accounts for tense, at least in its core uses. While present tense refers to time inside the ground, past tense refers to the portion of time within known reality but outside the ground, and future tense refers to time in irreality, beyond the ground.

In addition to tense, the epistemic model also accounts for the modal verbs. While the absence of a modal verb indicates that the speaker construes the event as part of known reality (e.g. *Monica is a cat lover*), the presence of a modal verb indicates that the speaker construes the event as part of irreality (e.g. *Monica might be a cat lover*; *Lily will be a cat lover*).

Given the basis of the epistemic model in TIME and SPACE, reality and irreality also vary along parameters of distance, in terms of whether they are immediate (proximal) or non-immediate (distal) relative to the ground. This type of variation is termed **epistemic distance** (an idea I first discussed in Chapter 19).

For instance, in the case of the modals, Langacker argues that the pairs that we observed earlier (e.g. *can* and *could*) represent immediate versus non-immediate irreality, respectively. Immediate irreality is close to known reality, and characterises verbs such as *must*, *will* and *can* which encode a strong degree of obligation, likelihood or possibility. These contrast with their non-immediate counterparts such as *would* and *could*, which encode a much weaker sense of possibility, a much stronger sense of doubt and so on.

In analogous fashion, Langacker analyses the past tense morpheme *-ed* as a **distal morpheme**, as it evokes a portion of time that belongs to known reality, but is distal relative to the 'here and now' of the ground. In contrast, the simple present prototypically refers to the 'here and now' of the ground, and its prototypical morpheme is treated as an unmarked form, or **zero morpheme** ø. This model therefore predicts that there will be four basic types of grounding predication, which are listed in (17).

(17) a. IMMEDIATE REALITY — for example Ø, *-s*
b. NON-IMMEDIATE REALITY — for example *-ed*
c. IMMEDIATE REALITY — for example *can*
d. NON-IMMEDIATE REALITY — for example *could*

While (17a) and (17b) relate to present and past tense, respectively, (17c) and (17d) relate to modality. Beyond these parameters of variation, tense and modality are both considered to be types of grounding predication, in Cognitive Grammar.

As I showed in Chapter 21, the nominal grounding predication specifies an instance of a category and is itself a schematic nominal or THING. In similar fashion, a **clausal grounding predication** is a schematic PROCESS, and specifies an instance of the PROCESS category. Consider the two examples in (18).

(18) a. Monica was a cat lover.
b. Monica to be a cat lover

Example (18a) is a finite clause and is therefore grounded. This entails that the location of the event described in the clause is established relative to the ground in terms of (ir)reality. As a consequence, the clause is realised as a PROCESS and can stand alone as a communicative speech event. Example (18b), in contrast, is a non-finite clause. Because it is not grounded, which entails that its reality status has not been established, it cannot stand alone as a communicative speech event. Clauses such as this can only occur as embedded clauses, where the main clause is grounded as in (19). In this way, Langacker accounts for the fact that main clauses have to be finite.

(19) Her husband always knew Monica to be a cat lover.

4.3 Modality revisited

Cognitive Grammar exploits this epistemic model in order to account for the unusual characteristics of the modal verb which I outlined above. First, the fact that the modal does not inflect to form a participle or an infinitive is consistent with its role as a grounding predication: participles and infinitives are ATEMPORAL RELATIONS, while the modal is a schematic PROCESS.

Second, this analysis also explains the fact that the modal does not participate in subject–verb agreement (**Monica musts succeed*). This follows as the third person present tense morpheme *-s* is itself a grounding predication with an opposing reality value, so the two are not expected to co-occur.

Finally, the fact that the modal has to be followed by the bare infinitive form of the next verb in the string is accounted for on the basis that a grounding predication and its grounded element must match in terms of category. That is, given that the modal represents a schematic PROCESS, its grounded element must also be a PROCESS. One potential problem for this analysis would be if the verb form that follows the modal counts as a 'bare infinitive', given that the infinitive represents an ATEMPORAL RELATION. However, in Cognitive Grammar, the verb form that follows the modal is described as a simple verb, which counts as a PROCESS. In other words, it encodes a temporal relation, but is uninflected because the modal performs the grounding function.

4.4 Potential and projected reality

In the context of the epistemic distance model, the modals are characterised in terms of **potential reality** and **projected reality**. The distinction between these explains the difference between the future time epistemic modals *will* and *may*. The modal *will* encodes projected reality (in immediate reality), and therefore gives rise to the future time interpretation. In contrast, *may* encodes only potential reality (although still in immediate irreality), hence a weaker epistemic reading. Langacker follows Talmy (1985) and Sweetser (1990), in adopting a force-dynamics model to capture this distinction between projected and potential reality.

Should the event be construed as having sufficient 'momentum', such that the speaker can be confident that it will reach the predicted reality status, this amounts to projected reality. In contrast, an event that is construed as having weaker momentum has only potential reality status. The distal counterparts of these modals are analysed along the same lines, but involve a temporal reference point more distant from the ground.

The polysemy of the modal verbs is also explained in force-dynamics terms. The distinction between the deontic and epistemic readings, which is often not a clear-cut distinction, relates to whether the source of the momentum is **salient**. If the source of the momentum is salient, this gives rise to deontic interpretations (involving obligation, permission and so on). This is illustrated by examples (20a) and (21a), where the source of the momentum or force is understood as the speaker or some other authority. Should the source of the momentum not be salient, as in (20b) and (21b), this gives rise to the epistemic reading.

(20)	a.	You may kiss the ring.	DEONTIC (permission)
	b.	Jimmy may be too full to play.	EPISTEMIC
(21)	a.	You must kiss the ring hand.	DEONTIC (obligation)
	b.	Jimmy must be too full to play.	EPISTEMIC

Moreover, the fact that modals are frequently ambiguous with respect to epistemic versus deontic interpretations illustrates that these are not discrete categories. For example, the sentence *Her husband must be loving* is open to either a deontic or an epistemic interpretation.

5 Lexical aspect

In Chapter 10, I introduced the distinction between grammatical versus lexical aspect. I showed that while lexical aspect concerns the way in which the internal structure of an event is encoded by the verb, grammatical aspect concerns the way in which the speaker's 'view' of the event's contour is encoded. In this chapter, we have seen, from the perspective of Cognitive Grammar, that grammatical aspect is imposed on a construction by auxiliary verbs. In this section, I now turn to the Cognitive Grammar account of lexical aspect, and the way this is encoded by lexical verbs. I do so in order to complete my presentation of the Cognitive Grammar approach to the verb string.

5.1 Situation types: an overview

Taxonomies of lexical aspect have traditionally focused on the way in which lexical verbs encode what have been dubbed **situation types**. The seminal account of lexical aspect is Vendler's (1967) account of situation types, where verbs, and hence the clauses that they head, are classified into four major categories: **state, activity, achievement** or **accomplishment**. Each of these situation types is distinguished based on a set of three aspectual features: whether the situation type exhibits **stative** versus **dynamic aspect**, whether it exhibits **durative** versus **punctual aspect** or whether it has an endpoint (**telic aspect**) or not (**atelic aspect**). Vendler's taxonomy of situation types is represented in Table 24.3.

In brief, a verb is stative if it describes an event that remains constant through time and, crucially, does not involve internal change or action. A prototypical stative verb is *resemble*. In contrast, a dynamic verb involves internal change (e.g. *grow*) or action (e.g. *eat*).

The distinction between durative versus punctual aspect relates to whether the event described by the verb is over almost as soon as it has begun, in which case it is punctual (e.g. *flash*), or extends over time, in which case it is durative (e.g. *resemble*, *love*, *grow*).

The distinction between telic versus atelic aspect relates to whether the event described by the verb has an inherent endpoint or goal as part of its meaning, in which case it is telic (e.g. *die*). In contrast, stative verbs such as *love* express atelic events.

While these aspectual features together give rise to the taxonomy represented by Table 24.3, the examples in (22) illustrate each of the situation types.

(22) a. Monica knows how to clip long-haired cats. STATE
b. Tommy's eyes twinkled. ACTIVITY
c. Her husband arrived at 9 pm. ACHIEVEMENT
d. Monica reached the vet's in 20 minutes. ACCOMPLISHMENT

Example (22a) is a state as it stative – knowing something does not involve internal change – it is durative – as it extends across time – and it is atelic – we do not expect the situation to reach some inherent endpoint.

Example (22b) is an activity as it is dynamic – twinkling involves inherent change – it is durative, and atelic – activities come to an end.

Example (22c) is an achievement as it dynamic – arriving involves action – is punctual – the act of arriving somewhere is achieved in the moment of arriving – and it is telic – it had an inherent endpoint.

Table 24.3 Situation types (adapted from Vendler 1967)

Situation type	stative/dynamic	durative/punctual	telic/atelic
state	Stative	Durative	atelic
activity	Dynamic	Durative	atelic
achievement	Dynamic	Punctual	telic
accomplishment	Dynamic	Durative	telic

Finally, example (22d) constitutes an accomplishment, as it is dynamic and telic – involving action towards an inherent endpoint or goal – and it is durative – it is extended across time.

5.2 Perfective and imperfective PROCESSES

Let's now consider how Cognitive Grammar accounts for these situation types. Langacker holds the basic aspectual distinction to be between **perfective** and **imperfective**. Moreover, the semantic basis of this aspectual distinction relates to scanning (recall my discussion in Chapter 22). Langacker (2002: 86) defines a PROCESS as 'a series of profiled relations . . . distributed through conceived time and scanned sequentially'.

An imperfective PROCESS is characterised by the fact that each relation that makes up the cognitive representation is the same as the next; hence, the situation described remains constant through time. Prototypical imperfectives includes verbs such as *resemble*, *have* and *know*. In contrast, a perfective PROCESS is characterised by a sequence of relations where each is different from the last; hence, the situation described involves changes through time. Prototypical perfectives include verbs such as *jump*, *kick* and *arrive*.

Langacker relies on well-established grammatical tests for distinguishing between the two. Prototypical imperfectives such as *resemble* can occur in the simple present (23a) but not in the progressive (23b).

(23) a. Tommy resembles a cherub.
 b. *Tommy is resembling a cherub.

In contrast, while prototypical perfectives such as *make* can occur in the progressive (24a), they are unnatural in the simple present (24b).

(24) a. Her husband is making burritos.
 b. ?Her husband makes burritos.

That said, while perfectives are often odd in the simple present, an appropriate context can license this usage and give rise to a habitual interpretation, which serves to enable construal of the situation as imperfective. Compare the following conversational exchanges:

(25) Monica: What are you doing?
 Her husband: ?I exercise.

(26) Monica: How come *you* never catch a cold?
 Her husband: I exercise every afternoon.

In example (26), the context of Monica's husband's utterance, together with his use of the expression *every afternoon*, gives rise to a habitual interpretation. Despite this broad division between perfective and imperfective PROCESSES, some verbs can occur quite naturally in both the simple present and the progressive, demonstrating they can be interpreted as either imperfective or perfective, respectively. This is illustrated by example (27).

(27) a. Monica loves this episode of *Bull*. IMPERFECTIVE
b. Monica is loving this episode of *Bull*. PERFECTIVE

Example (27a) describes a situation that remains constant over time: Monica has loved the episode for some time, and this is not expected to end. In contrast, (27b) describes an ongoing experience: Monica is enjoying watching the episode at the moment, and at some point this activity will come to an end.

5.3 Aspect and the count/mass distinction

Langacker proposes that the perfective/imperfective verb distinction can be modelled in the same terms as the count/mass noun distinction (that I presented in Chapter 22). As such, the aspectual distinction relates to the nature of the component parts of the PROCESS, and to the presence or absence of bounding. Needless to say, and unlike bounding vis-à-vis nominals, aspect relates to bounding in TIME rather than bounding in SPACE. Langacker summarises this proposal as follows:

> The component states of a process (each profiling a relation) are analogous to the component entities constituting the region profiled by a noun. For a process, time is the primary domain with respect to which the presence vs. absence of bounding is determined. (Langacker 2002: 87)

The diagrams in Figure 24.2 represent Langacker's model of aspect. The box represents the scope of predication. A perfective event (Figure 24.2(a)) is bounded within this scope and involves internal change which is represented by a squiggly line. In contrast, an imperfective event (Figure 24.2(b)) is unbounded and does not involve internal change, remaining constant both within and beyond the scope of predication. This is represented by a straight line. The arrow represents the passage of time.

5.3.1 Perfective

The perfective PROCESS can be likened to a count noun in that both are bounded and **replicable**. For count nouns, replicability gives rise to pluralisation. For

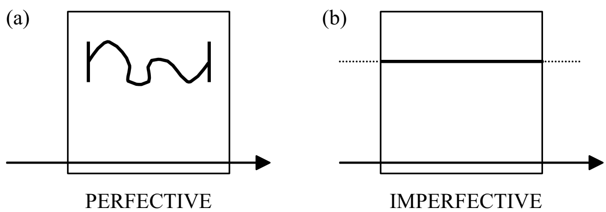

Figure 24.2 Perfective and imperfective aspect (adapted from Langacker 2002: 88)

perfective processes, replicability can give rise to **iterative aspect**. This is illustrated by (28a). Example (28b) shows that the imperfective PROCESS is incompatible with an iterative interpretation.

(28) a. Jimmy chased the toy over and over again.
b. *Jimmy resembled his brother over and over again

The incompatibility of a perfective process with the simple present tense is accounted for by Langacker's (2002: 89) definition of tense: in the case of present tense, a 'full instantiation of the profiled process occurs and precisely coincides with the time of speaking'. In the case of past tense, a 'full instantiation of the profiled process occurs prior to the time of speaking'. As we have seen, a perfective PROCESS is bounded, which means that a full instantiation includes the beginning and end points of the PROCESS. This explains why perfective PROCESSES are typically incompatible with the simple present which encodes an event coextensive with the moment of speaking: it is not usually possible for all the distinct subparts of a perfective PROCESS to coincide with the moment of speaking. Furthermore, because perfective PROCESSES involve internal change and therefore do not consist of identical subparts, a single 'moment' in the PROCESS cannot serve as a representation of the PROCESS as a whole.

Punctual events represent an exception to this generalisation: verbs such as *flash*, *sneeze* or *blink* encode bounded events that are over almost as soon as they have begun, which explains why they can be modified by temporal expressions that pinpoint a moment in time (e.g. *Tommy sneezed at noon*). Performative verbs such as *promise* or *declare* also represent an exception to this generalisation: while perfective and therefore bounded, the act of promising or declaring is instantaneous (punctual) and can thus coincide with the moment of speaking. This explains why performatives are licensed in the simple present. As Taylor (2002: 401) observes, bounded processes that are not punctual can be described as **extended**: these are compatible with temporal expressions that express a bounded period of time (e.g. *George built a canoe in two weeks*).

I observed above that there are other contexts in which the simple present is licensed for perfectives; these contexts require a 'special' interpretation to license the use of the simple present: as we saw in example (15), the simple present can be used to refer to the imminent future or the past, and can also give rise to a habitual interpretation. In Cognitive Grammar, interpretations of this sort are a matter of construal. Langacker argues that the imminent future use of the simple present situates the whole bounded event at some point in the future, preserving its bounded nature, but that the present tense emphasises the planned status of the future event, which remains constant through time. He further argues that a habitual reading construes a PROCESS as constant through time and thus imperfective, while the historical present construes a past (bounded) event as though it were happening in the present.

5.3.2 Imperfective

The imperfective PROCESS can be likened to a mass noun; in the same way that the component parts of a mass noun are **homogeneous**, the component states of a prototypical imperfective PROCESS are identical. Furthermore, in the same way that a mass noun is **expansible** or **contractible**, any given subpart of an imperfective PROCESS is still an instance of that process. This explains why a prototypical imperfective PROCESS is compatible with the simple present, because a subpart of the PROCESS that is coextensive with the moment of speaking can serve as a representation of the PROCESS as a whole. This follows directly from the property of homogeneity (an issue I discussed in Chapter 22).

This is illustrated by (29a). Unlike the perfective, the prototypical imperfective PROCESS is incompatible with the progressive, because the function of the progressive is to construe an event as imperfective. It is therefore redundant to mark an imperfective process as progressive (although see Taylor 2002: 404 for further discussion of this point).

(29) a. Monica knows her principles of business leadership.
b. *Monica is knowing her principles of business leadership.

As we saw earlier, the inflectional *-ing* morpheme derives an ATEMPORAL RELATION from a PROCESS. This explains why progressive participles of imperfective PROCESSES are licensed in adverbial clauses (30a), despite the fact that an imperfective PROCESS cannot occur in the progressive (30b). This is because the progressive auxiliary *be* imposes a PROCESS reading on the ATEMPORAL RELATION.

(30) a. Having a rather large belly, Jimmy was not cat show material.
b. *Jimmy was having a rather large belly.

5.4 Situation types: Cognitive Grammar compared to Vendler (1967)

I now briefly return to the situation types that I introduced above, as summarised in Table 24.3. Comparing that with the Cognitive Grammar approach, it is clear that the perfective PROCESS is necessarily telic, because bounded events entail an endpoint. The perfective PROCESS is also necessarily dynamic, as perfective PROCESSES involve internal change. While some perfective PROCESSES (e.g. *sneeze*) are punctual, others are extended or 'durative' (e.g. *build*). This means that Langacker's perfective aspect corresponds to achievement (punctual) and accomplishment (durative) in Vendler's system.

Now let's compare Langacker's approach with respect to the imperfective PROCESS. In Cognitive Grammar the imperfective PROCESS is atelic; this follows as unbounded PROCESSES do not specify an inherent endpoint. The imperfective PROCESS is also necessarily durative, since it is in the nature of an unbounded PROCESS that it endures across time. As we have seen, the prototypical imperfective PROCESS is the stative PROCESS, which involves no internal

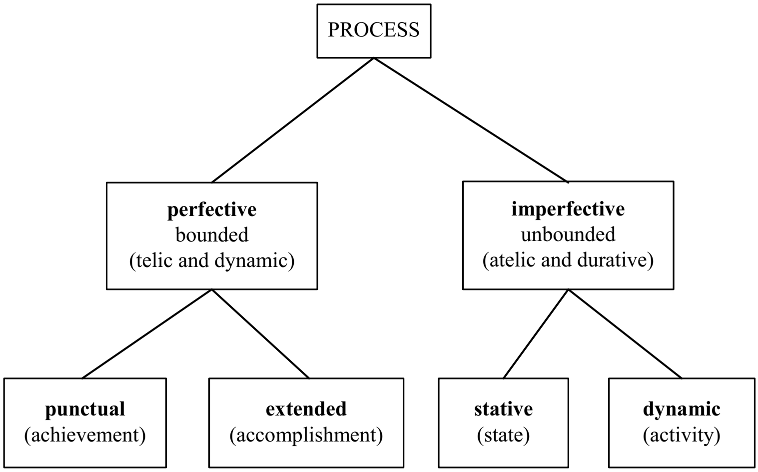

Figure 24.3 Perfective and imperfective situation types

change (e.g. *resemble*, *know*, *have*). This corresponds to Vendler's state. Taylor (2002: 402) also suggests that activities can be classified as a type of imperfective PROCESS. Although these do involve internal change (e.g. *Lily' s eyes sparkled*) and are therefore dynamic, activities are durative and atelic, hence unbounded. Unlike states, activities are compatible with the progressive (e.g. *Tommy's eyes were gleaming*). Figure 24.3 summarises the interaction of Langacker's aspectual system with the four situation types identified by Vendler.

SUMMARY

In this chapter I have provided an overview of the Cognitive Grammar account of the **verb string**, focusing in particular on the way in which this is grounded in terms of **tense** or **modality**. I began the chapter with a short discussion of English verb forms and then looked in detail at the verb string, a central feature of the structure of the English **clause**. The verb string is analysed in terms of a **grounding predication** – either a tense morpheme or a modal verb – and a **clausal head**, which can include a **perfect construction**, a **progressive construction** and a **passive construction**, as well as the content or **lexical verb** which is marked for **lexical aspect**. In examining the perfect, progressive and passive constructions, we saw that Cognitive Grammar treats **auxiliaries** *have* and *be* as semantically related to non-auxiliary functions of the same verbs. In Cognitive Grammar, the **perfect** or **passive** ('past') **participle** is also semantically related to adjectives that share the same morphology. We also saw that in Cognitive Grammar, tense and modality receive a unified semantic characterisation in terms of the **epistemic model**, and that the polysemy of modals can be accounted for in force-dynamics terms. Finally, we looked at the Cognitive Grammar account of the aspectual properties of **situation types**. These are accounted for in terms of a broad distinction between **perfective** and **imperfective aspect**, which, like count and mass nouns, can be characterised in terms of **homogeneity** and in terms of **bounding**.

FURTHER READING

Introductory texts

- **Lee (2002)**. Chapter 9 of this textbook provides a short and accessible introduction to Langacker's approach to perfective and imperfective aspect in verbs.
- **Radden and Dirven (2006)**. Chapters 8 and 9 of this textbook focus on tense, aspect and mood. Chapter 11 discusses marked coding.
- **Taylor (2002)**. Chapter 20 of this textbook focuses on tense, aspect and mood. Taylor's discussion of situation aspect from a Cognitive Grammar perspective is particularly useful.

The verb string in Cognitive Grammar

- **Langacker (1987)**. Chapter 7 of this volume focuses on temporal relations, and includes a discussion of perfective and imperfective processes.
- **Langacker (1991)**. Chapters 5 and 6 focus on the contribution of auxiliary verbs to the clause, and discuss voice, tense, aspect and mood.
- **Langacker (2002)**. Chapter 3 sets out Langacker's model of aspect; Chapter 4 focuses on the passive construction. Chapter 12 briefly discusses tense as a grounding predication.
- **Langacker (2008)**. Chapter 8 focuses on grounding, with an extensive discussion of clausal grounding.

DISCUSSION QUESTIONS

1. What does Langacker mean by 'grounding' in Cognitive Grammar? Provide examples, and show how they provide grounding.
2. How does Langacker account for the verb string? That is, how is it analysed in Cognitive Grammar?
3. What is the nature of the epistemic model? How does it account for tense and modality?

25

Construction Grammar I: accounting for irregularity in grammar

In this, and the next chapter, I introduce the theory of **Construction Grammar**. Like Cognitive Grammar, Construction Grammar is a dominant, and highly influential theory of grammar in the cognitive linguistics enterprise. Moreover, it also subscribes to the symbolic thesis, central to cognitive linguistics approaches to grammar. In Cognitive Grammar, a **construction** constitutes a complex symbolic unit, stored whole in the structured inventory which represents a speaker's knowledge of language. In contrast, in Construction Grammar, a 'construction' refers to any symbolic unit; in this sense, what makes something a 'construction' is that a unit of form and a unit of meaning are conventionally related to form a symbolic unit. Hence, a construction amounts to a 'symbolic unit' of any complexity.

I begin, in this chapter, by explaining how a constructional account of grammar is motivated. I do so by focusing on the seminal contributions of Charles Fillmore and Paul Kay, and in particular on their famous studies of the LET ALONE and WHAT'S X DOING Y **constructions**. In the next chapter, I present a fleshed-out theoretical account of Construction Grammar, namely the version of the theory developed by Adele Goldberg, as well as briefly introducing other theories of Construction Grammar.

In their pioneering 1988 paper, Fillmore, Kay and O'Connor challenge what they dub the 'words and rules' approach assumed by formal approaches to grammar, such as Transformational Grammar. As we saw in Chapter 21, according to formal approaches, the properties of language can be accounted for by a system of 'words and rules', where the words are the individual lexical items in the speaker's lexicon, and these words are subject to rules of different types within the language system. Phonological rules govern the assembly of complex strings of sounds. Syntactic rules govern the assembly of words into grammatical structures such as phrases and sentences, while semantic rules assign a semantic interpretation to the clause according to the **principle of compositionality** (as discussed in Chapter 14). As I showed there, this principle holds that the meaning of a sentence arises from the meanings of the words it contains, together with the way in which these words are syntactically arranged. This gives rise to propositional meaning, a 'purely semantic' meaning that is independent of context. In addition to syntactic and semantic rules, speakers also have knowledge of pragmatic principles that map propositional meaning onto context and guide the hearer in drawing the relevant inferences (as discussed in Chapter 15). But in formal approaches, pragmatic knowledge is considered to be peripheral to linguistic knowledge proper, as it is assumed to involve the interface between language and other systems of knowledge and information processing. This view of speaker knowledge only accounts for what is regular in language, and leaves aside **idiomatic units**, which, according to (Fillmore et al. 1988: 504), have the status of an 'appendix to the grammar'. In short, in the 'words and rules' approach, the only complex units that are 'stored whole' are those whose properties cannot be predicted on the basis of the regular rules of the grammar. As we saw in Chapter 1, idiomatic expressions such as *kick the bucket* fall into this category.

According to Fillmore et al., this appendix is not only very large, but also has the potential to reveal much about how language works. For this reason, as we will see in the next two sections, they propose an account of language that presupposes idiomatic constructions not as an exception to the norm, but as a central feature of human language. Furthermore, Fillmore et al. propose that the same theoretical machinery should be held to account for both regular and idiomatic grammatical units.

1 Towards a typology of idiomatic expressions

In their 1988 paper, Fillmore et al. argue in favour of a model in which the complex grammatical construction (the phrase or the clause) has semantic and pragmatic properties directly associated with it, just like the humble word. They do so by examining idiomatic expressions. I approach the Construction Grammar perspective that they end up with, by first sketching the typology of idiomatic expressions they develop, in this section.

Idiomatic expressions are those that a speaker cannot 'work out' simply by knowing the grammar and the vocabulary of a language. This is why idiomatic expressions are described as 'non-compositional'. Instead, a speaker has to 'learn them whole', rather like individual lexical items. Fillmore et al. present a taxonomy of idiomatic expressions based on four main distinctions:

i) decoding and encoding idioms;
ii) grammatical versus extragrammatical idioms;
iii) substantive versus formal idioms; and
iv) idioms with and without pragmatic point.

They then develop a typology, based on this taxonomy. According to this, idioms can consist of either familiar or unfamiliar linguistic expressions (familiar in the sense that they occur in non-idiomatic expressions). These expressions can be arranged in either familiar (regular) or unfamiliar (irregular) grammatical patterns. I explore both the taxonomy and typology below.

1.1 Decoding and encoding idioms

Decoding idioms such as *kick the bucket* have to be decoded or 'learnt whole' in the sense that the meaning of the expression cannot be worked out on first hearing. In contrast, **encoding idioms** such as *wide awake* may be understood on the first hearing: the adjective *wide* functions as a degree modifier, and it is possible to work out that this expression means 'completely awake'. However, the speaker would not be able to predict the conventionality of the expression. Hence, there is nothing in the 'rules' of English that enables a speaker to predict the existence of this expression as opposed to, say, *narrow awake*, *narrow asleep* or *wide alert*. Encoding idioms also include expressions that are perfectly regular but just happen to represent the conventional way of saying something. For example, the expression *driving licence* is an encoding idiom in the sense that it represents the conventional way of describing a document that could be (but is not) called a *driving permit* or a *driving document* (Taylor 2002: 547). Since encoding idioms are expressions that the speaker cannot predict the conventionality of, it follows that decoding idioms are also encoding idioms.

1.2 Grammatical versus extragrammatical idioms

Grammatical idioms are expressions that obey the usual rules of grammar. For example, in the grammatical idiom *spill the beans*, a verb takes a noun phrase complement. What makes something a grammatical idiom is that the meaning cannot be predicted from the sum of the parts: *spill the beans* doesn't mean that beans are literally spilled; you and I just have to know, by convention, that it refers to revealing a secret often unintentionally or indiscreetly.

In contrast, **extragrammatical idioms** like *all of a sudden* do not obey the usual rules of grammar. In this expression, the quantifier *all* is followed by a prepositional phrase, where we would expect to find a noun phrase. Furthermore, an adjective, *sudden*, occurs after a determiner where we might expect to find a noun.

1.3 Substantive versus formal idioms

The third distinction is between **substantive idioms** and **formal idioms**. Substantive idioms are those that are lexically filled: they have fixed lexical items as part of their composition. For example, *kick the mop* does not have the same communicative impact as *kick the bucket*, and *spill the coffee* does not have the same communicative impact as *spill the beans*. Both *kick the bucket* and *spill the beans* are substantive idioms because most or all of the substantive or content expressions involved are intrinsic to the idiom.

In contrast, formal idioms provide syntactic frames into which different lexical items can be 'inserted'. An example of a formal idiom is the *let alone* construction. As the following examples illustrate, the frame provided by this construction can be filled with all sorts of lexical items. In other words, this type of idiom is **productive**.

(1) a. This leader doesn't understand basic etiquette, let alone international diplomacy.
b. This politician can't be honest with himself, let alone the electorate.
c. He can't be described as moderately smart, let alone a very stable genius.

1.4 Idioms with and without pragmatic point

Some idiomatic expressions have a very clear pragmatic function, or **pragmatic point**, such as the greeting (*How do you do?*) or expressing a particular attitude (*What's your car doing in my parking space?*). In contrast, other idiomatic expressions appear to be pragmatically neutral, in the sense that they can be used in any pragmatic context. Expressions such as *by and large* and *on the whole* fall into this category.

Table 25.1 summarises these four distinctions. As this table shows, a single idiom can be classified according to each of these four parameters. For example, the expression *by and large* is a decoding idiom that is extragrammatical (a preposition is coordinated with an adjective), substantive and pragmatically neutral.

In addition to setting out the distinctions summarised in Table 25.1, Fillmore et al. provide a typology of idiomatic expressions. An adapted version of this typology is represented in Figure 25.1.

According to this typology, idioms can consist of either familiar or unfamiliar linguistic expressions (familiar in the sense that they occur in non-idiomatic

Table 25.1 Parameters for classifying idioms

Idiom type	Explanation	Example
Decoding	Neither meaning nor conventionality can be predicted	*kick the bucket*
Encoding	meaning may be predicted, but not conventionality	*wide awake*
Grammatical	obey the rules of grammar	*spill the beans*
Extragrammatical	do not obey the rules of grammar	*all of a sudden*
Substantive	lexically filled	*spill the beans*
Formal	lexically open	the *let alone* construction
Pragmatic point	specific pragmatic function	*How do you do?*
No pragmatic point	pragmatically neutral	*by and large*

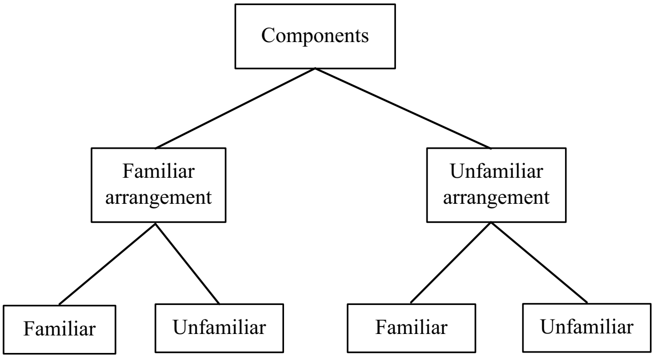

Figure 25.1 A typology of idioms (adapted from Fillmore et al. 1988)

expressions). These expressions can be arranged in either familiar (regular) or unfamiliar (irregular) grammatical patterns. Two of the four resulting possibilities (those relating to familiar components) can then be further subdivided into formal (lexically open) or substantive (lexically filled) idioms, which may or may not have specific pragmatic point. I consider these distinctions below.

1.5 Familiar pieces familiarly arranged

In this case, lexical items that are commonly used outside the idiom are arranged in a way that reflects the regular grammatical patterns of the language. It follows that such expressions will have a literal as well as an idiomatic meaning (e.g. *kick the bucket*, *spill the beans*, *throw in the towel, [go and] take a running jump*). What makes expressions such as these idiomatic is that one meaning of the expression cannot be predicted from the principle of compositionality.

As we have seen, expressions such as *kick the bucket* are substantive idioms. An example of a formal idiom which illustrates this type is the: *Is the X a Y?* construction, exemplified by the expression *Is the Pope a Catholic?* This construction has regular syntax (e.g. *Is Monica a cat lover?*), which is filled by regular expressions (*Pope*, *Catholic*), yet gives rise to an interpretation that emphasises the overwhelming certainty that a particular state of affairs will come to pass. This construction is typically used in response to a question. Consider the short conversational exchange in (2).

(2) Monica: Will Jimmy continue putting on weight?
Her husband: Is the Pope a Catholic?

From her husband's response, Monica infers that the answer to her question is a definite yes.

1.6 Familiar pieces unfamiliarly arranged

In idioms of this kind, familiar words are arranged in ways that don't conform to the regular grammatical patterns in the language. As we have seen, the substantive idiom *all of a sudden* consists of lexical items that are widely used in English, but which are arranged in a way that is unique to this idiom (compare **all of a fortunate*). Another substantive example in this category is the expression *by and large* (versus **by and small*).

1.7 Unfamiliar pieces familiarly arranged

In this category, we might place expressions that show regular syntax but that contain expressions that do not occur outside the idiom. Examples from Taylor (2002: 550) include *take umbrage at* (compare *take offence at* or *take exception to*), *in cahoots with* (compare *in collusion/collaboration with*), *by dint of* (compare *by virtue/necessity of*) and *wend one's way* (compare *make/trudge/climb one's way*). The expressions *umbrage*, *cahoots*, *dint* and *wend* are not found outside these idioms, yet their syntax is not restricted to these idioms. By definition, members of this category are substantive idioms, because a formal or lexically unfilled idiom is productive as a result of being filled by familiar expressions.

That said, Fillmore et al. (1988: 506) do not include this category in their typology, as they argue that unfamiliar pieces are 'by definition' unfamiliarly arranged 'because, if the pieces are themselves unfamiliar or unique, there can be no standard principles for arranging them in larger patterns'. This suggests that expressions such as *umbrage*, *cahoots*, *dint* and *wend* are not recognised as members of any word class and therefore cannot participate in regular syntax. Observe, however, that *umbrage* shows recognisable noun-forming morphology (compare *plumage*, *acreage* or *wattage*) and *cahoots* might plausibly be a plural noun.

In addition, each of these examples can be assigned to a word class by comparing their distribution with other familiar expressions in the same context. Indeed, *wend* can occur in the past tense (e.g. *He wended his way home*), suggesting that it fills a verb slot in the construction. There might therefore be reasonable grounds for including this category in the typology of idioms.

1.8 Unfamiliar pieces unfamiliarly arranged

Idioms of this kind consist of expressions not found outside the idiom, arranged in syntactic patterns which are themselves also not found outside the idiom. Fillmore et al. (1988: 506–7) place the formal idiom *the X-er the Y-er* in this category, which is illustrated by expressions such as *the more the merrier* and *the fewer the better*. Although the 'slots' in this construction can be filled with familiar expressions, Fillmore et al. suggest that in addition to its irregular syntax, the instances of *the* in this construction are not in fact definite determiners but descendants of the Old English instrumental demonstrative ð*y* – hence, unfamiliar. As Fillmore et al. also reject the idea that unfamiliar pieces can be familiarly arranged, they also place substantive examples such as *kith and kin* in this category, which are similar to *take umbrage with*, *in cahoots with* and so on.

1.9 Overall evaluation

As the discussion in this section has illustrated, the category 'idiom' (in the broad sense of any expression whose meaning cannot be predicted from the principle of compositionality) subsumes a wide range expressions, not all of which can straightforwardly classified. In fact, Taylor (2002: 550) casts doubt on the idea that linguistic expressions can even be categorised according to whether they exhibit fully compositional meaning or not: 'Strict compositionality is rarely, if ever, encountered. Most expressions (I am tempted to say: *all* expressions), when interpreted in the context in which they are uttered, are non-compositional to some degree.'

Furthermore, as Taylor also points out, if we were to include encoding idioms within the taxonomy, the number of expressions which would be described as idiomatic (the conventional way of describing something) would increase dramatically to include a far wider range than those captured by the taxonomy based on principles of familiarity versus unfamiliarity. It follows that the success of any attempt to 'organise' idioms into categories depends to a large degree on the definition of 'idiom' that it rests upon. Despite this note of caution, a relatively stable empirical generalisation to emerge from this discussion is the distinction between substantive and formal idioms; it is the latter category that represents the focus of Fillmore et al.'s (1988) study, and to which I now turn.

2 Two case studies

In this section I present overviews of two famous case studies which were instrumental in developing the Construction Grammar perspective. The first is the famous *let alone* construction, a detailed analysis of an idiom. I then consider the *what's X doing Y* construction, studied by Kay and Fillmore (1999).

2.1 The *let alone* construction

Fillmore et al. (1988) are particularly interested in accounting for formal idioms because, while it is at least plausible that speakers might learn substantive idioms item by item rather like learning individual words, it is not plausible that a speaker learns each instance of a formal idiom item by item. In principle, the number of instances of formal idiom constructions is infinitely large. Despite this, such constructions often have a clearly identifiable pragmatic force. For this reason, formal idioms pose a particularly interesting challenge to the 'words and rules' model of grammar: they are productive and therefore rule-based (systematic), yet often defy the 'usual' rules of grammar. Fillmore et al. therefore took as their case study the idiomatic *let alone* construction.

According to Fillmore et al., the *let alone* construction can be described in terms of its structural, semantic and pragmatic properties, some of which are regular and some of which are idiosyncratic. The *let alone* construction displays regular syntactic properties, and is characterised by the presence of the **coordinating conjunction** *let alone*, which coordinates two prosodically prominent (stressed) expressions. This construction is illustrated by example (1a), which is repeated here as (3). In this example, the expressions (labelled as A and B, respectively, and underlined), are prosodically prominent and are coordinated by *let alone*.

(3) This leader doesn't understand <u>basic etiquette</u>, let alone <u>international diplomacy</u>.
A B

In semantic terms, the construction has the idiosyncratic property that the coordinated expressions are interpreted as contrasted points on a scale, where the second conjunct (*international diplomacy*) has greater emphatic force than the first (*basic etiquette*). In the context of knowing that a political leader lacks the basic nous to engage appropriately at an interpersonal level, we might well wonder whether they have the requisite smarts to grasp the immeasurably more challenging realm of international diplomacy. The utterance in (3), as a result of the *let alone* construction, conveys the information that because the leader doesn't understand basic etiquette, they are even less likely to understand international diplomacy. This rests upon the assumption that 'understanding basic etiquette' is a prerequisite for 'understanding international diplomacy'.

Closely related to this property of the construction is the fact that *let alone* can be described as a **negative polarity item**. This means that it can only occur in negative contexts, whether this is determined by a morphosyntactic negation, as it is in example (3), or by a lexical item like *doubt*, which brings with it a negative interpretation. This is illustrated by example (4).

(4) I doubt that politician is moderately smart, let alone a stable genius.

The *let alone* construction has pragmatic point. Not only does the construction reject a particular proposition (for example, that the politician understands international diplomacy, or is a stable genius), but it does so by providing additional relevant information. The relevant information relates to the first conjunct (A) and establishes an **implicational scale** between the expressions conjoined by *let alone*. If the leader doesn't understand basic etiquette (A) this implies that the individual in question doesn't understand international diplomacy (B). The pragmatic impact of this construction is that by first rejecting a weaker proposition, the proposition that our attention is focused upon (e.g. whether the leader understands international diplomacy) is more forcefully rejected than it would otherwise have been. These idiosyncratic properties of the *let alone* construction are in fact shared among a 'family' of similar constructions. Some examples are provided in (5).

(5) a. Monica can't boil an egg, never mind cook a Sunday roast.
b. Monica doesn't approve of wedges, much less flat shoes.

In light of their findings concerning the *let alone* construction, Fillmore et al. argue against the 'words and rules' view (which they call the 'atomistic' view) of grammatical operations, where lexical items are assembled by phrase structure rules into complex units that are then assigned compositional meaning and only subsequently subjected to pragmatic processing. In short, they argue against a modular view of the language system.

Instead, Fillmore et al. (1988: 534) argue that speakers have, as part of their linguistic knowledge, 'clusters of information including, simultaneously, morphosyntactic patterns, semantic interpretation principles to which these are dedicated, and, in many cases, specific pragmatic functions in whose service they exist'. As such, speakers have access to an inventory of constructions which comprises a speaker's mental grammar.

2.2 The *what's X doing Y* construction

In a later paper, Kay and Fillmore (1999) present a detailed analysis of a second construction, dubbed the *what's X doing Y* construction, which they abbreviate to the **WXDY construction**. As the elaboration of the WXDY construction forms the basis for their proposals for a theory of Construction Grammar, I present an overview of the construction here.

The construction is illustrated by the examples in (6).

(6) a. What's [$_X$ Tommy] doing [$_Y$ cosying up to that neighbour]?
b. What's [$_x$ Tommy] doing [$_Y$ in the lingerie drawer]?
c. What's [$_x$ Tommy] doing [$_Y$ with the pillowcase on his back]?
d. What's [$_x$ Tommy] doing [$_Y$ without Jimmy]?
e. What's [$_x$ Tommy] doing [$_Y$ covered in cobwebs]?
f. What's [$_x$ Tommy] doing [$_Y$ asleep]?

As these examples illustrate, the construction lends itself to a wide range of specific examples. The Y part of the construction is particularly flexible, and can be headed by various categories including participial verb forms (*cosying*, *covered*), prepositions (*in*, *with*, *without*) or adjectives (*asleep*).

Kay and Fillmore motivate the existence of this idiomatic construction with a discussion of the familiar 'fly in the soup joke' (Kay and Fillmore 1999: 4):

(7) Diner: Waiter, what's this fly doing in my soup?
Waiter: Madam, I believe that's the backstroke

As I intimated in Chapter 1, this joke turns on the fact that there are two possible interpretations of the diner's question. One is that it is a straightforward information question (backstroke or crawl?), while the other is that it is an expression of what Kay and Fillmore call the incongruity of the situation described (the fly shouldn't be in the soup). The latter reading identifies the WXDY construction. Each interpretation can be paraphrased differently, as shown by the following examples (Kay and Fillmore 1999: 4):

(8) a. How come there's a fly in my soup?
b. What's this fly in my soup doing?

The paraphrase in (8a) identifies the WXDY construction, which is what the diner in (7) intended. In contrast, the paraphrase in (8b) identifies the straightforward information question interpretation. This is the interpretation that the waiter chooses to respond to and it is this 'clash' between what the diner intended and how the waiter responds which gives rise to the joke.

As with the *let alone* construction, the WXDY construction is a productive formal idiom that has identifiable structural and pragmatic properties. As we have seen, what is 'special' about the WXDY construction in pragmatic terms is the incongruity judgement it gives rise to. In structural terms, the WXDY construction is characterised by certain idiosyncratic grammatical properties.

First, Kay and Fillmore demonstrate that in order to achieve the incongruity reading, the construction must contain the verb *do*. While (9a) is ambiguous between the straightforward information question interpretation and the incongruity interpretation, the latter interpretation is not available for examples (9b) and (9c), despite the fact that these are (rather unnatural but grammatical) paraphrases of (9a) (examples adapted from Kay and Fillmore 1999: 5):

(9) a. What was Tommy doing under the bed?
b. What activity was Tommy engaged in under the bed?
c. What act was Tommy performing under the bed?

Second, the WXDY construction requires that the verb *do* appears in the progressive participle form, as illustrated by example (10). Observe that if the verb *do* occurs in the simple past, for example (10b), the sentence becomes ungrammatical.

(10) a. What was Jimmy doing eating Tommy's food?
b. *What did Jimmy do eating Tommy's food?

Third, the construction does not allow either *be* (11a) or *do* (11b) to be negated, unlike an ordinary information question (e.g. *What isn't Tommy doing that's naughty?*). Observe, though, that negation of the Y part of the construction is possible as in (11c). This example gives rise to the interpretation that Jimmy is expected to be eating Tommy's food.

(11) a. *What isn't Jimmy doing eating Tommy's food?
b. *What is Jimmy not doing eating Tommy's food?
c. What's Jimmy doing not eating Tommy's food?

3 The architecture of Construction Grammar

Having motivated a constructional approach to grammar, in this section, I provide an overview of the architecture of Kay and Fillmore's theory of Construction Grammar, as developed in their 1999 paper. Kay and Fillmore (1999: 1) summarise their Construction Grammar approach as follows:

> To adopt a constructional approach is to undertake a commitment in principle to account for the entirety of each language. This means that the relatively general patterns of the language, such as the one licensing the ordering of a finite auxiliary verb before its subject in English, often known as SAI, and the highly idiomatic patterns, like *kick the bucket*, stand on an equal footing as data for which the grammar must account. An explicit grammar that covers the full range of constructions must represent all constructions, of whatever degree of generality or idiomaticity, in a common notation and must provide an explicit account of how each sentence of a language is licensed by a subset of the leaves of the inheritance hierarchy of constructions which constitutes the grammar of that language. Language-internal generalizations are captured by inheritance relations among constructions. Cross-language generalizations are captured by the architecture of the representation system and by the sharing of abstract constructions across languages.

3.1 Construction Grammar: an overview

Kay and Fillmore's Construction Grammar model is monostratal; as we saw in Chapter 21, this means that it contains only one level of syntactic representation rather than a sequence of structures linked by transformations, a feature that characterises formal models of grammar such as Transformational Grammar. Furthermore, the representations in Construction Grammar contain not only syntactic information but also semantic information relating to argument structure as well as pragmatic information. Hence, Construction Grammar adheres to the symbolic thesis.

Kay and Fillmore's Construction Grammar contains a number of generalised constructions that underlie more specific constructions such as the WXDY construction – much like the notion of schema–instance relations in Langacker's Cognitive Grammar. Moreover, as Construction Grammar is a non-derivational, monostratal model, it does not have any phrase structure rules that assemble words into phrases and sentences. Instead, it has constructions that represent syntactic patterns. For example, the model has a **head–complement construction** which represents the structural relationship between a lexical head (for example, a verb) and its complement(s) (for example, the object(s)). This construction captures the basic structural relationship that holds across different categories (for example, VP, AP, PP, NP). The model also has a subject–predicate construction, which captures relationships between, for example, subject NP and predicate VP. In addition to various construction types, the model also contains a number of principles that ensure, for example, that categorial features of a lexical head will be shared with the constituent headed by that phrase (e.g. a verb heads a verb phrase), or that constituents local to a head, with the appropriate features, can be recognised as complements.

The various constructions that make up Kay and Fillmore's Construction Grammar are linked via an **inheritance relation**. This means that more specific constructions inherit the properties of more general constructions. For example, the VP construction inherits all the information in the head–complement construction, but adds further information concerning the category of the head and the fact that the VP requires a subject in order to complete the valence requirements of the head. As we will see, the WXDY construction also inherits the properties of several more generalised constructions.

To illustrate these properties, I will look in some detail at the Construction Grammar representation of the WXDY construction, which is represented in Figure 25.2. I provide a 'translation' of this somewhat complex diagram below, based on example (12).

(12) What is Tommy doing in Monica's lingerie drawer?

According to Kay and Fillmore, this construction is headed by the verb *be* (the form *is* in my example), and the category ('cat') of the construction as a whole is therefore V. As with Langacker's Cognitive Grammar, Kay and Fillmore's Construction Grammar views the verb as the head of the sentence. This is the information that appears in the top set of brackets in Figure 25.2, marked 'syn'. This is an abbreviation of 'syntax' and labels the construction as a whole in terms of its categorial status. Kay and Fillmore's claim that the verb *be* heads the construction rests upon their view that this is not a progressive auxiliary but a copula.

The next set of brackets, labelled 'sem', provides information about the semantic and pragmatic properties of the construction. The information 'frame': 'incongruity judgement' provides information about the pragmatics of the construction. The term 'frame' refers to the scene described by the sentence over which the pragmatic value 'incongruity judgement' is held by a 'judge'. This 'judge' is labelled 'prag', which means that the identity of this judge has to be pragmatically resolved. In other words, the identity of the 'judge' may or may not be the speaker, depending on the context in which the construction is uttered. In our example, the 'judge' is likely to be the speaker, but if this example were a case of reported speech (e.g. . . . *and then he said 'What is Tommy doing in Monica's lingerie drawer?'*) the judge would be the person referred to by the speaker as *he*. The incongruity judgement is held by this 'judge' with respect to a situation labelled #1. In my example, we can paraphrase the situation over which the incongruity judgement is held as 'Tommy being in Monica's lingerie drawer'.

The largest set of curly brackets, labelled 'val' (valence), provides information about the structure of the construction. The first part, [rel [gf subj]],

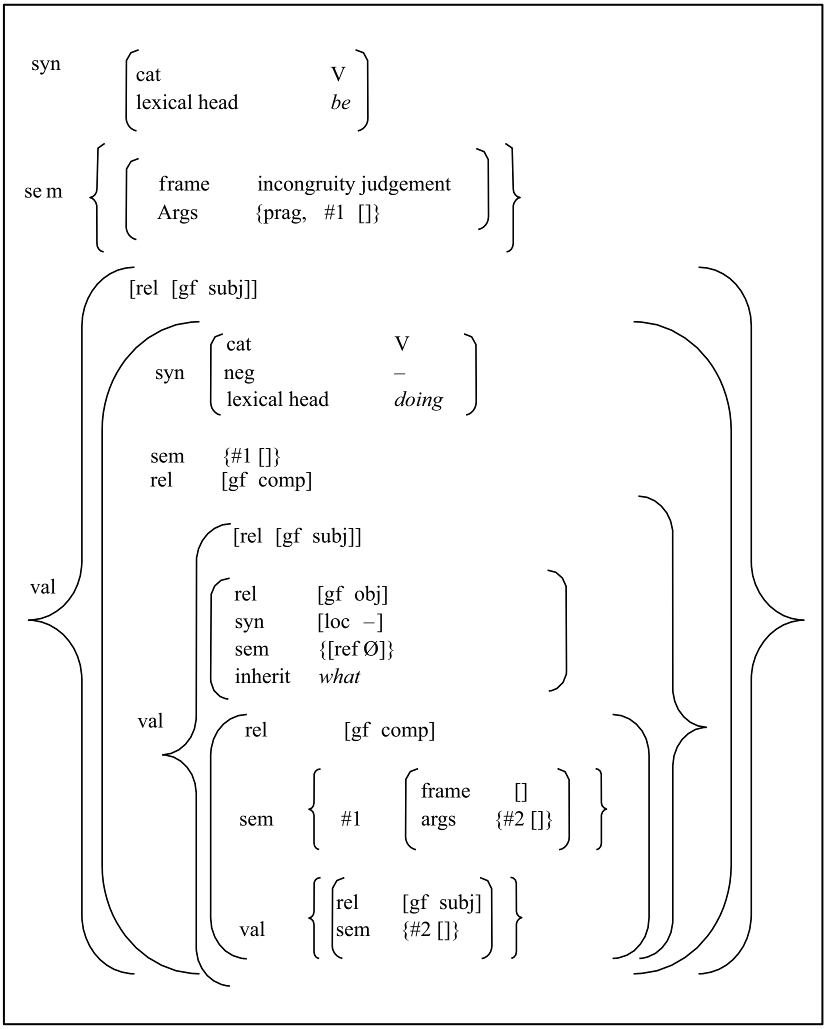

Figure 25.2 The WXDY construction (adapted from Kay and Fillmore 1999: 20)

identifies a unit with the relation (rel) of grammatical function (gf) subject (subj). This is the X in the WXDY construction. In my example, the X corresponds to *Tommy*, the subject of the verb *be*.

The largest set of square brackets, below the information about the subject, corresponds to the rest of the construction, headed by *doing*. Hence, Kay and Fillmore argue that *doing Y* forms a constituent. In my example, the string *doing in Monica's lingerie drawer* is the relevant part of the construction. Within these square brackets, the top brackets labelled 'syn' tell us that this part of the construction is headed by *doing*, which has the category V. Observe that this element is marked as having a negative value for negation ('neg –'). This is how Kay and Fillmore capture the fact that the WXDY construction does not license negation of the verb *doing*, as we saw in example (11b).

The next set of brackets marked 'sem' tells us that the semantics of this part of the construction correspond to the situation over which the incongruity judgement holds. It is the *Y* part of *doing Y* that fills in the information that the 'judge' holds to be incongruous.

The next set of brackets marked 'rel' tell us that this part of the construction, *doing Y*, is the complement of the verb *be*. Again, this rests on Kay and Fillmore's views concerning the constituent structure of the construction which I shall not pursue further here.

The second largest set of curly brackets, labelled 'val', tells us about the structure of *doing Y*. One important aspect of the construction that this model needs to account for is how the main clause subject comes to be understood as the subject of the Y predicate. In my example, *Tommy* is understood not only as the subject of the verb *be*, but also as the subject of *in Monica's lingerie drawer*. This entails that both instances of [gf subj] have to be linked in the construction. In Construction Grammar, this linking is achieved by an independent construction that is dubbed the **coinstantiation construction** (Kay and Fillmore 1999: 23).

A further point of interest relating to this part of the construction concerns the element *what*, which is not yet accounted for. Observe that the construction starts by telling us about the head (*be*), the subject (*Tommy*) and the complement (*doing* Y), but has not so far told us anything about *what*, the first element in the construction. This is because *what* is part of a *wh*-dependency relation. The label '*wh*' is shorthand for interrogative words such as *what*, *who*, *where* and so on. The term 'dependency' relates to the idea that two positions in a structure are related. Consider example (15):

(13) Q: What is Jimmy doing?
A: Jimmy is doing some bird watching.

Although the question word *what* occurs in clause-initial position in the question, it is nevertheless interpreted as the object of *doing*, which is illustrated by the fact that the answer to the question, *some bird watching*, occurs in the object position (after the verb). The issue of how to account for dependencies such as this is a recurring theme in models of grammar. Kay and Fillmore account for the *wh*-dependency by means of a **filler-gap analysis**; the construction simultaneously represents the *wh*-phrase (filler) in its clause-initial position and the position in which the *wh*-phrase is interpreted (gap), and links the two together.

Kay and Fillmore's account of the *wh*-dependency rests on what they call the **left isolation construction**. The term 'left isolation' captures the idea that (at least in a language such as English) the *wh*-phrase occurs in the leftmost position in the clause, and is 'isolated' in the sense that it is separate from local constituents. The left isolation construction has two 'daughters', which is to say, it consists of two main constituents. (The term 'daughter' is inherited from syntactic theories which rely upon tree diagrams, suggesting an inheritance relationship.) The left daughter is the *wh*-phrase, which is linked or unified with one of the arguments that is required by a predicate within the right daughter. Thus, the *wh*-phrase satisfies one of the valence requirements of a non-local predicate. In the WXDY construction, *what* is interpreted as the object of *doing*.

Let's look again at Figure 25.2 in order to see how this information is represented. Observe that the set of square brackets that tells us about the object of *doing* marks this part of the construction as [loc –]. This means that the unit that satisfies the object requirement of *doing* is non-local. The information 'inherit *what*' tells us that the non-local constituent *what* is to be unified with this position in the structure, thus fulfilling the valence requirement of *doing*. This account of the filler-gap dependency can accommodate not only part of the syntax of the WXDY construction, but also the *wh*-interrogatives in general. This illustrates an important aspect of Kay and Fillmore's theory, which is that 'regular' and 'idiomatic' constructions should in large part be accounted for by the same theoretical machinery.

However, the expression *what*, which occurs in the WXDY construction, despite sharing syntactic properties with the expression *what*, which occurs in 'ordinary' questions, does not share the referential features of the 'ordinary' question word *what*. In short, *what* in the 'ordinary' question in example (13Q) picks out some entity or event (the thing that Tommy is doing) whose identity or value is questioned. This licenses an answer along the lines given in (13A), which fills in the required information about that entity or event. In contrast, given the pragmatic import of the WXDY construction, which identifies the function of the construction as the expression of an incongruity judgement, the *what* in this construction does not have referential value. Hence, it does not pick out an entity or event in the same way that the 'ordinary' question word *what* does, because it doesn't require an answer such as 'bird watching'.

This explains why an answer such as the waiter's in example (8) is not licensed. This feature of *what* is marked in the WXDY construction by the information {[ref Ø]}, which tells us that *what* does not have referential value. Observe, however, that the position of *what* is not marked in the WXDY construction. This is because the left isolation construction is an independent construction from which the WXDY construction inherits certain properties. This illustrates how particular generalised properties of idiomatic constructions are accounted for by Kay and Fillmore.

The next set of square brackets provides information about the Y part of the construction. In our example, this part corresponds to *in Monica's lingerie drawer*. The representation tells us that Y is a complement of *doing* in Kay and Fillmore's analysis. The representation also links the semantics of Y to the situation over which the incongruity judgement holds, which is tagged as #1 throughout the representation of this construction, as we have seen. The information about the semantics of the frame or situation is left blank in this diagram because this is a generalised representation of the WXDY construction rather than a representation of a specific example.

One of the features that identifies the WXDY as a formal idiom is the fact that it provides a syntactic 'template' into which a potentially infinite set of specific lexical items can be inserted. The construction tells us that this unspecified

Y constituent will contain at least one argument that corresponds to the subject requirement of the Y predicate. This is why the information about the argument of Y and its subject are linked by the tag #2.

In sum, the WXDY construction has a number of 'regular' syntactic features, which it inherits from other less specific constructions. First, the WXDY construction contains head–complement structures and subject–predicate structures, which means that it inherits the properties of these two fundamental constructions that underlie 'regular' as well as idiomatic constructions. Furthermore, the properties of these basic constructions are inherited in turn by the specific categorial instantiations of these generalised constructions, such as VP, PP and so on. In this respect, the idiomatic construction shares much in common with all 'regular' constructions. Second, the WXDY construction inherits the syntactic properties of the left isolation construction, which is involved in 'regular' interrogatives as well as in this idiomatic construction. Third, the WXDY construction inherits the properties of the coinstantiation construction, in order to link a single NP to the subject valence requirement of two distinct predicates. In addition to its 'regular' properties, the WXDY construction also has a number of features that identify it as idiomatic. As we have seen, these features not only involve the morphosyntax of the construction (in terms of the form of the verb *doing*, or the restriction on negation, for example), but also crucially involve the meaning of the construction, which brings with it a striking and idiosyncratic interpretation that cannot be straightforwardly predicted from the parts that make up the construction.

3.2 The status of the 'construction' in Construction Grammar

I now briefly consider the way in which the term 'construction' is used in Construction Grammar, compared to other approaches to grammar. In traditional grammar, the term 'construction' term refers to a clause type, such as the 'passive construction' or the 'cleft construction'. These labels apply to the sentence as a whole, which can be classified as construction X or construction Y on the basis of certain morphosyntactic or semantic properties.

For instance, the passive construction (14a) is identified by the fact that the subject is interpreted as the PATIENT, while the (optional) *by*-phrase expresses the AGENT. In addition, it is identified by the presence of the passive auxiliary *be* and the past participle form of the content verb (V). This information can be schematically represented as in (14b). In a similar way, the (subject) cleft construction (15a) can be captured by the schematic representation in (15b).

(14)	a.	The squirrel	was chased		by Jimmy.
	b.	NP	*be*	V	(*by* NP)
		PATIENT	AUX– PASSIVE	PARTICIPLE	AGENT

(15)	a.	It was	Jimmy	who	chased the squirrel.
	b.	*It be*	NP	who/that	VP
			COPULAR	FOCUS	

In Transformational Grammar, these constructions have the status of 'taxonomic epiphenomena' (Chomsky 1991: 417). According to Chomsky, the model of grammar does not need to contain whole constructions because these can be predicted on the basis of the words and rules that the grammar contains. This entails that most generative linguists use the term 'construction' as a shorthand for describing certain types of syntactic structures that have certain identifiable properties (for example, 'the passive construction' or 'the *wh*-construction'); these constructions are not themselves primitive building blocks, in the model. Instead, they are the output of the 'words and rules' perspective, as I outlined in Chapter 21, and as such are not of central importance. Instead, the emphasis in Transformational Grammar is upon characterising the rules that give rise to the constructions.

Against this background, it is clear that Fillmore and Kay's proposal reflects a very different view as to how language should be modelled. Instead of a model in which syntactic, semantic, phonological and pragmatic knowledge is represented in encapsulated subsystems, the constructional approach proposes that all this information is represented in a single unified representation, which is the construction.

Specifically, Construction Grammar explicitly rejects this approach to grammar. In its place, it posits 'ready-made' grammatical constructions, some of which are highly detailed and some of which are highly generalised. The consequence of the foregoing is that Construction Grammar assumes that semantic structures are stored, as part of a construction, and are hence non-compositional, such as the incongruity judgement associated with the WXDY construction; this unit of meaning is held to be directly linked to the grammatical construction itself. Furthermore, this meaning is linked to the construction as a whole rather than being derived from some subpart of the construction. This is important because it shows that the constructional account of grammar is not modular. In short, constructions contain information about syntax, morphology, semantics and pragmatics (and, in principle, phonology) within a single integrated representation.

3.3 Compositionality in Construction Grammar

Nevertheless, the assertion that semantic structures are conventionally stored as part of a construction does not entail that semantic compositionality is excluded altogether. After all, more specific constructions can undergo an operation of **unification** (Kay and Fillmore 1999) or **fusion** (Goldberg 2006) – compared with **elaboration** in Cognitive Grammar.

For instance, Goldberg (2006: 21) observes that the utterance in (16) is made up of all the constructions in (17):

(16) A dozen roses, Nina sent her mother.

(17) a. Distransitive construction
     b. Topicalisation construction

c. VP construction
d. NP construction
e. Indefinite determiner construction
f. plural construction
g. the lexical items (all constructions): *dozen*, *rose*, *Nina*, *send*, *mother*

Evans (2009: 36) discusses the process of fusion (or integration) in terms of **nested integration**. For instance, the expression, *John baked Mary a cake*, involves integration between the ditransitive construction – discussed in more detail in the next chapter – and the verb *bake*, which is not normally ditransitive (e.g. *John baked the cake*), such that the bake construction is nested within the sentence-level ditransitive construction, thereby receiving distransitive semantics. This process is diagrammed in Figure 25.3.

3.4 Construction Grammar as usage-based theory

As we have seen, Construction Grammar posits that constructions hold at various levels of schematicity, ranging from the highly idiomatic (and fully lexically specified, e.g. the substantive idioms of Fillmore et al. 1988), to the highly abstract, such as the VP construction. An obvious question begged by such an approach is where constructions come from: how are they derived? One consequence of assuming that constructions – rather than words plus rules – are the ingredients of language, is to assume that constructions are built, bottom-up, in an item-based way, from the units of language that we encounter, early in infancy (e.g. Tomasello 2003). In keeping with Langacker's usage-based account of the way in which schemas are abstracted from instance, as discussed in Chapter 5, contemporary theories of Construction Grammar are usage-based (see, e.g. Goldberg 2006). Constructions are built, in the mind, by abstracting away from specific instances of use, based on frequency effects (e.g. Bybee 2010, 2013), as discussed in Chapter 6, in order to build an inventory of constructions, ranging from the most specific, to the most abstract.

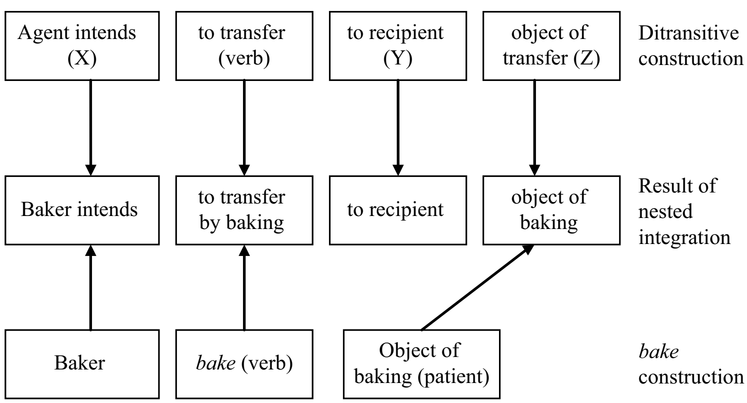

Figure 25.3 Fusion of the ditransitive and bake constructions (adapted from Evans 2009: 38)

For instance, Traugott (2008) proposes a taxonomy of construction types that captures the usage-based thesis, central to Construction Grammar, and one that is consistent with the bottom-up nature of the approach. At the highest level of generality, and hence abstraction, she identifies what she dubs **macro-level constructions**. At an intermediate level of abstraction and generality, she identifies **meso-level constructions**. And the most concrete, substantive constructions, with limited generality, she refers to as **micro-level constructions**. Constructions at this level can form groups, leading to generalisations that give rise to constructions at the meso-level. Further abstraction can give rise to constructions at the highest level of generalisation, at the macro-level. Indeed, constructions at the macro-level might appear, on the face of it, to be devoid of semantics, and amount to syntactic, sentence-level 'rules'. However, as we shall see in the next chapter, when I examine Goldberg's pioneering research, constructions at this level, while schematic, nevertheless pair semantic structure with form – the ditransitive construction being a case in point.

4 Comparing Construction Grammar with Cognitive Grammar

In this final section, I briefly compare Construction Grammar with Langacker's Cognitive Grammar. It will already be clear that the two theories share a number of important assumptions. First, both approaches agree that idiomatic expressions should have central rather than peripheral status in a model of grammar.

Second, both approaches agree that the most explanatory model of language is one that assigns central status to the notion of the symbolic unit. In short, both approaches favour a unified representation that links together syntactic, semantic, pragmatic (and phonological) information rather than representing these as properties of distinct components of the grammar, as in a 'words and rules' formal model of grammar. Hence, both approaches subscribe to the symbolic thesis as construed by cognitive linguists.

As an aside, it's important to observe that all theories of language adopt some version of the symbolic thesis; but formal theories restrict the nature of symbolic representation to the lexicon, assuming that other sub-modules of language are not symbolic, involving bipartite form–meaning organisation. In contrast, cognitive linguistic approaches extend this idea and accord the symbolic unit a central status by rejecting syntactic rules. From this perspective, we can describe Cognitive Grammar as a type of construction grammar.

Third, an important point of similarity between Cognitive Grammar and construction grammars is that they all take an inventory approach to the psychological representation of grammar. This type of approach assumes that the language system does not work predominantly by building structure, but by storing it in a complex network of interlinked constructions.

Despite these important points of agreement, Langacker's focus, in Cognitive Grammar, is to work out the cognitive principles and mechanisms that give rise to the units of language and to the relationships that hold between these units. In contrast, the Construction Grammar approach developed by Fillmore, Kay and those influenced by them, focuses directly upon the formal properties of the constructions that make up the structured inventory assumed by both approaches.

SUMMARY

In this chapter, I presented the theory of **Construction Grammar**, as developed, initially, by Charles Fillmore, Paul Kay and subsequently others. My point of departure was two famous case studies, focusing on two constructions, the ***let alone* construction**, and the ***what's X doing Y?*** or the **WXDY construction**. I began by presenting a brief recap of the so-called 'words and rules' account of grammar, the cornerstone of formal approaches to grammar. I established that a constructional account rests upon a single unified representation that links together syntactic, semantic, pragmatic (and, in principle, phonological) information, rather than viewing these as the output of distinct components of the grammar. I then considered **idiomatic expressions**, linguistic units that display idiosyncratic as well as regular properties and cannot therefore be fully accounted for by a model of language that focuses on accounting for what is 'regular'. I presented a taxonomy of idioms, which distinguishes between **decoding** versus **encoding idioms**, **formal** versus **substantive idioms**, as well as idioms with and without **pragmatic point**. The presentation of the *let alone* and WXDY constructions showed that while these constructions display some regular grammatical properties, they also exhibit grammatical, semantic and pragmatic properties that are not fully predictable from their subparts. This finding motivates the claim that grammatical constructions can be meaningful in part independently from the content words that make up instances of the construction. Having explored the empirical motivation for a constructional approach to grammar, I sketched out the approach to Construction Grammar proposed by Kay and Fillmore (1999), and compared and contrasted this approach with Cognitive Grammar.

FURTHER READING

Introductory texts

- **Croft and Cruse (2004)**. Chapter 9 of this book describes a range of idiom types and discusses the challenges posed by such expressions to a modular theory of language. Chapter 10 presents an overview of a range of constructional accounts, including the Construction Grammar model of Fillmore et al. (1988) and Kay and Fillmore (1999), and Langacker's Cognitive Grammar model.

- **Hilpert (2014)**. An excellent and highly accessible overview of Construction Grammar, applied to English.
- **Östman and Fried (2005a)**. This chapter provides a useful introduction to Construction Grammar, and the volume in which it appears includes papers on a range of constructional approaches.
- **Taylor (2002)**. Chapter 27 provides a detailed description of idioms, formulas and fixed expressions, and discusses the status of these types of expressions in formal linguistics. Chapter 28 discusses the status of constructions in Cognitive Grammar and includes some discussion of the literature reviewed in this chapter.

Handbook

- **Hoffmann and Trousdale (2013)**. The definitive handbook on Construction Grammar, with specially commissioned chapters on various approaches, perspectives, theories and more.

Construction Grammar

- **Fillmore (1985b); Fillmore (1988)**. These two papers map out Fillmore's early ideas about Construction Grammar.
- **Fillmore et al. (1988); Kay and Fillmore (1999)**. These two papers, which provide the basis of the discussion in the present chapter, represent the seminal sources for Construction Grammar.
- **Fillmore and Kay (1993)**. The legendary Construction Grammar textbook can only be ordered in hard copy, from Copy Central, at the University of California (UC), Berkeley, where Fillmore and Kay developed Construction Grammar. This textbook is based on lectures given at UC Berkeley on Construction Grammar, by the two architects of the theory to their students.
- **Sag et al. (2013)**. A detailed account of how constructions can be formalised, in the Construction Grammar approach.

DISCUSSION QUESTIONS

1. Provide a summary of the range of different idiom types identified by Fillmore et al.
2. What are the main assumptions, and claims, of a Construction Grammar perspective, as presented in this chapter?
3. How does this approach compare and contrast with the 'words and rules' approach to grammar (as briefly discussed in this chapter, and in more detail in Chapter 21)?

26

Construction Grammar II: accounting for generalisations in grammar

In the previous chapter, I showed that a constructional account of grammar rests upon a single unified representation which links together all aspects of the meaning and form of an utterance. The original motivation for a constructional approach was to account for irregularity in grammar; the logic of this perspective was as follows: if the irregular can be accounted for – which actually turns out to be a significant portion of the grammar of a language – then it becomes a relatively straightforward task to account for the regular. Indeed, **generalisations** should follow, a natural outcome of accounting for the somewhat more challenging task of detailing the irregular. In this chapter I consider in some detail the work of Adele Goldberg, a scholar whose research, perhaps more than anyone else, had helped to provide a detailed theoretical and descriptive approach to capturing such generalisations, from the perspective of Construction Grammar. And in the process, Goldberg has significantly advanced the theoretical sophistication of the theory.

In particular, I will focus my presentation, in this chapter, on Goldberg's seminal, and now classic, doctoral research on **argument structure constructions**, published as a 1995 book. As we shall see, Goldberg presents compelling constructional analyses of sentence-level constructions such as the English **ditransitive construction** (e.g. *Grandma knitted Monica a sweater*) and the English **resultative construction** (e.g. *James drank himself stupid*). Although most instances of these constructions are not idiomatic, in the sense that they do conform to the 'regular' patterns of language, Goldberg argues that these constructions contain meaning that cannot be attributed to the lexical items that fill them. In this way, Goldberg extends the constructional approach in order to account for regular instances as well as idiomatic instances. In addition, Goldberg take a thoroughgoing usage-based perspective, examining, as part of her later research programme, how language users come to acquire constructions, from infancy onwards. She contends, as intimated in the previous chapter, that constructions are acquired in bottom-up fashion, whereby grammatical generalisations are 'reverse-engineered', in an item-based way from more specific and concrete constructions, as exemplified in Goldberg's later books (2006, 2019). In this way, generalisations emerge from use, with specific constructions giving rise to more abstract constructions, which serve to provide the language user's mental grammar with abstract generalisations – what Traugott (2008) dubs macro-level constructions.

1 Towards a constructional account of argument structure constructions

Influenced both by the work of Fillmore and Kay, and by the early work of George Lakoff on constructions (in particular his 1987 case study of *there* constructions), Goldberg developed a construction grammar that sought to extend the constructional approach from 'irregular' idiomatic constructions to 'regular' constructions. In order to do this, Goldberg focused on verb–argument constructions. Hence, she examined 'ordinary' sentences, such as transitives and ditransitives, and built a constructional account of grammar on the patterns she found there.

1.1 Assumptions

The central thesis of Goldberg's theory is that sentence-level constructions 'themselves carry meaning, independently of the words in the sentence' (Goldberg 1995: 1). According to this view, constructions are theoretical primitives rather than 'taxonomic epiphenomena' (Chomsky 1991: 417), as we saw in the previous chapter. Although Goldberg does not deny that word-level constructions contribute a great deal to the meaning and structure of sentences, she contends that a purely 'bottom-up' or lexically driven model of grammar fails to provide the whole picture.

As Goldberg observes, the issue of **argument structure alternations** has received a considerable amount of attention in contemporary Anglo-American linguistics. To illustrate what these amount to, consider the examples in (1) and (2).

(1) a. He brought Monica some lunch.
    b. He brought some lunch to Monica.

(2) a. *Her husband brought the table some lunch.
    b. Her husband brought some lunch to the table.

As these examples illustrate, the ditransitive verb *bring* can occur in two different construction types. Examples such as (1a) and (2a) are sometimes referred to as **double object constructions**, because the verb is followed by two nominal objects. In examples (1b) and (2b) – which Goldberg dubs the **prepositional construction** (Goldberg 1995: 8), the indirect object (*Monica* or *the table*) is instead represented by a preposition phrase (PP). The point of interest here relates to the fact that while the prepositional construction – the PP – allows the recipient to be either animate (1b) or inanimate (2b), the double object construction requires that it be animate (compare (1a) with (2a)). What follows this observation is how best to capture these differences in a model of grammar. Goldberg argues that most revealing account is to associate these semantic restrictions directly with the grammatical construction itself, rather than, for instance, listing this information as part of lexical entries for individual verbs.

1.2 Defining a construction

Goldberg defines a construction as follows:

> C is a CONSTRUCTION iff C is a form-meaning pair $<F_i, S_i>$ such that some aspect of F_i or some aspect of S_i is not strictly predictable from C's component parts or from other previously established constructions. (Goldberg 1995: 4)

In this definition, F stands for 'form' and S stands for 'semantics', so that $<F, S>$ represents a symbolic unit. The subscripts represent the symbolic link between form and meaning. Crucially, this definition of 'construction' hinges on the issue of **predictability**, which in turn is related to compositionality (albeit in slightly different terms to Langacker's notion of compositionality). If any aspect of either the form or the meaning of a symbolic unit cannot be shown to be predictable from the properties of its component parts, then it has the status of a construction in Goldberg's approach. Hence, it follows that both bound morphemes (e.g. plural-*s*) and free morphemes (simplex words such as *cat*) are constructions in Goldberg's theory, while they do not have construction status in Cognitive Grammar – recall that Langacker reserves the term 'construction' for complex symbolic units.

For Goldberg, neither the form nor the meaning of a morpheme is predictable from its component parts, as it lacks compositional structure. It also follows from Goldberg's definition of a construction that a complex word, phrase or sentence (which are all constructions in Cognitive Grammar) will only count as a construction in Construction Grammar if some aspect of its form or meaning cannot be predicted from its subparts.

Given that the central status of constructions blurs the boundaries between lexicon and syntax, Goldberg, as with other cognitive linguists, assumes the lexicon–grammar continuum (discussed in Chapters 10 and 21). As Goldberg makes no principled distinction between simplex and complex symbolic units (as either kind may count as a construction) she refers to the lexicon–grammar continuum as the **constructicon** (the repository of constructions).

Goldberg (1995: 5) also posits that knowledge of language is represented as a 'highly structured lattice of interrelated information'. This view is consonant with Langacker's description of knowledge in terms of a structured inventory. Furthermore, Goldberg (1995: 5) assumes that 'knowledge of language is knowledge'. Hence, in keeping with the Cognitive Commitment (Chapter 2), she rejects the idea that knowledge of language is separate and distinct in nature from other kinds of knowledge and experience. As such, Goldberg contends that the properties of language directly reflect human embodied experience and conceptual structure.

Finally, Goldberg's account builds upon, elaborates and extends the pioneering work of Fillmore and Kay in developing a theory of Construction Grammar. In particular, Goldberg fleshes out Construction Grammar as a fully-fledged usage-based account of language, tying constructions to language use, with her **scene encoding hypothesis**, spelled out below. Moreover, in her later work (e.g. Goldberg 2006), Goldberg explores the relationship between the formation of constructions and bottom-up, item-based language acquisition as well as the predictive learning mechanisms that language learners deploy in order to build their constructicons early in infancy (an issue I briefly discussed in Chapter 7, in the context of 'statistical preemption' in language learning).

1.3 Advantages of a constructional approach to verb–argument structure

Goldberg argues that there are a number of advantages to adopting a constructional approach to verb–argument structure. I briefly review these here.

1.3.1 Avoids implausible verb senses

First, the constructional approach avoids the necessity of positing several distinct senses for one verb (which is necessary in a lexically driven model), in order to account for all the constructions it can appear in; some of these might be **implausible senses**. Consider the examples in (3).

(3) a. Tommy sneezed.
    b. Tommy sneezed the fly off his pink nose.

The verb *sneeze* is a prototypical intransitive verb (3a). That is, it normally occurs with a single argument: the subject (*Tommy*). Despite this fact, *sneeze* can occur in a syntactic construction such as (3b), which can be represented as X CAUSES Y TO MOVE Z BY SNEEZING: [$_{X}$ Tommy] causes [$_{Y}$ the fly] to move [$_{Z}$ off his pink nose] by sneezing. As Goldberg points out, if we assume that this 'cause to move by sneezing' sense is a property of the verb itself, then we might expect to find a language (or languages) somewhere in the world with a lexical item specialised for this meaning; yet, the existence of a verb sense of this kind is not attested.

1.3.2 Avoids circularity

Second, Goldberg argues that a constructional account has the advantage of avoiding **circularity**. If we assume that verbs are 'in charge' of everything that happens in a sentence – for example, how many participants are required and in what order – we are forced to posit as many senses for a verb as there are constructions in which that verb can occur; Goldberg puts this in the following way:

> It is claimed that *kick* has an *n*-argument sense on the basis of the fact that *kick* occurs with *n* complements; it is simultaneously argued that *kick* occurs with *n* complements because it has an *n*-argument sense. This is where the circularity arises. (Goldberg 1995: 11)

Goldberg argues that if the properties of the constructions in which a verb can occur are seen as the properties of the construction itself, rather than properties determined by the verb, this problem is avoided.

1.3.3 Semantic parsimony

The third advantage that Goldberg claims for a constructional approach is that it facilitates **semantic parsimony**; if the range of constructions in which a verb can occur – as well as the subtle differences in meaning associated with different possibilities – can be accounted for directly in relation to the construction itself, rather than by positing long lists of senses for individual verbs, the resulting explanation is more **economical**.

For example, because the verb *kicked* can appear in the eight different verb–argument constructions illustrated in (4), a lexically driven approach would be forced to posit eight different senses or lexical entries for this verb.

(4) a. Jimmy kicked the chair.
b. Jimmy kicked the toy over.
c. Jimmy kicked Monica's slipper under the bed.
d. Jimmy kicked at Tommy.
e. Jimmy kicked his paw against the wall.
f. Jimmy kicked Mr Greeny.
g. Monica's friend's mother's horse kicks.
h. Jimmy kicked his way out of the vet's examination room.

In contrast, a constructional approach places the burden of explanation on the syntactic construction itself rather than on the verb.

1.3.4 Compositionality

The fourth advantage claimed by Goldberg is that a constructional account preserves compositionality, albeit in a weakened form. While all linguists agree that words contribute to the meaning of sentences, there is considerable disagreement about what and how much they contribute. In a formal approach, words (particularly verbs) are assumed to contribute not only their content meaning, but also their 'requirements' concerning the syntactic structure of the sentence. In a constructional approach, Goldberg argues, the problems inherent in such an approach can be avoided while preserving the point of agreement: words do contribute meaning to sentences, but not *all* the meaning.

Put another way, sentence-level constructions have their own conventional schematic meaning independent of the verbs and other lexical items that are embedded in them. These sentence-level constructions represent symbolic units in their own right, much like the formal idioms discussed in the previous chapter, which can be lexically filled in a number of ways. In the next section, I will set out in more detail how this set of claims is substantiated in Goldberg's theory.

2 The relationship between verbs and constructions

Goldberg (1995: 24) explores the nature of the relationship between verbs and constructions by posing three questions which I discuss here in turn. I then consider a number of other issues relating to the relationship between verbs and the sentence-level (verb–argument) constructions that they fill.

2.1 What is the nature of verb meaning?

Goldberg proposes a Frame Semantics approach to verb meaning (e.g. Fillmore 1977, 1982). As we saw in Chapter 16, this account holds that the rich and detailed meaning of individual words is understood against the background of a particular conceptual frame (or domain, in Langacker's terms). Goldberg argues that an account such as this is necessary, among other reasons, for explaining the distribution of adverbial expressions. Consider the examples in (5).

(5) a. Monica staggered into the bedroom slowly.
    b. #Monica bounded into the bedroom slowly.

Goldberg argues that a frame provides the basis for our understanding of the nature and manner of the motion involved, which explains why *slowly* can be felicitously applied to *stagger* but not to *bound*.

2.2 What is the nature of constructional meaning?

Goldberg argues that constructions form a network. Within this network, constructions have related and sometimes overlapping meanings. This entails that constructions are not individually represented with unique fixed meanings, but that they interact with other constructions in a rather fluid network of relationships. Consequently, sentence-level constructions, just like words, exhibit polysemy. Consider the examples in (6).

(6) a. Monica gave her husband a kiss.
    b. Susan knitted him a sweater.
    c. John owes Susan ten euros.

Observe that all the examples in (6) are instances of the ditransitive construction. While example (6a) implies SUCCESSFUL TRANSFER of *a kiss* to *her husband*, example (6b) only implies intended transfer (it's possible that Susan will suffer a crisis of confidence and the recipient will never see the sweater). In example (6c), it is also unclear whether Susan will ever receive the money, or indeed whether John even intends to repay it. According to Goldberg, SUCCESSFUL TRANSFER (6a) represents the central or prototypical sense of the ditransitive construction, while the other examples share aspects of the prototypical sense (TRANSFER) while departing from it in other respects (the TRANSFER may only be intended or potential). These examples also effectively illustrate the contribution of both the construction and the verb itself to the overall meaning of the sentence. While the construction determines what the possible meanings are (TRANSFER, successful or otherwise), the verb determines which of these possible meanings is realised. According to Goldberg, the central or prototypical sense associated with a construction is salient because it represents a basic aspect of human experience. She captures this view by positing the scene encoding hypothesis: '*Scene encoding hypothesis*: Constructions which correspond to basic sentence types encode as their central senses event types that are basic to human experience' (Goldberg 1995: 39). According to this, a basic 'scene' of experience involves TRANSFER of an entity from one person to another. This is a scene that we participate in and witness scores of times every day, which therefore represents a basic and fundamental aspect of human experience.

2.3 When can a given verb occur in a given construction?

In explaining what governs the interaction of particular verbs with particular constructions, Goldberg argues that while verbs are associated with **participant roles** (an idea I introduced in Chapter 16), constructions have **argument roles**. In short, given the Frame Semantics of any specific verb, it follows that the verb is associated with frame-specific participants. For example, the verb *buy* might be associated with the participant roles BUYER, SELLER, GOODS, while the verb *sing* might be associated with the participant roles SINGER and SONG. As these examples illustrate, participant roles are associated with rather specific meanings that are related to their underlying frame, or domain, of experience.

Consider, for example, the distinction between the verbs *rob* and *steal*, in (7) and (8).

(7) a. John robbed Susan (of hope).
    b. *John robbed hope (from Susan)

(8) a. John stole hope (from Susan).
    b. *John stole Susan (of hope).

While *rob* obligatorily profiles THIEF (*John*) and TARGET (*Susan*), *steal* obligatorily profiles THIEF (*John*) and (metaphorical) GOODS (*hope*). While either verb may optionally represent the third participant as a peripheral prepositional phrase (7a) and (8a), the sentences become ungrammatical if this optional participant is represented as the direct object (7b) and (8b). Goldberg (1995: 45) represents the profiling properties of the two verbs as follows:

(9) a. *Rob* <**THIEF TARGET** GOODS>
b. *Steal* <**THIEF** TARGET **GOODS**>

The relatedness of the two verbs is captured by the fact that each is associated with the same set of participant roles by virtue of being associated with the same (or similar) frame. The difference between the two verbs is captured in terms of their profiling properties, represented in bold type.

2.4 Argument roles

In contrast to the relative specificity of participant roles, the argument roles that are associated with sentence-level constructions in Goldberg's Construction Grammar are of a more general semantic kind; I introduced the notion of semantic roles in Chapter 23, in the contexts of my discussion of Cognitive Grammar. As we saw there, and in Chapter 24, where I discussed the verb string, in cognitive linguistics approaches to grammar, positing semantic roles as the basis for sentence structure rests upon the semantic partition of the clause into predicate and arguments. Recall that this sense of the term 'predicate' is different from the traditional grammar sense, in which the predicate is everything in a clause apart from the subject (that is, the verb and any objects or modifiers it may have). In the cognitive linguistics, semantic roles sense, the predicate is usually a word-level unit that can be thought of as the semantic 'head' of the sentence. This word expresses the action, event, property or relation that the clause describes. Prototypically, the predicate of a clause is the lexical or content verb, which accounts for the central status of the verb in constructional approaches to explaining the relationship between grammar and meaning.

Depending on the semantics of the predicate, it will take a certain number of arguments which are the participants or entities that the predicate requires in order to complete its meaning: a verb such as *die* only involves a single participant, while a verb such as *love* involves two and a verb such as *put* involves three. The number and type of arguments that a predicate requires is traditionally referred to in terms of valence, as we saw in Chapter 23; **argument structure** is an alternative term for valence. Parts of the sentence that are not required by the predicate, but that provide 'incidental' or circumstantial information (typically, expressions of place, manner, time and so forth), fall outside the argument structure of that predicate, which explains why such expressions are optional.

The semantic roles approach adopted by Goldberg goes beyond the number of arguments required by a predicate and also looks at the types of arguments required in terms of their semantic properties. For example, the verb *die* requires a participant capable of living in the first place, while the verb *love* requires at least one of its participants to be a conscious and sentient being; it is difficult to say that you love someone or something 'on purpose', while purpose and intention are certainly involved if you slap someone. In order to try and capture these semantic restrictions, various proposals have been put forth concerning the semantic roles played by these arguments or participants, some of which are familiar from the discussion in previous chapters. Another term for semantic roles is **thematic roles**. Some examples are given in (10).

(10) Semantic roles

a.	AGENT	volitional initiator of action
b.	PATIENT	undergoes effect of action; change of state
c.	THEME	moved by action or whose location is described
d.	EXPERIENCER	sentient and aware of action/state but not in control
e.	BENEFICIARY	for whose 'benefit' action is performed
f.	INSTRUMENT	means by which action is performed
g.	LOCATION	place in which event takes place
h.	GOAL	entity towards which something moves
i.	SOURCE	entity from which something moves

Example (11) illustrates a prototypical AGENT and PATIENT:

(11) [Monica] drank [the love potion].
AGENT PATIENT

The idea of semantic roles has been extremely influential in modern linguistics, and in cognitive linguistics in particular. As we saw in earlier chapters in this part of the book, semantic roles play a crucial role in the Cognitive Grammar account of the grammatical functions subject and object via their participation in the prototypical action chain model (discussed in Chapter 23), where the AGENT is conceived in terms of 'energy source' and PATIENT in terms of 'energy sink'. This model underlies unmarked active declarative sentences as well as explaining the properties of passive constructions on the basis of marked coding or TR–LM reversal. In this respect, Langacker's approach is rather similar to Goldberg's, in that AGENT and PATIENT are not linked directly to individual verbs but to some underlying representation that structures the clause. That said, Langacker focuses on the cognitive model that underlies the clause, while Goldberg focuses on the grammatical construction itself. In Goldberg's Construction Grammar, semantic roles or argument roles are associated instead with the sentence-level construction. Thus, while a verb is conventionally associated with its own participant roles, a sentence-level construction has its own independent argument roles. This idea is represented by Figure 26.1.

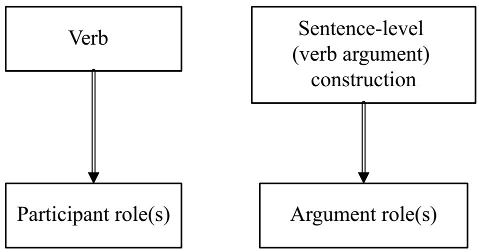

Figure 26.1 Participant roles and argument roles

2.5 Constructional profiling

While each verb determines which of its participant roles is lexically profiled or conceptually highlighted, sentence-level constructions also profile their argument roles. However, the **constructional profiling** of argument roles is more flexible. Goldberg suggests that only the argument roles that are linked to a grammatical function (subject, direct object or indirect object) are constructionally profiled. As we saw in the case of examples (7a) and (8a), other argument roles may optionally be present in the sentence but represented as prepositional phrases, sometimes called **oblique objects**. In Goldberg's sense of the term, these are not constructionally profiled: 'Every argument role linked to a direct grammatical relation (SUBJ, OBJ or OBJ_2) is constructionally profiled' (Goldberg 1995: 48). This reveals the distinction between lexical profiling and constructional profiling in Goldberg's approach: lexical profiling relates to the aspect of an expression's meaning that is made explicit by some expression (recall my brief review of the profile and base distinction in Chapter 22). In short, in the sentence *Monica bought some vegan foie gras*, the expressions *Monica* and *some vegan foie gras* lexically profile (express in language) two participant roles relating to the semantic frame of the verb *buy* (BUYER and GOODS, respectively). Hence, constructional profiling relates to the realisation of argument roles in terms of core grammatical relations. From this it follows that other arguments may be explicit (lexically profiled) yet not constructionally profiled.

2.6 Fusion

Having set out the semantic and structural properties that the individual verb and the grammatical construction each bring to the sentence, questions naturally arise concerning how the two are integrated or fused, in Goldberg's terms. Goldberg posits two principles that govern the association of a verb's participant roles with a construction's argument roles: i) the **Semantic Coherence Principle**; and ii) the **Correspondence Principle**. These are reproduced below:

> *The Semantic Coherence Principle*: Only roles which are semantically compatible can be fused. Two roles r_1 and r_2 are semantically compatible if either r_1 can be construed as an instance of r_2, or r_2 can be

> construed as an instance of r_1 . . . Whether a role can be construed as an instance of another role is determined by general categorization principles.
>
> *The Correspondence Principle*: Each participant role that is lexically profiled and expressed must be fused with a profiled argument role of the construction. If a verb has three profiled participant roles, then one of them may be fused with a nonprofiled argument role of a construction. (Goldberg 1995: 50)

The Semantic Coherence Principle works by matching a participant role with an argument role, and establishing whether the two overlap sufficiently for one to be construed as an instance of the other. For example, general categorisation principles enable us to determine that the THIEF participant role of the verb *steal* overlaps sufficiently with the argument role AGENT, because both share semantic properties such as ANIMACY, INTENTION, CAUSATION and so on.

The Correspondence Principle states that profiled argument roles are obligatorily matched with profiled participant roles, but builds some flexibility into the system by allowing that one of the participant roles may or may not be constructionally profiled in the case of a verb with three participant roles. Equally, a ditransitive construction can contribute a third role to a two-participant verb. These ideas are illustrated by Figure 26.2, which represents the CAUSE–RECEIVE ditransitive construction.

In this representation of the construction, 'Sem' represents the semantic structure of the construction in terms of argument roles, and 'Syn' represents the syntactic structure of the construction in terms of how the grammatical functions subject and object(s) realise the argument roles. 'PRED' represents the potential for any given verb to be mapped onto the construction, and the empty angled brackets represent the potential for that verb's participant roles to be fused onto the argument roles of the construction. The dotted line represents the argument role that may or may not be constructionally profiled in the case of a three-participant verb, or the argument role that can be contributed by the construction in the event that this third participant is not part of the verb's independent specification. This means that two-participant or three-participant verbs can be inserted into the construction (because the construction obligatorily profiles AGENT and PATIENT, strict one-participant verbs are not compatible with this construction). Consider the examples in (12) which illustrate how this works.

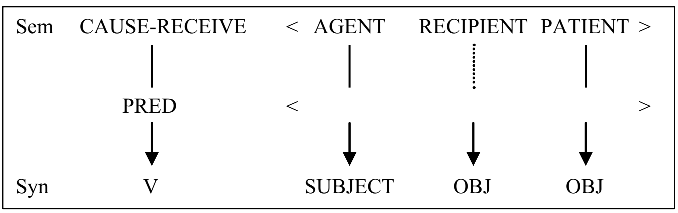

Figure 26.2 Ditransitive construction (adapted from Goldberg 1995: 50)

(12) a. Her husband sent Monica a discreet message.
b. Her husband sent a discreet message (to Monica).
c. (*)Her husband sent Monica.
d. Her husband wrote Monica a song.
e. Her husband croaked Monica a song.

In example (12a), the three participant roles of the verb *send* (SENDER, SENDEE and SENT) are mapped onto the three argument roles of the ditransitive construction (AGENT, RECIPIENT and PATIENT, respectively). In this case, all three profiled participant roles are constructionally profiled. In (12b), in contrast, only the SENDER and SENT participant roles are mapped onto argument roles; the SENDEE role is optionally represented as a PP, which means that it is not constructionally profiled because it is not represented as a direct object nor as an indirect object. These possibilities are represented in Figure 26.3. Observe that the construction also rules out (12c), on the ungrammatical interpretation that Monica is the RECIPIENT (Her husband sent Monica something). Because AGENT and PATIENT roles are obligatorily profiled, if one of these fails to be realised, the result is ungrammatical. Observe that (12c) is grammatical on the interpretation that Monica is the PATIENT (Her husband sent Monica somewhere).

While we might describe *send* as a prototypical three-participant verb, it is not obvious that the verbs *write* and *sing* would also be described in this way. For example, both can occur in an intransitive frame (e.g. *Her husband writes*; *Her husband sings* vs. **Her husband sends*), as well as in a monotransitive frame (e.g. *Her husband wrote a book*; *Her husband sang a lullaby*). As examples (12d) and (12e) illustrate, however, these verbs are licensed to occur with an 'extra' argument (the RECIPIENT) by virtue of their occurrence in the ditransitive construction. As these examples show, the construction contains the flexibility, while the verb determines which of the possibilities provided by the construction are realised. Furthermore, while the verb *send* permits both possibilities presented by the construction – in other words instances of the construction in which the recipient either is (12a) or is not profiled (12b) – a verb such as *hand* permits only the first option.

(13) a. Monica handed her husband a napkin.
b. *Monica handed a napkin.

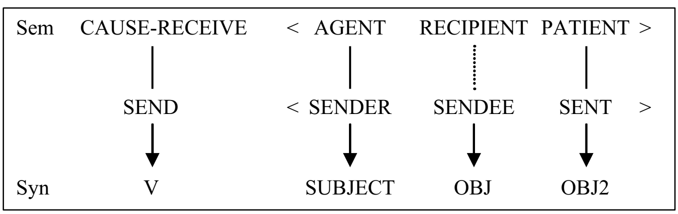

Figure 26.3 Ditransitive + *send* (adapted from Goldberg 1995: 51)

The difference between the two verbs can be captured in terms of which participant roles they obligatorily lexically profile, as we saw above. The absence of bolding on the SENDEE participant role in the representation of *send* in (14a) illustrates that this participant role is optionally lexically profiled, while all three of its participant roles are obligatorily lexically profiled by the verb *hand* (14b).

(14) a. *send* <**sender**, sendee, **sent**>
b. *hand* **<hander, handed, handed>**

Of course, as well as explaining how the participant roles of particular verbs are mapped onto the argument roles of particular constructions, Goldberg's account must also explain how the 'right' verbs are matched with the 'right' constructions in the first place. Put another way, the theory must explain how examples such as (15) are ruled out:

(15) *John saddened Sue the news.
'John gave Sue the news, which made her sad.'

An example such as (15) might result if we were licensed to map the verb *sadden* onto the ditransitive construction, merging the three-participant semantics of *sadden* (X CAUSES Y TO BE SAD BY SOME MEANS Z) onto the three-role semantics of the ditransitive (X CAUSES Y TO RECEIVE Z). As Goldberg points out, it is necessary to restrict the linking of certain constructions to certain classes of verbs by explaining which aspects of a verb's meaning license the linking. Although Goldberg does not state a specific principle that governs this licensing, she suggests that certain aspects of verb meaning are salient in this licensing process. For example, if a verb's meaning denotes a subtype of the event type represented by the semantics of the construction, this will license the linking.

For example, *give*, *hand* and *send* are all subtypes of the CAUSE–RECEIVE event. Alternatively, a verb's meaning might denote the means by which the event designated by the construction is brought about. This is illustrated in (16):

(16) a. Monica threw her husband the can of refried beans.
b. Monica rolled her husband the can of refried beans.
c. Monica slid her husband the can of refried beans.

In each of these examples, the mapping of the verbs *throw*, *roll* and *slide* onto the ditransitive construction is licensed because the verb expresses the means by which Monica caused her husband to receive the refried beans (by throwing, rolling or sliding them). This approach therefore goes some way towards explaining why strict one-participant verbs such as *die* are not mapped onto the ditransitive construction: it is difficult to think of a strict one-participant verb that encodes the semantics of the TRANSFER event type, because this event type by definition requires the profiling of at least two participants, if not three.

3 Relationships between constructions

In this section, I consider how Goldberg models the way in which constructions interact within a structured network of relations. In Goldberg's approach, relationships between constructions are captured in terms of **motivation** and **inheritance**. Consider the following principle:

> *The Principle of Maximized Motivation:* If construction A is related to construction B syntactically, then the system of construction A is *motivated* to the degree that it is related to construction B semantically . . . Such motivation is maximized. (Goldberg 1995: 67).

The term 'motivation' reflects the degree to which the properties of a given construction are predictable. That is, given the premise that grammatical constructions are meaningful, it follows that constructions that share grammatical properties will to some extent also share semantic properties. The Principle of Maximised Motivation is a psychological principle. In order to explain how language observes this principle, Goldberg posits inheritance links within the network of constructions that comprise knowledge of language: 'construction A motivates construction B iff B inherits from A' (Goldberg 1995: 72). There are four different kinds of inheritance links, which are shown in Figure 26.4. I now examine each of these in turn.

3.1 Polysemy links

Goldberg posits that a given sentence-level construction (a syntactic pattern conventionally associated with a meaning, and thus a symbolic assembly, or unit) can be associated with a range of related senses. For example, the ditransitive construction is associated with a range of senses (or lexical concepts, recall the discussion in Chapter 18), which all share the semantics of TRANSFER, but which also differ in systematic ways. Consider the following examples (based on Goldberg 1995: 75).

(17) a. X CAUSES Y TO RECEIVE Z (central sense)
Monica gave her husband a sports car.

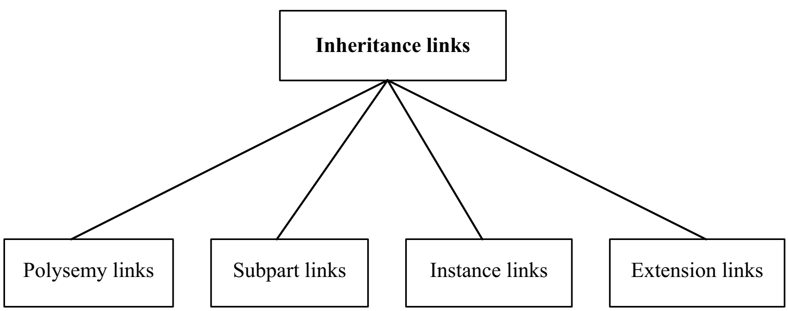

Figure 26.4 Inheritance links

b. CONDITIONS OF SATISFACTION IMPLY X CAUSES Y TO RECEIVE Z
Monica promised her husband a speedboat.
c. X ENABLES Y TO RECEIVE Z
Monica allowed her husband a motorised mountain bike.
d. X CAUSES Y NOT TO RECEIVE Z
Monica refused her husband a racing motorbike.
e. X INTENDS TO CAUSE Y TO RECEIVE Z
Monica built her husband a clockwork mouse.
f. X ACTS TO CAUSE Y TO RECEIVE Z AT SOME FUTURE POINT IN TIME
Monica commissioned her husband a space ship.

While examples such as these all have in common the salient feature of the central sense in (17a), they differ in terms of whether the TRANSFER is actual or intended, permitted or prohibited, and so on. As with lexical polysemy – which I considered in Chapter 17 – **constructional polysemy** can also be modelled in terms of a semantic network.

3.2 Subpart links

If one construction is a **proper subpart** of another construction but exists independently, the two constructions are related by a **subpart link**. Consider the following example.

(18) a. Monica flew her husband to Paris (for luncheon).
b. Her husband flew.

Example (18a) is an instance of the **caused motion construction**. Example (18b) is an instance of the **intransitive motion construction**. While (18a) lexically profiles the argument roles CAUSE (*Monica*), THEME (her husband) and GOAL (*Paris*), (18b) lexically profiles solely the THEME (*her husband*). In this sense, the construction illustrated in (18b) is a proper subpart of the construction in (18a). Thus, the relationship between the two constructions is captured by a subpart inheritance link.

3.3 Instance links

An instance link exists where one construction is a special case of a related construction. This type of link explains substantive idioms of the kind that I examined in the previous chapter. Recall that substantive idioms are lexically filled, which means that the idiomatic interpretation is only available if one of a restricted set of expressions is present within the construction. Compare the following examples (based on Goldberg 1995: 79).

(19) a. Jimmy ate himself silly.
b. Tommy drove Monica mad/loopy/round the bend/up the wall.

c. *Tommy drove Monica sad/cross/ecstatic/bored.
d. Her husband rowed Monica round the bend.

The example in (19a) is an instance of the **resultative construction**. When the verb *drive* occurs in this construction, one of a particular set of expressions must fill the result 'slot', as in (19b), and the construction takes on an idiomatic reading that can be paraphrased as 'make somebody crazy'. If the 'wrong' expressions are chosen to fill the construction, the result is ungrammatical as in (19c) or fails to be recognised as the resultative construction, as in (19d) and therefore loses its idiomatic interpretation. The idiomatic construction in (19b), then, is a special case or instance of the 'ordinary' resultative construction illustrated by example (19a).

3.4 Metaphorical extension links

Goldberg argues that some constructions are metaphorical extensions of other constructions, and that metaphorical extension therefore gives rise to a further type of inheritance link. For example, she argues that the resultative construction in (20a) is a metaphorical extension of the caused motion construction in (20b).

(20) a. She tickled him senseless.
b. She threw Mr Greeny into the toy box.

The similarity between these two construction types revolves around the interpretation of the result phrase (the adjective phrase (AP) *senseless* in example (20a)) as a type of metaphorical GOAL, parallel to the actual GOAL expressed by the PP in the caused motion construction (*into the toy box*, in example (20b)). In short, the resultative construction encodes a metaphorical movement towards a GOAL or a metaphorical change of location. As Goldberg observes, this parallel is further supported by the fact that resultative constructions do not permit GOAL PP phrases. This can be accounted for by the fact that the result phrase already expresses the (metaphorical) GOAL, so the expression of an additional GOAL is redundant. This is illustrated by the unacceptability of example (21).

(21) *She tickled him senseless off the sofa.

Despite this metaphorical inheritance link, Goldberg argues that it is important to recognise the caused motion construction and the resultative construction as distinct, albeit related, constructions. This is because each construction places different restrictions on which verbs can occur in the construction. For example, while the resultative construction licenses *make* (22a), the caused motion construction does not (22b).

(22) a. He made Monica happy.
b. *Her husband made her onto the sofa.

In contrast, the caused motion construction licenses *move* (23a), while the resultative construction does not (23b).

(23) a. He moved her across the dance floor.
b. *He moved her happy.

In sum, constructions can be related in a number of ways within a complex network of inheritance links, and any given construction might be linked to a number of other constructions or families of constructions via a number of different types of links. Although the set of links must be learnt for each 'family' of constructions, frequently occurring links will license novel instances of the construction. This is reminiscent of Langacker's notion of entrenchment and exemplified the usage-based nature of Goldberg's model.

4 Three constructions

In this section I present an overview of three constructions that have been studied in detail by Goldberg (1995). As we will see, Goldberg develops a strict methodology in her model of Construction Grammar which can be summarised in terms of the following five stages: i) Goldberg first motivates the existence of these constructions by demonstrating that each has certain semantic and/or syntactic properties that cannot be predicted on the basis of the lexical items that fill the construction; ii) she then posits the central sense of the construction; iii) she posits the syntactic frame that identifies it; iv) she establishes the mapping between the argument roles of the construction and the participant roles of the lexical verb that fills the construction; and finally v) she explores inheritance links within the construction, focusing mainly on polysemy and metaphor.

4.1 The English ditransitive construction (X CAUSES Y TO RECEIVE Z)

The ditransitive construction, which is sometimes called the double object construction, is associated with the syntactic frame [SUBJ [V OBJ OBJ_2]] (e.g. *Monica gave her husband a pair of Bulgari cufflinks*), where both objects are NPs. The ditransitive construction is not associated with the syntactic frame [NP [V NP PP]] (e.g. *Monica gave a pair of Bulgari cufflinks to her husband*), which identifies the distinct prepositional construction. These two constructions are distinct (although related in the network by shared aspects of form and meaning) because any difference in form or meaning signifies a distinct construction in Construction Grammar.

Goldberg lists a number of properties that are specific to the ditransitive construction, which cannot be predicted either from the lexical items that fill the construction or from other constructions in the language. Recall that this issue of predictability is important, because the presence of unique or unpredictable semantic or syntactic properties is what identifies a construction in Goldberg's theory. The properties of the ditransitive construction are summarised in Table 26.1.

Table 26.1 Properties of the English ditransitive construction (Goldberg 1995)

The English ditransitive construction: X CAUSES Y TO RECEIVE Z
Contributes TRANSFER semantics that cannot be attributed to the lexical verb
The GOAL argument must be animate (RECIPIENT rather than PATIENT)
Two non-predicative NPs are licensed in post-verbal position
The construction links RECIPIENT role with OBJ function
The SUBJ role must be filled with a volitional agent, who intends TRANSFER

I examine each of these properties in turn. Beginning with the TRANSFER semantics of the construction, compare examples (24a) and (24b).

(24) a. Grandma knitted Monica a sweater.
b. Grandma knitted a sweater.

It is clear that while (24a) has the semantics of TRANSFER (that is, Grandma knitted the jumper with the intention of giving it to Monica), this interpretation is missing from example (24b). If the semantics of TRANSFER were directly associated with the verb *knit*, we would expect both the ditransitive sentence in (24a) and the monotransitive sentence in (24b) to share this aspect of meaning. The fact that they do not suggests that this aspect of the meaning of (24a) is contributed by the construction. The same point is illustrated by examples (12d) and (12e), which are headed by the verbs *write* and *croak*, neither of which possess inherent TRANSFER semantics.

The ungrammaticality of example (25a) illustrates the second property of the ditransitive construction: the GOAL argument must be animate. Observe that if the alternative prepositional construction is chosen, this restriction does not hold (25b).

(25) a. *Grandma knitted Monica's winter wardrobe a sweater.
b. Grandma knitted a sweater for Monica's winter wardrobe.

It is clear from examples like (24a) that the ditransitive construction licenses two non-predicative NPs in post-verbal position. Goldberg's claim is that the ditransitive construction is unique in having this property. Compare (26a) with (26b), for example.

(26) a. Her husband cooked Monica fajitas.
b. *Her husband put the fajitas the plate.

The verb *put* is superficially similar to the verbs that are licensed to occur in the ditransitive construction in that it is a verb with three participant roles. Unlike these verbs, however, *put* is not licensed to occur in the ditransitive construction, but can only occur followed by NP + PP:

(27) Her husband put the fajitas on the plate.

Despite superficial similarities, (27) is an instance of the distinct caused motion construction, which is characterised by distinct semantics and syntax from the ditransitive construction. This last point is also related to the fourth characteristic of the ditransitive construction: the construction is also unique in linking the RECIPIENT role with the OBJ function. As example (27) illustrates, the object of *put* cannot be interpreted as RECIPIENT, but as PATIENT (the fajitas do not receive anything in example (27) but directly undergo the action of being put somewhere).

Goldberg's final claim, that the SUBJ role must be filled with a volitional AGENT who intends TRANSFER, is apparently contradicted by examples like those in (28).

(28) a. The hummus gave Monica food poisoning.
b. The ambulance's siren gave Monica some peace of mind.

In these examples, the subject is either animate but (probably) lacking intention (28a), or inanimate and thus incapable of acting with intention (28b). Goldberg argues that these examples are motivated by metaphorical extension from the ditransitive construction. The conceptual metaphor in question is CAUSAL EVENTS ARE PHYSICAL TRANSFERS. In this metaphor, the event that causes the outcome (food poisoning or the sound of the ambulance's siren) is construed as an entity that transfers that outcome.

4.2 The English caused motion construction (X CAUSES Y TO MOVE Z)

This construction has the syntax [SUBJ [V OBJ OBL]], where OBL (short for 'oblique') denotes a directional PP. The construction has the semantics X CAUSES Y TO MOVE Z, where Z designates a path of motion expressed by the directional PP. The construction is illustrated by the following examples.

(29) a. Tommy sneezed the fly off the curtain.
b. Monica coaxed her husband into the kitchen showroom.
c. Monica led her husband up the garden path.

The properties of this construction are summarised in Table 26.2.

The examples in (30) illustrate the fact that the CAUSED MOTION semantics cannot be attributed to the lexical verb. As (30b) shows, the verb *laugh* does not independently give rise to a CAUSED MOTION interpretation. It is only when

Table 26.2 Properties of the English caused motion construction (Goldberg 1995)

The English caused motion construction: X CAUSES Y TO MOVE Z
Contributes CAUSED MOTION semantics that cannot be attributed to the lexical verb
Contributes CAUSED MOTION semantics that cannot be attributed to the preposition
The CAUSER argument cannot be an INSTRUMENT

this verb occurs in the caused motion construction (30a) that this interpretation is licensed.

(30) a. Monica laughed him out of the lingerie shop.
b. Monica laughed.

Given that this construction is also characterised by a prepositional phrase, a question also arises concerning whether it is the preposition itself that licenses the CAUSED MOTION semantics. Although it is fair to say that the prepositions that occur in this type of construction are typically directional in the sense that they encode motion along a path (for example, *across*, *towards*, *into*), it is also possible to find prepositions occurring in this construction that are not independently directional, but locational.

Consider example (31), in which the preposition *under* is independently locational in the sense that it describes a static location rather than a path of motion.

(31) Tommy sat under the table.

Nevertheless, the same preposition takes on a directional interpretation when it occurs in the caused motion construction, as illustrated by example (32). The sentence in (32) can be interpreted to mean that due to Jimmy's coaxing, Tommy ended up under the table. Goldberg argues that the caused motion construction coerces the essentially locative preposition into a directional interpretation.

(32) Jimmy coaxed Tommy under the table.

Finally, the examples in (33) illustrate that while the CAUSER argument can be either an AGENT (33a) or a natural force (33b), it cannot be an INSTRUMENT (33c). The English caused motion construction is represented in Figure 26.5.

(33) a. Monica tickled her husband off the chair.
b. The wind blew Monica's hair onto her lipstick.
c. *The feather tickled her husband off the chair.

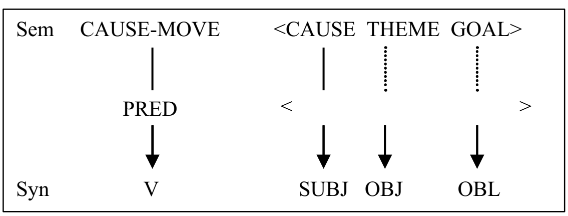

Figure 26.5 The English caused motion construction (adapted from Goldberg 1995: 78)

Just as with the ditransitive construction (recall example (17)), Goldberg argues that the caused motion construction has a number of related senses. These are illustrated in example (34).

(34) a. X CAUSES Y TO MOVE Z (central sense)
[$_X$ Monica] persuaded [$_Y$ him] [$_Z$ into the bedroom].
b. CONDITIONS OF SATISFACTION ENTAIL X CAUSES Y TO RECEIVE Z
[$_X$ Monica] ordered [$_Y$ him] [$_Z$ into the bedroom].
c. X ENABLES Y TO MOVE Z
[$_X$ Monica] allowed [$_Y$ him] [$_Z$ into her boudoir].
d. X PREVENTS Y FROM MOVING Z
[$_X$ Monica] barricaded [$_Y$ him] [$_Z$ into the kitchen].
e. X HELPS Y TO MOVE Z
[$_X$ Monica] gently guided [$_Y$ him] [$_Z$ towards the vacuum cleaner].

Senses (34b) to (34e) represent polysemy inheritance links to the central sense (34a).

Finally, Goldberg (1992: 69) analyses the prepositional construction exemplified in example (1b) as being related to the caused motion construction. Observe that these constructions exhibit the same syntax. Goldberg motivates the link between the two constructions on the basis of a metaphorical link between CAUSED MOTION and POSSESSION, a feature of the prepositional construction. Because there is also semantic overlap between POSSESSION and TRANSFER, this explains why the classes of verbs associated with the ditransitive and the prepositional (caused motion) construction overlap.

4.3 The English resultative construction

I noted earlier that Goldberg argues that the English resultative construction is a metaphorical extension of the caused motion construction. However, she views the resultative construction as a distinct construction because it licenses different verbs from the caused motion construction (recall example (20)). The English resultative construction is illustrated by the examples in (35).

(35) a. They laughed themselves silly.
b. He drank himself into oblivion.
c. Monica kissed him senseless.

Goldberg argues that the existence of the resultative construction is characterised by a number of unique properties which are summarised in Table 26.3. As this table suggests, X corresponds to the AGENT (subject) NP, Y to the PATIENT (object) NP and Z to the RESULT argument, which may be realised either by an AP, such as *silly* (35a) or by a PP, such as *into oblivion* (35b).

The ungrammaticality of the examples in (36) illustrates that the subject role has to be mapped onto an AGENT. Example (36a) is ungrammatical because

Table 26.3 Properties of the English resultative construction (Goldberg 1995)

The English resultative construction: X CAUSES Y TO BECOME Z
Subject argument has to be an animate AGENT Object argument has to be PATIENT (undergoes change of state) Verb has to encode direct causation Resultative adjective has to designate the endpoint of a scale (binary adjectives) Resultative adjective cannot be deverbal

the verb *become* is specified for a PATIENT subject, and is therefore incompatible with the resultative construction. Example (36b) is ungrammatical because the subject is not animate.

(36) a. *Monica became herself happy.
b. *The feather tickled Monica senseless.

The ungrammaticality of example (37a) illustrates that the object argument must be a PATIENT, that is, an entity capable of undergoing the change of state denoted by the RESULT argument.

(37) a. *Her husband cooked the steak dead.
b. Her husband cooked the steak to death.

Example (37a) is not acceptable because the steak is already 'dead' and therefore fails to undergo a change of state resulting in death. In contrast, (37b) is acceptable because *to death* can mean 'to excess', and steak can be cooked to excess. As these examples demonstrate, the status of an expression as PATIENT depends not only upon its inherent meaning, but also upon the meaning of the other expressions in the construction.

The claim that the verb has to encode direct causation is supported by the interpretation of resultative constructions, where the result state is understood to be immediately effected as a consequence of the action of the verb. We cannot interpret (38), for example, to mean that *Arnold shot the predator* and it died a week later from its injuries. We can only interpret the sentence to mean that Arnold shot the predator and it died instantly.

(38) Arnold shot the predator dead.

Goldberg's claim that the resultative adjective has to designate the endpoint of a scale is related to the fact that **binary adjectives** are more frequently attested in the resultative construction than **gradable adjectives**. This is illustrated by example (38), in which *dead* is a binary adjective (*dead* is equivalent to 'not alive', and it is not possible to be somewhere in between dead and alive, nor to be *rather dead* or *slightly dead*). Goldberg argues that when gradable adjectives such as *silly* or *stupid* are licensed in the construction, they are interpreted in the same way, as an endpoint or resultant state. Compare (39a) and (39b). In (39a), *stupid* designates a state of extreme drunkenness. The unacceptability of (39b) relates to the fact that *tipsy* does not designate an extreme state.

(39) a. He drank himself stupid.
b. *He drank himself tipsy.

Finally, the claim that the resultative adjective cannot be **deverbal** is supported by examples such as (40), which demonstrate that adjectives derived from participial forms of verbs are not licensed in the resultative construction. The resultative construction is represented in Figure 26.6.

(40) *Monica's husband talked/tickled her bored/excited/thrilled/captivated.

Once again, the dotted lines indicate the potential of the construction to add arguments that are not specified independently by the verb. In the case of a two-argument verb like *tickle*, for example, the construction adds the RESULT-GOAL argument. In the case of a one-argument verb such as *laugh* (35a), the construction adds both the PATIENT argument and the RESULT-GOAL argument.

Unlike the other two constructions we have seen in this section, the resultative construction does not display polysemy. It is not possible, for example, to derive an interpretation whereby the realisation of the result state depends upon satisfaction conditions (41a) or permission (41b).

(41) a. *Monica promised her husband senseless
b. *Monica allowed her husband senseless.

According to Goldberg (1995: 84), the absence of polysemy in this construction is predicted by the analysis that the resultative construction itself is a metaphorical extension of the caused motion construction. In particular, Goldberg argues that the result phrase of the resultative construction is a metaphorical GOAL. This follows from the independently motivated conceptual metaphors CHANGE IS MOTION, and STATES ARE LOCATIONS (recall Chapter 12). According to this perspective, the resultative construction encodes metaphorical caused motion resulting in a change of state (expressed in terms of a metaphorical GOAL); this means that the resultative construction is related to the caused motion construction, which encodes literal caused motion resulting in a literal change in

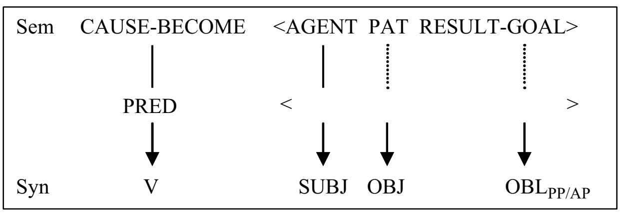

Figure 26.6 The English resultative construction (adapted from Goldberg 1995: 189)

location. Because the resultative construction is metaphorically extended from the central sense of the caused motion construction, it is predicted that it will fail to exhibit the range of polysemy exhibited by that construction.

In sum, Goldberg builds on the approach to Construction Grammar developed by Fillmore et al. (1988) and Kay and Fillmore (1999), in claiming that certain aspects of the meaning of a sentence, as well as certain restrictions upon its structure, arise directly from the properties of the skeletal grammatical construction rather than from the properties of the lexical verb. In addition, the verb contributes its own rich and specific (frame semantic) meaning, as well as bringing with it participant roles. It is in the interaction between the properties of the verb and the properties of the construction that both semantic and syntactic properties of these classes of sentences receive an explanation. Furthermore, Goldberg adopts the Construction Grammar notion of inheritance in accounting for generalisations across constructions and relationships between constructions. Goldberg develops this idea into a taxonomy of inheritance links that enable certain shared properties between constructions to be explained in terms of polysemy and conceptual metaphor, as well as in terms of more straightforward and predictable similarities (subpart and instance links).

5 Other Construction Grammar approaches

In this, and the previous chapter, I focused on the two most well-known, and arguably most influential types of Construction Grammar. The previous chapter examined the original version of Construction Grammar, pioneered by Charles Fillmore and Paul Kay. This is sometimes referred to as **Berkeley Construction Grammar**, as both Fillmore and Kay spent their careers at University of California, Berkeley, where Construction Grammar was developed. Goldberg's approach was influenced both by the original Construction Grammar of Fillmore and Kay, as well as Lakoff's own approach to Construction Grammar (e.g. Lakoff 1987: case study 3). Golderg's approach, as we have seen, focuses on psychological plausibility, and views constructions, from a usage-based perspective, as arising from the scenes that they serve to encode.

From the mid-2000s, Fillmore and Kay, together with collaborators Ivan Sag and Laura Michaelis, sought to develop a more rigorous formalism for Berkeley Construction Grammar, referred to as **sign-based construction grammar** (e.g. Boas and Sag 2012; Michaelis 2009). And more recently, Luc Steels (e.g. 2011), developed what is termed **Fluid Construction Grammar**. This type of construction grammar was developed to model the evolution of grammar, and to provide a version of Construction Grammar that is scalable for robotic modelling; the purpose of this is to conduct experiments on the way in which human grammar may be grounded in embodied experience.

In the remainder of this section, I provide a brief overview of two other significant approaches to Construction Grammar: **Radical Construction Grammar** and **Embodied Construction Grammar**.

5.1 Radical Construction Grammar

Radical Construction Grammar (**RCG**) was developed by Croft (2001), and sets out to explore the implications of linguistic typology for syntactic theory. As we saw in Chapter 6, linguistic typology is the sub-discipline of linguistics that examines the structural properties of language from a cross-linguistic perspective and describes patterns of similarity as well as observing points of diversity. Although typological studies can in principle be theory-neutral, relying on large-scale comparisons and statistical findings, explanations for the patterns observed are usually couched in functional terms. Indeed, it is this link that Croft seeks to exploit in developing a model of language that marries typological insights with a meaning-based model of language structure.

5.1.1 Taxonomy of constructions

RCG is in many respects compatible with Langacker's Cognitive Grammar. For example, Croft assumes the lexicon–grammar continuum, the continuum between specific and schematic meaning and the representation of the mental grammar in terms of a structured inventory. Croft also adopts the usage-based approach and the idea of entrenchment. However, in RCG, everything from a morpheme to a sentence is a construction. Hence, Croft's definition of construction is distinct both from Langacker's definition and from Goldberg's definition. Table 26.4 represents Croft's taxonomy of constructions.

5.1.2 Emphasis on diversity

Croft argues that instead of taking grammatical universals across the world's languages as a starting point and building a model of language that assumes a universal grammar (the formal approach), we should instead take grammatical diversity as a starting point and build a model that accounts adequately for patterns of typological variation. Croft posits that a constructional approach is best placed to provide this type of model, since a constructional approach enables the articulation of the arbitrary and the unique, in contrast to most formal approaches which place the emphasis on generalisation.

Table 26.4 RCG taxonomy of constructions (adapted from Croft 2001: 17)

Construction type	Traditional name	Example
complex and (mostly) schematic	syntax	[NP *be*-TENSE VERB- *en by* NP]
complex and (mostly) specific	idiom	[*pull*-TENSE NP's *leg*]
complex but bound	morphology	[NOUN-*s*], [VERB-TENSE]
atomic and schematic	word classes	[NOUN], [VERB]
atomic and specific	lexical items	[*the*], [*sweater*]

5.1.3 Five key features of RCG

Croft (2001: 362–3) states that RCG can be summed up in five key points, which I briefly summarise in this section.

First, Croft assumes that the construction is the only primitive unit in the grammar, and may be either simplex or complex in terms of structure and either specific or schematic in terms of meaning. That said, only overt (which is to say fully substantive) constructions, such as independent words, can be recognised as atomic in Croft's model. This means that grammatical categories (for example, word classes such as noun and verb, or grammatical functions such as subject and object) have no independent status, but are defined in relation to the constructions within which they occur (the penultimate row in Table 26.4). This does not mean that words do not exist, but that words cannot be categorised into word classes that have any independent reality. Instead, words are just part of individual constructions.

In this respect, the RCG model is diametrically opposed to the 'words and rules' formal linguistics model, where the words are the primitives and the constructions are epiphenomenal. In the RCG model, constructions are the primitives, and word classes, as they emerge from constructions, are epiphenomenal. From this perspective, it is to be expected that the types of word classes that we observe from one language to another might be significantly different, and because no universal word classes are posited, this cross-linguistic variation is not only unproblematic but predicted.

As a consequence, Croft argues against the traditional distributional approach to word classes – introduced briefly in Chapter 22 – which holds that they can be identified by morphological and syntactic properties. In support of this position, Croft (2001: 29) points out that some languages lack some of the relevant features that define the distributional approach (the lack of inflectional morphology in Vietnamese, for example), and that other languages might have the relevant features but reveal such different patterns of distribution that it is difficult to arrive at meaningful distributional criteria. Croft therefore argues against universal primitives, and also argues against the independent existence of word classes within any given language. Instead, Croft argues in favour of language-specific constructions, and in favour of construction-specific **elements** (grammatical subparts) and **components** (semantic subparts).

Second, the only syntactic relations admitted in RCG are the part-whole relations that hold between the construction as a whole and the syntactic elements that fill it. Hence, the model does not recognise **grammatical relations** (grammatical functions) such as subject and object as having any independent reality outside individual constructions. Instead, to the extent that grammatical functions emerge from constructions, these also have the status of construction-specific epiphenomena. In this model, constituency is conceived in terms of grouping, where grammatical units are identified in terms of contiguity and prosodic unity, and heads receive a semantic characterisation as **primary information bearing units** or **PIBUs** (Croft 2001: 258). Croft adopts Langacker's account of relationships between heads and dependents in terms of semantic valence and in terms of instantiation (Fillmore and Kay 1993), which is a property of constructions that links semantic components to their syntactic counterparts or elements.

Third, the form and the meaning of a construction are linked in RCG by symbolic relations, in Langacker's sense of the term; each construction as a whole is a form–meaning pairing in the same way that each lexical item is a form–meaning pairing – given the conventional view of the lexicon. As we have seen, this is a defining feature of constructional approaches (including Langacker's Cognitive Grammar).

Croft's fourth point relates to how RCG describes typological generalisation and variation. In Croft's model, both are characterised in terms of categorisation and in terms of how function is linguistically encoded. As such, cross-linguistic similarities and differences are described in terms of **functional typological prototypes**: while referring expressions relate to OBJECTS, attributive expressions relate to PROPERTIES and predicative constructions relate to ACTIONS (Croft 2001: 87). On this account, OBJECTS, PROPERTIES and ACTIONS are semantic or conceptual categories, and these prototypes underlie the parts of speech in the world's languages. However, RCG does not specify the boundaries of these categories, which may vary from one language to another (Croft 2001: 103).

Finally, RCG explains linguistic universals (linguistic generalisations, in Croft's terms), not by assuming of a set of universal grammatical primitives, but by assuming a **universal conceptual space**. In this respect, RCG, which inherits much from functional typology (Croft 2003), reflects one of the core assumptions of cognitive linguistics approaches to grammar: cross-linguistic patterns of grammatical structure, such that they exist, are motivated by meaning, which in turn emerges from conceptual structure.

Many typologists adopt some version of a semantic map model. A semantic map is a language-specific typological pattern which rests upon a universal conceptual space or system of knowledge. Croft defines conceptual space as follows:

> Conceptual space represents a universal structure of conceptual knowledge for communication in human beings. (Croft 2001: 105)
>
> The categories defined by constructions in human languages may vary from one language to the next, but they are mapped onto a common conceptual space, which represents a common cognitive heritage, indeed the geography of the human mind. (Croft 2003: 139)

To take a concrete example, recall the discussion of case-marking systems from Chapter 23, where the subject of a transitive verb is labelled A (for AGENT), the object of a transitive verb is labelled O (for OBJECT) and the subject of an intransitive verb is labelled S (for SUBJECT). A case system need only distinguish A and O (the subject and object of a transitive sentence), since S and A cannot co-occur (a sentence cannot simultaneously be transitive and intransitive),

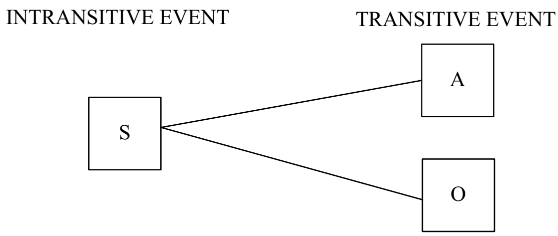

Figure 26.7 Conceptual space for transitive/intransitive participant roles (adapted from Croft 2003: 145)

and S and O do not co-occur (an intransitive sentence does not have an object). Figure 26.7 represents the universal conceptual space that underlies language-specific patterns for marking these participants morphologically.

We saw in Chapter 23 that if a language marks S and A in the same way but marks O differently, this is a nominative/accusative case system (for example, German). In contrast, if a language marks the intransitive subject S and the object O in the same way (absolutive) but marks the transitive subject A differently (ergative), this is an ergative/absolutive system (for example, Basque). The semantic maps for these two systems are represented in Figure 26.8.

RCG questions basic assumptions that have defined theoretical and descriptive linguistics throughout the history of the discipline, such as the existence of word classes and grammatical functions. From this perspective, what many linguists think of as the building blocks of language (its grammatical units) are epiphenomenal. In the place of these cross-linguistic universals, the RCG model emphasises the universality of the conceptual system and explains typological patterns on this basis. For these reasons, it follows that Croft applies the descriptor 'radical' to his version of Construction Grammar.

5.2 Embodied Construction Grammar

Embodied Construction Grammar (ECG) is a theory of construction grammar that is based on the **neural theory of language** (NTL), developed by Jerome Feldman, George Lakoff and others (see Feldman 2006 for an accessible overview of the NTL). The NTL posits that semantic representation is grounded

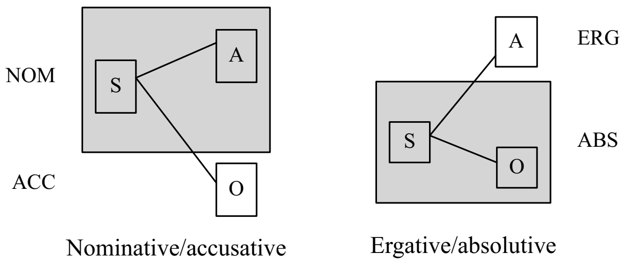

Figure 26.8 Semantic maps for nominative/accusative and ergative/absolutive (adapted from Croft 2003: 145)

in embodied mental states, and that representation in language is achieved by mental simulation (recall the discussion in Parts II and III of the book). ECG is conceived as a form of Construction Grammar that realises the assumptions of NTL. It was developed by Benjamin Bergen and Nancy Chang, together with various collaborators. In this section, I present a very brief overview of this model based on Bergen and Chang (2005). This approach assumes that all linguistic units are constructions, including morphemes, words, phrases and sentences.

5.2.1 Emphasis on language processing

In this model, the emphasis is on **language processing**, particularly **language comprehension** or understanding. While the other approaches to Construction Grammar I have discussed place the emphasis on modelling linguistic knowledge, rather than on on-line processing, ECG assumes that constructions form the basis of linguistic knowledge, and focuses on exploring how constructions are processed in on-line or dynamic language comprehension. Moreover, ECG is centrally concerned with describing how the constructions of a given language relate to embodied knowledge in the process of language understanding. Thus, much of the research in ECG has focused on developing a formal 'language' to describe the constructions of a language such as English; this formal language also needs to be able to describe the embodied concepts that these constructions give rise to in dynamic language comprehension.

5.2.2 Analysis and simulation

ECG claims that when a hearer hears an utterance, he or she has two distinct tasks to perform. The first is **analysis** (parsing), which involves the hearer mapping the stimulus (the utterance) onto the structured inventory of constructions in his or her grammar and recognising which constructions are instantiated by the utterance.

The second task is **simulation**, which involves the activation of conceptual structure that underlies the interpretation of the utterance and the 're-enactment' of these conceptual representations (recall my discussion of simulation in Chapters 8 and 14). It is this process of simulation, together with contextual factors, that gives rise to the hearer's response. According to ECG, the conceptual representations that are accessed and simulated during language understanding are embodied schemas such as the SOURCE–PATH–GOAL image schema that I considered in Chapter 9.

In short, it is embodied experience that gives rise to these conceptual representations, and during language processing constructions are specified to prompt for simulations that arise from multimodal embodied states. This explains why the approach is called 'Embodied Construction Grammar'.

To take a concrete example, consider how a hearer might process the following utterance.

(42) Jimmy brought Monica a dead mouse.

In terms of the analysis stage, each of the phonetic forms maps onto a construction (form–meaning pairing) in the hearer's inventory of constructions, at morpheme, word, phrase and construction level. The hearer recognises the ditransitive construction, which brings with it the semantics of TRANSFER, as we saw in our discussion of Goldberg's Construction Grammar. The mapping of participant roles onto argument roles in the construction contributes to the interpretation of the utterance, and the context of the utterance enables the referent of the expression *Monica* to be identified (as a specific individual, owner of the nebelung cat named Jimmy). Recall from Chapter 19 that Mental Spaces Theory provides a cognitive account of how this process of reference assignment takes place.

At the simulation stage, Bergen and Chang argue that the interpretation of a ditransitive utterance such as this activates three embodied schemas: FORCE APPLICATION, CAUSE–EFFECT and RECEIVE (IN NEAR PROXIMITY). Each of these is associated with schematic events and schematic roles such as ENERGY SOURCE and ENERGY SINK (Langacker 1987), and it is the mapping of constructions onto these schematic events and roles that gives rise to the simulation process.

In the example in (42) the construction instantiated by *Jimmy* is ENERGY SOURCE and the construction instantiated by *Monica* is ENERGY SINK. This simulation process gives rise to an ordered set of inferences, some of which are represented in (43), where SMALL CAPS indicate participants and event schemas (based on Bergen and Chang 2005):

(43) a. MONICA does not have MOUSE
b. JIMMY exerts force via BRING (TO NEAR PROXIMITY)
c. MOUSE at feet of MONICA
d. JIMMY moves MOUSE towards MONICA
e. MOUSE not in proximity of MONICA
f. JIMMY causes MONICA to receive MOUSE
g. MONICA has received MOUSE

Although these inferences may be rather obvious, it is nevertheless important for a model of language processing to explain how such inferences arise in utterance comprehension. Indeed, ECG posits that it is the hearer's own embodied experience – and conceptual representations of that experience in terms of embodied schemas – which gives rise to these inferences via simulation. In this way, the hearer mentally re-enacts the event designated by the utterance. Hence, this brief overview provides a sense of how a constructional approach can be extended to account not only for knowledge of language but also for the dynamic processing of language, while taking seriously the role of embodied knowledge and the notion of mental simulations as the outcome of language comprehension.

6 Comparing constructional approaches to grammar

Constructional approaches to grammar (among which I include Langacker's Cognitive Grammar) share two key features in common, by definition. First, despite differences in how 'construction' is defined, these approaches recognise grammatical constructions as symbolic units. From this perspective, linguistic knowledge consists of constructions 'stored whole' rather than 'built' (as they are in the formal linguistics 'words and rules' approach).

The second shared feature is the assumption of a structured inventory (Langacker 1987). All constructional approaches reject the idea that knowledge of language consists of an unordered set of constructions. Instead, these approaches make some statement concerning the nature of relationships between constructions within a complex network of links; these links rest not only upon shared structure, but also upon shared meaning (such as polysemy links or metaphorical extension links).

With respect to the differences between constructional approaches, we saw that each approach takes a different position on how the notion of construction is to be defined. Langacker views any unit with complex symbolic structure as a construction, regardless of whether its structure or meaning can be predicted from the properties of its subparts. In defining the term 'construction' in this way, Langacker's conception of a construction comes closest to the traditional sense of the term.

Goldberg defines the construction as any symbolic unit, complex or otherwise, that is to some degree arbitrary (unpredictable) in terms of meaning or structure. In this respect, Goldberg's model is closer to the seminal approach to Construction Grammar developed by Fillmore and Kay, as introduced in the previous chapter, than it is to Cognitive Grammar.

In Radical Construction Grammar, every linguistic unit is a construction, regardless of complexity or arbitrariness. Indeed, everything in RCG is arbitrary, if we take this perspective to its logical conclusion, as everything is construction-specific. In Embodied Construction Grammar, a similar view of constructions is taken, although the emphasis in this model is on language processing and on the nature of the embodied knowledge with which the language system interacts rather than on the nature of the language system itself.

In addition to the foregoing, most contemporary approaches to Construction Grammar assume the usage-based thesis (as outlined in Chapters 5 and 21). These include all those approaches discussed in this chapter, including Goldberg's Construction Grammar (2006, 2019), Radical Construction Grammar (Croft 2001), Embodied Construction Grammar (Bergen and Chang 2005) as well as Fluid Construction Grammar (Steels 2011, 2012); indeed, the assumption shared by these approaches is that constructions are mental representations acquired through language use, in bottom-up, item-based fashion (e.g. Tomasello 2003), and are contingent on factors such as token frequency, ease of processing as well as prototypicality (see Chapter 6). In addition, a variety of studies have applied the construction grammar approach to language variation, including dialects and style, as well as language change (see Hoffmann and

Trousdale 2013). Further studies have applied the approach to genre-related phenomena (e.g. Antonopoulou and Nikiforidou 2011; Bender 2007; Fischer 2010, 2011; Fried 2009; Nikiforidou 2010, 2016; Östman 2005; Ruppenhofer and Michaelis 2010), as well as to units above the level of the utterance, such as texts and even entire genres of text (e.g. Bergs 2008; Hoffman 2015; Hoffman and Bergs 2014; and especially Hoffman and Bergs 2018).

A final, notable parameter of comparison between constructional approaches to grammar is one discussed by Croft and Cruse (2004); this relates to the issue as to whether theories of construction grammar can be described as **reductionist** or **non-reductionist**. This distinction hinges on the directionality of the relationship between part and whole (for example, the relationship between grammatical units such as subject, object and verb (parts), and the construction in which they occur (whole)). In a non-reductionist model, the whole – namely, the construction – is the primitive unit, rather like a gestalt, and the parts emerge as properties of that whole. In a reductionist model, the parts are the primitives and the whole is constructed from the parts. Croft and Cruse describe RCG as non-reductionist, because the whole construction is the primitive and the parts are defined in relation to that whole.

In contrast, Fillmore and Kay's Construction Grammar is reductionist; although it recognises constructions, it still views these as composed of smaller atomic units. As we saw in the previous chapter, in Construction Grammar complex constructions inherit their properties, in part, from basic constructions such as the head–complement construction, and the subject–predicate construction, for example.

In contrast, Goldberg's approach, including her notion of participant roles, is non-reductionist, as she assumes Frame Semantics. That is, the semantic frame is the primitive unit and the participant roles emerge from that frame. In contrast, her analysis of syntactic roles and relations is described as reductionist by Croft and Cruse, as she relies upon atomic primitives such as subject, object and verb in describing the syntactic properties of each construction, without positing an independent account of the origins of these primitives.

In contrast, Cognitive Grammar views grammatical units such as subject and object as emerging from TR–LM organisation, which in turn derives from figure–ground organisation at the conceptual level. It follows that Cognitive Grammar is, hence, a non-reductionist constructional model.

SUMMARY

In this chapter, I have presented an overview of how a constructional approach to grammar can be extended to deal with regular sentence-level grammatical patterns. I examined, in some detail, Goldberg's (1995) now classic constructional approach, and saw that she defines a construction as any form–meaning pairing whose properties cannot be predicted by its subparts, if it has subparts (recall that Goldberg's definition of a construction subsumes symbolically simplex units). This entails a different definition of a construction from that assumed by Cognitive Grammar, where a construction is any unit with a complex symbolic structure. We saw that Goldberg assumes, along with Langacker, that knowledge of language consists of a **structured inventory**, dubbed a **constructicon**; constructions are related to one another by **inheritance links**. In addition, Goldberg's model, along with most contemporary constructional approaches, is **usage based**. In looking in detail at Goldberg's case studies, we saw that her model focuses on sentence-level constructions such as the **ditransitive construction**, the **caused motion construction** and the **resultative construction**, all of which are argued to have (schematic) meaning independent of the lexical items that instantiate them. Goldberg argues that verbs are associated with rich **Frame Semantics**, which gives rise to **participant roles**. These are mapped onto the **argument roles** provided by the construction. Restrictions on sentence-level constructions can be accounted for in terms of **profiling**, either by the verb (**lexical profiling**) or by the construction itself (**constructional profiling**). In some cases, constructions can add roles, supporting Goldberg's hypothesis that argument structure alternation is governed to a large extent by sentence-level constructions rather than purely by the semantic properties of individual verbs. Finally, I also showed that Goldberg views sentence-level constructions as having an experiential basis, which she articulates in terms of her **scene encoding hypothesis**. The chapter then briefly considered other approaches to construction grammar, including Croft's (2001) **Radical Construction Grammar** and Bergen and Chang's (2005) **Embodied Construction Grammar**. We saw that the different focus of each approach (typological variation versus language processing, respectively) gives rise to a constructional model with different emphases. Finally, I compared the cognitive constructional approaches discussed in this chapter with one another and with Cognitive Grammar and Fillmore and Kay's Construction Grammar. I compared how they diverge in terms of how a construction is defined, and in terms of the way in which a structured inventory of constructions is held to be represented in the mind.

FURTHER READING

Introductory texts

- **Croft and Cruse (2004)**. Chapter 10 includes a discussion of Goldberg's approach and how it has been influenced by Lakoff's (1987) analysis of the English *There*-construction (see below). This chapter also provides concise points of comparison between different theories of construction grammar.
- **Lee (2002)**. Chapter 5 of this textbook introduces Construction Grammar, focusing mainly on Goldberg's approach.

- **Taylor (2002)**. Chapter 28 includes some discussion of the difference between the Cognitive Grammar view of constructions and Goldberg's view.

Edited volumes and handbooks

- **Hoffman and Trousdale (2013)**. A comprehensive handbook of Construction Grammar, which includes excellent overview chapters of the different approaches to, and theories of, Construction Grammar(s).
- **Östman and Fried (2005b)**. This volume includes papers on a range of constructional approaches.

Goldberg's constructional approach to grammar

- **Goldberg (1992)**; **Goldberg (1995)**. These represent the primary sources for my presentation of Goldberg's argument structure constructions in this chapter. Goldberg's (1995) monograph is highly accessible and includes a thorough comparison of her model with formal models, transformational and non-transformational.
- **Goldberg (2006)**. A follow-up to Goldberg's (1995) classic. This book is especially detailed on how constructions are acquired by children.
- **Goldberg (2019)**. In this book, Goldberg examines the nature of creativity and partial productivity in constructions.
- **Lakoff (1987)**. This monograph contains an in-depth discussion of the English *There*-construction (case study 3), for which Lakoff proposes a constructional analysis. Goldberg acknowledges the influence of Lakoff's analysis upon her theory; Lakoff's analysis therefore represents essential background reading for anyone interested in exploring constructional approaches in more depth.

Radical Construction Grammar

- **Croft (2001)**. This book sets out Croft's theory of RCG in detail. Croft's close attention to cross-linguistic data is particularly appealing and illuminating.
- **Croft (2012)**. A seminal book-length study presenting a theory of event structure for the analysis of aspectual constructions and argument structure constructions in English and other languages. It does so in keeping with the core tenets of RCG.

Embodied Construction Grammar

Bergen et al. (2004); **Bergen and Chang (2005)**. These two papers set out the Embodied Construction Grammar framework in more detail than has been possible here. The interested reader is referred in particular to Bergen and Chang (2005), which presents a detailed analysis of the stages involved in the comprehension of a ditransitive sentence of the type discussed in this chapter.

Fluid Construction Grammar

Steels (2011). This edited volume provides details of a fully operational computational system capturing many key notions in Construction Grammar and applied in a series of case studies presented in the book.

Sign-based Construction Grammar

Boas and Sag (2012). Sign-based Construction Grammar combines the formalism of Sag's Head-driven Phrase Structure Grammar with the approach adopted by Fillmore and Kay's Construction Grammar. It represents a synthesis of the two approaches by Sag, Fillmore, Kay and Michaelis. This volume contains a range of illuminating papers that illustrate the approach.

DISCUSSION QUESTIONS

1. What are the main assumptions of Goldberg's approach to Construction Grammar?
2. What does it mean to say that constructions exhibit polysemy? Can you come up with examples of a constructional polysemy for a construction not discussed in this chapter, or from a language other than English?
3. In what way does it make sense to describe Goldberg's approach as grounded in (embodied) experience? What claim or claims does Goldberg make to substantiate this notion, and what is the reasoning she provides?

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The evolution of grammar

In this part of the book, my approach has been to adopt a **synchronic** approach to grammar, examining the nature of grammar as represented at a single point in time: namely in the early decades of the twenty-first century. Hence, I have focused on cognitive linguistics theories of grammar that attempt to model the way in which contemporary language users represent their mental grammars. In particular, I have focused on Modern English. As discussed in Chapter 6, the process of language change is continuous. Historical linguists take a **diachronic** view of language, describing patterns of change and attempting to account for those changes over historical time. The findings of historical linguistics have implications for most areas of modern linguistics, precisely because language change affects phonology, semantics and grammar, and can therefore inform synchronic theories about these core areas of language.

In addition, as I also showed in Chapter 6, the causes of language change can often be attributed to sociolinguistic forces, which entails a close link between historical linguistics and sociolinguistics. There is also a close interrelationship between historical linguistics and linguistic typology, as it is by looking at patterns of language change and discovering the directions that such changes follow that typologists can form a view on the directions that typological patterns are likely to follow.

Some types of language change move at a more rapid pace than others. For example, the lexicon of a language changes more rapidly than its phonology or its grammar, with new words coming into the language, old words falling out of use and existing words taking on different meanings. The sound patterns of a language change more rapidly than its grammar (compare the contemporary 'Received Pronunciation' **social accent** of British English with its 1950s counterpart, for example).

Finally, the slowest type of language change is grammatical change. For example, as I will show later in the chapter, while the English verb *must* was a full content verb in Old English, as attested in the Old English corpus (for example, in the epic poem *Beowulf*, written sometime in the eighth century), in Modern

English it functions as a modal auxiliary. These two points in the history of this symbolic unit are separated by over a thousand years. As Heine et al. (1991: 244) observe, the time span involved in grammatical change depends on the kinds of grammatical elements concerned (see also Heine and Kuteva 2007).

The type of language change I focus upon in this chapter is **grammaticalisation** – some linguists prefer the term 'grammaticisation'. This is the process whereby grammar evolves, by virtue of lexical or content words acquiring a grammatical function, or by existing grammatical units acquiring further grammatical functions. Grammaticalisation has received a great deal of attention within cognitive linguistics. This is because grammaticalisation is characterised by interwoven changes in the form and meaning of a given construction and can therefore be seen as a process that is essentially grounded in changes in semantic structure – the shift in a symbolic unit from encoding rich, analogue semantic structure to acquiring less contentful, schematic, parametric semantic structure. In terms of Access Semantics, for instance, this process entails a symbolic unit undergoing a shift from a words-to-world reference strategy to that of words-to-words (recall the discussion in Chapter 18). Furthermore, cognitive linguists argue that semantic change in grammaticalisation is grounded in usage events, and is therefore itself a usage-based phenomenon.

There are a number of different cognitive linguistics theories of grammaticalisation, each of which focuses on the semantic basis of the process. After providing an overview of the nature of grammaticalisation, I provide an overview of three specific theories: the **metaphorical extension approach**; **invited inferencing theory**; and Langacker's **subjectification approach**, associated with his theory of Cognitive Grammar. Finally, I present a brief comparison of the three approaches.

1 The nature of grammaticalisation

Although the term 'grammaticalisation' suggests a type of grammatical change, grammaticalisation in fact involves correlated changes in sound, meaning and grammar. The process of grammaticalisation affects the phonology, morphosyntax and meaning or function of a given symbolic unit. Grammaticalisation can therefore be described as a kind of language change that involves **form–meaning reanalysis** (Croft 2003). Grammaticalisation is essentially the process whereby contentful or lexical constructions (including words) develop grammatical functions, or already grammaticalised constructions evolve further grammatical functions. Grammaticalisation, like many kinds of language change, is **unidirectional** and **cyclic** (Croft 2003: 253). It is described as 'unidirectional' because the direction of this type of change is from the lexical to the grammatical (from the open class to the closed class), and not vice versa. The cyclic nature of grammaticalisation is evident by the fact that linguistic units enter a language as open-class lexical items, evolve into closed-class items via the process of grammaticalisation, eventually leave the language via a process of loss and are replaced by new open-class items.

For example, a common cross-linguistic process involves the evolution of a lexical verb meaning 'want' or 'intend', such as the Old English verb *willan*, into a modal auxiliary, such as *will*, then into a bound inflectional (e.g. future) morpheme, such as *I'll/he'll/she'll* and so on, that may eventually be lost as its function is taken over by a new open-class item.

Another example is provided by Heine et al. (1991) from Yoruba, a Nigerian language that belongs to the Kwa branch of the Niger-Congo language family. The Yoruba verb *kpé* 'say' evolved into a complementiser (1a), was then replaced by another verb *wí* 'say' that was also grammaticalised into a complementiser and compounded with *kpé* (1b), and then this form was lost as a new 'say' verb *ní* emerged (1c). Examples from Lord (1976) cited in Heine et al. (1991: 246–7).

(1) a. ó sɔ kpé adé lɔ
'He said that Ade went'
b. ó sɔ wí-kpé adé lɔ
'He said that Ade went'
c. ó ní Adé lɔ
'He said that Ade went'

One reason for the cyclic nature of grammaticalisation is the phenomenon of **renewal**. For example, the English degree modifiers or 'intensifiers' (e.g. *very* in *Monica's knowledge of formal logic can be very intimidating*) are especially prone to renewal. As Hopper and Traugott (2003) observe, at different points over the last 200 years the following degree modifiers have been particularly fashionable: *frightfully*, *terribly*, *incredibly*, *really*, *pretty*, *truly*. Renewal is motivated by the tension that holds between **informativeness** and **routinisation**. Routinisation relates to **frequency of use** and thus **predictability**: a form becomes highly predictable in linguistic contexts in which it occurs frequently. Because grammaticalisation ensures a more limited distribution of a grammaticalised form, grammaticalised elements tend to become highly predictable.

However, predictability entails a reduction in the informational significance of a particular form. This is attested by the phenomenon of **phonological attrition**, which is the endpoint of morphological **fusion** and **coalescence** (which I discuss below). This process, which eventually results in the complete loss of phonological form, is well attested in the languages of the world (see Hopper and Traugott 2003). Renewal reflects a natural shift towards new forms in order to increase informativeness, by avoiding forms that, as a result of routinisation, have reduced informational significance. This process manifests itself in innovation in language use and contributes to the cyclical nature of the grammaticalisation process.

Grammaticalisation is effected through a shift in the meaning associated with the linguistic unit element from the specific to the schematic. According to cognitive (and functional) linguists, the grammaticalised unit takes on meaning associated with the usage event, and is thus a fundamentally

Table 27.1 Common grammaticalisation patterns (adapted from Croft 2003: 254)

Common grammaticalisation patterns
content verb > auxiliary > tense-aspect-mood affix
verb > adposition
noun > adposition
adposition > case affix
adposition > subordinator
emphatic personal pronoun > clitic pronoun > agreement affix
cleft sentence marker > focus marker
noun > classifier
verb > classifier
demonstrative > article > gender/noun class marker
demonstrative or article > complementiser or relativiser
numeral 'one' > indefinite article
numerals 'two' or 'three' > dual/paucal/plural affix
collective noun > plural affix
demonstrative > copula
positional verb > copula

usage-based change. The most frequent patterns of grammaticalisation are listed in Table 27.1.

1.1 Form change

In this and the next subsection, I examine, in more detail, a number of characteristics associated with the grammaticalisation process. I begin, here, with form change.

As Table 27.1 illustrates, a common pattern in grammaticalisation is one in which free morphemes come to be bound or fused together. As such, a grammaticalised unit undergoes a tighter integration of morphophonological form. This is known as coalescence, a process whereby two words become one. For example, Modern English derivational affixes *-hood*, *-dom* and *-ly* evolved from nouns meaning 'condition', 'state, realm' and 'body, likeness', respectively. Consider the following examples from Hopper and Traugott (1993: 41):

(2) a. cild-had 'condition of a child' > childhood
 b. freo-dom 'realm of freedom' > freedom
 c. man-lic 'body of a man, likeness of a man' > manly

The process of coalescence is accompanied by **reduction** or **loss**: a process whereby a morpheme or sound segment is either shortened or lost altogether. This process is illustrated by the English (*be) going to* construction, which has undergone syllabic reduction (from trisyllabic to disyllabic) and has also undergone coalescence, resulting in a fused form *gonna*. Observe that the form associated with the FUTURE meaning has undergone reduction while the form associated with the ALLATIVE (motion) meaning has not. This is illustrated by the acceptability of *gonna* with a FUTURE meaning (3a), but not with an ALLATIVE meaning (3b) (compare *I'm going to the cinema*).

(3) a. I'm gonna be a rock star when I grow up. FUTURE
b. *I'm gonna the cinema. ALLATIVE

Moving from morphophonological form to morphosyntactic form, grammaticalised units display **rigidification** of morpheme/word order (Croft 2003: 257). For example, consider the position of the French clitic pronoun *l'* (a grammaticalised unit) with the position of its full NP counterpart *le livre* in (4).

(4) a. Je l'ai lu
1s 3s-AUX.1s read.P.PART
'I've read it.'
b. J'ai lu le livre
1s-AUX.1s read.P.PART DEF.MS book
'I've read the book.'

As French evolved from its ancestor Latin, the relatively free Latin word order (which tended towards a default SOV pattern in transitive clauses), became rigidified along two parameters in French: an SOV pattern became fixed in the case of (clitic) object pronouns (4a), while an SVO pattern became fixed in the case of free nominals (4b).

In Croft's (2003: 259) terms, grammaticalised units also undergo **paradigmaticisation**, whereby they move from open class to membership of a closed class; they also undergo **obligatorification**, whereby an optional element in a construction becomes obligatory. The latter process is illustrated by the French negation particle *pas*. This open-class word means 'footstep', and was originally introduced into the French negative construction *ne* V as an emphatic object of verbs of movement (5a) – providing emphasis, akin to the following English gloss: 'I won't move, not a step.' Over time, this element, *pas*, was reanalysed as an optional negation particle in negated verb of movement constructions: *ne* V-movement (*pas*). The negation particle was then extended to occur optionally in all negated verb constructions: *ne* V (*pas*), and then obligatorily: *ne* V *pas* (5b). Finally, in spoken French, the element *pas* retained its obligatory status (in the absence of another negative morpheme like *rien* 'anything' or *jamais* '(n)ever'), while the earlier negation particle *ne* became optional, giving rise to the construction (*ne*) V *pas*. In some current spoken varieties, *ne* has now been lost altogether, resulting in the construction V *pas* (5c). This path of change is schematically represented in (5d). The example in (5) is based on Hopper and Traugott (1993: 58).

(5) a. Il ne va (pas)
3MS NEG go step
'He doesn't go (a step).'

b.	Il	ne	sait	pas	
	3MS	NEG	know	NEG	
	'He doesn't know.'				
c.	Il	sait	pas		
	3MS	know	NEG		
	'He doesn't know.'				

d. *ne* V-movement (*pas*) > *ne* V (*pas*) > *ne* V *pas* > (*ne*) V *pas* > V *pas*

The disappearance of the negation particle *ne* in varieties of modern spoken French illustrates the final stage in the life cycle of a grammatical morpheme: grammatical loss.

1.2 Meaning change

A key characteristic of grammaticalisation, which accompanies and indeed can be said to give rise to form changes, is change in the meaning or function associated with a linguistic form. While some grammaticalisation scholars argue that this semantic change is the result of meaning loss, termed **semantic bleaching** or **attenuation** (weakening), others argue that it is more accurate to describe the semantic change that characterises grammaticalisation, particularly in the early stages of grammaticalisation, as an instance of polysemy. Croft (2003: 262) describes this polysemy as 'a chain of related meanings or uses', and illustrates this point by means of the English word *that*, which has four functions. This coexistence of related meanings which emerged at historically different periods is sometimes called layering in grammaticalisation theory. The four functions of *that* are illustrated by the following examples.

(6)	a.	Pass me that.	DEICTIC DEMONSTRATIVE
	b.	Tommy sneezed and she laughed at that.	ANAPHORIC DEMONSTRATIVE
	c.	Monica said that her husband was too cute for words.	COMPLEMENTISER
	d.	Tommy was the blue-eyed ragdoll that she loved.	RELATIVISER

As Croft observes, there may not be a single meaning that underlies all four functions of *that*. Nevertheless, we might plausibly argue that the demonstrative function has been extended from the domain of physical space (6a) to the domain of linguistic organisation (6b). Hence, the anaphoric demonstrative 'points to' another element in the discourse (the fact that Tommy sneezes) rather than an entity in the physical context. Similarly, the function of *that* as a complementiser is to 'point to' or introduce what is coming next (6c), while the relativiser *that* in (6d) 'points to' some characteristic of the noun *husband* which the relativiser *that* introduces. From this perspective, the four uses of *that* are plausibly related to and motivated by deixis.

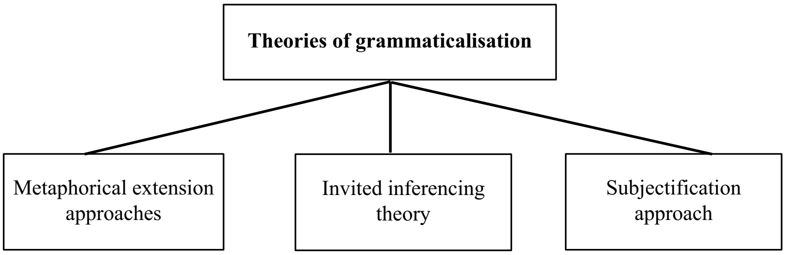

Figure 27.1 Cognitive linguistics approaches to the grammaticalisation process

Cognitive linguists therefore contend that the semantic change characteristic of grammaticalisation does not necessarily involve 'semantic bleaching'; rather, the shift from lexical or content meaning to grammatical or schematic meaning gives rise to a set of overlapping form–meaning pairings along the continuum between lexicon and grammar, during the grammaticalisation process.

Finally, just as grammaticalisation involves phonological and morphological loss, it can also involve semantic or functional loss. To illustrate this point, I return to the French negation construction which I presented in example (5). Here, the emphatic meaning of *pas* is lost as it becomes a fully grammaticalised negation particle and the negation function of *ne* is lost as it is superseded by *pas*. This explains why it eventually slips out of certain varieties of the language altogether.

The study of grammaticalisation has a rich history, dating back at least as far as the eighteenth century (Heine et al. 1991: 5). This area of language change has received most attention from **philologists** (historical linguists with a particular interest in establishing language families) and from typologists, and has therefore been approached more from a functional than a formal linguistics perspective. More recently, a number of cognitive linguistics theories of grammaticalisation have emerged, which I now turn to. As we will see, these theories differ in a number of ways; what they share is the view that grammaticalisation is essentially grounded in meaning, and the view that grammaticalisation is a usage-based phenomenon. These three approaches are represented in Figure 27.1.

2 Metaphorical extension approaches

Of the three approaches to grammaticalisation addressed here, the metaphorical extension approach is probably the most widely adopted and is therefore associated with a considerable number of researchers. I illustrate this approach by focusing on a representative study by Heine et al. (1991); see also Heine (1997).

2.1 The evolution of grammatical concepts

Heine et al. (1991) argue that grammaticalisation is one of a number of strategies that speakers rely upon in developing new expressions for concepts, together with other strategies such as coining new words, borrowing words from other languages and so on. That said, the emergence of new grammatical forms is more gradual than the emergence of new lexical forms. Grammaticalisation results in the development of expressions for **grammatical concepts**. According to Heine et al. (1991: 28), grammatical concepts share a number of properties: they are relatively abstract in nature, lack semantic autonomy, contribute to the structure rather than content of the conceptual structure encoded in language, belong to closed classes and tend to lack morphological autonomy. In these respects, Heine et al.'s characterisation of grammatical concepts is reminiscent of the cognitive linguistics view of grammatical organisation.

2.2 Metaphorical extension

According to Heine et al., grammaticalisation essentially arises from human creativity or problem-solving. In developing a new expression for a grammatical concept, speakers 'conceptualize abstract domains of cognition in terms of concrete domains' (Heine et al. 1991: 31). In particular, these researchers adopt the view that this process involves metaphorical extension emerging from the mapping of image schematic concepts from source to target domain (Heine et al. 1991: 46). Given the gradual nature of grammaticalisation, Heine et al.'s approach involves the reconstruction of dead or frozen metaphors, in the sense that the synchronic grammatical forms are often no longer transparently recognisable as metaphors but are argued to have originated from the same conceptual metaphorical mapping processes as 'living' metaphors.

Heine et al. argue that basic source concepts have a strong tendency to be concrete objects, processes or locations, and to involve frequently used expressions such as body-part terms, verbs expressing physical states or processes such as *sit*, *lie* or *go*, and verbs expressing core human activities such as *make*, *do*, *have* or *say* (Heine et al. 1991: 32–5). They therefore suggest that egocentricity (or embodiment) is a central feature uniting source concepts. In these respects, they argue that grammaticalisation emerges from human construal, and thus they take an explicitly experientialist stance.

Heine et al. (1991: 48) propose a metaphorical source domain hierarchy, which is represented in (7). According to this hierarchy of basic concepts, any (less abstract) concept on the hierarchy can be used to metaphorically structure any other (more abstract) conceptual domain (to its right in the hierarchy). In this way, the hierarchy captures the unidirectionality that is characteristic of grammaticalisation.

(7) PERSON > OBJECT > ACTIVITY > SPACE > TIME > QUALITY

As Heine et al. observe, some basic source concepts are difficult to place in this hierarchy. For example, they argue that POSSESSION might be located somewhere to the right of SPACE.

2.3 The grammaticalisation continuum

In accounting for the transition from source concept to target concept in grammaticalisation, Heine et al. observe that the continuum between less and more grammatical meaning might be considered a potential problem for their metaphor extension account. As Heine et al.'s account assumes that the underlying motivation for grammaticalisation is metaphorical extension from a more concrete source domain to a more abstract target domain, then examples that fall somewhere between source and target domains might be seen as counterevidence for such a metaphorical extension account.

For instance, the conceptual metaphor TIME IS (MOTION THROUGH) SPACE motivates the grammaticalisation of the (*be*) *going to* construction, which evolves from its ALLATIVE meaning towards its more abstract and hence more grammaticalised FUTURE meaning. Consider the examples in (8) (adapted from Heine et al. 1991: 70).

(8) a. Monica is going to town.
b. *Monica*: Are you going to the barber shop?
Her husband: No, I'm going to eat.
c. Jimmy is going to do his very best to annoy Tommy.
d. It is going to rain.

As Heine et al. observe, while *be going to* in (8a) has an ALLATIVE meaning and *be going to* in (8d) reflects a purely FUTURE meaning, the examples in (8b) and (8c) are intermediate between these two senses. For example, Monica's husband's use of *be going to* in (8b) encodes what Heine et al. call an intention meaning, with a secondary sense of PREDICTION; they also suggest that there is a 'relic' of the spatial (ALLATIVE) meaning in examples like this. This contrasts with (8c) which encodes INTENTION and PREDICTION, but no spatial (ALLATIVE) sense is apparent.

Examples such as (8b) and (8c) are potentially problematic for a metaphor account because they illustrate that grammaticalisation involves a continuum of meanings rather than a clear-cut, discontinuous semantic shift from one domain (SPACE) to another (TIME).

2.4 The role of discourse context

Heine et al. argue that the metaphorical extension approach can account for this continuum between more and less grammaticalised meanings by taking into account the role of discourse context. While conceptual metaphors such as TIME IS SPACE structure the directionality associated with grammaticalisation, the process of grammaticalisation itself is effected by discourse-related processes including context-induced reinterpretations which arise as a result of metonymy. Heine et al. use the term 'metonymy' in a similar way to Barcelona (e.g. 2003b), whose account I presented in Chapter 13.

Some cognitive linguists refer to the context-induced metonymy that gives rise to language change in terms of **experiential correlation** (see Tyler and Evans 2001a, 2003). For example, in an exchange in which John meets Sue by chance and asks her where she's going, Sue might reply 'I'm going to town.' In this utterance, Sue refers to the act of moving in the direction of town. At the same time, this act is due to her intention to move in the direction of town. This example illustrates a close correlation between the experience of moving towards a particular goal and the intention to reach that goal. Experiential correlations of this kind can be described as metonymic in the sense that the motion event described as *be going to* 'stands for' the closely related intention. From this perspective, the semantic shift from an ALLATIVE interpretation to an INTENTION interpretation is metonymic, induced by a context-based interpretation. Further shifts of this kind may eventually result in a FUTURE interpretation, because intentions are future-oriented.

2.5 The microstructure and macrostructure of grammaticalisation

According to Heine et al., more local-level discourse context processes – referred to as the **microstructure of grammaticalisation** – manage the process of semantic change resulting in grammaticalisation. However, the microstructure is guided by the conceptual metaphor, which is part of the **macrostructure**. This account of context-induced reinterpretation and metonymy emphasises the usage-based nature of this model: it is discourse that effects the grammaticalisation process, because forms take on new meanings as a result of speakers' communicative goals. In emphasising the relationship between pragmatic and cognitive factors in grammaticalisation, Heine et al. present a perspective that is in many ways consonant with the model of grammaticalisation developed by Elizabeth Closs Traugott and her collaborators (which I discuss below). For example, Heine et al. invoke Traugott's notion of **pragmatic strengthening**, the conventionalisation of situated inferences or implicatures which result in new meanings. Consider the examples relating to *sooner*, in (9), which are drawn from Heine et al. (1991: 77).

(9) a. Bill died sooner than John. TEMPORAL SENSE
b. I'd sooner die than marry you. PREFERENCE SENSE

According to Traugott and König (1991), the preference sense of *sooner* evolves from the temporal sense as a result of conversational implicature, driven by pragmatic strengthening. Over time, the new preference sense becomes conventionalised, and may coexist alongside the original sense so that the form *sooner* becomes polysemous.

In adopting the view that grammaticalisation is discourse-driven in this way, Heine et al. also point out that their model is consonant with Hopper's (1987) notion of **emergent grammar**. According to Hopper, the grammar of a language is not most insightfully conceived as a fixed or stable system that precedes discourse, but as a system that is in a constant state of flux, and 'comes

Table 27.2 Macrostructure and microstructure in grammaticalisation

Macrostructure	Microstructure
Conceptual domains	Context
Similarity; analogy	Conversational implicatures
Transfer between conceptual domains	Context-induced reinterpretation
Metaphor (viewed as a conceptual phenomenon)	Metonymy (viewed as a discursive phenomenon)

out of discourse and is shaped by discourse as much as it shapes discourse in an ongoing process' (Hopper 1987: 142). Once more, this emphasises the usage-based nature of this related constellation of grammaticalisation theories.

In sum, Heine et al. argue that metaphor and context-induced reinterpretation involving metonymy are inextricably linked in the process of grammaticalisation (see also Heine 1997). However, they suggest that the two are 'complementary' in the sense that one is likely to figure more prominently in any given case of grammaticalisation than the other: 'The more prominent the role of context-induced reinterpretation, the less relevant the effect of metaphor . . . the more remote the sense along any of the channels of conceptualization described . . ., the more plausible an analysis in terms of metaphor is' (Heine et al. 1991: 96).

Table 27.2 summarises the macrostructure and the microstructure of grammaticalisation, as developed by Heine et al. While the macrostructure relates to cognitive domains (conceptual structure) and involves linking processes between domains that emerge from conceptual similarities, the microstructure relates to the pragmatic and discourse domains (semantic structure).

2.6 Case study I: OBJECT-TO-SPACE

Recall that the first historical stage in the grammaticalisation cycle is the stage when a lexical item takes on a new grammatical sense. Having presented an overview of the framework developed by Heine et al. (1991), I now consider evidence they present to illustrate this first stage in the grammaticalisation process. I do so, in the context of the grammaticalisation source domain hierarchy, which, recall, I presented in (7) above.

Heine et al. argue that the OBJECT-TO-SPACE conceptual metaphor represents this early stage in the grammaticalisation process, and this is evident in languages where body-part terms have evolved into locative adpositions. While there is a strong tendency for these body-part terms to relate to the human body – the **anthropomorphic model** – body-part terms in some languages are also related to the animal body – the **zoomorphic model** (see also Heine 1997).

Heine et al. conducted a study based on 125 African languages, representing the four major language families of Africa (Afroasiatic, Congo-Kordofanian, Khoisan and Nilo-Saharan). Their findings were striking. Among other prominent patterns, it emerged that in eighty of these languages, the adposition

BEHIND had evolved from the body-part term for BACK. In fifty-eight of these languages, the adposition INSIDE had evolved from the body-part term for STOMACH. In forty-seven of these languages, the adposition IN FRONT OF had evolved from the body-part term for FACE. Finally, in forty of these languages, the adposition ON had evolved from the body-part term for HEAD.

2.7 Case study II: SPACE-TO-POSSESSION

The next stage in the grammaticalisation process involves an already grammaticalised form acquiring additional grammatical senses or functions. Moving further along the source domain hierarchy in (7), the evolution of possession markers from spatial terms (SPACE-TO-POSSESSION) represents this stage of grammaticalisation. Heine (1997) also argues that, in the case of possession, grammaticalisation cannot be fully characterised in terms of the evolution of a single morpheme or word, but involves the whole possessive construction. This follows as the syntax of possessive constructions often exhibits properties that are distinct from canonical syntactic patterns within the language. Heine argues that this is because possessive constructions are structured in terms of **event schemas** (these are similar to Goldberg's verb–argument constructions, which are motivated by the scene encoding hypothesis, as discussed in the previous chapter). The structure of the relevant schema is reflected in the syntax of the construction. Consider the following examples (cited in Heine 1997: 92–5).

(10) a. Estonian
Isal on raamat — LOCATION SCHEMA
father.ADDESSIVE 3S.be book.NOM
'Father has a book' (lit: 'the book is at father')

b. Russian
U menja kniga — LOCATION SCHEMA
at me book
'I have a book' (lit: 'a book is at me')

c. Mupun (Afroasiatic–Chadic)
War kə siwol — COMPANION SCHEMA
3F with money
'She has money' (lit: 'she is with money')

d. French
Le livre est à moi — GOAL SCHEMA
The book is to me
'The book is mine' (lit: 'the book is to me')

Heine (1997) classifies these examples in terms of various event schemas. For example, he describes (10a) and (10b) in terms of the location schema, (10c) in terms of the companion schema and (10d) in terms of the goal schema. What these examples all share in common, however, is that they rely upon a grammatical unit that relates to SPACE in order to express POSSESSION. While example (10a) relies upon an adessive case morpheme (expressing adjacency) to express POSSESSION, (10b) relies upon a locative preposition. Both examples express POSSESSION in terms of location in SPACE. Example (10c) relies upon an associative preposition and expresses POSSESSION in terms of proximity or contiguity in SPACE. Finally, example (10d) relies upon a preposition that encodes motion towards a goal in order to express POSSESSION.

In sum, Heine et al. (1991) develop a theory of grammaticalisation that relies predominantly upon the idea of metaphorical extension along a continuum from more concrete to more abstract domains. The unidirectionality of grammaticalisation is explained in terms of this metaphorical extension, which provides the macrostructure of grammaticalisation. According to this model, discourse goals giving rise to context-induced reinterpretation are also inextricably linked with grammaticalisation and provide the microstructure of the process.

3 Invited inferencing theory

I now turn to a discussion of a theory of semantic change in grammaticalisation proposed by Elizabeth Closs Traugott and Richard Dasher, focusing on the presentation in Traugott and Dasher (2002). This theory is termed the invited inferencing theory of semantic change as its main claim is that the form–meaning reanalysis which characterises grammaticalisation arises as a result of situated language use. In short, semantic change is usage-based. Traugott and Dasher argue that pragmatic meaning – the **inferences** which arise in specific contexts – come to be reanalysed as part of the conventional meaning associated with a given construction. Inferences of this kind are invited in the sense that they are suggested by the context.

3.1 From invited inference to coded meaning

According to invited inferencing theory, semantic change occurs when **invited inferences** become generalised. The distinction between an invited inference and a **generalised invited inference** is that a generalised invited inference is not simply constructed on-line, but is preferred without yet being conventionalised. Inferences that subsequently become conventionalised are dubbed **coded meanings**. According to this theory, semantic change follows the path indicated in Figure 27.2.

The difference between a generalised invited inference and a coded meaning is that while a generalised invited inference can be cancelled, a coded meaning cannot. The ability to be cancelled is a property of inferences that can be eradicated by subsequent context. Consider example (11).

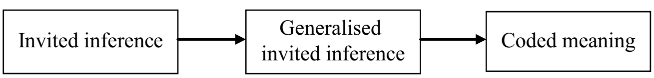

Figure 27.2 From invited inference to coded meaning

(11) After the trip to Malta, Monica felt very tired.

An inference associated with the temporal expression *after* is that Monica felt tired as a result of the trip. In short, there is an inference of causality: the trip to Malta caused Monica to be tired. However, causality is not a coded meaning associated with *after*, because it can be cancelled. In example (12), further information is given relating to the cause of Monica's tiredness.

(12) After the trip to Malta Monica felt very tired. It turned out she had been suffering from a virus.

In this example, the second sentence cancels the inference of causality associated with *after* by providing explicit information concerning the cause of Monica's tiredness.

3.2 Subjectification

Traugott and Dasher (2002) argue that the range of semantic changes apparent in grammaticalisation are most insightfully conceived in terms of shifts from more objective to more subjective meaning. This process is called **subjectification** (not to be confused with Langacker's approach to grammaticalisation, which I dub the subjectification approach, presented later in the chapter). In Traugott and Dasher's sense of the term, subjectification involves a shift from a construction encoding some speaker-external event to a construction encoding the speaker's perspective in terms of location in space and time, or in terms of the speaker's attitude to what is being said. This is termed the **grounding** of the speaker's perspective, which is thereby lexicalised (becoming part of the coded meaning).

For example, while the ALLATIVE meaning of *be going to* represents a concrete and objective event, the FUTURE meaning grounds the assertion with respect to the speaker's subjective perspective. The FUTURE sense of the construction encodes the speaker's 'location' in TIME relative to the event described in the utterance. Consider example (3a) again, which is repeated here as (13).

(13) I'm gonna be a rock star when I grow up.

In this example, *gonna* indexes the speaker's present location in TIME, marking the assertion as being future-oriented from the speaker's perspective. In this way, the grammaticalisation of *be going to* from ALLATIVE to FUTURE involves a shift from a more objective meaning to a more subjective meaning.

One salient example of subjective meaning involves **deixis**. As we have seen at various points in this book, **deictic expressions** encode information that is grounded with respect to the speaker. For example, **spatial deixis** grounds an entity relative to speaker location, as in expressions such as *here* and *there*, whose reference can only be fully understood relative to the speaker's location. Similarly, **temporal deixis** concerns the subjective grounding of speaker 'location' in TIME, as reflected in the use of tense and temporal adverbials such as *yesterday* and *tomorrow*, as well as in the future sense of the *be going to* construction. These expressions can only be fully interpreted if we know 'where' in time the speaker is located. **Person deixis** concerns the use of personal pronouns such as *I* versus *you*, which are also grounded in speaker perspective.

Another class of expressions that are subjective in this sense are the modal verbs, which encode information relating to possibility, necessity and obligation (among others). Hence, modals also encode these aspects of the speaker's perspective.

3.3 Intersubjectification

A subsequent grammaticalisation process is **intersubjectification**. This relates to a shift from objective meaning to a meaning that grammatically encodes the relationship between speaker and hearer. For instance, Traugott and Dasher (2002) discuss **social deixis** in relation to the Japanese verb *ageru*, 'give'. They note that until recently *ageru* was an **honorific verb**: a verb used by a speaker (giver) who is of an inferior social status to the (hearer) recipient. Hence, part of the meaning of the verb was to signal the differential social status. More recently, this verb has begun to be used to express politeness, regardless of the relative social status of the giver and recipient. Thus, a shift has occurred such that the expression has acquired a different intersubjective meaning, evolving from an honorific expression to a marker of politeness.

Other examples of intersubjective meaning include pronoun forms in languages such as French, which has 'polite' and 'familiar' variants of the second person singular pronoun (*vous* and *tu*, respectively). The choice of pronoun is grounded in intersubjective perspective and encodes the social relationship that holds between interlocutors. Explicit markers of the speaker's attention to the hearer, including politeness markers such as *please* and *thank you* and honorific titles such as *Doctor* and *Sir* also express intersubjective meaning. Figure 27.3 summarises the evolution of subjectivity in the semantic change that underlies grammaticalisation.

As Figure 27.3 illustrates, objectivity and intersubjectivity represent the extreme poles of the continuum. The more objective an expression, the more

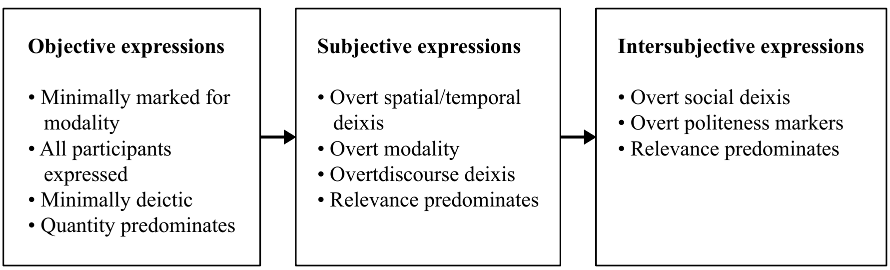

Figure 27.3 The evolution of subjectivity in grammaticalisation (adapted from Traugott and Dasher 2002: 22–3)

likely it is to be unmarked for modality (speaker attitude) and the least likely it is to be dependent on inference for full interpretation. It follows that Grice's (1975) **maxim of quantity** predominates in this type of expression: the hearer assumes that the speaker has given as much information as is required, and is licensed to infer that what is not said is not the case. In contrast, as an expression moves along the continuum from objectivity to subjectivity, the more likely it is to be marked for speaker perspective, including modality, spatial and temporal deixis, and **discourse deixis**. The latter relates to expressions that link back explicitly to portions of preceding discourse (recall my discussion of example (6b)), or link pieces of discourse by means of connectives such as *so*, *if* or *because*. Furthermore, the more subjective the expression, the more dependent it is upon inference. Traugott and Dasher (2002) argue that Grice's (1975) **maxim of relevance** therefore predominates in this type of expression: the hearer assumes that more is meant than is said. At the most subjective point on the continuum – intersubjectivity – expressions are characterised by overt social deixis (for example, honorifics) and overt politeness markers (for example, hedges such as *I suppose* and expressions such as *please* and *thank you*). Relevance also predominates in this type of expression.

From the foregoing, it should be clear that while subjectification relates to speaker perspective (which is also true of Langacker's approach, discussed below), for Traugott and Dasher subjectivity correlates with the presence of an overt expression that signals subjectivity (for Langacker subjectivity correlates with the absence of overt expression). Furthermore, as Traugott and Dasher (2002: 98) point out, Langacker's approach focuses upon the conceptual representation of event structures and how they are construed by the speaker. In contrast, invited inferencing theory focuses upon discourse, and therefore subjectivity is seen as contextually determined rather than as an inherent property of constructions.

3.4 The status of metaphor in invited inferencing theory

Traugott and Dasher (2002) observe that metaphor has sometimes been considered the predominant force behind the semantic change that underlies grammaticalisation. As we have already seen, because conceptual metaphor 'was conceptualized as involving one domain of experience in terms of another and operating "between domains" . . . changes motivated by it were conceptualized as primarily discontinuous and abrupt' (Traugott and Dasher 2002: 77).

However, as I noted earlier, the linguistic evidence does not support this view, and Heine et al.'s metaphorical extension account has to allow the language user a significant role in grammaticalisation in order to overcome this potential problem. For Heine et al., metaphor represents a macrostructure in grammaticalisation: it is within the conceptual frame established by a conceptual metaphor that grammaticalisation occurs. From this perspective, a conceptual metaphor provides the underlying schema that facilitates context-induced semantic change.

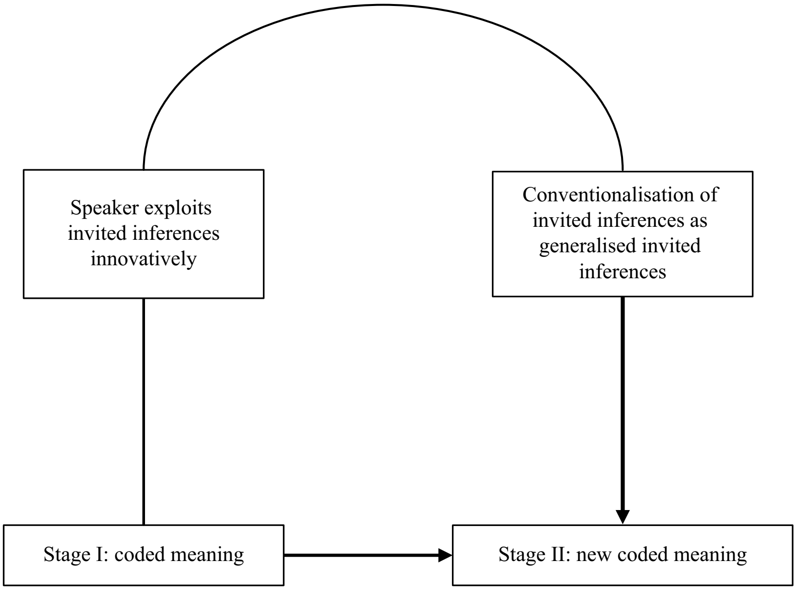

Figure 27.4 Invited inferencing model (adapted from Traugott and Dasher 2002: 38)

In contrast, Traugott and Dasher argue that many, perhaps most, of the regular semantic changes involved in grammaticalisation do not involve conceptual metaphor. Rather, semantic change arises from the usage-based processes I described above, in which invited inferences become generalised before becoming conventionalised as coded meaning. From this perspective, the changes involved are smaller scale, mediated by context and language use. These changes are therefore metonymic in the sense that one concept 'stands for' another closely related concept rather than one concept being understood in terms of another as a result of a metaphorical mapping from one domain to another (recall my discussion of the examples in (8)). Traugott and Dasher's model is summarised in Figure 27.4.

While studies that focus on metaphor complement the invited inferencing approach, Traugott and Dasher argue that the predominance of metaphor-based explanations in theories of grammaticalisation results from a tendency to focus on the beginning and endpoints of the process of change (the bottom, horizontal arrow in Figure 27.4), without fully investigating the pragmatic processes that drive the process of change (the U-shaped line from 'Stage I' to 'Stage II' in Figure 27.4). In this respect, Traugott and Dasher tend towards the view that conceptual metaphor is epiphenomenal in the context of grammaticalisation: a 'side effect' of the grammaticalisation process rather than an underlying cause.

3.5 Case study: the evolution of *must*

Having set out the path of change predicted by invited inferencing theory, I now present an illustrative case study, discussed by Traugott and Dasher (2002).

They observe that modal verbs follow a unidirectional path of evolution. First, content expressions evolve into deontic modals which express obligation, permission or prohibition (e.g. *John must learn to be on time*). The same expressions then evolve into epistemic modals which relate to knowledge and belief (e.g. *John must be home by now*). Evolution in the opposite direction (from content expression to epistemic to deontic) is not attested. Second, the path of evolution is from narrow scope (over some subpart of the proposition) to wide scope (over the whole proposition), not vice versa. This point is illustrated below. Finally, this path of grammaticalisation correlates with increased subjectivity. I have summarised the properties that characterise the evolution of modal verbs in Table 27.3.

In order to illustrate this path of evolution, Traugott and Dasher present a case study of the English modal *must*. In Modern English, this modal verb has both deontic readings (14a) and epistemic readings (14b).

(14) a. You must stop talking. DEONTIC MODALITY
b. She must love him, I suppose EPISTEMIC MODALITY

Traugott and Dasher describe the evolution of this verb from Old English to Modern English in terms of three stages:

Stage I: *must*$_1$: ability (15); permission (16) (Old English)

(15) Ic hit þe þonne gehate pcet þu on Heorote *most* sorhleas swefan.
'I promise you that you will be able to sleep free from anxiety in Heorot.'
(Eighth century, *Beowulf*; cited in Traugott and Dasher 2002: 122)

(16) þonne rideð celc hys weges mid ðan feo & hyt *motan* habban eall.
'Then each rides his own way with the money and can keep it all.'
(*c*.880, *Orosius*; cited in Traugott and Dasher 2002: 123)

Stage II: *must*$_2$: obligation/deontic (Late Old English – Early Middle English)

(17) Ac ðanne hit is þin wille ðat ic ðe loc ofrin *mote*.
'But then it is Thy will that I must offer Thee a sacrifice.'
(*c*.1200, *Vices and Virtues*; cited in Traugott and Dasher 2002: 124)

Table 27.3 The evolution of modal verbs (Traugott and Dasher 2002)

Evolution of modal verbs
deontic > epistemic
narrow scope > wide scope
less subjective > more subjective

Stage III: *must*$_3$: epistemic (Middle English – Modern English)

(18) For yf that schrewednesse makith wrecches, than *mot* he nedes ben moost wrecchide that longest is a schrewe.
'For if depravity makes men wretched, then he must necessarily be most wretched that is wicked longest.'
(*c*.1380, Chaucer, *Boece*; cited in Traugott and Dasher 2002: 129)

(19) There ys another matter and I *must* trowble you withal . . . hit ys my lord North . . . surely his expences cannott be lytle, albeyt his grefe *must* be more to have no countenance at all but his own estate.
'There is another matter I must trouble you about . . . It is my Lord North . . . surely his expenses can't be small, although it must be an even greater grief to him that he has no standing other than his own estate.'
(1586, Dudley; cited in Traugott and Dasher 2002: 129)

As these examples demonstrate, *must* originated in Old English as a content verb meaning 'be able' and evolved into a deontic verb expressing permission and then obligation (17). Traugott and Dasher (2002) argue that the evolution from permission to obligation correlates with increased subjectivity. The earliest uses of the obligation (deontic) sense of *must* appear to have been **participant-external**: the obligation (deontic) sense arose in contexts where permission was being granted to a third person referent. In such contexts, particularly when the person or entity granting the permission, such as a king or the Church, is in a position of authority, there is a context-induced implication of obligation. Once the deontic sense was established, more subjective **participant-internal** (first person) uses began to emerge, as illustrated by the example in (17).

The shift from deontic to epistemic senses in (18)–(19) also follows a path from objective to subjective uses. According to Traugott and Dasher (2002: 132), therefore, there is no need to resort to a metaphorical account of the evolution of this modal verb as an invited inferencing analysis provides a descriptively adequate account of the stages involved in the grammaticalisation process.

4 The subjectification approach

Langacker (1999b, 1999c) argues that subjectification is central to grammaticalisation. As already intimated, Langacker uses the term 'subjectification' in a somewhat different way from Traugott and Dasher. In this section, I explore this notion, and show how Langacker deploys it to account for grammaticalisaton.

4.1 The nature of subjectification

In Langacker's Cognitive Grammar, subjectification relates to perspective. For example, speaker and hearer are usually subjectively construed or 'off-stage', and only become objectively construed or 'on-stage' when linguistically

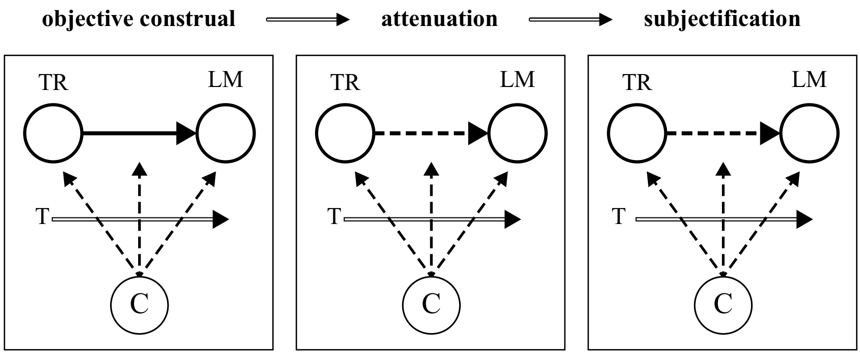

Figure 27.5 Subjectification, or the attenuation of objectivity (adapted from Langacker 1999b: 6)

profiled, for example by the use of pronouns such as *I* or *you* (recall my introduction to subjective and objective construal in Chapter 16). Langacker argues that subjective construal is **immanent** in (subsumed by) objective construal, because whether or not the conceptualiser is on-stage (objectified), his or her perspective in terms of participation in scanning is part of the conceptualisation process. This idea is illustrated by Figure 27.5.

In Figure 27.5, the circle marked C represents the conceptualiser who is mentally scanning the interaction between trajector (TR) and landmark (LM). This scanning process is represented by the arrows between C and TR and LM, and takes place across processing time, which is represented by the horizontal arrow marked T.

The difference between the three diagrams in Figure 27.5 concerns the arrow which connects the TR and LM; this represents the profiling of the relationship between the TR and LM. In the case of objective construal, this arrow is unbroken. This captures the idea that the relationship between the TR and LM is highly objectively salient. In the central diagram in Figure 27.5, this arrow is broken; this captures the notion of attenuation or weakening of the objective salience of the relationship between the TR and LM. When subjectification occurs, the arrow representing the relationship between the TR and LM is absent: the idea that there is no longer any objective salience in the relationship between the TR and LM. Although the two are still related, the relationship holds only within the conceptualiser's construal.

The examples in (20) provide some linguistic evidence for these notions. Langacker (1999b) compares two different senses of the expression *across* in order to illustrate subjectification or the attenuation of objectivity.

(20) a. Monica went across the street.
b. There is a perfume boutique across the street.

In example (20a), the TR *Monica* is in motion, and the expression *across* encodes her path of movement which is therefore objectively salient. In contrast, TR

Table 27.4 Patterns of attenuation (Langacker 1999b)

Patterns of attenuation	
Status	actual → potential; specific → generic
Focus	profiled → unprofiled
Domain	physical → experiential/social
Locus of activity	on-stage → off-stage

a perfume boutique in example (20b) is a static entity, and the expression *across* only encodes its location. Although both examples involve the same perspective point for the conceptualiser, who mentally scans the path across the street, the objective salience of this path is weaker in (20b) because of the absence of a moving TR. Furthermore, while the entire path is profiled in (20a), only the endpoint of the path is profiled in (20b). The idea behind immanence is that subjective construal is 'there all along', but only comes to the fore when objective construal is attenuated or weakened.

Langacker proposes that subjectification, or the attenuation of objectivity, gives rise to grammaticalised forms over a period of time, and that in the intervening stages on the gradual path to grammaticalisation, a number of layered senses or functions of a single form may coexist. Langacker suggests that attenuation is evident in four main patterns of change, which I have summarised in Table 27.4.

4.2 Case study I: *be going to*

Langacker (1999b) provides a number of examples of how the attenuation process evolves grammaticalised forms. To illustrate, I first revisit the *be going to* construction from the perspective of Langacker's subjectification approach, examining how this model accounts for the evolution of auxiliary verbs. As I showed earlier, this construction is associated with an ALLATIVE (motion) sense and a FUTURE sense. Consider example (21), which is ambiguous between these two senses.

(21) Monica is going to buy some perfume.

In this example, Monica may be walking across the street towards the perfume boutique (ALLATIVE sense) or sitting on her apartment sofa stroking her ragdoll cat (FUTURE sense). Langacker (1999b) argues that the FUTURE sense arises from subjectification – the conceptualiser mentally scans Monica's motion through TIME rather than SPACE, and this scanning becomes salient in the conceptualiser's construal as the motion along this path is not objectively salient (there is no physical motion). In a number of ways, the FUTURE sense of *be going to* exemplifies the defining properties of attenuation that are set out in Table 27.4.

4.3 Case study II: the evolution of auxiliaries from verbs of motion or posture

The Spanish auxiliary verb *estar*, 'be', evolved from a content verb meaning 'stand'. Langacker (1999b: 309) provides the following examples, which show that this verb behaves much like the English copula in that it can take subject (or adverbial) complements, for example AP (22a) or PP (22b). The verb *estar* also functions like the English progressive auxiliary, in that it can also take a present participle (22c).

(22) a. Está enfermo
be.3S ill
'He is ill'
b. Está en la cocina
be.3S in the kitchen
'He is in the kitchen'
c. Está trabajando
be.3S working
'He is working'

As I showed in Chapter 22, what distinguishes TEMPORAL RELATIONS (PROCESSES) from ATEMPORAL RELATIONS in Cognitive Grammar is sequential scanning. We also saw in Chapter 24 that, according to Cognitive Grammar, the role of the verb *be* is to impose PROCESS status upon otherwise ATEMPORAL RELATIONS such as adjectives, prepositions and participles. Langacker (1999b) argues that the path of change from a verb of posture to a *be* verb involves attenuation of objectivity resulting in loss of subject control and consequent subjectification. The path of evolution proposed by Langacker is schematically represented in (23) and the English examples in (24) provide an illustration of this claim.

(23) [*stand* + participle] → [*stand'* + participle] → [*be* + participle]

(24) a. Monica stood there gazing into his eyes.
b. The carriage clock stood ticking on the mantelpiece.
c. The clock was ticking.

In (24a), the situation designated by *stand* is salient and the event designated by the adverbial subordinate clause *gazing into his eyes*, headed by the participle *gazing*, is less salient hence its status as a modifier. In (24b), which contains an attenuated instance of *stand*, that Langacker represents as *stand'*, the situation designated by *stand* is still salient, but its objectivity is attenuated because its TR is a static and inanimate entity. It is in this example that the notion of loss of subject control becomes clear: the extent to which the objective construal of the construction is attenuated is closely linked to the properties of the subject (or TR) in terms of animacy, potential for motion and so on. The further attenuation of *stand* results in a sense that is also devoid of orientation in SPACE, and it is at this point that Langacker suggests the verb of posture evolves into a *be* verb that has lost its original content meaning but retains its PROCESS (verbal) essence which designates sequential scanning. At this stage, the *be* verb and the participle merge in terms of expressing a single event or situation (24c).

In light of the foregoing, a number of points of contrast emerge in relation to Langacker's subjectification approach, in comparison to the other approaches to grammaticalisation I have discussed in this chapter. In the first instance, both the metaphorical extension approach and invited inferencing theory place the burden of explanation on metaphor and pragmatic inferencing, respectively. Langacker's explanation has little to say about either of these factors, but focuses the account entirely on how the conceptual system might give rise to grammaticalisation as a consequence of perspective and construal. Second, Langacker's account, and his notion of attenuation, can be viewed as a version of a semantic bleaching account that is eschewed by the two other approaches I have considered. Indeed, Langacker (2002: 324) explicitly equates semantic attenuation and semantic bleaching.

5 Comparison of the three approaches: *be going to*

In this section, I conclude my discussion of the three theoretical approaches to grammaticalisation presented in this chapter with a very brief comparison of how each approach accounts for the *be going to* construction.

We saw that the metaphorical extension approach analyses the shift from ALLATIVE to FUTURE in terms of metaphorical extension from the more concrete domain of SPACE to the more abstract domain of TIME. As the *be going to* construction exhibits graded polysemy, which is potentially problematic for a metaphorical extension account, the analysis developed by Heine et al. (1991) also takes into account the role of discourse context, which gives rise to context-induced reinterpretations based on metonymy or experiential correlation, for example between motion and intention: recall my discussion of example (8).

In contrast, invited inferencing theory (Traugott and Dasher 2002) rejects the metaphorical extension account, and analyses the *be going to* construction in terms of a shift from a construction encoding a speaker-external event towards a construction encoding speaker perspective relative to TIME and SPACE. According to this theory, the ALLATIVE sense encodes a concrete and objective event, while the FUTURE sense relates to the speaker's location in TIME and is therefore more subjective: recall example (13).

Finally, we saw that the subjectification approach developed by Langacker (1999b) analyses the evolution of the ALLATIVE into the FUTURE sense in terms of the nature of the conceptual processes that underlie each interpretation. While the ALLATIVE sense involves the conceptualiser scanning actual physical motion through space, objective construal is salient and subjective construal remains backgrounded. In contrast, the FUTURE sense lacks physical motion and therefore objective construal is attenuated, which enables subjective construal to become salient.

In many ways, the fully usage-based character of the theory proposed by Traugott and Dasher, which views metaphor as epiphenomenal, is in keeping with some of the most recent trends within cognitive linguistics, which focus increasingly upon 'bottom-up' or usage-based explanations of 'dynamic' aspects of language use, rather than upon 'top-down' or structural explanations that are characteristic of conceptual metaphor theory. As we saw in our discussion of Heine et al.'s 'metaphor' account of grammaticalisation, a descriptively adequate account of grammaticalisation cannot ignore the context of language use, which, at least in part, contributes to the process of grammaticalisation.

Langacker's account, while not strictly an account of grammaticalisation per se, which is a historical and usage-based phenomenon, nevertheless represents a serious attempt to model the kinds of mental processes that result in the form–meaning reanalysis characteristic of grammaticalisation. It follows that Langacker's account complements (rather than competes with) the usage-based accounts proposed by Heine et al. and by Traugott and Dasher.

SUMMARY

In this chapter, I took a **diachronic** rather than a **synchronic** perspective on language, and focused on the type of language change known as **grammaticalisation**. I began by presenting a descriptive overview of grammaticalisation and saw that this **unidirectional** and **cyclic** process involves changes in the function or meaning of a symbolic unit, which evolves from contentful to grammatical or from grammatical to more grammatical. These changes may result in **layering** or polysemy at certain stages in the grammaticalisation process. Such changes are often accompanied by correlated changes in the phonological and morphological form of the unit in terms of **reduction** and **loss of autonomy**. Having set out the features of grammaticalisation, I explored three distinct, cognitive linguistic approaches to grammaticalisation. The main claim of the **metaphorical extension approach** is that human creativity gives rise to the process of metaphorical extension, leading to form-function reanalysis, and hence, a new grammatical unit. Metaphorical extension involves the mapping of image schematic concepts from a concrete source domain to an abstract target domain. According to this theory, **egocentricity** and embodiment are central to defining source concepts, and this theory therefore takes an explicitly experientialist stance. In contrast, the main claim of **invited inferencing theory** is that the generalisation and ultimately the conventionalisation of **pragmatic inferences** gives rise to new **coded forms**, a process that is characterised by increasing **subjectification** (in a pragmatic sense). This theory acknowledges that while metaphor may play some role in grammaticalisation, the metaphorical extension approach only presents a partial explanation of the phenomenon, as usage-based, communicative goals lead to gradual shifts in grammaticalised meanings, rather than the discontinuous jumps that would be expected if conceptual metaphor were the main driver of form-function reanalysis. Finally, we saw that Langacker's **subjectification approach** takes a conceptual rather than contextual perspective, and holds that the subjectification (in a conceptual sense) that characterises grammaticalisation is **immanent** in a conceptualiser's construal of a scene encoded in language and is revealed by the **attenuation** of objective salience.

FURTHER READING

Introductory texts and background reading

- **Croft (2003)**. Chapter 8 of this excellent textbook provides a descriptive overview of grammaticalisation, and briefly discusses explanations for the functional process that underlies it, including Heine's theory and Traugott's theory.
- **Heine and Kuteva (2002)**. This book provides a theory-neutral reference source for grammaticalisation data. The authors have collected examples from over 500 languages, which illustrate over 400 grammaticalisation processes. Each entry states the source and target of the grammaticalisation process (for example, OBLIGATION > FUTURE), and lists a number of representative examples, together with sources of the data.
- **Heine and Kuteva (2007)**. Provides a compelling account of how evidence from grammaticalisation can be deployed to uncover the origins and evolution of language (organisation) and its emerging grammatical complexity.
- **Hopper and Traugott (2003)**. This extremely accessible text book, now in its second edition, is written by two leading researchers in the field of grammaticalisation and provides an introductory overview of the field. The textbook takes a theory-neutral approach and includes chapters on the history of research into grammaticalisation, the mechanisms of language change, pragmatic inferencing and unidirectionality. The authors explore grammaticalisation processes both internal to and across the clause, and present examples from over eighty languages from around the world.
- **Lee (2002)**. Chapter 7 of this textbook provides a brief overview of language change, and includes a discussion of the evolution of the English modals *can* and *may* with a good range of examples from Old English and Middle English.
- **Narrog and Heine (2011)**. A comprehensive and authoritative handbook, consisting of specially commissioned chapters by leading experts on various aspects of grammaticalisation.

Metaphorical extension approaches

- **Bybee et al. (1994)**. Like Heine et al. (1991), Bybee et al. argue that metaphorical extension and the conventionalisation of implicature are central to grammaticalisation. This study focuses on the evolution of grammatical markers of tense, aspect and mood in a large-scale sample of over ninety languages, and argues for an explicitly usage-based account of the findings.

- **Heine (1997)**. This book presents an introduction to Heine's metaphorical extension theory of grammaticalisation. This book is conceived as a teaching text so there is less emphasis on theoretical detail but considerable emphasis on cross-linguistic data representing grammatical evolution in areas such as spatial deixis, indefinite articles and possession.
- **Heine et al. (1991)**. The first chapter of this book traces the development of grammaticalisation theory from the eighteenth to the late twentieth centuries. Chapter 2 addresses the metaphorical basis of grammaticalisation and Chapter 3 addresses the contribution of discourse goals. Chapter 4 sets out Heine et al.'s framework and Chapters 5 and 6 present case studies of grammaticalisation processes. Chapter 7 focuses on the experiential basis of metaphor in grammaticalisation and Chapter 8 focuses on the cyclic nature of grammaticalisation. The concluding chapter argues for a 'panchronic' view of grammaticalisation, according to which the phenomenon can only be fully explained by merging diachronic and synchronic perspectives.
- **Svorou (1994)**. Svorou's typological study focuses on grammatical morphemes that encode spatial concepts and relies upon a sample of twenty-six unrelated languages. Like Heine et al. (1991), Svorou argues that the semantic change that underlies grammaticalisation is essentially metaphorical in nature.
- **Sweetser (1988, 1990).** Like Heine et al. (1991), Sweetser also argues that the semantic change that underlies grammaticalisation involves metaphorical extension. In her (1990) book, Sweetser explores the basis of lexical polysemy, pragmatic ambiguity and semantic change, and argues that all these features of language can be explained in terms of metaphor. For example, she proposes a metaphor-based account of the transition from deontic or 'root' modality, to epistemic and speech act uses of the modal verbs. Her 1988 paper focuses more closely on the connection between metaphorical extension and grammaticalisation.

Invited inferencing theory

- **Traugott and Dasher (2002)**. This book sets out Traugott and Dasher's invited inferencing theory of semantic change. Chapter 2 provides an overview of the literature on semantic change in grammaticalisation, while Chapter 3 presents a discussion of the evolution of modal verbs. In Chapter 4, the authors extend the same approach to adverbial discourse markers such as *indeed*, *in fact* and *actually*, which, like the modals, are argued to evolve epistemic from non-epistemic senses. The evolution of performative verbs and social deictics represent the other major topics addressed in this volume.

Langacker's subjectification approach

- **Langacker (1991)**. Chapters 5 and 6 of this volume include discussions of the impact of subjectification on the evolution of auxiliary and modal verbs.
- **Langacker (1999b)**. In Chapter 10 of this book Langacker sets out his theory concerning the impact of subjectification (revealed by attenuation of objectivity) upon grammaticalisation.
- **Langacker (2002)**. Chapter 12 of this book includes a discussion of the relationship between subjectification and attenuation that presents the same basic argumentation as Langacker (1999b) but includes a discussion of some different examples, such as the evolution of verbs of possession into markers of perfect aspect.

DISCUSSION QUESTIONS

1. What is the nature of grammaticalisation, and what are the stages involved?
2. Provide a characterisation for each of the three approaches to grammaticalisation presented in this chapters. What are their points of similarity and difference?
3. What is the nature of difference between the two views on 'subjectification' presented, Traugott and Dasher versus Langacker?

Part V: Applications and extensions of cognitive linguistics

In this final part of the book, I consider applications and extensions of cognitive linguistics, covering three representative areas of research. In Chapter 28 I consider cognitive linguistics approaches to the study of society and social behaviour. I do so by considering how cognitive linguistics can be extended to examine social behaviour, cognitive linguistics approaches used to study social relations by considering approaches to discourse and other aspects of sociolinguistics. In particular, I examine the nature of a 'social' cognitive linguistics, considered in various ways by William Croft and Peter Harder. I consider the way in which cognitive linguistics can be developed to study variation in language, as an example of social behaviour, and a so-called cognitive sociolinguistics. And I also examine how cognitive linguists have applied theoretical constructs in order to insightfully conduct discourse analysis.

In Chapter 29, I turn to the study of narrative and literature, from the perspective of cognitive linguistics. I consider the seminal work of both Leonard Talmy and Mark Turner, in the cognitive linguistics study of narrative. I also introduce cognitive poetics, a cognitive linguistics approach to the study of literature.

Finally, in Chapter 30, I consider how the burgeoning fields of gesture studies and the linguistics of sign language are being enhanced by the research effort of cognitive linguists. I also consider how gesture and sign language researchers have applied ideas and theoretical constructs from cognitive linguists to these two emerging areas of study.

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Language, society and discourse

In the western academic tradition, there has been longstanding separation of the study of social and psychological dimensions of human behaviour. In recent times, this has manifested itself most clearly in the disciplinary distinction between sociology and psychology – which both emerged during the course of the nineteenth century. During its initial phase of theoretical development, from the 1970s onwards, cognitive linguistics was primarily concerned with the psychological dimension. In large part, this focus was a consequence of the early pioneers in cognitive linguistics reacting to the approach to language and its place in the mind, as advanced by Chomsky (e.g. 1957, 1965, 1981). As we saw in Chapter 7, in contrast to Chomsky, and his Universal Grammar hypothesis, cognitive linguists came to view language as continuous with the rest of cognition, rather than being distinct, and encapsulated, organised with respect to principles not shared by other aspects of mind. Hence, early research in cognitive linguistics focused on the psychological dimension of language, and linguistic behaviour, seeking to account for language as an outcome of general properties of mind. Thus, while cognitive linguistics assumed, like Chomsky, that an account of language had to situate it in its cognitive context, early pioneers such as Fillmore, Lakoff, Langacker and Talmy differed, quite radically, in what they took the nature of this cognitive context to be, as we have seen at various points in this book, especially in Parts I and II.

That said, research in cognitive linguistics has slowly but surely come to recognise that the cognitive prowess of our species is grounded in our social and interactive smarts. For instance, there is an increasing awareness that language acquisition emerges due to the intention-recognition abilities of young infants, a fundamentally socio-interactional capability (Tomasello 2003). Language is increasingly viewed as an **epigenetic system** (Sinha 2017), a function of **situated embodiment** (Zlatev 2005, 2007a). The social nature of the linguistic system has been described in the seminal work of Itkonen (e.g. 2003), meaning emerges from language use (e.g. Clark 1996; Cruse 2000; Evans 2009) and **intersubjectivity** is now recognised as central to language and language development (Verhagen 2005; Zlatev 2007b), and Harder (2003, 2010) has demonstrated the socio-functional backdrop upon which language depends. Moreover, cognitive linguists and others associated with the enterprise increasingly view the evolutionary precursors of language as having a socio-interactive basis (e.g. Evans 2015a, 2016; Everett 2012, 2017; Levinson 2006; Tomasello 1999, 2008, 2014).

There are four key developments in the emergence of what can be identified as the **social turn** in cognitive linguistics. The first amounts to embracing social interaction as a central feature of language. This is represented, in this chapter, by the seminal work of William Croft, who has proposed a reformulation of some of the central tenets of cognitive linguistics, in order to rethink language as a social as well as a psychological phenomenon.

The second concerns the relationship between individual conceptualisers and the construction of social realities. This has been studied in detail by Peter Harder, who examines how social realities become 'hooked up to' individual minds.

The third significant development is represented in a relatively recent **variationist cognitive sociolinguistics** tradition, led most notably by Dirk Geeraerts. This research has been concerned with the nature of sociolinguistic variation, and has provided new and compelling cognitive linguistic accounts for this variation.

And finally, critical discourse analysts have, since the 1980s, focused on examining how language and discursive practice constitutes social reality. Recent research within cognitive linguistics led by scholars such as Paul Chilton, Jonathan Charteris-Black and Christopher Hart among others has embellished **critical discourse analysis (CDA)** with the tools of cognitive linguistics in order to better understand the conceptual underpinnings of discursively constituted social relations such as power and ideology relations. These four dimensions are considered in this chapter.

1 Rethinking cognitive linguistics socially

In seminal research, Croft (2009) has argued that language is more than merely a system of cognitive mechanisms and structures: language exists in our heads so that we can use it for purposes of communication, to get things done in our daily lives. He observes that 'language is a central feature of social interaction' (Croft 2009: 397). Hence, we must bring the psychological and social facets of language together in order to fully understand it. As we are fundamentally social creatures, which is what gives us our interactive smarts, cognitive linguistics must take account of the social dimension in accounting for human cognition. In order to provide such an account, Croft re-examines four of the core tenets of cognitive linguistics, which he reformulates in light of this observation. I present Croft's reformulation in this section.

1.1 Joint action, coordination and convention

One of the fundamental principles of cognitive linguistics is the cognitive commitment: linguistic structure and organisation is an outcome of general cognitive abilities such as perception, memory and categorisation, as discussed in Chapter 2. But Croft observes that grammatical organisation is also an outcome of general social cognitive abilities. The most important of these, he argues, are **joint action**, **coordination** and **convention**. He proposes that this fundamental tenet of cognitive linguistics should be enlarged to encompass these three fundamental aspects of socio-interactive function. Before reformulating the cognitive commitment in light of this, let's first consider what these three notions amount to. Language takes the form of what Clark (1996: 60–2) terms joint action. Joint action involves two or more participants who, in performing their action, take into account the beliefs and intentions of the other participants in the action in such a way that it can be described as cooperative: the action is jointly conceived and fulfilled. This differs from our nearest cousins, such as chimpanzees, whose collaborative behaviour constitutes **co-action**, rather than joint action: it is never truly cooperative in nature (Tomasello 2014). Consequently, humans might be dubbed the **cooperative species** (Evans 2015a).

Joint action manifests itself in the context of **joint activities** (Clark 1996). A joint activity, such as a service encounter – for instance, making a purchase in a shop – involves public roles – where the participants divide labour in order to achieve the mutually agreed upon goal. It may also include private goals – the participants may attempt individually to achieve a goal not shared or not revealed to the other participant. Joint activities are advanced by building what Clark terms **common ground** – the established or agreed upon information, and knowledge accumulated during the course of the cooperative activity engaged in by interlocutors.

The philosopher Michael Bratman (1992; see also 1993, 2014) has provided a characterisation of the attributes associated with joint action – which he terms **shared cooperative activity**. These can be captured as follows: i) each participant intends to perform the joint action, ii) each participant does so due to and in accordance with interlocking subplans, iii) neither participant is coercing the other, iv) each participant is committed to mutual cooperation/support in achieving the shared goal(s), v) common ground is established between participants, and vi) there is mutual responsiveness in facilitating the joint action.

As we saw in Chapter 1, cognitive linguists assume that the primary function of language is communication. And communication, involving as it does a minimum of two interacting participants, is the paradigmatic example of joint action. But the capability to conceptualise joint actions, rather than merely individual actions, is arguably the defining feature of human cognition, that which sets us apart from other species, and, on some accounts, has made language possible in the first place (see Evans 2015a).

Based on findings from different sub-fields of the language and cognitive sciences – including **developmental psycholinguistics**, **comparative**

psychology, linguistic typology and **linguistic** and **evolutionary anthropology** – a number of researchers have begun to converge on the proposal that language is the outcome of a species-specific **social intelligence**. This intersubjective impulse has been variously dubbed the **human interaction engine** (Levinson 2006), **joint intentionality** (Tomasello 2014) and **cultural intelligence** (Evans 2014). The common insight is that our species has, over evolutionary time, built on interactional capacities of other great apes (e.g. Deacon 1997), giving rise to what might be dubbed a **cooperative intelligence** (Evans 2015a). This cooperative intelligence is more than simply 'an innate drive for infants to interact with conspecific caregivers' (Everett 2012: 183). It has resulted in innately prescribed biases in the design of language itself (Evans 2014; 2015a), and also enables the emergence of a rich and varied **shared intentionality**, also known as culture (Tomasello 2014). From the perspective of contemporary cognitive science, this has led to **collective intelligence** (e.g. Salminen 2012), a form of distributed, aggregated intelligence, unique to humans, arising from cooperation and competition among individuals.

But while language is a form of joint action, the way joint action is achieved is via coordination. Coordination concerns the means whereby two participants in a joint activity align their cooperative efforts, and thereby divide the joint labour. Coordination is achieved via establishing a device to facilitate coordination. Imagine a scenario in which you need to arrange to meet someone, at a later point, perhaps when picking them up at a large, busy train station or airport terminal. How do you agree upon where to meet? One possibility might be to rely on precedent: you both go to the spot where you've met in the past. But say this is the first occasion you've had to pick up the other person. In this case you can't rely on precedent to solve what amounts to a **coordination problem**.

Of course, in this case, we are likely to deploy language to make an explicit agreement as to where to meet. But how does language itself solve the coordination problem? According to philosopher David Lewis (1969), language makes use of **convention**, which amounts to a solution agreed upon by a community of language users in response to a recurrent coordination problem. Building on Lewis' account, Clark (1996) argues that a convention is a regularity in behaviour, that is at least partly arbitrary, that is common ground in a given community, and which serves as a coordination device in order to solve a recurrent coordination problem. For example, as we saw in Chapter 1, the word *cat* constitutes a convention for English speakers. It is arbitrary – there is no inherent connection between the sound segments and the meaning it symbolically refers to – and consequently, it constitutes part of the common ground of speakers of English.

In light of the foregoing, Croft (2009) accordingly argues that language should be viewed as providing a conventional coordination device to solve the coordination problem posed by communication. And in turn, communication amounts to a coordination device which seeks to solve the problem of achieving any joint action. Joint action, in turn, is made possible by the pro-social impulse that is the hallmark of cognitively modern humans. But by viewing the cognitive commitment as a socio-cognitive commitment, Croft argues that cognitive linguists are appropriately viewing language in its social cognitive context; we consequently obtain a more precise account of the nature and function of language, as an outcome not just of domain-general properties of human psychology, but domain-general cooperative tendencies which are part and parcel of human cognition.

1.2 Linguistic symbols and common ground

The second tenet of cognitive linguistics, explored by Croft, is the symbolic thesis – the idea that symbolic units are form–meaning pairings (see Chapters 1 and 21). The consequence of this thesis is that meaning is indissociably linked, and indeed, central to grammar. Symbolic units range from those 'below' the level of a word, such as bound morphemes, to those above the word-level including sentence-level constructions such as the ditransitive construction discussed in Chapter 26.

As discussed above, a convention amounts to a pairing of form and meaning, as in the case of *cat*. But Croft observes that what is omitted from the symbolic thesis, as adopted by cognitive linguistics, is the notion of common ground. The definition of a convention developed by Lewis and as reformulated by Clark holds that the symbolic unit (the form–meaning pairing) constitutes common ground in a community.

In his work, Clark (1996) suggests that linguistic symbols actually amount to **communal lexicons**. On this account, a grammar can, in fact, be thought of in terms of a **semiotic triangle**, involving a form, a meaning and the community in which the meaning associated with a given form is conventional. In short, for a convention to be a convention it must be shared across the language users who make up a given language community.

But while Croft is surely correct, that the symbolic thesis must incorporate the notion of common ground as part of its definition of a form–meaning pairing, this still doesn't account for the relationship between the psychological and social dimensions of grammatical knowledge. After all, if grammar amounts to entrenched patterns of form and meaning in individual minds, how does this 'hook up to' the shared knowledge apparent in a community of language users, 'outside' or 'above' the level of an individual mind? As we shall see a little later in the chapter, this challenge is taken up and resolved by Peter Harder, with his proposal for analysing the interaction between individual and aggregate levels of meaning; Harder shows how these two levels of meaning interface, enabling individual knowledge to be shared, and shared social knowledge to, in turn, inform individual knowledge in the minds of language users.

1.3 Encyclopaedic meaning and shared meaning

Another key tenet of cognitive linguistics concerns the thesis that semantic structure is encyclopaedic in nature, which I explored in Part III of the book, especially Chapters 14–16 inclusive. Recall that the idea is that a word or other symbolic unit facilitates access, at least in principle, to the totality of knowledge and experience of the range of situations for which the word has been used, or potentially could be used. But as before, the difficulty is that this doesn't quite explain how, in the context of communication, encyclopaedic knowledge provides an effective account of lexical semantics. After all, it remains tied to an individual mind, while communication is fundamentally dyadic and interactional in nature. How do we move from encyclopaedic meaning to an account of **shared meaning**?

Croft argues that the thesis of encyclopaedic semantics must be revised so that it takes account of encyclopaedic knowledge, in order to include the common ground between language users. Individual bodies of encyclopaedic knowledge will be a consequence of individual experiences, beliefs and attitudes, by virtue of individuals inhabiting a common social context, and forming part of language community – as discussed below when I review Harder's research. In short, our understanding of an utterance relies, in part, 'on shared knowledge, beliefs and attitudes about our world, both natural and cultural' (Croft 2009: 40).

So, what is the nature of the common ground that forms part of shared encyclopaedic knowledge? Clark (1996) distinguishes two main types of common ground. The first is **personal common ground**. This is shared directly during ongoing interaction between people, including during linguistically mediated communication. It includes shared information arising from the common field we inhabit by virtue of interacting with an interlocutor. It also includes the information we convey that comes to constitute shared knowledge.

The second type is **communal common ground**. This amounts to knowledge that is shared by virtue of belonging to a common community. In short, communal common ground involves shared expertise arising from a community of practice (Eckert 2000) which amounts to a shared repertoire for carrying out the joint enterprise of communal living. Wenger (1998: 83) proposes that this shared repertoire of practice involves 'routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions or concepts . . . which have become part of its practice'. Croft concludes from this that shared experiences, and expertise, that arise from living in such a community of practice, amounts to the shared component of our individual encyclopaedic bodies of knowledge. And given that they are shared, they form part of the common ground that facilitates understanding of linguistic utterances during linguistic communication. Consequently, the thesis of encyclopaedic semantics, to render it socio-cognitively realistic, must take account of common ground, arising from shared expertise in a community of practice, as facilitating shared meaning.

1.4 Meaning as construal and construal for communication

The fourth key tenet that Croft reformulates from a socio-cognitive perspective relates to conceptualisation: this is the idea that meaning is always conceptualised from a particular perspective, a process referred to, in cognitive linguistics, as **construal** (recall my discussion in Chapter 16). Construal has three characteristics:

i) There are always alternative possible construals of the same scene, termed **alternative structural schematisations** (Talmy 2000a). For instance, the canopy on a tree can be construed as a mass (*foliage*), or in terms of the individual entities which constitute it (*leaves*).
ii) Construal is inevitable and cannot be avoided: by virtue of linguistically encoding a given scene, the language user must necessarily construe it. Hence, while the perspective one user adopts compared to another may vary, the fact that the scene is being construed is an inevitable consequence of language use.
iii) No construal has a privileged status as being the 'correct' or 'best' way of conceptualising a given scene.

Croft argues that construal is not simply an end in itself: rather construal always serves a communicative purpose; it provides a meaningful perspective that facilitates communication. Hence, construal should be understood as providing meaning for purposes of communication.

2 Meaning and social reality

In his seminal 2010 book, linguist and philosopher Peter Harder both reviews the flurry of recent research which has sought to extend cognitive linguistics to the social sphere, and intervenes in key ways in what he terms the social turn in cognitive linguistics. For Harder, the key question concerns how cognitive linguistics can and should be expanded in order to provide an account of meaning as part of social reality.

The solution concerns understanding cognition-in-action. What is required, he argues, is an account of the social grounding of meaning, as well as the relationship between the mental and social dimensions of meaning. Harder proposes that to achieve this, an account is required of two sorts of things: i) social facts, as distinct from cognitive facts, and ii) the various ways in which meaning in the mind and meaning in the environment interact. Traditionally, cognitive linguistics has viewed meaning as being a primarily a mental phenomenon, something that 'occurs in the interlocutors' heads' (Croft 2000: 11). Hence, the challenge for cognitive linguistics is to better understand the interaction between the individual (cognitive) and collective (societal) levels in giving rise to meaning.

Harder (2010: 305) proposes that the two levels interface during the 'fundamental social embedding of human individuals in the experience of joint, collaborative activity'. As noted above, a major function of language is to facilitate interaction in the course of joint activities (Clark 1996). Joint activities constitute activities which aim to achieve mutually shared goals, achieved in a cooperative manner often utilising language to do so. But in achieving joint activities, as we have already seen in this chapter, interlocutors necessarily exhibit a common ground – a shared body of knowledge, attitudes, beliefs and so on. In the context of participating in a joint activity, this may consist of no more than sharing a common goal, and perhaps a common set of strategies for achieving this goal. And in so doing, goal-directed activities exhibit **joint attention** (Tomasello 2003) – two participants jointly attend to their common ground, in order to achieve a particular goal. This provides the nexus for the interface between the individual and the collective. Social meaning arises in just such collaborative contexts. And this is the venue in which social meaning and, ultimately, social realities arise. Harder provides a theory of the distinction between the different levels involved in social meaning, and the way in which social constructions (social realities) arise and are maintained, which I briefly touch upon below.

2.1 Levels of meaning: competency versus affordances

Harder distinguishes between two levels of linguistic meaning: the **individual level** and the community or **societal level**. From this perspective, language amounts to a set of **community norms** (Harder 2014), which trigger uniform linguistic behaviour at the individual level. This amounts to the claim that linguistic norms exist at the societal level, which then drive individual practice. If person A utters the word *horse*, for instance, this evokes for person B the notion of 'horse'. The word *horse* in a living language community really does mean 'horse'. This follows as linguistic norms are social facts, anchored in community practices. In short, language is a normative feature of a given community.

Of course, this doesn't mean that language can somehow exist in the absence of individual minds. Rather communities, for Harder (2014: 59), constitute 'aggregate complexes of individual minds'. Consequently, the community grounding that supports the linguistic norms present in the community exhibit two key features. First, a language – a collective-level property of aggregate complexes is neither a static nor a monolithic entity, in the structuralist view of language inherited from Saussure. Nor is it an idealised entity, in the Chomskyan sense. Rather, language emerges, for Harder, from what he evocatively refers to as the **flow** of language use, in all its messiness, diversity, imprecision and glory. Nevertheless, norms, recognised by the community as such, do arise from this flow. In short, linguistic norms, a type of social, community-wide set of facts, emerge from language use.

Second, precisely because community-wide norms arise from the language used by individuals, in different ways, at different points in time, what emerges is not a single, unambiguous set of norms, but rather, a myriad set of partially overlapping and, indeed, conflicting norms. Terms such as **official variety**, **vernacular**, **prestige variety** and so on point to the range of ways in which norms can overlap, coexist and even conflict.

From this perspective, meaning arises not merely as a mind-internal property of an individual. The aggregate-level complex of individual minds, giving rise to language with the status of social facts, is part of the environment which individual minds have to adapt to. Accordingly, language is a collective-level phenomenon, a property of a community of language users. Harder describes this level of meaning as an **affordance** of the community – the term affordance being borrowed from the work of ecological psychologist James Gibson (e.g. 1979). What Harder has in mind is that the use of linguistic expressions to convey conventional linguistic meanings is a property of the community, rather than an individual mind. And it is these conventional meanings that Harder refers to as **community-level affordances**.

While language at the societal or community-level can be conceived in terms of affordances, an individual language user exhibits what Harder terms **competency** – which concerns how adapted an individual is to the community norms in place. Language as a community-level affordance exists whether an individual language user taps into it or not. Moreover, no individual is likely to tap in to the whole range of community-level affordances. This is because of the considerable **variational diversity** exhibited across a community of language users – a point I'll explore in more detail later in the chapter. Consequently, competency concerns the degree to which an individual is adapted to a community's linguistic affordance – in other words, the range of affordances that an individual has mastered.

From this perspective, meaning arises at the confluence of two levels. The first is the community or societal level, where linguistic norms are established as shared social facts, which give rise to a system of community-level affordances. And at the second, the individual level, an individual mind exhibits competency in a subset of the community-wide linguistic affordances.

2.2 Types of meaning construction

In the previous section I examined the distinction between individual (cognitive) and societal or community (aggregate) levels, in terms of social reality and meaning. But meaning, in fact, arises from a dynamic interplay between both individual minds and social reality. As noted above, social realities (meanings) come about from the social embedding of individuals in contexts of joint, collaborative activity. I now consider how this process arises.

According to Harder, the emergence of language as a property – an affordance – of a community – the aggregative-level collective of individual minds – derives from a bottom-up process, beginning with those individual minds interacting in joint activities. But once social realities are established, they come to take on an existence of their own, independent of the individual minds that give rise to them, and evolve, and develop, exhibiting evolutionary lineages in the same way as linguistic constructions exhibit lineages – etymologies. This process occurs at three levels, involving the construction of different types of meaning. The fundamental type of meaning construction is the **mind-internal level**. At this level, an individual adopts an intentional relation towards an entity in the world of discourse. This stage involves the process of conceptualisation, or construal, whereby an individual makes use of a linguistic construction in order to symbolically refer to a particular entity or event, and in so doing, construe it in a certain way. For instance, when someone describes a scene in one way, rather than another, they are construing the scene from a particular perspective. For instance, compare the distinction between the examples in (1a) and (1b):

(1) a. John smashed the TV.
  b. The TV got smashed.

This level of meaning construction amounts to what, in Chapter 1, I dubbed the symbolic function of language: language facilitates a means of encoding ideas, from the perspective of the individual, about the world.

The second level of meaning construction is the **discursive level**. Here, interlocutors work within the realm of joint-attention, making use of a common ground in order to interpret particular scenes of experience. For instance, given the common ground of a smashed TV screen, two interlocutors might attempt to establish how this happened, and, given that TV screens don't smash themselves, who is responsible. Attributing responsibility, and possibly blame, in order to determine who must make a financial contribution for a new TV, involves using shared knowledge about the state of part of the world – the region occupied by the TV in a living room – and negotiating through a process of joint attention, culpability, and an acceptable level of compensation, in order to have the TV fixed. This negotiated level of meaning, in order to achieve a communicative goal, takes the form of a joint activity, making use of turn-taking conventions in order to exchange information about events that have occurred, apportion blame and so on. This gives rise to a discursive level of meaning construction, which fulfils the interactive function of language addressed in Chapter 1.

And finally, the outcome of this discursive level can – although it need not – lead to a **social level** of meaning construction. At the social level, outputs from the discursive level can become established as socially accepted facts. For instance, under certain circumstances, someone who denies that they smashed the TV screen, perhaps in a fit of pique, even when the evidence is incriminating may be identified, at the discursive level, as dishonest. And at the social level, this characterisation may come to stick, becoming, over time, established as social-level meaning – a social fact. But as we'll see below, the social level of meaning construction is subject to the same sort of selective-adaptational dynamics that hold for linguistic units.

2.3 Properties of social constructions

Thus far, I have shown that Harder contends that social realities begin as meanings constructed during ongoing discourse. But a social construction goes beyond the transitory, discursive constructions created during the ongoing flow of social interaction. As Harder puts it, they 'stick', becoming, so to speak, part of the furniture. So what, exactly, are social constructions? These are meanings that have seemingly become part of our social environment. In some sense, they constitute the social facts or realities that make up a given culture. Examples include money, police, a democratically elected government and so on. While these, on the face of it, might seem to constitutes facts of our social life, that, in a profound sense, have nothing to do with language, individual minds or meaning, in actual fact, in one way or another, they all began life as wholly conceptually in nature. And over historical time they have come to constitute rich social complexes, with complex material and symbolic representation. And in part, this is a consequence of the evolutionary trajectory of social constructions – they are lineages that survive by the self-same process of replication that I considered for language change in Chapter 6.

For instance, '10 Downing Street' is the official residence of the UK Prime Minister; this is a social construction, one that survives from one period to the next precisely because, via elections, as one prime minister moves out of 'number 10', the newly elected Prime Minister moves in. And via this process, the social construction is reproduced and thus maintained. Moreover, without being reproduced every five years or so, this social fact would go extinct.

Harder (2010) argues that social constructions have two components: a **mental dimension** and a **behavioural dimension**. The mental dimension amounts to shared mental knowledge, what Tomasello (2014) has dubbed shared or **collective intentionality**. For instance, in terms of the red traffic light, the shared intentionality is that this signal means 'stop'. The behavioural dimension concerns what the shared intentionality causes people to do, affecting their behaviour. In the case of the red traffic signal this causes people to stop.

Harder argues that the behavioural dimension has a causal underpinning, leading to the social behaviour. And this causal underpinning is itself made up of two dimensions. The first concerns **acceptance**. Harder suggests that acceptance of a social construction goes beyond the mental content associated with the significance of the construction. It influences the way one acts. Acceptance concerns the extent to which you or I accept that a social reality is real. In short, for a red light to cause people to stop, motorists must, more or less, universally accept that when they come to a red traffic light they will stop. But this leads to the second dimension: **efficacy**. For a social construction to cause a particular behaviour, not only must it be accepted, people must also behave in accordance with the social construction. In short, whether an individual likes it or not, they behave in accordance with the social construction. Efficacy, them, concerns the 'brute operationality' of the social construction. Hence, we know that a red light means stop, we accept this as the price for driving on the public highway, and adjust our behaviour in accordance with this acceptance. In short, efficacy, is conditional on acceptance – whether one likes it or not, we must accept a particular social construction in order to behave in accordance with it. Acceptance and efficacy thus constitute the causal underpinning of the conceptual dimension of the social reality.

On Harder's (2010: 319) account, 'social constructions have causal properties . . . in their process of socialization, children adapt to money, police and (operational) traffic lights as part of dealing with the material world'. But, in so doing, they are also adapting to concepts, which have come to form part of an aggregate-level set of affordances. One manifestation of a social construction is a **material anchor** (Hutchins 1996) – such as money – notes and coins that symbolise a complex body of conceptual knowledge exhibiting acceptance and efficacy, and which we respond to across generations enabling money to be reproduced and maintained. But, precisely because social constructions have a conceptual dimension, its causal underpinning can, in principle at least, continue in the absence of the physical manifestation of the social construction. For instance, credit can be negotiated, and agreed, in the absence of material manifestations of money. All that is required is the conceptual dimension, and a reliable state of the social world in which trust in currency remains. As long as two people agree to adhere to the causal underpinning of the conceptual dimension, then a physical manifestation is not required, as we are increasingly witnessing with electronic payment systems, smart and contactless payment systems and so on.

3 Cognitive sociolinguistics

In the previous two sections I was concerned with what might be termed **social cognitive linguistics** (Hollman 2013). In his work, and as I showed, Croft sought to examine the socio-cognitive underpinnings of language – his thesis is that language and meaning are fundamentally social and interactive in nature. Hence, cognitive linguistics must embrace the social underpinnings of language, and be reformulated in such a way that its basic principles incorporate the socio-interactive function and nature of language. While Harder's research also seeks to both situate and interpret cognitive linguistics socially, his focus, as we saw, was slightly different. Harder's research has, among other things, been concerned with examining the individual and collective (or aggregate) levels of meaning, in order to understand how the two derive from, inform and relate to one another. In this regard, his research seeks to develop a sociology of cognitive linguistics.

In this section I now turn to what has been dubbed **cognitive sociolinguistics**. This concerns investigating the nature of language-internal variation, and its relation to social stratification. But crucially, it does so by examining the way in which cognitive constraints influence the variation (Frank et al. 2008; Geeraerts et al. 2010; Kristiansen and Dirven 2008). Cognitive sociolinguistics hold that such an approach both enhances cognitive linguistics and is a benefit to sociolinguistics (Geeraerts et al. 2010; Pütz et al. 2014).

Cognitive sociolinguistics enhances cognitive linguistics in the following way. Given the usage-based thesis, cognitive sociolinguistics proposes that a more complete account of the usage-based nature of language can only be possible if the full panoply of sociocultural factors involved in the way in which language is used in situated contexts of use are considered systematically, alongside the usual cognitive factors studied by cognitive linguists.

Hence, it seeks to examine the way in which societal norms and variation are manifested across individual usage-events. And in so doing, it seeks to consider the extent to which social, cultural and cognitive factors interface during language use, and in giving rise to a mental grammar in the minds of language users.

In terms of sociolinguistics, especially in the **variationist tradition** pioneered by William Labov (e.g. 1966, 1972), language internal or intralingual variation is often examined purely in social stratificational terms. That is, there is, by and large, relatively little attempt to understand the cognitive factors that may be influencing the variation. Given the observations made by Croft and Harder in demonstrating the fundamental interconnectedness between cognitive/individual and socio-interactive/collective dimensions in understanding the nature and use of language, by studying sociolinguistic variation, from the perspective of cognitive linguistics, this can enhance our understanding of the social nature of this variation.

We saw earlier in my discussion of Harder's work that language as a system constitutes social facts: observable regularities – or norms – constitute a set of affordances that individuals can become adapted to, with a grammar being constructed in an individual's mind, and predicated on these social facts. Thus, the same mechanism that enables linguistic regularities – an aggregate level norm – to enter individual minds also enables these collective norms to emerge in the first place: situated instances of language use during social interaction. Socially instantiated language use both enables the acquisition and the development of a grammar in an individual mind, and sanctions the emergence of societal norms in the first place.

As we saw in Chapter 6, one consequence of the usage-based thesis is that variation emerges both through conscious and unconscious mechanisms. There I focused on the ways in which these innovations can propagate through a community, and lead to language change. But while languages do incontrovertibly change over time, at the synchronic level there are many innovations that may provide competing regularities or norms within a particular linguistic community. And this follows because a linguistic community is not a homogenous entity. Rather, any given language community is socially complex, comprising different sorts of interacting population subsets, which themselves may exhibit further overlapping and internally complex social stratification. Moreover, as the members of a language community do not interact with all other members, the innovations that arise, can, within particular interacting subsets of a population lead, through propagation, to competing or overlapping regularities or norms. In short, the usage-based thesis, and the natural mechanisms of language change, lead to **interlingual variation** – linguistic variation within a language community. As Geeraerts et al. (2010: 5–6) observe 'the very concept of a usage-based theory of language leads to the recognition of language-internal variety of the kind that has been studied by sociolinguistic.' In short, the affordances that make up societal linguistic norms are far from homogenous; they exhibit significant variation.

3.1 What is the nature of cognitive sociolinguistics?

Given that interlingual variation is to be expected – in light of the usage-based thesis – what does cognitive sociolinguistics add to the study of variation within a single language? In short, what is its novel contribution? Traditional variationist studies within sociolinguistics have focused primarily on variation of form. For instance, the notion of a **sociolinguistic variable**, as classically formulated, amounts to variation in form, which conveys social rather than semantic significance. As Labov has put it: 'Social and stylistic variation presuppose the option of saying "the same thing" in several different ways: that is, the variants are identical in reference or truth value, but opposed in their social and/or stylistic significance' (Labov 1972: 271).

But from the perspective of cognitive linguistics, as we saw in my discussion of Croft's perspective, presented earlier in the chapter, a variation in form always leads to a distinction in conceptualisation: the perspective encoded is distinct. Hence, a sociolinguistic variable is always a matter of meaning. After all, social stratification is a meaningful consequence of variation. Hence, a cognitive sociolinguistic perspective nuances the classical sociolinguistic view, focusing on the conceptual significance of linguistic variation.

From the perspective of cognitive linguistics, the presumption that variation across a sociolinguistic variable has semantic equivalence, which is what the classical sociolinguistic view assumes, is inadequate. And this follows because variation itself comes in a number of forms which interact in a range of ways. For instance, Geeraerts et al. (2010) identify three types of semantic variation, which intersect.

The first concerns **formal variation**: for instance, the same type of transport system encoded variously by *subway*, *metro* and *underground*. These terms refer to local city train transport systems, which are at least partially underground. But the terms are not wholly equivalent. They refer to systems in specific cities, with specific features. Even the autohyponymical use of the terms *subway* versus *underground* connotes semantic differences between British versus American attitudes, and logistical aspects associated with city-wide public transport. Moreover, in British English, there is variation between *tube* and *underground* both of which refer to London's underground transport system.

A second type of variation concerns **conceptual variation**: the range of thematic choices made. For instance, variation of this type might include discussing the weather, beer or train travel rather than say vacations, wine or air travel.

And a third type of semantic variation relates directly to **speakers and situations**: for instance the nature of the joint actions we engage in, such as their degree of scriptedness, formality and so on, as identified in Table 28.1.

These three types of variation interact so that variation is never a matter of semantic equivalence, and never purely or solely a matter of social stratification (age, gender, socioeconomic group, ethnic group, etc.), but may vary within

Table 28.1 Features of joint activities (adapted from Clark 1996)

Feature of joint actions	Examples
Scriptedness	While some joint activities are highly scripted, such as a marriage ceremony, others, such as chance meeting in a supermarket, are unscripted. There are other activities which lie between these two poles of scriptedness.
Formality	Joint activities also vary in terms of formality between two extremes; while some activities can be highly formal, such as a court hearing, the other extreme is that of complete informality, such as a gossip session between friends over a cup of tea or a drink in the pub.
Use of language	This concerns the degree to which language is integral to a given activity. Again, there are extremes and event types in between. For instance, a telephone call is constituted solely by language, while a football match is primarily not linguistic in nature.
Cooperative vs adversarial	Joint activities range from those that are wholly cooperative, to those that are adversarial in nature. For instance, making a purchase in a shop is cooperative as it relies on both the customer and the shop assistant working cooperatively in order to effect the purchase. In contrast, a tennis match, at least in one sense, is adversarial, rather than cooperative, as the players seek to cause their opponent(s) to lose.
Degree of symmetry of participant roles	Different participants have distinct roles in the joint activity, as in the case of the customer and the sales assistant in the shoe shop joint activity. Importantly, these roles can be symmetric or asymmetric: this concerns whether their roles are equally balanced or not in terms of significance and contribution towards realising the goal of the joint activity. For instance, making a purchase in a shop involves a degree of equality or symmetry: both participants, the customer and the shopkeeper, must work equally in order to effect the sale. In contrast, in some activities one participant is especially dominant, as in the case of a public speech by a politician, where the speaker is far more dominant that the audience. In this case, the participant roles are asymmetric, with respect to the goal of the joint activity: the delivery of the speech.

the same extralinguistic context due to context, style, geographic location and so on, and convey meaningful differences.

A further way in which cognitive sociolinguistics contributes to the study of intralingual variation concerns the meaning of variation, which is to say ‘the way in which language users make sense of linguistic variation, the way in which linguistic variation is meaningful to them' (Geeraerts et al. 2010: 9). Just as the usage-based thesis predicts variation, so too, as an individual grammar emerges from usage-events, an individual's mental grammar of necessity must recognise and represent variation and diversity. Cognitive linguistics research has developed sophisticated account of categorisation, cognitive models, such as ICMs (see Chapter 11), and so on. And these notions can be brought to bear in modelling how language users both represent and evaluate intralingual variation. In short, not only does cognitive sociolinguistics add an account and a means of investigating semantic factors in lectal variation, it also provides a means of modelling how individual language users represent this variation, and how they evaluate it.

3.2 A case study: cognitive dialectology

One type of extralinguistic variable that gives rise to variation within a single language is geographical separation. Due to the normal processes of innovation and propagation, linguistic communities that share a common language nevertheless exhibit and develop, over time, slightly different varieties of the same language. A dialect entails divergent features of pronunciation (or accent), grammar and vocabulary. In the English-speaking community, a salient dialectal difference relates to the American versus British English varieties. But within a geographically contiguous region, where a common language holds, such as Great Britain, there is considerable lectal variation. This variation forms a continuum. Nevertheless, **dialectologists** – those who study dialects – employ representative or diagnostic features of accent and dialect, such as lexical or grammatical variation in order to identify a dialect boundary, known as an **isogloss**.

While **dialectology** is an area of study within sociolinguistics, dialectologists usually examine dialectal variation in terms of the structure of lectal varieties. That is, dialectal differences are studied in terms of describing differences between them. And the motivation for variation is the complex social and other factors that give rise to language divergence and change. But cognitive linguistics offers an additional motivation for the occurrence of variation: cognitive factors can also lead to variation. In short, meaning may be a prime mover in giving rise to change.

To illustrate, I briefly consider a representative study by two pioneers in cognitive sociolinguistics Geeraerts and Speelman (2010). The type of dialectal variation they examine concerns **lexical heterogeneity** – different word forms for the same meaning, or different meanings for the same word forms. The major insight they provide is that the nature of a given concept may itself 'constitute a significant factor in the occurrence of lexical heterogeneity' (Geeraerts and Speelman 2010: 24), which is to say, variation. An important reason, then, for reviewing this particular study, is that it is representative of what cognitive sociolinguistics can contribute to the study of language-internal variation: cognitive sociolinguistics enables the role of conceptual factors in giving rise to variation to be incorporated into our account.

Geeraerts and Speelman examined lexical variation for the Limburgish dialects of Dutch – spoken in Belgium and the Netherlands – using statistical analysis of a large-scale database. And they focused on two conceptual factors that are hypothesised to be implicated in language variation: **vagueness** and **salience**. Vagueness concerns the observation that, in some instances, lexical meanings cannot always be easily distinguished.

For instance, the English word *aunt* is vague as to whether what is meant is the paternal or maternal aunt. While some languages have lexical resources to specify which is meant, in English, the word itself leaves this vague, with context being required to specify which is intended. Salience concerns the notion that a particular concept or idea is well known within a particular linguistic community and/or well entrenched in the minds of individual language users.

Geeraerts and Speelman hypothesised that in the case of vagueness, where the conceptual boundaries are unclear, this may lead to greater lexical variation across dialects. But in contrast, in the case of salience, where a concept is more familiar, this leads to reduced variation, and greater uniformity across dialects. In short, these conceptual factors may also have a role in variation across dialectal boundaries. Geeraerts and Speelman reasoned that if a concept is less prominent in communication, then it stands to reason that a less prominent concept will be less standardised across dialects, and hence, exhibit greater lectal variation. In contrast, more salient concepts are expected to exhibit greater standardisation across varieties of the same language.

To examine this hypothesis, Geeraerts and Speelman compiled a large database of words and expressions for bodily concepts, drawn from dialects spoken in the Limburg region, which stretches from south-west Netherlands across into eastern Belgium; Limburg was a unified province until 1839 when it was formally split between Belgium and the Netherlands. Based on this database, they employed three measures (**explanatory variables**) in order to examine salience.

First, they asked Dutch speakers to rate **familiarity** for 206 bodily concepts drawn from the database using a five point Likert-like scale, where 1 indicated complete familiarity, and 5 complete unfamiliarity. For instance, lexical items judged as being unfamiliar included *knokkelkuiltjes* 'little dents between knuckles' and bloedwei, 'blood pressure', whilst highly familiar words included *keel* 'throat' and *knie* 'knee'.

Using questionnaire data distributed to participants across the Limburg region, the second measure Geeraerts and Speelman used were the number of **observational gaps**. An observational gap is an instance where participants from a particular location failed to produce a response – a word or expression – for a given concept. Such observational gaps may suggest corresponding lack of familiarity with a given concept, as evidenced by the inability of participants to name the concept. Examples of concepts with few responses include *shlecht groeien*, 'to grow slowly', *geluidloze wind*, 'silent fart' and *huig*, 'uvula'.

The third and final factor used to assess concept salience related to the degree to which a given concept was described using a single lexical item or a multiword expression. There are a number of reasons to think that the use of a multiword expression, rather than a single lexical item, may reflect reduced salience for a concept. Berlin and Kay (1969) in their seminal work on colour terms across the languages of the world have proposed the hypothesis that cross-linguistically, highly salient concepts tend to be lexicalised using single lexical items, rather than multiword expressions. Moreover, Geeraerts and Speelman observe that multiword answers for a concept may reflect the fact that there is no name for the concept in the speaker's dialect, or because they don't know it. In short, a multiword expression may 'constitute a structural reflection of lower concept salience' (Geeraerts and Speelman 2010: 28–9). For instance, an example of a multiword expression is *haar wie een stekelvarken*, 'hair like a porcupine'.

In order to investigate the issue of vagueness, Geeraerts and Speelman considered a single explanatory variable, the lexical non-uniqueness of words or expressions for the concept. That is, where a lexical item can be used to also name another concept, this may indicate that the concept being described is readily distinguishable for the other concept, and hence may be vague, exhibiting fuzziness. For instance, some concepts may be more vague, and thus more prone to confusion – 'pelvic cavity' versus 'groin' – while others may be less vague 'eyelash' versus 'loin'. The consequence is that concepts that are more vague may lead to greater heterogeneity than concepts that are less vague.

In order to assess lexical heterogeneity (variation) – the independent variable – the variable we are attempting to account for – the variation exhibited by words for a given concept in terms of **diversity**, **dispersion** and **range** was examined. Diversity constitutes the number of different words or expressions that informants identified for a given concept. The higher the number of words for a concept, the greater its diversity. Dispersion concerns the extent to which a concept achieves a lexical attestation across all the observational points. In other words, dispersion concerns how many of the observational points answered with the same term for the same concept. Concepts with a higher frequency of the same terms across the observational points – the various towns and villages sampled across the Limburg region – exhibit greater dispersion. And finally, range concerns the maximal geographical distance across which the same term is used for a given concept. Hence, lexical heterogeneity was measured in terms of both diversity and geographical fragmentation, and analysed statistically, providing, for each concept, a statistical profile of its degree of variation.

The degree of variation for each of the 206 concepts, and the various explanatory variables, were then subjected to a **multiple linear regression analysis**. This is a type of statistical analysis that examines the degree to which the various explanatory variables contribute to lexical heterogeneity. Geeraerts and Speelman found that heterogeneity increases as a concept is less familiar, exhibits more multiword answers and overlaps more with other concepts. In contrast, heterogeneity decreases as the number of places with zero observations rise.

In short, measures hypothesised to relate to increased concept salience appear to correlate with decreased variation, while measures hypothesised to relate to increased concept vagueness appear to correlate with greater lexical variation. Overall, this study is illustrative of the utility of cognitive linguistics as applied to sociolinguistic studies of variation. It reveals that studying heterogeneity purely from the perspective of geographic differentiation may be too limiting. Rather, it provides a compelling case for thinking that concepts themselves may have a role in linguistic variation, and is representative of what cognitive linguistics offers variationist sociolinguistics, and what a cognitive sociolinguistics looks like.

4 Cognitive critical discourse analysis

CDA is an approach to the study of discourse – both written and spoken – which is concerned with the relationship between language and society. More specifically, practitioners of CDA assume that non-linguistic social action and language use are symbiotically linked; put another way, social structures, situations and relations are enacted through language: language both constitutes social action and is shaped by it. From this perspective, the means of investigating social actions and relations is achieved by studying language, and the way social action is enacted through language.

CDA is 'critical', in the sense that it is primarily concerned, in the most general terms, with identifying the nature of the power relationships that language gives rise to and maintains in constituting social action. The pioneers of CDA, in particular, Norman Fairclough (e.g. 1995), Teun van Dijk (e.g. 1998) and Ruth Wodak (e.g. 1996, 2006), among others, have argued that highlighting the way language constitutes power relations – or **ideologies** – as they are often referred to, is essential if their negative effects are to be addressed (e.g. Fairclough 2001). To this end, CDA has often focused on perceived social power abuse, dominance and inequality.

The power relations exhibited by language use represents an ideology in the sense that they are argued to constitute systems of values which influence and guide social action and behaviour, thereby reinforcing asymmetric and unequal power relationships in the social sphere. But importantly, and as acknowledged by researchers working in CDA, the ideologies reflected in language, which thereby constitute social action, amount to a shared 'system of mental representations and processes' (van Dijk 1995: 261). In short, language use is underpinned by conceptual mechanisms and structure that emerge as linguistically enacted ideologies. The challenge, then, concerns how to investigate the mental representations that language reflects.

4.1 From CDA to cognitive CDA

As cognitive linguistics provides a sophisticated, theorised account of the relationship between language and conceptual structure, CDA practitioners have increasingly argued that cognitive linguistics provides the missing link in investigating how language represents ideological points of view (e.g. Chilton 2005; Hart 2015). This is because, and as we have seen in earlier chapters, cognitive linguistic accounts demonstrate the multifarious ways in which language reflects underlying conceptual representations, which guide thought.

For example, Lakoff and Johnson, as early as 1980, in developing conceptual metaphor theory, observed that 'metaphors create realties for us, especially social realities. A metaphor may thus be a guide for future action. Such actions will, of course, fit the action' (Lakoff and Johnson 1980: 156). In short, cognitive linguistics is especially useful for CDA as it can 'lay bare the structuring of concepts and conceptions which constitute ideologies' (Dirven et al. 2003: 4). And, consequently, as Hart (2015: 326) observes, 'cognitive linguistics can serve as an analytical lens through which the latent ideologies expressed in, and enacted through discourse can be brought to critical consciousness'.

4.2 A case study: critical metaphor analysis

Conceptual metaphor theory was one of the earliest and, in key respects, remains one of the most significant applications of cognitive linguistic theory to CDA. Its importance derives, in part, from its role in hiding and highlighting aspects of a given target domain, as discussed in Chapter 12. Given that the same situation can be structured using different source domains, these can hide certain aspects of the target domain, while highlighting others, giving rise to different ideologies, with divergent consequences in terms of portrayal, social action and so on.

To illustrate, consider the following two excerpts from different British newspapers, drawn from Hart (2015). They are both reporting on the same event, G20 protests in London in April 2009:

(1) [A] largely peaceful demonstration <u>spilled over</u> into bloody violence in the centre of London . . . Clashes later <u>erupted</u> at Mansion House Street and Queen Victoria Street near the Bank. (*The Daily Telegraph*)

(2) The G20 protests in central London turned violent today ahead of tomorrow's summit, with a <u>band of demonstrators</u> close to the Bank of England <u>storming</u> a Royal Bank of Scotland branch, and baton-wielding police charging a sit-down protest by students. (*The Guardian*)

In his discussion of these reports, Hart (2015) observes that in each case a different metaphoric source domain is employed to conceptualise and so convey, in language, ostensibly the same material situation. In the first example, the demonstration is being conceptualised in terms of a volcanic eruption. And such a conceptualisation 'suggests the need to control the liquid which in the target domain equates to the controversial crowd control technique' of kettling. In contrast, in (2), the protest is conceptualised in terms of war.

Hart contends that one consequence of the portrayal in (1), by the right-wing and establishment newspaper *The Daily Telegraph*, reduces the protests to a natural disaster that must be controlled. The animacy of the protestors is thereby removed, and police intervention is implicitly sanctioned. In contrast, in (2), as conveyed by the left-leaning newspaper, *The Guardian*, the war metaphor portrays protestors and police as combatants, with the protestors fighting for a specific cause, providing, at least in part, a positive connotation. In short, the selection of different source domains has ideological consequences, not least in terms of what social actions may be sanctioned or not as a consequence.

According to Jonathan Charteris-Black, a key figure in the development of the critical approach to metaphor, as metaphors are fundamentally conceptual in nature, and central instruments of thought, the consequence is that they have significant emotional power in public discourse. In seminal research, applying conceptual metaphor theory to CDA, Charteris-Black (2011) relates the way in which conceptual metaphors enact power relations, through language, to the classical concepts of **logos** (reasoned argument), **pathos** (appeal to the emotions) and **ethos** (establishing the speaker's ethical credentials). Charteris-Black argues that in the domain of political discourse in particular, conceptual metaphors that underpin language use have four significant functions: they effectively communicate political arguments; they communicate a political ideology, or belief system, by establishing a political myth; they give rise to a heightened emotional impact; and, they establish the ethical integrity of the speaker.

Charteris-Black has exemplified these functions of metaphor in political discourse. In one representative study (Charteris-Black 2006), he examined the use of metaphors in political discourse on immigration by the centre and far-right political parties during the 2005 General Election in the United Kingdom. He found that two main metaphor systems were employed. The first related to natural disaster, especially the behaviour of fluids. This was exemplified in the literature of the British National Party (BNP), a far-right political group. Immigration in the BNP manifesto was characterised as constituting 'an almost limitless flow', a 'flood' and a 'massive and unnecessary wave', exhibiting what he dubbed the IMMIGRATION IS A NATURAL DISASTER conceptual metaphor. The centre-right Conservative Party made use of a container metaphor, emphasising the view of Britain's boundaries, which must be safeguarded against perforation, and the potential from pressure building up inside due to the perceived influx of immigrants.

Charteris-Black argues that both metaphor groups effectively arouse emotion and fear, as both metaphor systems are linked to the behaviour of fluids, and the danger associated with excessive amount of fluids. Moreover, both metaphor systems dehumanise and discourage empathy with immigrants by viewing them as objects, and not individuals with their own unique life stories. They do so, as they impose the perspective of the observer of the phenomenon in question, rather than of a human participant. And in this way, the metaphor systems contribute to the legitimacy of the right-wing perspective being conveyed on immigration.

Charteris-Black argues that the two metaphor systems, nevertheless, establish slightly different ideologies. In the BNP literature, the overriding metaphor, of immigration as a natural disaster, more blatantly serves to arouse fear, due to a natural disaster being out of control – with the metaphorical entailment of clear and present danger. In contrast, the use of the container metaphor in the Conservative Party's communication focused on the systems designed to prevent immigration. For instance, the then Conservative leader, Michael Howard, in one speech, spoke of the action required 'to secure our borders'.

Charteris-Black observes that the verb *secure* implies an unspecified external threat. And in so doing, it equates loss of control of immigration with loss of control of security; perforation of the container amounts to loss of control. In short, containment and control are equated. This metaphor system, like that of immigration as a natural disaster, provides a narrative in which immigration is presupposed as being negative and harmful, and thus should be resisted. And in so doing, these metaphor systems establish the legitimacy of the centre and far-right's ideological stances towards immigration, and in contrast to the incumbent centre-left Labour Party, then led by Tony Blair.

SUMMARY

In this chapter I have focused on recent developments that can be identified as amounting to a **social turn** in cognitive linguistics. This has generated an increased interest in applying theories, methods and perspectives from cognitive linguistics to concerns and problems that arise from language and behaviour in social and societal contexts. I began by considering the nature of social interaction as a central feature of language. This is exemplified by the **social cognitive linguistics** developed by William Croft. Croft has proposed a reformulation of some of the central tenets of cognitive linguistics, in order to rethink language as a social as well as a psychological phenomenon. Next, I considered the relationship between individual conceptualisers, and the construction of **social realities**. This has been studied in detail by Peter Harder, who examines how social realities become 'hooked up to' individual minds. Third, I provided an overview of **cognitive sociolinguistics**, led most notably by Dirk Geeraerts. This research has been concerned with the nature of sociolinguistic variation, providing new and compelling cognitive linguistic accounts for lectal variation. And finally, I briefly examined how cognitive linguistics has served to embellish **critical discourse analysis (CDA)**: the study of how language and discursive practice constitutes social reality. Recent research within cognitive linguistics led by scholars such as Paul Chilton, Jonathan Charteris-Black and Christopher Hart among others has provided CDA with the tools of cognitive linguistics in order to better understand the conceptual underpinnings of discursively constituted social relations such as power and ideology relations.

FURTHER READING

Social cognitive linguistics

- **Croft (2009)**. This article presents Croft's seminal reinterpretation of some of the core tenets of cognitive linguistics in light of social and interactional studies.
- **Harder (2010)**. In this seminal, book-length study, the author explores the relationship between individual mental grammars and the construction of social realities, and the way in which the two interface in co-creating social meaning.

Cognitive sociolinguistics

- **Kristiansen and Dirven (2008)**. A seminal edited volume, providing an overview of the emerging field of cognitive sociolinguistics, with chapters by leading pioneers.
- **Pütz et al. (2014)**. A collection of papers, based on a 2010 conference focused on cognitive sociolinguistics. The papers seek to systemise the methodological and theoretical basis and goals of the field.

Cognitive critical discourse analysis

- **Charteris-Black (2014)**. In a series of papers and books, Charteris-Black has developed his rhetorically based approach to discourse, known as critical metaphor analysis, in order to examine the ideological systems conveyed by metaphor, especially in the political sphere. This book represents an exemplification of this approach in the domain of political speeches.
- **Hart (2010)**. Drawing on ideas from cognitive linguistics, this innovative book-length study takes a critical discourse analysis approach to immigration discourse.
- **Hart (2011)**. An important edited collection, which focuses on the role of cognition in understanding the relationship between discourse and society, especially the ideology systems embedded in language. The volume provides an important venue in which broadly cognitive linguistics approaches are applied to CDA.

DISCUSSION QUESTIONS

1. What is the nature of a 'social' cognitive linguistics?
2. What is the nature of cognitive sociolinguistics? How is this distinct from 'social' cognitive linguistics?
3. What is the nature of critical discourse analysis? How and in what ways is this enhanced by ideas from cognitive linguistics?

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Text, narrative and literature

In this chapter I explore cognitive linguistic approaches to the analysis of text – written or spoken – and especially literary texts, although cognitive linguistic approaches to texts are by no means limited to literature, as we shall see. I do so by examining approaches to narrative and literary analysis. This necessarily involves the tripartite relationship between a particular **text** – for instance, a poem, a novel, the dialogue in a play, or a movie screenplay and so on – an **author**, who produced the text for some purpose, and, presumably, to have some effect on a reader or audience, and the **reader/audience**. In studying the meaning that arises from this interaction, an important distinction relates to an **interpretation** of a text, and a **reading**.

According to Stockwell (2002), an interpretation constitutes the range of impressions that arises as a reader (or audience) begins to interact with a text, perhaps even partly before. But as the interpretation is refined, and some interpretations are rejected, what emerges is a reading. A reading arises from, in some sense, an analytical process. We each attempt to make sense of what any given text means, for us: one that is personally acceptable. And in so doing, we may be guided, and influenced, by the 'readings' of others, what we may know about the historical or sociocultural context of the author, and/or the period in which the text was produced, as well as our own individual context. For instance, depending on where or when we read a particular text, such a poem, and how we are feeling at that particular point in our lives, can influence the reading we derive. Hence, readings are always dynamic constructs – rather than being fixed and timeless – they can develop and shift in response to our own changing interpretations that ultimately give rise to a specific reading.

In the field of literary studies, especially the field known as **literary criticism**, which came to prominence in the so-called post-modern period – the period since the second World War – 'the notion of literature has become so enlarged to include whatever the reader chooses to consider "text" whether oral or written or even the nonlinguistic "signifiers" of culture' (Freeman 2007: 1177). For example, while literary criticism has primarily focused on the aesthetic and emotional effects of texts, rather than close linguistic analysis of how these effects are achieved – the concern of **stylistics** – debate has been polarised as to whether a particular text has one true reading, or whether readings are forever indeterminate and variable – with a single text having, in principle, as many readings as there are readers, and moreover, as many readings as their specific occasions on which they interact with the same text.

So-called **New Criticism**, for instance, assumed that an author always has a specific intention in constructing a text. And this can be accessed by a single 'true' reading of the text in question. From this perspective, the function of literary analysis is to identify this single, correct reading. But literary criticism in the post-structuralism period – from around the 1960s onwards – took a different tack, claiming the stability of the readings permitted by a specific text. This serves to undermine the intentions, attached by New Criticism, to the work's author. From this perspective, a text can mean, with caveats, almost anything.

An application of cognitive linguistics to texts offers a way out of this apparent paradox. After all, as we have seen in this book, cognitive linguistics provides an effective and detailed approach to understanding what is common across human minds – arising from, among other things, shared embodied experience which leaves an indelible mark on mental organisation, and on language, including its fundamentally usage-based character. And as a consequence, it provides a means of studying what it is about a text, and an author's apparent intentions, that leads readers to agree – where they do – on a specific reading of a text, due to shared cognitive constraints. And where readings diverge, it enables the analyst to understand why they do so. Cognitive linguistics, as applied to texts, thus provides an analytical 'metric', grounded in commonalities in human cognitive structures and linguistic systems, and the variation that these systems permit, enabling a rigorous analysis of commonalities and variation across readings.

In addition, cognitive linguistics approaches take in the close linguistic analysis of texts. This sub-branch, sometimes referred to as **cognitive stylistics** (e.g. Semino and Culpeper 2002), enables the careful analysis of how effects on readers arise from specific textual and compositional features of a particular text – not limited to literature. But importantly, cognitive linguistics approaches are also concerned with the more traditional concerns of literary criticism, especially the evaluative and aesthetic responses, by readers, to particular texts. This sub-branch is sometimes referred to as **cognitive poetics** – and is primarily focused on the study and analysis of literature. This chapter will address the contribution of both these sub-branches of cognitive linguistics.

Finally, an important insight arising from cognitive linguistics, as applied to the analysis of texts, is that everyday language, and the production of texts by skilled practitioners – journalists, playwrights, poets and so on – lie on a continuum. Cognitive linguistic theories of language and mind, as we have seen in this book, rest on the analysis of everyday patterns of language and thought. But more specialised and skilled production of texts is, in fundamental ways, and in principle, no different. Everyday operations, such as conceptual metaphor, conceptual blends, formation of mental space networks, and the embodied basis of language and grammatical organisation are deployed by skilled practitioners. The difference, between everyday language and, say, literary language, relates then not to a disjunction between the capacities associated with ordinary mortals and stand-out literary geniuses such as Shakespeare or Milton (e.g. Freeman 2007; Lakoff and Turner 1989; Turner 1996). Rather it concerns, as we shall see, **deviance** from everyday language – the way in which literary greats are able to exploit the ordinary cognitive and linguistic capacities we all share and are common to all to produce the extraordinary (Stockwell 2002).

The remainder of this chapter focuses on two applications of cognitive linguistics to texts. First, I address cognitive linguistics accounts of narrative, including its organisation and structure. I then consider the branch of cognitive linguistics known as cognitive poetics, which addresses the way in which cognitive effects, reflected in literary language, give rise to specific readings of literary texts.

1 Narrative

Narrative, or **story**, concerns the practice of developing and integrating a series of events, in a text, featuring a series of characters, who both interact in various ways and develop, over time. Narrative can be fictional, historical, quasi-fictional or grounded in reality, and can be written or spoken (as in, for instance, the Homeric oral tradition). In this chapter, I consider two specific cognitive linguistic accounts of narrative: that associated with Leonard Talmy (2000b) and that associated with the seminal research of Mark Turner (1991; and especially 1996).

1.1 Towards a theory of narrative in human cognition

In this section, I present Talmy's (2000b: Chapter 8) theory of narrative. Talmy argues for a narrative system in human cognition: a general theory of the principles that constrain and, indeed, make narrative possible. Hence, the principles that he outlines are held to apply both to the producers (e.g. authors) of a narrative as well as the recipients (e.g. readers) when interpreting narratives. This system enables mental experiences to become interconnected, giving rise to a single overall pattern, experienced through time, enabling both the production of and interpretation of an integrated narrative. For Talmy, a narrative constitutes a coherent **ideational structure** – ideational having to do with a series of interconnected ideas – subserved by universal constraints and mental abilities. And this narrative system underpins all manifestations of narrative, no matter the medium or the genre of production. Hence, the same system is responsible for diverse forms of narrative, as manifested in, for instance, conversation, storytelling, a play, a film, a comedy routine, an improvised theatre performance, literature, video art, kinetic sculpture, ballet and so on. From this perspective, the hallmark of the narrative system is that it ascribes 'entityhood to some sequential portion of the experienced phenomena . . . providing continuing identity into an ideational whole' (Talmy 2000b: 419). For Talmy, in order to be able to characterise the nature, structure and organisation of narrative, as manifested in its production and reception, we must examine the ways that human cognition structures representations of the surrounding world. Hence, his starting point is the mental constraints and capacities that facilitate narrative, and from which narrative flows.

Talmy proposes that the narrative cognitive system consists of three levels, which I present in the subsections below:

i) **Domains**: these constitute the highest level of organisation, and are general areas within the total narrative context.
ii) **Strata**: these are structural properties that relate to domains.
iii) **Parameters**: these are organising principles that relate to both strata and domains.

1.1.1 Domains

Talmy identifies five distinct domains relevant for the production and reception of a narrative, and within which narrative collectively unfolds. These are:

i) the spatiotemporal physical world (i.e. our perceived and conceived world), and all of its properties;
ii) culture/society, together with its values, norms, patterns of behaviour and so on;
iii) producer(s) of the narrative;
iv) experiencer(s) of the narrative;
v) the narrative itself.

Each of these domains are interconnected in the production (by an author) and reception (by a reader/interlocutor/audience) during the course of the narrative.

Talmy argues that narrative constitutes a **prototype phenomenon**: a given narrative can be more or less prototypical. Talmy highlights seven distinct ways in which the various domains interact, giving rise to a prototypical narrative. First, a prototypical narrative engages with concepts in order to form a coherent **ideational complex**: a story. In so doing, it forms a coherent sequence of ideas that have a referential character: the ideas refer to discrete entities, such as individuals, and their traits, dispositions and so on, and the way in which individuals interact, evolve over time during the course of the story and so forth. An example of a less prototypical narrative would be one that doesn't directly create an ideational complex, in this sense, with discrete referents, but instead engages different cognitive systems. For instance, a musical work induces moods and other affective states, rather than evolving an ideational complex with specific referents. Similarly, a painting less prototypically evokes a narrative, engaging visual responses, although many paintings can and do 'tell' a story.

A further defining feature of a prototypical narrative is that it entails a **degree of progression**: it provides an experienced world in terms of **events** that **occur** in **succession**. That said, Talmy observes that a prototypical narrative need not require actual succession. For instance, some narratives, for example James Joyce's *Ulysses* which presents a single, self-contained event – a day in the life of Leopold Bloom – are nevertheless still prototypical, where the experienced event can be construed as an excerpt from a progression. And in the case of *Ulysses*, the single day consists of a diverse range of sequenced sub-events – the things that happen to Bloom during his day set in Dublin on 16 June 1904.

A prototypical narrative also exhibits both **coherence** and **significance**. According to Talmy, the component parts of a prototypical narrative must fit together into a sensible whole. In terms of significance, the parts, and the whole, must be experienced as fulfilling some purpose or mission on the part of the author.

For instance, in the novels of Charles Dickens, each novel is often construed as having a didactic or social commentary function. For instance, in *Hard Times*, Dickens provides acute observations on the material inequity of the working class as opposed to the industrialists that own the factories that employ the workers. And similarly, *Bleak House* is often taken to provide telling criticism of the English judicial system in Victorian-era England. But even contemporary literary novels, where plot development sometimes plays a less central role, in lieu of character development and stylistic innovation, for instance in David Foster Wallace's *Infinite Jest*, a clear purpose, on the part of the author, can nevertheless still be discerned.

A further hallmark of a prototypical narrative concerns **projection** of the particulars and structures of the **real world**, on the part of the author, and construed as such on the part of the audience, even when these may not be explicitly apparent. For instance, in Arthur Conan Doyle's Sherlock Holmes stories, time progresses in unidirectional fashion, and at the same rate as in the real world. Moreover, we presume that Holmes engages in everyday human behaviour (he uses the toilet from time to time), even though that may not be conveyed in the stories. And even when there is divergence from normal aspects of the real world, a common logic, apparent in the real world, is still apparent. For instance, in the BBC TV sci-fi drama, *Dr Who*, the protagonist, The Doctor, is a time-travelling alien. This gives rise to unusual, and often surprising time-dilation effects and paradoxes. Moreover, The Doctor, who makes use of time-lord technology, travels through space and time in a spaceship, his/her Tardis, which is larger on the inside than out. Nevertheless, The Doctor is presented as a humanoid – albeit with two hearts – s/he speaks English, often with an accent, as portrayed by the various actors who animate the titular character – can die – although s/he can resurrect him/herself via a process of regeneration, can change sex upon regeneration, and consequently s/he feels and experiences the normal range of human emotions and dilemmas in the face of adversity and so on.

In addition, a prototypical characteristic of narrative is that the domains of the work and that of the addressee normally form an **impermeable boundary**: the domain of the work constitutes a self-contained **story world**, distinct from the real world inhabited by the reader/audience. However, some story worlds play on this. A famous example of the crossing of this otherwise impermeable boundary in a genre that is normally separate from that of the audience is the James Bond film, *On Her Majesty's Secret Service*, the first official Bond film in which the actor Sean Connery didn't play the titular character. In this film, following the opening action sequence, the 'new' James Bond, played by Australian actor George Lazenby, faced the camera, saying 'This never happened to the other fellow' – known as **crossing the fourth wall**: the space between the stage and the audience, conceived as an imaginary wall. While crossing the fourth wall is atypical, some works and, indeed, some narrative genres play on this. A salient example is the genre known as pantomime, which directly engages the audience, and even involves audience members in the story world by bringing them onto the stage, and inviting them to engage in aspects of the story world.

The sixth defining feature relates to the degree to which **background knowledge**, concerning the narrative, is required by the audience in order to be able to follow the events depicted. A prototypical narrative provides a self-contained story world which can be followed without much prior knowledge. But less prototypical narratives require, to varying degrees, greater background knowledge. An example of this is the story in classical ballet. For the naïve viewer, the plot in ballet performances, given that it is enacted through the medium of dance, is relatively inaccessible without an awareness of at least some background knowledge.

The final hallmark of a prototypical narrative relates to the **timing** of the production of the work, by an author, and reception of the work by an audience/reader. In the prototype, the author first composes the work, which is then, subsequently, received by the addressee. Less prototypical narratives are composed 'on-line', in response to audience feedback. For instance in some children's puppet theatre shows, children are invited to choose an ending. Sometimes, an author can play with the prototypical timing of narrative composition by simulating the 'on-line' production and reception of a work. For instance, in John Fowles' 1969 novel, *The French Lieutenant's Woman*, the author appears in the novel, towards the end, and flips a coin to decide how the novel will end: and as the reader continues, it only then becomes apparent as to which way chance has determined the novel's outcome.

1.1.2 Strata

The second level of narrative organisation concerns what Talmy terms **strata**. These operate within and across domains, and provide the **ground-level structuring systems** for each of the domains mentioned above. Talmy identifies four distinct strata, which can each be invoked simultaneously by each of the domains during the course of the production and reception of a narrative:

i) temporal structure;
ii) spatial structure;
iii) causal structure;
iv) psychological structure.

Temporal structure provides each of the domains, self-evidently, with their temporal dimension. This stratum arises from the pan-human experience, conception and psychological representation of time – as described in Chapter 4. It exhibits the property of **progression**, with internal structure in the form of **events** and temporal **texture**. And consequently, a narrative is constituted by **activities**, **situations** and **circumstances**. A narrative excerpts temporal compression into events, which can exhibit a number of distinct properties. For instance, a narrative event can be discrete – with a clear beginning and ending – or it can be continuous, in the sense of being unbounded. Moreover, a narrative event can be **global** – a single event spanning the entire narrative, as in the case of *Ulysses* mentioned earlier, where a single event, a single day, is coextensive with the story time, in a narrative. Alternatively, an event can be local, with each event occupying a single point in time, and forming a sequence. Alternatively, events can be embedded within one another, as in the Christopher Nolan movie *Inception*, in which distinct 'dream' events take place inside one another, forming a complex temporal landscape.

An important distinction relates to **story time** – the temporal structure of a narrative – versus **addressee time** – the nature and rate of temporal progression for the addressee. Talmy posits that the baseline is **co-progression**: temporal progression in both proceeds at exactly the same rate. An example of this is the 1964 film by Andy Warhol, *Empire*, which depicts a stationary building during the course of an entire day. However, events depicted in story time, while taking place in unidirectional fashion, are typically excerpted – a narrative would be rendered tedious if all events, even the mundane, were depicted, as is arguably the case with the Warhol movie. Producers of a narrative can also deviate from the standard, unidirectional progression of story time. For instance, events can be depicted out of sequence for dramatic effect, as in the Quentin Tarantino movie *Pulp Fiction*. Alternatively, the use of flashbacks can be deployed at various points, which deviates from the usual progression. Finally, story time can proceed slower or faster than addressee time, or the rate can change.

The second stratum is **spatial structure**. It is this level of structure that allows the author of a work and the audience to interpret the spatial aspects of a narrative. Spatial structure consists of two subsystems. In the first, what Talmy dubs the **matrix subsystem**, space is conceived as a matrix that contains and localises. It organises space in terms of **regions**, **locations**, and dynamic concepts such as **path** and **placement**. In the second, the **material subsystem**, this concerns the objects and entities that are located in space.

While a story world normally corresponds, in terms of its spatial organisation, to the real world, sometimes a story can exhibit **discorrespondence**. For example, characters, and other entities and objects, can exhibit novel sizes, shapes and other physical discrepancies, vis-à-vis the real world. Examples include *Alice in Wonderland* by Lewis Carroll, and the 1966 movie *Fantastic Voyage* by Richard Fleischer. In the latter, miniaturised humans travel through the bloodstream of a normal sized person.

The third stratum is **causal structure**. This stratum provides the structure concerning the physics of matter and energy in space and time. For instance, it is this stratum that concerns whether matter has spatiotemporal continuity or not. Moreover, it is this stratum that enables an author to manipulate the physics of the story world so that it deviates, sometimes in surprising ways, from the real world. For instance, understanding that one entity, such as a ghost, can pass through another, requires an understanding that physical entities cannot normally pass through material substances. It also facilitates understanding discorrespondences with the real world, such as the nature and organisation of, for example, the space ship used by The Doctor in the BBC's serial *Dr Who*. As already intimated, The Doctor's space ship, the Tardis, is larger on the inside than on the out.

The final stratum is **psychological structure**. This concerns a number of diverse subsystems of which Talmy identifies six:

i) The **foundational subsystem**: which concerns aspects of consciousness, attention, perspective, perception, memory and motor control.
ii) The **executive subsystem**: relating to agency, intention, volition, goals, planning and decision-making.
iii) The **ideational' or 'intellective' subsystem**: concerning beliefs, knowledge, assumptions, opinions and attitudes.
iv) The **affective subsystem**: relating to emotions, mood states, motivations, desires and so on.
v) The **values subsystem**: which concerns ethics, morals, priorities and so on.
vi) The **'composite' subsystem**: relating to psychological phenomena such as temperament, personality and style.

These different subsystems of psychological structure operate within and across three distinct levels: the individual, at the level of the group or society and, finally, in terms of atmosphere created during a narrative.

The individual level is the most prototypical level of psychological structure: it involves attributing sentience to the entity, and localisation of the phenomena listed under the six psychological subsystems above. Nevertheless, the individual is subject to variation, as portrayed by an author. For instance, an individual can exhibit incompatible attitudes, split selves and so on. Moreover, an entity need not be human. For instance, the self-same psychological phenomena can be attributed to inanimate objects, ghosts, deities, extra-terrestrials and so on.

For example, Talmy provides the following example of an ocean scene:

(1) 'It's body glistening, the porpoise leapt gracefully out of the water, rose majestically into the air, executed a beautiful somersault at the top of its arc, and dove back into the water barely perturbing the surface.'

Talmy's point, in providing this example, is that the scene being conveyed provides a specific perspective point – located above the ocean and near the porpoise. But the perspective point is functioning as an individual: it has many of the psychological phenomena mentioned above co-located with it. For example, it includes perception of the various events that took place, and a characterisation of them, for instance as evidenced by the use of the word *glistening*. It also includes an evaluation, as in the use of the word *gracefully*, and attitude and affect, as evidenced by the use of *majestically* and *beautiful*. And finally, it exhibits expectations, for instance, with the use of *barely*.

At the level of group, the group can be conceived as a single organism, for instance as a nation, with intentions, values and so on. Alternatively, it can be conceived as a collectivity, based on the psychological attributes of its individual members. One striking example of this is the alien species the Borg, in a recent version of the Star Trek franchise. The Borg exhibit a 'hive mind', where each individual shares and partakes in the consciousness of the collective.

Finally, at the level of atmosphere, narrative can attribute psychological characteristics to some portion of ambient space, to a physically defined region, or even an event. In Virginia Woolf's novel *The Voyage Out*, the author creates an atmosphere of 'sanity-threatening fractionation' (according to critic Claire Dehane, cited in Talmy 2000b: 446) via the use of 'allusions to menace'.

1.1.3 Parameters

As noted above, these constitute organising principles that apply across all strata and domains in a narrative. Talmy identifies five such principles:

i) the relational nature of structures;
ii) relative quantity;
iii) degree of differentiation;
iv) combinatory structure;
v) evaluation;

In terms of the first parameter, structures can exhibit the property of inclusion, which is one way in which structures can be related. In terms of the domain of the work, for instance, stories can be embedded within one another, by virtue of this property. Shakespeare's *Hamlet*, for example, exhibits repeated nesting of one story inside another, each with its own story world.

Another way in which structures can be related is **coextension**, where one story is overlaid onto another. For instance, in **parable**, about which I'll have more to say below, one story, a **metaphoric projection**, rests on the literal interpretation upon which it is laid.

The second organising principle concerns relative quantity of structures in a domain or stratum. For instance, spatial or temporal structure can have a different focus or **scope**, within a narrative. For example, a narrative might track the movements of a character, or characters, over an entire historical period, in a work, as Tolstoy does in his magisterial novel *War and Peace*. Alternatively, it might focus on a relatively small temporal or spatial scope: a character moving about in an enclosed location, during the course of a thirty minute period.

Third, we have the parameter degree of differentiation. This concerns the ways in which a given structure or entity within a narrative can be more or less distinguished, defined or otherwise determined. For example, the viewpoint from which a story can proceed can be transposed, by the author, from one character, to another. In Lawrence Durrell's *Alexandria Quartet*, for instance, which consists of a tetralogy of novels, set before, during and after the Second World War, Durrell explores the relativity and continuum of subject–object relations, with the theme of love as its binding principle. In the series of novels, only the fourth instalment, *Clea* (1960) counts as an actual sequel, with the first three – *Justine* (1957), *Balthazar* (1958) and *Mountolive* (1958) – all recounting the same sequence of events, but from the perspective of different protagonists of these events. What this provides is quite strikingly different viewpoints, on the same events, illustrating the principle of degree of differentiation.

The fourth principle concerns combinatory structure. This concerns the pattern in which elements, in a narrative, are joined together to constitute a larger whole. According to Talmy, this enables either an **atemporal** – a simultaneous – association of events, or of a **temporal** sequencing of events. An atemporal association of events serves to create a narrative atmosphere. In contrast, an example of temporal sequencing involves the plot of a story, where events are arranged and presented serially, simulating real-world temporal progression. Talmy argues that a number of principles guide the combinatory structure that underpins narrative. These includes notions such as **well-formedness** and **coherence**.

For instance, principles of well-formedness and coherence are essential in enabling the reader to understand the sequential structure of the identity of a character, and in particular, the continuity through time of a character's identity, over the course of a narrative. For instance, in the transformation of Kafka's (1936) character, Gregor Sansa into an insect, Talmy observes that the reader, nevertheless, accepts that the personal identity of Sansa continues, irrespective of the physical transformation. The essential element of the entity is the personality of the original character, despite the change in form. In short, the principles of well-formedness and coherence enable the reader to guide an interpretation such that the two physical entities are combined into a single coherent entity.

Finally, the principle of evaluation concerns our interpretation of events, setting and character. It is informed by the output of the foregoing principles, as discussed.

In sum, what Talmy provides is a taxonomy of the range of cognitive factors that enable both the creation (production) and interpretation (reception) of a narrative. These principles, he points out, can be readily studied, by examining what authors and audiences/readers do, when producing and receiving/engaging with narratives. Moreover, the principles are constrained by common elements of human cognition, which enable a theoretical account of what is possible, and moreover, enable explanation of how narratives can and do diverge from reality, and how receivers of a narrative are able to make sense of them when they do.

1.2 The literary mind

In his 1996 book, *The Literary Mind*, Mark Turner developed a seminal approach to narrative – or what he refers to as story – that has been highly influential in the emergence of cognitive poetics, and cognitive stylistics more generally. Like Talmy, Turner's contention is that story is something central to the way we think: it derives from specific cognitive mechanisms, which enable us to understand how it arises, which is the subject of his book. And Turner's central claim is that while stories often have an entertaining side, especially in literature, in point of fact,

> they are the root of human thought; they are not primarily – or even importantly – entertainment . . . We might therefore think that storytelling is a special performance rather than a constant mental activity. But story as a mental activity is essential to human thought. (Turner, 1996: 15)

While Talmy was concerned with uncovering the overarching cognitive systems and constraints that facilitate the production and reception of narrative, Turner's focus is slightly different. In *The Literary Mind*, Turner considers the realisation of these cognitive systems by examining the specific cognitive mechanisms that enable story, facilitating literature. In particular, he focuses on the projection of image schemas, via conceptual metaphors, enabling the construction of stories. And he also considers the role of conceptual blending in creating complex stories. The study of the role of these theoretical constructs, from cognitive linguistics, enables Turner to illustrate his contention that the everyday mind is, in fact, the literary mind: great literature emerges from the self-same mechanisms and processes that enable everyday thought.

1.2.1 Events are actions

For Turner, story, as a cognitive phenomenon, is founded on small spatial stories in our everyday world of experience. Story involves the **projection** of these simple **action stories** onto unfamiliar or more complex **event stories**. Projection involves the image-schematic structure being mapped from action stories onto event stories via conceptual metaphor. The fundamental organising conceptual metaphor, relevant for story, is what he terms EVENTS ARE ACTIONS – developed in his earlier work with George Lakoff (Lakoff and Turner 1989).

This very general conceptual metaphor works as follows. It enables us to conceptualise abstract events, without actors, in terms of actions. And **an action**, as defined by Turner, is an event with an actor. For instance, in Homer's *The Odyssey*, on the homeward leg of the journey from Troy to Ithaka, Odysseus' sailors eat sacred cattle, despite being warned by Odysseus not to do so. And during the course of the voyage, one by one they die. The many single death events of the sailors, who die at different times, have no obvious single agency attributable to them: they die by drowning, and by other means, at various points. However, in the narrative, these deaths are presented as punishment – divine retribution – by Apollo, King of the Sun – whose sacred cattle it was that were consumed by the sailors.

In so doing, the narrative enables the reader to understand the many events of death, without a clear agency, in terms of a spatial story with an actor. This action story involves the actor Apollo, who physically manipulates an object. And this physical manipulation of an object results, metaphorically, in the death of the sailors. Apollo 'takes' something 'away from' the sailors, which is 'the day of their return'. In short, the abstract, agentless events of death – the metaphoric target – are structured, by virtue of EVENTS ARE ACTIONS, such that the action story of Apollo manipulating an object – the metaphoric source – taking 'away' 'the day of their return' enables the reader to understand the sailors' deaths as being *caused* by Apollo. In short, a story of physical manipulation (action) is projected onto an agentless event – the sailors' deaths.

Now let's consider a slightly different example that Turner discusses, an excerpt from Robert Browning's poem: *Porphyria's Lover*:

> The rain set early in to-night,
> The sullen wind was soon awake,
> It tore the elm-tops down for spite,
> And did its worst to vex the lake.

In the case of the return from Troy, in *The Odyssey*, an action story – Apollo's manipulation of a physical object, which can be taken away – was projected on to a non-spatial, agentless event story: the various death events that befell each of the sailors. Those events were non-spatial in the sense that the events themselves involved death: the change in state from living to becoming non-living. In contrast, in the excerpt from Browning's poem, what we have is a spatial event story: a naturalistic spatial event in which wind is blowing through elm trees, and whipping across a lake. But Browning portrays this spatial event in terms of a spatial action story. In the poem, the wind is a causal agent, with intentionality: it is described as 'sullen', its actions are a consequence of 'spite', and hence it 'does its worst', and is portrayed as attempting to 'vex' the lake, which thereby also has intentionality attributed to it. Here, both the wind and lake are subject to **personification**: human-like experiences and behaviours are attributed to other inanimate entities: wind and the lake. And this is possible, Turner observes, precisely because a very general spatial action story – a human destroying and mutilating a physical object in a fit of rage – is projected onto an otherwise agentless, yet nevertheless spatial, event found in nature.

1.2.2 The image-schematic structure of events

The conceptual metaphor EVENTS ARE ACTIONS is the central organising principle of story, enabling the projection of spatial stories onto more abstract events. But the action stories that are projected by the metaphor, themselves, have internal structure. And this internal structure comes in the form of image schemas, rooted in our spatio-physical experience of the world.

For instance, Turner observes that events have **spatial structure**. For example, events can be conceived as punctual or continuous, repeating or single instances, cyclic or non-cyclic. A season can be conceptualised as 'coming round again', time as progressing in linear fashion, a mid-season clothes sale as 'finished' or 'closed'. Activities such as breathing or snoring are conceived as repeating, while an act such as a blink is punctual. Turner observes that it isn't, actually, that events have this structure. Rather, by imposing image-schematic structure onto events, we recognise them as having this structure. And in so doing, we utilise embodied experience in order to make sense of the range of ongoing events in our everyday world of experience.

Events also have causal structure, also a consequence of image-schematic structure. For instance, causation by a physical force is conceptualised by virtue of image schemas of force dynamics, as illustrated by the following examples drawn from Turner (1996):

(2) a. The sight of blood *forced* him to run.
 b. His ambition *propelled* him to excess.
 c. The committee finally *gave in* and *collapsed*.

The point, then, is that that the EVENTS ARE ACTIONS conceptual metaphor facilitates story – by projecting spatial stories onto abstract events – because the spatial stories that are projected are organised internally via image schemas. And it these image schemas, which have spatial and causal internal structure, that enable us to make sense of the otherwise complex abstract events that the metaphor serves to structure.

1.2.3 Variants of events are actions

One of the important conclusions of Turner's research on the cognitive bases of story is that its central organising principle, EVENTS ARE ACTIONS, has a range of variants, which enable the construction of different sorts of story. This variation takes the form of a range of more specialised sub-cases of the EVENTS ARE ACTIONS conceptual metaphor.

For example, one notable variant is the ACTORS ARE MOVERS conceptual metaphor. This derives from the general, relatively abstract story of movement by an actor, under his or her own power, regardless of whether this involves movement:

(3) She is a *mover* in the entertainment industry. (Turner 1996)

And this conceptual metaphor, itself, exhibits further variants, according to Turner:

ACTION IS MOTION BY AN ACTOR UNDER HIS/HER OWN POWER

(4) She *walked right into* a dismal job.

STATES (OF ACTORS) ARE SPATIAL LOCATIONS (THAT ACTORS CAN BE IN)

(5) He sees financial security as being *far off* in the future.

As actors can be both movers and manipulators, this enables the metaphoric projection of such action stories onto events of various kinds. One example, as observed by Turner, is the projection of actions of this sort onto the thought process itself, making use of what Turner dubs: A THINKER IS A MOVER AND A MANIPULATOR. And this manifests itself in literary works that present a 'journey of the soul'. Examples include John Bunyan's *The Pilgrim's Progress* and Dante's *Divine Comedy*. In these works, the authors project the action story of a physical journey onto stages in mental and spiritual development. This is also apparent, for instance, in Joseph Conrad's novel, *Heart of Darkness*, where the protagonist, Marlow, travels down the Congo River, deep into the heart of the Belgian Congo. In all these cases, the spiritual 'journey' is made possible and intuitively interpretable by the reader precisely because the literal action story is projected onto an altogether more abstract event story: conceptual/spiritual/moral change. And in so doing, the reader is able to conceptualise the conceptual/spiritual/moral change *in terms of* aspects of a physical journey.

1.2.4 Projection of non-action stories

While story, prototypically, involves the projection of action stories onto abstract events, non-action stories can also be projected. Turner proposes the conceptual metaphor: EVENTS ARE SPATIAL STORIES, which enables the projection of **non-animate stories** – stories without actors – onto otherwise abstract events, enabling their interpretation in the light of these non-action stories. For instance, a stream going downhill, under the force of gravity, or an old wall, eventually collapsing after many years of weathering, are instances of non-animate action stories; they are spatial, but have no animate actor that leads to the change in state.

To illustrate, let's first consider a case where an event – temporal change – is interpreted by projection of an **animate action story**: one with an agent. In the following, from Shakespeare's *Troilus and Cressida*, time is personified, by virtue of a variant of the EVENTS ARE ACTIONS metaphor: *Time hath, my lord, a wallet at his back, wherein he puts alms for oblivion*. In this line, time is personified: an action story, involving an actor who manipulates an object, is projected onto an otherwise agentless event – temporal change. And in this way, we understand the event in terms of animate action by an agent, who places alms into his wallet.

But time can also be conceptualised by the projection of a non-animate story, due to the metaphor EVENTS ARE SPATIAL STORIES. For instance, in *Walden*, Henry David Thoreau's reflection on simple living in a naturalistic setting, Thoreau compresses time into a single calendar year, using the four seasons to symbolise his own spiritual development. In one particularly famous excerpt, he describes time as follows: *Time is but the stream I go a-fishing in. I drink at it; but while I drink I see the sandy bottom and detect how shallow it is. Its thin current slides away, but eternity remains.* Here, time is being conceived in terms of a non-animate spatial story: time conceived in terms of a stream that flows in a stream basin, with a sandy bottom. But the flowing is not the result of an animate actor, but a consequence of the physical behaviour of water, flowing under the animating force of gravity. And in this way, time's passage, and its consequences, are being conceptualised in terms of a non-action story.

1.2.5 Creative blends

The final aspect of Turner's account of story, that I address, concerns the role of conceptual blending in the development of the more sophisticated aspects of story. While the EVENTS ARE ACTIONS conceptual metaphor provides the organising principle, conceptual blending enables the embellishment of story via often highly elaborate, creative blends.

For instance, Turner provides an analysis of a story told by the Vizier in the *1001 Arabian Nights*, a collection of south and west Asian folk tales, originally in Arabic, and arising from the Islamic Golden Age. The individual stories are framed in terms of an overarching story: King Shahryar discovers that his wife had been unfaithful. In his extreme bitterness, he has her executed. He then proceeds to marry a series of virgins, executing each one the day after the marriage night, before they can become unfaithful. The King's Vizier is tasked with procuring more virgins for the King to marry; but eventually, he can't find any more virgins. In a bid to avert further deaths of innocent women, the Vizier's daughter, Scheherazade offers herself as the King's next bride; and the Vizier reluctantly agrees. And on their wedding night, she begins to tell the King a story, but does not complete it. Anxious to find out how the story ends, the Kings postpones her execution. And so, Scheherazade begins a new story each night, for the next 1,001 nights, in a bid to bring the King to his senses.

The story that Turner analyses is the parable of the ox and the donkey, two talking animals. In the parable, the donkey provides the ox with a plan to get out of the hard farm work that the ox is normally obligated to undertake. But the consequence of the donkey's smarts is that he himself is forced to undertake the backbreaking ploughing work that the ox has been excused from. The central inference of the parable is that the donkey is too smart for his own good: he should have foreseen that his plan would backfire, as the work must be done, regardless of whether that is by the ox or another farm animal.

Turner argues that this inference involves more complex projection than conceptual metaphor alone. In point of fact, it requires the multiple-space projection provided by the conceptual blending theory (recall Chapter 20). In the conceptual integration network there are two input spaces: a source and a target. The source involves the ox and the donkey, and background assumptions about farm work. In this source space, the donkey is blind to the consequences of his plan: that he will be required to take the ox's place.

In the target space there is Scheherazade and the King. Scheherazade has assumed the place of other virgins – just as the donkey must assume the ox's place. But unlike the donkey, she is not blind to the potential risk – the threat to her life – that her plan entails. The blend arises by selective projection of different elements from each of these 'source' and 'target' input spaces. The donkey and ox, and background assumptions regarding farm work, are projected from the source space. Also projected is the donkey's blindness about the potential risk of his plan to himself. From the target input space, what gets projected is human intentionality, our ability to make plans and, specifically, Scheherazade's cognisance of the potential risk entailed by her plan – unlike the donkey, she is not blind to the risk.

The central inference, that the donkey should have seen the risk, and hence is too smart for his own good, arises from integration of these different aspects of the two input spaces. In the blend, the donkey possesses human attributes, drawn from the target input space. He makes a plan, but is blind to its outcome, drawn from the source input space. But foresight that the plan may lead to peril is projected from the target input space. When integrated in the blend, we have an inference that the donkey was blind to the outcome of his plan but, in fact, should have foreseen it. In short, the complex set of projections, modelled by conceptual blending theory, enables us to see how multiple spatial stories – the ox and the donkey engaged in farm work on the one hand, and Scheherazade attempting to avert yet more deaths of virgins on the other – are integrated in order to interpret a complex reasoning event: the self-defeating scheming engaged in by the donkey.

2 Cognitive poetics

In this section I consider the application of cognitive linguistics to the study and analysis of literature, more generally. This sub-field of study has come to be known as cognitive poetics.

Cognitive poetics in the most general terms constitutes the **science of reading** (literary texts), where 'reading' concerns the process whereby specific instances of sophisticated interpretation of literariness occur, that makes sense, personally to the reader, based in part on an analytical process invoking the context in which the interpretation takes place, background knowledge about the author, genre, historical period and so forth, what others have taken the text to mean, its status, value and aesthetic effect, and so on. It invokes ideas, theoretical constructs, and theories from cognitive linguistics, in studying this process, which is where the term 'cognitive' derives from. And it concerns literature, where 'poetics' in modern literary theory is generally taken as relating to a model or system for understanding this process of reading. In this sense, the study of reading involves neither a text alone, nor the reader alone, but rather 'the more natural process of reading when one is engaged with the other' (Stockwell 2002: 2). Hence, readings constitute the type of data that the cognitive poeticist draws upon in attempting to examine generalisations, and explain divergences, across readers and texts.

The consequence of studying this engagement by a reader, with a text, in deriving a reading, is that cognitive poetics, in essence, is concerned with what a given literary text means. And in so doing, the cognitive poeticist is in fact asking what the text does. As Stockwell (2002: 4) observes, this 'is another way of asking what it is being used for. Meaning, then, is what literature does.'

2.1 The foci of cognitive poetics

Cognitive poetics has two related foci. First, using the tools of cognitive linguistics it aims to provide an account of what an author does, in constructing a text (production), and how readers make sense of it (reception), when producing a reading. In this, cognitive poetics provides a means of analysing the stylistic and rhetorical patterns exhibited by a text, its grammatical and lexical representations, and so on, enabling a reading to arise. But, as observed by Stockwell (2002), this, alone, would amount to a stylistic analysis of a text: doing cognitive linguistic analysis, with a text substituted for naturally occurring non-literary data.

In addition, cognitive poetics also encompasses the more traditional concerns of literary criticism: it provides a means, using these theoretical and analytical tools, of studying the literary value, status and effect of a given work, as manifested in individual and collective readings. Such effects include notions such as emotional resonance, aesthetic appeal and value, and so on. A reading encompasses more than what a literary text conveys, but what is does, in short what it means, or comes to mean, in the course of producing a reading. And an important aspect of this concerns how the work, during this process, makes an individual reader feel. And these less tangible dimensions of a reading can also be studied using the tools provided by cognitive linguistics.

Second, the hallmark of the cognitive poetics perspective is that it treats literary language as lying on a continuum with everyday language. As was clear with the discussion of narrative, and the respective contributions of Talmy and Turner discussed above, the same cognitive and linguistic mechanisms apply to both. From this perspective, what is special about literature, from the perspective of cognitive poetics, is that skilled practitioners are viewed as using the everyday cognitive and linguistic mechanisms, grounded in a shared embodiment of experience, but manipulate these self-same resources to produce the extraordinary. And it is precisely because of this, that the self-same theoretical and analytic tools, developed for analysis of natural language, can be applied by cognitive poetic analysts to study convergence and divergence of readings of literary texts.

2.2 The nature of literariness

One of the things that cognitive poetics is able to do is shed light on old questions, providing new and illuminating answers. A case in point concerns the question: what makes something literary? Or in slightly different terms: what is literariness? One way of thinking about literariness is in terms of a process of **defamilarisation**, whereby the reader is estranged from the ordinary world (Stockwell 2002). This is achieved by a process of **deviance**: literary language and the literary form often deviate from the expected or ordinary use of language.

From the perspective of cognitive poetics, deviance is achieved by virtue of figure–ground organisation (Stockwell 2002). As I showed in Chapter 3, this phenomenon is central to perception. It concerns the ability to attend to a salient element in a scene against less salient background. Moreover, ordinary language exhibits a linguistic reflex of this. In similar fashion, a central design feature of literary language is that foregrounding of an element of text is achieved by drawing attention to it. And this contrasts with the relief of the remainder of the text which is thereby backgrounded. According to Stockwell, a variety of literary devices are utilised in order to provide this foregrounding function. These include devices such as repetition, unusual naming, innovative descriptions, creative syntactic ordering, puns, rhyme, alliteration, metrical emphasis and creative uses of metaphor, amongst others (Stockwell 2002).

One way in which figure–ground organisation is achieved in literature is via the dominant feature – a feature of a literary text that provides the organisational structure for the text. Stockwell (2002: 14) describes this as a '"super-foregrounded" figure around which the rest of the text is dynamically organised'. For instance, this organisational principle might be the fourteen lines and metrical pattern of a sonnet, alliteration in Anglo-Saxon poetry, the use of imagism in the poetry of T. S. Eliot, the absurd situations in the novel *Catch 22* or even the silences in the plays of Harold Pinter. These devices provide a focus of readerly attention, which provide the signature for a particular literary work, and the primary means for driving a reading of a given text.

More generally, literary texts manifest figure–ground organisation in other ways, drawing the reader's attention to other aspects of the text. One example of this is the notion of a character in narrative fiction. Stockwell observes that characters constitute distinct foci of attention, in such texts, with their proper names serving as a means of bounding the character. Names such as Beowulf, Hamlet or even Winnie the Pooh serve as shorthand linguistic devices to point to the characterisation, whereby the various psychological and ideational characteristics emerge and develop, as outlined in Talmy's taxonomy for narrative discussed earlier. And a character is set against the ground of the settings in the story world.

But the setting itself can also come to be foregrounded. A salient example includes Egdon Heath in Thomas Hardy's novel *The Return of the Native*. Here, the heath is attributed various psychological traits and attributes which mean that it comes to be foregrounded and takes on a salient role at key points in the novel.

2.3 Prototypicality in literature

Another way in which cognitive poetics enhances literary description and analysis relates to the issue of prototypicality, and specifically: what makes something more, or less, literary. This question, of course, is itself related to the one I addressed in the previous section: what is literariness? Or put another way: what type of discourse is literature?

In a seminal study, Gerard Steen (1999) developed a classification system for discourse in general, and literature in particular, using prototype theory. Steen proposes seven attributes for classifying discourse: domain, medium, content, form, function, discourse type and language. For instance, an advert, in terms of domain, concerns business and commerce; its medium can be written, as in the printed press, spoken, as in a radio advert, or multimodal, as in a TV advert. Its content is extremely free, and varied, depending on what is being advertised; and similarly, advert forms are also free. Its function is to persuade consumers; and its discourse type can be narrative, argumentative, discursive or expository. Finally, the language used can be varied, often including a mix of formal and colloquial language, and it may include a professional register.

With these attributes in mind, Steen focuses his attention on basic-level categories in terms of classifying discourse: recall from Chapter 11 that prototype theory makes a distinction between categories at the superordinate, basic and subordinate levels. Moreover, it is the basic level that is most salient. Literature is itself the superordinate category, which subsumes basic-level categories such as novel, poem, play, short story and so on. And each basic-level category features further subordinate categories. In terms of the basic level, novel subordinate categories might include westerns, spy novel, sci-fi and so on.

Steen argues that the more abstract the level, the fewer values are specified for particular attributes. For instance, the superordinate level 'literature' might be characterised by the value 'artistic', for the attribute domain; in terms of the attribute content, the value specified is 'fictional' and in terms of the attribute function, the value is 'positively affective'. But Steen suggests that no values would be specified for the remaining four attributes: form, type, medium and language. What this provides is a means of examining similarities and differences between different **modes of writing**.

Nevertheless, a number of caveats are in order. Identifying prototypicality is not necessarily the same as establishing the best exemplar of a particular basic or subordinate category (De Geest and van Gorp 1999). After all, the best exemplars of a given mode of writing are, perhaps inevitably, exceptional, and hence not prototypical, in terms of attributes they share. And this recalls the discussion of the various manifestations of a prototype in Chapter 11. As noted there, a prototype can manifest itself in a number of ways, depending on how a category is being defined. A paragon, for instance, might be an ideal that serves as a reference point for a particular category.

But even this notion can be problematic. While *Hard Times* or *Bleak House* might be paragons of the nineteenth-century novel, they may not count as such if we consider novels of the post-modern period. For instance, David Foster Wallace's *Infinite Jest* might, for some, count as a prototypical example of the post-modern novel, with its unconventional narrative structure and experimental use of footnotes. And this relates to an important observation made by Ray Gibbs (2003: 38): 'prototypes are not abstract, pre-existing conceptual structures, but are better understood as products of meaning construal'. This is particularly true of literary texts, which are not timeless entities: they are assessed and judged both in terms of their attributes – the taxonomy provided by Steen being one way of classifying them – but also in terms of the way they are evaluated by readers. And this involves interpreting in terms of cultural and historical norms, values and models (Freeman 2007). What is valued in one era, may not hold in the next. Hence, prototypicality, especially as it relates to literature, should probably be considered as a dynamic, in nature (Freeman 2007).

2.4 Cognitive poetic applications

Cognitive linguistic theories have been widely adopted and applied in cognitive poetic analyses of literature (e.g. Gavins and Steen 2003; Stockwell 2002). In this section I briefly consider two of the most influential of these, and the way they have been applied to two different modes of writing: conceptual metaphor theory and its application to poetry, and conceptual blending theory and its application to the graphic novel. Hence, this section is meant to be illustrative.

2.4.1 Conceptual metaphor

In their seminal book, *More Than Cool Reason*, first published in 1989, George Lakoff and Mark Turner do more than simply apply conceptual metaphor theory to poetry. They develop a theory of conceptual poetic analysis, which was instrumental in the emergence of the field of cognitive poetics. The central animating idea of their thesis is that 'Poetic thought uses the mechanisms of everyday thought, but it extends them, elaborates them, and combines them in ways that go beyond the ordinary' (Lakoff and Turner 1989: 67).

Lakoff and Turner make the case that the conceptual power of poetic metaphor arises from the fact that conceptual metaphors have internal structure. And this internal structure enables the accomplished to use these everyday conceptual structures to produce the extraordinary. They highlight four main ways in which any given conceptual metaphor exhibits internal structure. Conceptual metaphors, recall from Chapter 12, consist of a series of mappings, establishing cognitive links between distinct concepts or **slots** across a source and target domains. For instance, in the LIFE IS A JOURNEY conceptual metaphor, a set of slots from the source JOURNEY domain are systematically mapped onto slots in the target domain of LIFE.

A further consequence is that this series of mapping establishes metaphoric **entailments**. For instance, in the source domain, the relation holding between a traveller and a destination in the source domain is that the traveller reaches or achieves the destination. And analogously, this entails a relation holding between a person and a purpose in the target life domain such that the person reaches or achieves the purpose.

Third, conceptual metaphors involve the projection of **properties** from the source to target domain. For example, particular strengths and weaknesses of an individual traveller will impact on how the journey being undertaken will be conducted. And analogously, these properties are projected to the target domain: in the domain of LIFE, a person can inherit strengths and weaknesses from the source domain, which impact how they conduct aspects of their life.

And finally, **inferences** that arise in the source domain can be projected to the target domain. For example, in the domain of travel, if a car comes to a dead end, it cannot carry on. And similarly, in the domain of life, if a person reaches an 'obstacle' in their life, this presents a difficulty in terms of achieving a particular life goal.

These aspects of a conceptual metaphor provide complex internal structure that a poet takes advantage of, reusing conceptual resources to great effect in poetry. Lakoff and Turner identify four key principles whereby accomplished poets make use of this internal complexity of conceptual metaphors in producing poetic metaphor.

The first concerns novel extensions of conventional conceptual metaphors. Lakoff and Turner observe that there's a highly conventional metaphor DEATH IS SLEEP. This enables us to understand certain aspects of death, such as the horizontal position of the deceased, inactivity, an inability to perceive and so on, in terms of death. But in *Hamlet*, Shakespeare extends the metaphor. In one of his soliloquys Hamlet says:

> To sleep? Perchance to dream! Ay, there's the rub.
> For in that sleep of death what dreams may come.

Here, the conceptual metaphor is extended in a novel way, to include the possibility of dreaming. And in so doing, a disanalogy is set up between sleep and death: after all, death is dreamless sleep, hence Hamlet's refrain: 'Ay, there's the rub.' But in order to entertain the possibility of death as encompassing dreaming, an additional slot has been created in the target domain: the slot onto which dreaming and dreams from the source domain is being mapped. This, then, constitutes a novel extension of the metaphor.

The second principle involves the **elaboration** of conventional, conceptual metaphors. Here, rather than a new slot being added to the target domain, an existing slot is filled in, but in an unusual way. For instance, take the conventional metaphor DEATH IS DEPARTURE. Lakoff and Turner discuss the poetry of Roman poet Horace, who describes death as the 'external exile of the raft.' In this case, an existing slot for death, in terms of departure, is elaborated in terms of a specific form of departure, namely banishment. And the manner of the banishment is by travel away on a raft. As Lakoff and Turner observe, this provides a rather interesting elaboration. Banishment is both permanent, like death, but also unwanted. Moreover, travel on a raft is slow, laborious and often aimless – a raft is at the mercy of the water currents that carry it along – it doesn't have a clear destination. Moreover, travel by raft can be uncomfortable – the traveller is at the behest of the elements. In short, the elaboration concerns a departure that is permanent, and one that is unenviable.

The third principle involves commentary on the boundaries of conceptual metaphors, revealing where they break down. And in so doing, the poet can, paradoxically, use an everyday conceptual metaphor, with its point of breakdown in order to powerfully make a point about the target domain in question. In short, the 'major poetic point can be the inadequacy of the conventional metaphor' (Lakoff and Turner 1989: 69).

Take the following excerpt from another Roman poet, Catullus:

Suns can set and return again
But when our brief light goes out
There's one perpetual night to be slept through.

As Lakoff and Turner note, this excerpt relies on the conceptual metaphor A LIFETIME IS A DAY to be understood. However, the poetic lines point to its breakdown in the target domain – while a day is part of a recurring cycle: day follows night and so on – in the target domain, there is nothing cyclical about life and death: once dead, humans remain dead.

The final principle relates to **composability**: the combination, in poetry, of conventional metaphors to form highly creative metaphoric blends. And as Lakoff and Turner (1989: 70) observe, this is, perhaps, 'the most powerful of all ways in which poetic thought goes beyond the ordinary way we use conventional metaphoric thought'. Consider the following quatrain from a Shakespearean sonnet:

In me thou seest the twilight of such day
As after sunset fadeth in the west,
Which by and by black night doth take away,
Death's second self that seals up all in rest.

Lakoff and Turner argue that at least five conventional conceptual metaphors are in play here: LIGHT IS SUBSTANCE, EVENTS ARE ACTIONS, LIFE IS A PRECIOUS POSSESSION, A LIFETIME IS A DAY and LIFE IS LIGHT. These conceptual metaphors work together to produce a creative blend in which night is personified as an agent who takes away a precious possession – life – metaphorically understood as light. In short, the creativity arises from integrating the conceptual metaphors, rather than merely words. And to understand the poetic lines, we must be able to activate and integrate these conventional conceptual resources, in the way prompted by their novel configuration in the poem.

2.4.2 Conceptual blending

In this section I briefly consider a remarkable (1998) study by Todd Oakley, which complements other aspects of the discussion in this chapter. Oakley uses conceptual blending theory to study Art Spiegelman's classic and Pulitzer prize-winning graphic novel: *Maus: A Survivor's Tale*.

In *Maus*, Spiegelman is depicted as interviewing his father, Vladek, in the modern day – the setting is a park in New York – about his experiences as a Jew and a holocaust survivor during the 1930s and up until the end of the Second World War. Some of the main protagonists in the narrative include Vladek himself, as well as his wife, Anja – Art's mother, who committed suicide some years before the interview – as well as Art's brother, Richieu, who died in Hungary, in 1942, six years before Art was born. Richieu, the brother Art never met, is poignantly referred to as Art's ghost-brother. One striking aspect of the book is its portrayal of different races in terms of animals: Jews are depicted as mice, Germans as cats and non-Jewish Poles as pigs.

One aspect of Oakley's analysis, which relates both to my earlier discussion of narrative, as well as cognitive poetic analysis, concerns the way the narrative itself is structured. In order to conduct his blending analysis, Oakley draws on the work of McNeill (1992), who developed a framework for narrative analysis in the context of studying gesture – I'll consider aspects of McNeill's work in the next chapter. In particular, and as we saw in Talmy's taxonomy of narrative discussed earlier, storytelling involves far more than simply the presentation and the keeping track of a sequence of events. It involves complex and interweaving shifts in time, space and perspective, as well as, more often than not, an interplay between narrator, the events being depicted and even the audience.

In order to model this, Oakley follows McNeill in using a tripartite scheme for narrative structure. According to Oakley, *Maus* makes use of three levels: a **narrative level**, a **metanarrative level** and a **paranarrative level**. Each of these different levels within the narrative involve complex mental space construction, establishing complex conceptual blends. And these blends enable the dynamic construction of meaning, and interpretation on the part of readers of the book. The narrative level concerns the narrated events, actions, characters and settings. In contrast, the metanarrative level concerns reference by the book's author about the process of realising the story, both verbally and pictorially. And the paranarrative level involves the narrator stepping out of his or her official role, 'unconstrained by the duties and voice of the official narrator' (Oakley 1998: 328). In *Maus*, the paranarrative level manifests itself by several characters temporally stepping out of their roles in the narrative, and commenting on life in the Spiegelman household.

Oakley argues that complex integration networks arise for each of these narrative 'levels'. Moreover, to develop a reading of the story, not only must each of these three integration networks be constructed, they become interconnected as the reader engages with the verbal and pictorial elements of the novel.

At the narrative level, the integration network minimally includes two input spaces and a blended space. Input 1 is the EVENT space, specifying the historical events being narrated. These include Vladek, as well as his wife Anja, and Art's 'ghost-brother' Richieu. Input 2 is the STORYTELLING space. Here Vladek and Art have the roles of narrator and auditor (recipient of the narrative), respectively. The setting for this space is Rego Park, in New York in the 1980s. Elements from each space are selectively projected to the blend: the SURVIVORS TALE. In the blend, Vladek is both the protagonist and the narrator, which provides the blended space with its unique logic: Vladek exists simultaneously in wartime Poland as well as 1980s New York.

At the metanarrative level, the BLENDED SURVIVORS tale space is recruited as input 1. All of its content is thereby recruited en masse to the metanarrative integration network. As the novel is a textual artefact, the second input is an AUTHOR space, which provides the organising frame for the blend. In the blended space, elements from both input spaces are compressed in a single artefact, the book, creating a BOOK blend. In this space, and unlike the survivor's tale blend, Art has the role of author, rather than auditor. Moreover, the temporal dimension of this space is somewhat different too, extending from 1981 to 1989, which was the period it took Spiegelman to complete the book. Moreover, at one point in the book a character, Francois, asks Art what he is doing. He replies: 'Trying to draw you.' Here, Art is conveying aspects of the challenge in constructing the book. And this is possible because Art simultaneously occupies both the auditor role, in the narrative SURVIVOR'S TALE blend, and the author role in the metanarrative BOOK blend.

Finally, at the paranarrative level, a third integration network emerges. This concerns discussion, in the narrative, of the Spiegelman household, and particularly the familial relations that hold between Art and his father, Vladek, and Vladek's second wife, Mala, who is Art's stepmother. Input 1 for the integration network is the SURVIVOR'S TALE, while input 2, which provides the organisational frame, is that of FAMILY RELATIONS. In the blended SPIEGELMAN space, Art is no longer an only child. Here, his 'ghost-brother', Richieu, who in the SURVIVOR'S TALE blend died years ago, before Art was born, can fill the role of brother. And in this way, Art can relate to, and even directly engage with, his 'ghost-brother'.

What this brief overview of aspects of Oakley's research reveals is this. Conceptual blending is a powerful analytic tool for examining some of the key elements involved in narrative – and in this, it underscores many of the points emerging from my earlier discussion of Talmy's and Turner's works. However, it also shows how blending theory can be applied to multimodal narrative, to provide a detailed and highly insightful cognitive poetic analysis of the meaning achieved, in and through graphic narrative.

SUMMARY

In this chapter I explored cognitive linguistic approaches to the analysis of **text** – written or spoken – and especially literary texts. I did so by examining approaches to **narrative** and **literary analysis**. In the first part of the chapter I focused on two influential approaches to the study of narrative, by cognitive linguists. Talmy argues for a narrative system in human cognition: a general theory of the principles that constrain and, indeed, make narrative possible. I reviewed the principles for this that are held to apply both to the **producers** (e.g. authors) of a narrative, as well as the **recipients** (e.g. readers) when interpreting narratives. This system enables mental experiences to become interconnected, giving rise to a single overall pattern, experienced through time, enabling both the production of and interpretation of an integrated narrative. For Talmy, a narrative constitutes a coherent **ideational structure** – ideational having to do with a series of interconnected ideas – subserved by universal constraints and mental abilities. And this narrative system underpins all manifestations of narrative, no matter the medium or the genre of production. I then consider Turner's contention that **story** is something central to the way we think. In particular, he focuses on the projection of image schemas, via conceptual metaphors, enabling the construction of stories. And he also considers the role of conceptual blending in creating complex stories. I then provided an overview of **cognitive poetics**. This constitutes the **science of reading** (literary texts), where 'reading' concerns the process whereby specific instances of sophisticated interpretation of **literariness** occur, that makes sense, personally to the reader, based in part on an analytical process invoking the context in which the interpretation takes place, background knowledge about the author, genre, historical period and so forth, what others have taken the text to mean, its status, value and aesthetic effect, and so on. It invokes ideas, theoretical constructs, and theories from cognitive linguistics, in studying this process, which is where the term 'cognitive' derives from. And it concerns literature, where 'poetics' in modern literary theory is generally taken as relating to a model or system for understanding this process of reading. Hence, readings constitute the type of data that the cognitive poeticist draws upon in attempting to examine generalisations, and explain divergences, across readers and texts. The consequence of studying this engagement by a reader, with a text, in deriving a reading, is that cognitive poetics, in essence, is concerned with what a given literary text means. And in so doing, the cognitive poeticist is in fact asking what the text does.

FURTHER READING

The relationship between the study of text, literature and cognitive science

- **Burke and Troscianko (2017)**. An important recent collection of chapters, by pioneers in the field, who show how the science of literature can be viewed as a branch of cognitive science.
- **Hogan (2003)**. An accessible overview of what cognitive science can offer the study of the arts, and especially literature.
- **Semino and Culpeper (2002)**. A seminal collected volume bringing together new insights into the study of cognitive stylistics.
- **Turner (1991)**. A seminal study applying key insights from cognitive linguistics to the study of literature.
- **Zunshine (2012)**. A highly accessible overview of the utility of cognitive science for understanding contemporary arts including literature. The book shows how theory of mind can be used to generate more effective readings of novels, cinema, plays and even reality TV.

Cognitive linguistics approaches to narrative

- **Dancygier (2011)**. An exemplary study, deploying conceptual blending theory, into the linguistic and conceptual underpinnings of the interpretation of stories.
- **Gavins (2007)**. An introductory textbook to text world theory. This is an innovative interdisciplinary approach to text and language processing, based on seminal ideas by the late Paul Werth. Gavins is a leading proponent of the approach which integrates ideas from cognitive and functional linguistics, and has elements in common with mental spaces theory.
- **Talmy (2000b)**. The chapter entitled 'A cognitive framework for narrative structure' provides the basis for much of my discussion of narrative in this chapter. It provides the basis for a cognitive linguistics study of narrative.
- **Tobin (2018)**. A compelling book applying blending theory to elements of surprise in narrative fiction.
- **Turner (1996)**. A seminal study by one of the pioneers in cognitive poetics. Applies key elements of cognitive linguistics approaches to the projective aspects of imagination to narrative fiction.

Cognitive poetics

- **Brône and Vandaele (2009)**. A useful collected volume with chapters by some of the leading figures in the field.
- **Gavins and Steen (2003)**. A companion volume to Stockwell (2002). In this volume, specially commissioned introductory chapters, by leading experts exemplify key ideas in cognitive poetics.

- **Lakoff and Turner (1989)**. A seminal application of conceptual metaphor theory to literary metaphor, by two of the pioneers in conceptual metaphor theory.
- **Stockwell (2002)**. This textbook remains the standard introductory reference work in the field.

DISCUSSION QUESTIONS

1. What are the main claims associated with Talmy's and Turner's approaches to narrative, respectively?
2. What is the nature of cognitive poetics? What is it for and how does it function in terms of analysing literariness?

30

Gesture and sign language

In this chapter I examine cognitive linguistics approaches to gesture and sign language. Gesture here refers to the use of hand, arm, head and torso movements, as well as facial expressions, that are co-timed with language. Adam Kendon (2004), a leading proponent of gesture studies, claims that gesture constitutes 'visible action as utterance': gestures complement and often supplement information conveyed via the spoken medium, adding meaning not otherwise apparent. And in this sense, gestures form an integral part of any given utterance. Over the last couple of decades, advances in the study of gesture, notably by researchers such as Calbris (1985, 1990), Duncan (2002), Kendon (1980, 1988, 2004), Kita (2000) and McNeill (1985, 1992, 2005), have led to the growing awareness that 'gestures and speech should be viewed within a unified conceptual framework as aspects of a single underlying process' (McNeill 1992: 23; see also McNeill 2005). Co-speech gestures are highly prevalent during language use, and yet are often unconscious (Casasanto 2013). Moreover, they cannot be straightforwardly suppressed: the congenitally blind, for instance, gesture when they speak, which lends credence to the view that speech and gesture form part of a combined communicative system; moreover, speakers continue to gesture even when their interlocutor cannot see the gestures, for instance, during telephone conversations; this suggests that gesture may have a deep evolutionary basis in terms of facilitating language use (e.g. Arbib 2012; Corballis 2003). Moreover, if subjects are required to suppress their gestures during language use, their speech is in fact less fluent, with speakers finding words more easily when using gesture (Lucero et al. 2014).

In terms of sign language, the chapter also considers recent research, which has applied theoretical constructs from cognitive linguistics to better analyse the nature and organisation of sign languages. According to the twenty-first edition of *Ethnologue* (the leading encyclopaedia of the world's languages), there are 142 recognised sign languages in the world – although this is likely to be a highly conservative estimate (N. Evans and Levinson 2009; S. Wilcox 2007).

Sign languages – for instance, British Sign Language (BSL) or American Sign Language (ASL) – are fully-fledged languages used by communities of deaf language users. They fulfil the same range of symbolic and interactive functions of a spoken language – recall the discussion of these linguistic functions in Chapter 1. Importantly, however, their lexical, grammatical and phonological systems make use of the manual–visual, rather than the oral–auditory medium. Hence, while sign languages are languages, and share many commonalities with spoken languages, they are qualitatively different in a range of ways: BSL and ASL, for instance, are not based on English, nor are they mutually intelligible, a situation which contrasts with the English spoken, for instance, in the British Isles and North America, which is (more or less) mutually intelligible. Sign languages exhibit complex phonological, grammatical and semantic systems enabling sign language users to effectively communicate with one another and even produce sign language poetry (P. Wilcox 2000). That said, the recognition of sign languages as 'languages' is a relatively recent phenomenon; until the work of Stokoe (1960) – and activism leading to the growing recognition of sign languages from the 1970s on, leading to official recognition of signing as a minority language in many countries, and the use of sign languages in education for the deaf – there was significant stigma associated with signing by the deaf.

Educators, and even linguists, ignorant of the complexity of sign languages, often disregarded them as potentially language-like. In the late eighteenth century, Abbe de L'Epée established a school in Europe for deaf children. But opponents argued, vehemently, for a system not of signing, but rather, of oral education (S. Wilcox 2004). In the nineteenth century, a conference held in Milan, in 1880, sought to establish the principles of educating the deaf using spoken language. The President of the Milan conference, Giulio Tarra, declared that

> Gesture is not the true language of man . . . The fantastic language of signs exalts the senses and ferments the passions. Whereas speech elevates the mind much more naturally, with calm and truth and avoids the danger of exaggerating the sentiment expressed and provoking harmful mental impressions. (Lane 1984: 393–4)

This prejudice and ignorance persisted well into the twentieth century. For instance, a commentator as eminent as the influential American linguist, Edward Sapir, writing in 1921, 'dismissed sign languages as mere substitutes for speech' (S. Wilcox 2007: 1113). And even as late as 1957, Helmer Myklebust wrote that:

> The manual language used by the deaf is an ideographic language . . . It is more pictorial, less symbolic . . . Ideographic language systems, in comparison with verbal systems, lack precision, subtlety, and flexibility . . . The manual sign language must be viewed as inferior to the verbal as a language. (Myklebust 1957: 241–2)

Moreover, even Charles Hockett's (1960) influential design features for language failed to account for sign languages – two and possibly three of Hockett's design features are not applicable to manual communication systems (Evans 2014). As we shall see, in this chapter, as we review cognitive linguistic approaches, these representative views of the use of gesture, and signs, in linguistic communication, are not only misplaced, but erroneous.

1 The nature of gesture

This section provides an orientation to the range of studies presented in this chapter, by providing an overview of the nature of gesture. It does so by providing a classification of gesture, as well as commenting on why we gesture in the first place.

1.1 Classifying gestures

In a 1988 paper, Adam Kendon provided a seminal classification of gestures, later reformulated, and dubbed **Kendon's continuum**, by David McNeill (1992). The continuum relates to the degree of conventionalisation associated with the type of gesture, and is depicted in Figure 30.1.

McNeill observes that as we move across the continuum, from left to right, the presence of speech becomes less obligatory, such that gestured signs – as used in sign languages, do not require spoken language at all. Moreover, the continuum also correlates with language-like, conventionalised properties, with gesticulation being least language-like, while gestured signs are completely language-like. While we will consider gestured signs, later in the chapter, here I briefly review the other sorts of gestures that populate Kendon's continuum, based on McNeill (1992).

An **emblem** is a type of gesture that is highly conventionalised, and has a stable meaning. Moreover, it can be understood without the support of spoken language. Examples of an emblem include 'waving', to signal goodbye, and the 'thumbs up' gesture, denoting approval. **Pantomime** may be less readily interpretable, without spoken support, and involves gestured performance, that may vary across contexts, and even in the same context, such as a game of charades, for instance. The least conventionalised type of gesture, and the one that may be ambiguous without verbal support, is **gesticulation**. Gestures of this kind most often make use of hands and arms, accompanying speech, and involve spontaneous movements, that may be highly idiosyncratic.

In his research, McNeill provides a taxonomy of different types of gesticulation. He divides gesticulated gestures into **imagistic** versus **non-imagistic**. Imagistic gestures provide an image, co-occurring with speech, that depict how

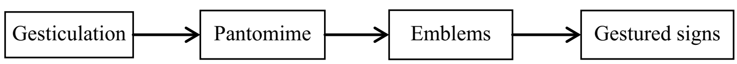

Figure 30.1 Kendon's continuum

an object or entity appears, or else a depiction of an action or activity, such as a pattern of movement. McNeill further divides imagistic gestures into those that he classifies as **iconic** versus **metaphoric**.

An iconic gesture provides a **representation** of either the form of an entity or the manner of execution of an action, which iconically represents the concrete scene being depicted. For instance, an arc traced in the air might depict a rainbow. But as gesticulation can be ambiguous without verbal support, an arc traced in the air could, indeed, represent something else, such as the hump of a camel, or even the trajectory of a football as it travels through the air (Casasanto 2013).

Metaphoric gestures are also representational. But in contrast to the iconic variety, the representation employs a concrete source to indicate a more abstract target idea. For instance, tracing an arc in the air might denote the rise and fall of civilisation (Casasanto 2013). McNeill provides the following example, from his own research, of a metaphoric gesture. A speaker was narrating a cartoon that he'd seen. As he utters the following: 'It was Sylvester and Tweety cartoon' (McNeill 1992: 14), the speaker held up both hands, open, with the palms facing one another. McNeill argues that this gesticulated gesture represents 'the idea of a genre . . . as a bounded container' (ibid.: 14). In short, a film genre is being metaphorically represented, by the gesture, as a container.

In contrast to imagistic gestures, which are representational, the function of non-imagistic gestures is **referential** – they point to, or else, draw attention, to something (Cienki 2013). McNeill identifies two types of non-imagistic gesture. The first is what he terms **deictics**. These gestures refer to objects or locations, typically in physical space, and often accompany a spoken utterance. For instance, when selecting an item of food in a pastry shop, explaining that you'd like a specific sausage roll may often be accompanied by a pointing gesture, a deictic, to indicate exactly which pastry you'd like to purchase.

The second type is termed **beat** gestures. These constitute simple, rhythmic motions, made with the hands or fingers. They appear to be used to add emphasis to what is being uttered, or else might express the speaker's emotional state. For instance, Casasanto (2013: 373) observes that '[f]ast staccato beats may show agitation: precise beats may show determination or sincerity: large forceful beats may show either frustration or enthusiasm'. See Table 30.1 for a summary of these different gesture types.

McNeill also identifies a third class of gesticulations. This type can be either imagistic or non-imagistic. But in contrast to the gestures identified in Table 30.1, the function of this class is **discursive**: these gestures facilitate, in

Table 30.1 Types of gesticulations (adapted from McNeill 1992)

Imagistic gestures (function: representational)	Non-imagistic gestures (function: referential)
Iconic gestures	Deictic gestures
Metaphoric gestures	Beat gestures

different ways, the flow of discourse. The first of these is termed **cohesives**, which may be imagistic gestures or deictics. These are gestures that serve to 'tie together thematically related but temporally separated parts of the discourse' (McNeill 1992: 16). And the second, McNeill dubs **butterworths**, so-named after the British psychologist Brian Butterworth. Butterworths are gestures produced when a speaker attempts to recall a word or verbal expression.

Subsequent research has expanded or built upon McNeill's classification of gestures in various ways (e.g. Kendon 2004; Gullberg 2006; Müller 1998a, 1998b). And a number of researchers take a more inclusive view of what counts as the focus of gesture research (see, S. Wilcox 2007, for instance) – as we've seen, McNeill's taxonomy is primarily focused on the most idiosyncratic aspect of co-verbal gesture – gesticulation.

1.2 Why we gesture

An important question that has exercised gesture researchers concerns why we gesture. After all, and as noted earlier, suppression of gesture leads to greater disfluency in spoken language, and we appear to gesture even when no one is co-located to witness the gesture (e.g. during phone conversations). One important reason for gesturing appears to be that gestures enable speakers to retrieve linguistic expressions (e.g. words) more easily, especially words with a spatial meaning (Casasanto 2013).

In addition, and as noted by a number of gesture researchers, gestures supplement the meaning associated with verbal utterances. This is achieved in two ways. The first is known as **matching**. Imagine a speaker is describing a scene in which a waiter, in a restaurant, trips, while holding a tray, spilling the contents over a customer. A gesture depicting the act of holding an imaginary tray, which then slips from the speaker's hand, matches the verbal description. This constitutes a match between the spoken utterance and the gesture. But what the gesture achieves is to provide a visual depiction, which enhances the verbal description, by providing **multimodal support** for the message being conveyed.

In addition, gestures can provide what is termed a **mismatch** – in the sense that the gesture provides information not available in the verbal description. For instance, if someone is offered a glass of wine, they might respond: 'Yes, please', but use a gesture involving the thumb and forefinger parallel, just a couple of millimetres apart, to indicate just a small amount of wine. In this case, the gesture is providing supplementary information, indicating the amount of wine required, that is not available from the spoken response.

In important research, the psychologist Susan Goldin-Meadow (2003) has explored the role of gesture in thinking. Goldin-Meadow argues that gestures serve important cognitive functions for the individual speaker, over and above their communicative impact on the listener. It appears that gestures enable language users to more effectively process certain types of information, conveyed in speech, such as spatial and motoric details of a scene, enabling more effective storage of this type of information in memory. Moreover, given that gesture encodes information in a different channel – the visual – compared to spoken language, it provides a type of multimodal support for spoken language that is particularly effective in learning contexts, such as classroom settings.

In essence, speech and gesture appear to form a unified communicative signal. The suppression of gesture has a deleterious effect on the spoken signal. McNeill (1992) frames the co-expressive nature of speech and gesture in terms of a dialectic relationship: an utterance, he proposes, unfolds from what he terms a **growth point** (McNeill e.g. 2005, 2013). This growth point involves a visual dimension, achieved by gesture, while the linguistic categorical elements are conveyed via spoken language. But both dimensions are required to fully realise the intended speaker meaning conveyed by the utterance.

2 Gestural studies in cognitive linguistics

In this section I provide an overview of some of the representative research on gesture, within cognitive linguistics. What this overview reveals is the way in which many of the key theoretical constructs from the cognitive linguistic literature have been applied to better understand the nature of gesture in communication, and in thought. Moreover, the findings surveyed below, making use of a non-verbal form of communication – namely gesture – provides additional, and converging, evidence for the psychological reality of the theoretical constructs (e.g. image schemas, conceptual metaphor, mental spaces and so on) posited by cognitive linguists.

2.1 Image schemas

Gesture research, in cognitive linguistics, has focused both on the **reception** as well as the **production** of image schemas in co-verbal gestures. Reception concerns the way in which language users make use of their knowledge of image schemas to interpret the gestures made by speakers during ongoing discourse.

In one study, Alan Cienki (2005), a leading cognitive linguist and gesture researcher, examined the reception of image schemas in the comprehension of gestures. Subjects viewed around forty video clips of people making use of gestures as they spoke. The subjects were then shown six image schemas, plus a written description of the schema. Half the subjects viewed the video clips without sound and half with sound. Each group was then required to identify the gesture according to the set of six image schemas provided, plus a designation of 'other', if they considered there to be no match between a given gesture and an image schema. Cienki found reliable agreement, across subjects in both conditions, as to which image schemas best characterised each videoed gesture.

In terms of production, a body of work demonstrates the role of image schemas in providing the motivation for many of the gestures that language users deploy during speech. For instance, research on co-verbal gestures in German found that the CYCLE image schema played a role in motivating a related set of gestures, for instance, the lax hand performing a rotational motion at the wrist (Ladewig 2011). Williams (2008), in his research on time-reckoning, found that the PATH image schema underpinned a range of co-verbal dynamic tracing gestures. And Mittelberg (2010) has provided evidence that a range of other sorts of geometric imagery, motivated by iconic representation of physical referents, gives rise to geometric gestures. Overall, these sets of findings provide evidence both for the psychological reality of image schemas, and their role in enabling language users to both interpret and produce gestures.

2.2 Conceptual metaphor

Following McNeill's (1992) identification of metaphoric gestures, a significant amount of research, within cognitive linguistics, has examined the role of conceptual metaphor in motivating a variety of different sorts of gestures.

In his research, Cienki (1998b, 2008) has found that conceptual metaphors can appear in language (but not gesture), in gesture (but not language), and simultaneously in both language and gesture. For instance, a speaker can make use of a colour metaphor, for example *I'm feeling blue*, which has no gestural counterpart – gesture makes use of the medium of space, and hence there is no analogue for colour in the manual–gestural medium. Alternatively, Cienki has found that gesture can reify abstract concepts, such as occupying different locations in physical space. For instance, when discussing distinct ideas, a speaker might use their hands to indicate or place divergent ideas in different spatial locations, indicating their conceptual separation by virtue of physical separation in space. In this way, the abstract ideas are represented metaphorically by gestures alone. He also found evidence that both language and gesture can provide a match in terms of metaphors used. One example concerns considering two competing options, by using the metaphor of *weighing up* the ideas. While the verbal expression might make use of the conceptual metaphor CHOOSING BETWEEN OPTIONS IS WEIGHING, the co-verbal gesture deployed involves a gesture with the two hands flat and palm up, much like two parts of a weighing scale moving up and down (Cienki 2010).

Finally, Cienki has also found that speech and gesture can make use of divergent metaphors, for instance making use of two distinct source domains, to identify the same target domain. For example, in one study, Cienki (2008) found that when a subject was discussing the moral distinction between wrong versus right, and using the colour metaphor black versus white, the accompanying gesture made use of a different metaphoric source. The speaker made a gesture in which her right hand was tense and flat, in a vertical position, which was then placed against the palm of the left hand, held palm up, and in a horizontal position. Cienki argues that this gesture metaphorically construes the same division, not in terms of colour, but rather, in terms of divisions in physical space. In short, the metaphoric gesture represents the moral distinction metaphorically in terms of physical division, while in speech, it is represented metaphorically in terms of a colour opposition.

Overall, what these findings provide evidence for is the role of conceptual metaphor in both spoken language and gesture. Moreover, it reveals the complementary and, indeed, supplementary nature of gesture, in contributing meaning to the utterance. Gestures exhibit matching and mismatching, in terms of the metaphoric information they can signal, and thereby contribute meaning to the communicative signal.

2.3 Conceptual metonymy

Cienki and Müller (2006), in their work, have found that conceptual metonymy is foundational for both representational and referential uses of gesture. For instance, in terms of referential gestures, speakers of English as well as other European languages have been observed to point to different regions of space when introducing a new idea in spoken language. Moreover, speakers point to a different region of space when referring back, again in speech, to a previously mentioned idea. Cienki (2013) observes that this type of deictic gesturing uses space as a visual index in order to refer to specific ideas. And in keeping with much of the research findings in the cognitive linguistics literature, this use of metonymy involves metaphor too. An abstract idea is reified, metaphorically, as a space, which can then, metonymically, be pointed to: a distinct location in gestured space stands for a distinct idea.

In terms of representational gestures, a particularly ubiquitous gesture type involves the metonymy PART FOR WHOLE. Metonymic gestures often depict part of an object, or an activity, which thereby represents the entire object or activity. One such type of representational gesture has been dubbed **re-enactment** (Cienki 2013). For instance, one observed gesture involved the gestured re-enactment of a writing scene a speaker was describing. The speaker used their hand as if holding a pen against paper. But the gesture re-enacted just part of the scene, the elements gestured standing, metonymically, for the entire writing scene.

Another common example of a metonymic gesture is dubbed **tracing** (Cienki 2013). For instance, Müller (1998a) reports gestured tracing of physical entities, such as part of the three dimensional form of a bowl being described by a German speaker. Again, the gestured tracing was partial, with the part traced standing for the entire object. Similarly, metaphoric metonymies can be depicted by tracing. When a German speaker described *eine runde Gesichte*, a complete, literally, a 'round', story, the speaker used a tracing gesture to depict the story's 'shape'. As before, this metonymic gesture makes use of a PART FOR WHOLE representation, and has a metaphoric basis.

2.4 Mental spaces and blending

Cognitive linguists have identified the invocation of the conceptual integration of mental spaces in the use of iconic gestures. For instance, in one study, Parrill and Sweetser (2004) found that when a speaker described different computational processes, they made use of a variety of distinct motion gestures, which depicted the different qualities of the computational processes metaphorically. However, to understand the way in which the various iconic gestures related to the process being described, the hearer was required to integrate them, forming a unified blend, such that the distinct gestures could be interpreted as depicting the entire process.

In another study, Williams (2008) studied the role of mental space construction and blending when teaching children to tell the time. In a classroom setting, children were provided with a clock and spoken explanation, and gestures which added information not apparent in the spoken explanation. In order to successfully learn to tell the time, the children were necessarily integrating multimodal information, from different sensory streams, in order to learn how to tell the time. This research offers further support for the fundamental importance both of mental space construction and blending, in meaning construction, and the semantic contribution of gestures, which supplements other types of information, such as that conveyed through speech: gesture appears to support mental space construction and integration.

2.5 Construal, framing and perspective

In gesture research, it has been established that a gesturer can take on one of two viewpoints when depicting a particular scene using gestures. The first is **character viewpoint**, the second is **observer viewpoint** (Cassell and McNeill 1990; McNeill 1992).

In his research, McNeill found that gestures revealed one of these two perspectives when subjects were narrating a story, for instance when recounting an animated cartoon in which a cat attempted to swing from one building to another using a rope.

Some speakers took a character viewpoint, when narrating the story, as revealed by their gestures. For instance, from this perspective, some speakers narrated the story while clasping both hands together, and moving their clasped hands horizontally, across their bodies, from one shoulder to another, as if clasping onto a rope themselves.

Other speakers took an observer viewpoint. In this condition, speakers would often hold up one hand, making a loose fist, and move it from one side of their body to another. In this way, the cat was being depicted as swinging. Interestingly, McNeill found that while these distinct viewpoints were apparent in speech, the differences were less clear than in the gestures. For instance, one narrator, adopting a character viewpoint, said ‘and he tries to swing . . .’, which explains what the character is attempting. (McNeill 1992: 193). In contrast, one from the observer viewpoint narrates what the observer sees: ‘and you see him swinging . . .’ (ibid.). But with the gestures, the distinction in viewpoint becomes much clearer.

An important idea, in cognitive linguistics, is that linguistic meaning is equated with conceptualisation: meaning arises in situated contexts of use, arising from a particular understanding by an individual of a specific situation. And an individual’s understanding is facilitated by their **construal** of the scene being conveyed, the **perspective** – physical or otherwise – from which the scene is being construed and the way they or their interlocutor **frames** the scene. Gestures also facilitate construal, framing and perspective-taking in meaning construction. These notions, which we have met at various points in the book, can be insightfully applied to the varying perspective points afforded by co-verbal gestures (Cienki 2013). Theoretical notions, such as these, enable the cognitive linguist to account for the variance in perspective points, in co-verbal gestures, as a natural outcome of the meaning making process. As speech and gesture form part of an integrated communicative system, facilitating expression of a meaning potential, then gestures can frame a scene in divergent ways, adopting markedly distinct perspectives, and thereby facilitate different construals of ostensibly the same scene.

3 Sign language studies in cognitive linguistics

In this section, I consider the way in which cognitive linguistics has been applied to the study of sign language. I do so by examining some of the ways in which theoretical constructs from cognitive linguistics have insightfully been applied to the study of sign languages.

3.1 Articulatory parallels between spoken and signed languages

The contemporary study, and recognition, of sign languages as fully-fledged languages, with the same complexity and facility for communication as spoken languages, began with the seminal work of Stokoe (1960). Stokoe identified three major aspects of lexical formation, in sign languages: handshape, hand movement and location of the hand in space. Battison (1978) added a fourth aspect: the direction in which the palm faces. The significance of Stokoe's research was that he demonstrated that the gestures deployed in sign languages constitute a physical manifestation of an underlying phonological system, equivalent in its sophistication and organisation to the analogous phonological systems in spoken languages. The key difference, of course, concerns the medium of production – manual–visual, rather than oral–aural. But medium of production aside, sign versus spoken languages are functionally equivalent: both serve as effective systems for facilitating the symbolic and interactive functions of linguistic communication, which I introduced in Chapter 1.

In spoken language, the phonological **articulators** involve various components of the articulatory tract, including the glottis, tongue, lips, oral and nasal cavities, and teeth. The phonological system of a spoken language involves manipulating these physical articulators, to change the shape of the articulatory tract as air is expelled from the lungs, producing the set of sounds constituting the sound inventory of a given spoken language.

Analogously, sign languages also involve mobile articulators, which must be positioned and moved correctly in space, to produce the requisite signs that populate a given sign language system. For instance, in ASL, the sign for think requires the fingertip to make contact with the forehead. The sign for funny entails the fingertip making contact with the nose. And the sign for mirror requires the hand be near, and ahead, but not touching the nose. As Liddell (2000) observes, these signs are **contrastive**, in principle in the same way as the /s/ and /p/ are in the following spoken English words: /sɪp/ and /pɪp/. If one sign is replaced by another, or indeed, if the sign is incorrectly executed, then a different sign is produced, or no sign is produced at all. In short, both types of language, albeit using different types of medium for their physical expression, make use of similar organisational principles in order to facilitate the symbolic and interactive functions that they serve.

3.2 Cognitive iconicity

In influential work Sherman Wilcox has studied the nature of **iconicity** in sign language, utilising insights from Langacker's theory of Cognitive Grammar (e.g. S. Wilcox 2004; see also S. Wilcox 2007 for an overview; and Taub 2001).

During the 1970s, as sign languages were increasingly receiving political and educational recognition as 'real' languages of minority populations, sign language researchers attempted to play down the nature of iconicity in sign languages. Iconicity, prevalent in spoken language, concerns, for example, the way in which a linguistic symbol reflects the entity it symbolises. A well-known class of iconic symbols is **onomatopoeias**: words that iconically emulate the sound produced by the entity that the word refers to. Onomatopoeia derives from the Greek meaning 'echo' or 'sound'. Examples of some onomatopoeias from English are given in Table 30.2.

But, as two leading researchers noted: 'linguists had a definite sense that admitting the existence of iconicity in sign languages was admitting that sign languages were not "real" languages, certainly not as real as spoken languages whose forms were supposedly arbitrary' (Valli and Lucas 1995: 6). The point is that if sign languages iconically mirrored the entities the signs were meant to represent, then, in some sense, the signs themselves could not be arbitrary, supposedly undermining the claim that sign languages were on a par with spoken languages, whose symbols *are*, in fact, largely arbitrary, onomatopoeias aside.

And in light of this, sign language researchers, in early research, attempted to deny the significance of iconicity in sign language. For instance, Klima and

Table 30.2 Some onomatopoeias in English

Type of sound	Onomatopoeias
Human vocal sounds	achoo, babbling, gargle, hiccup, hum, etc.
Human actions	smack, thump, etc.
Physical contact, movement or combustion	boom, fizz, plop, slosh, splat, swish, whiz, etc.
Sounds produced by devices	beep, ding ding, tick tock, vroom, zap, zip, etc.
Things named after the sounds they produce	choo choo (train), flip-flops, etc.
Animal names	cuckoo, dodo, etc.
Animal sounds	bleat, buzz, chirp, hiss, hoot, meow, moo, purr, quack, ribbit, woof, etc.

Bellugi (1979) argued that the grammatical development of a sign language system submerges and thus obscures iconicity, supposedly demonstrating that as a sign language develops a sophisticated grammar, this results in the loss of the iconic basis for gestured signs. For example, in terms of the morphological marking of the intensifier, VERY, in combination with SLOW, in ASL, the sign for SLOW is held, followed by a sudden, rapid release, resulting in the meaning VERY SLOW. Klima and Bellugi (1979: 30) argue that 'the sign "very-slow" is made with a fast movement – faster than used in the sign "slow": Thus the form of "very-slow" is incongruent with the meaning of the basic sign'. In short, the intensifier, applied to SLOW, has lost any semblance of iconicity, with the grammatical structuring of ASL having superseded it.

But as S. Wilcox (2004) observes, this, in fact, amounts to a misanalysis. Seen through the lens of Cognitive Grammar, the intensifier is, very much, iconic. The intensifier VERY in ASL is not restricted to the sign for SLOW, but can be applied to a wide range of other signs, including those for SMART and FAST. Moreover, as Wilcox points out, the abstract notion of intensity is often understood in terms of more concrete notions, grounded in embodied experience. In particular, the embodied experience of intensity manifests itself in terms of, for example, the 'build-up and sudden release of internal pressure' (S. Wilcox and Morford 2007: 178). An everyday example of this is a bottle of fizzy drink that has been shaken in transit: when the bottle is opened, the contents explode everywhere.

The point Wilcox makes is that the sudden, rapid release of the intensifier sign in ASL is, in fact, iconic: the rapid release iconically represents the embodied experience of intensity. While, on the face of it, adding a rapid release to the sign for SLOW might appear incongruent with the sign for SLOW itself, the motivation for the intensifier is iconic, created by a metaphoric mapping between the embodied experience of intensity – sudden release under pressure – and the phonological pole of a specific sign, the form, which signals intensity in ASL. In short, this example, which was held up by an earlier generation of sign language researchers as a paradigmatic example of the lack of iconicity in sign language, viewed from the embodied cognition perspective of Cognitive Grammar, is in fact revealed to be highly iconic indeed.

3.3 Metaphor

A significant research effort has been expended, by sign language researchers, to uncover the conceptual metaphors that underpin signs across a variety of sign languages. For example, Wilbur (1987), studying ASL, identified a number of what Lakoff and Johnson (1980) referred to as **ontological metaphors**. What this research reveals is that a range of specific signs are motivated by specific conceptual metaphors. The ASL signs for CHEERFUL, HAPPY and EXCITED all make use of an upward motion, which is claimed to be motivated by the ontological metaphor HAPPY IS UP. In contrast, the ASL signs LOUSY, IGNORE and FAIL involve a downward motion, motivated by the NEGATIVE VALUE IS DOWN conceptual metaphor.

Wilbur also observes that the MIND IS A CONTAINER conceptual metaphor motivates an extension of the size and shape specifier handshape in ASL. This sign, typically used for containers, such as cups, is made using a C handshape. But when the sign is made against the signer's forehead, rather than relating to a concrete object, it in fact means knowledgeable. This reveals that, just as with spoken languages, a specific sign can develop a polysemous sense extension, by virtue of conceptual metaphor.

In her research, Phyllis Wilcox (2000) has uncovered other extensions of the MIND AS A CONTAINER conceptual metaphor. Signers indicate information consciously known or remembered as being located at the front of the head, while information that is unconscious or forgotten is located at the back of the head. Again, this conceptualises the mind – an abstract notion – in terms of a physical container, with different physical locations for different types of information.

Phyllis Wilcox has also uncovered a series of signs, in ASL, that are extended from the IDEAS ARE OBJECTS conceptual metaphor. Wilcox observes that the ASL rendition of FORGET involves a sign in which ideas 'fall out' of the mind-as-container, motivated by the metaphor IDEAS ARE OBJECTS SUBJECT TO PHYSICAL FORCE. The ASL sign for 'remember' is the compound sign PUT-STAY signed against the forehead. This is motivated by the metaphor IDEAS ARE OBJECTS TO BE MANIPULATED OR PLACED. Moreover, related signs, motivated by the same conceptual metaphor, are apparent in other sign languages, including Catalan Sign Language and Italian Sign Language (S. Wilcox 2007).

As one would perhaps expect, given their ubiquity in spoken language, various TIME IS SPACE conceptual metaphors are apparent in sign languages too. In his research, S. Wilcox (e.g. 2007) has found that ASL makes use of LOCATION IN TIME IS LOCATION IN SPACE, and FLOW OF TIME IS MOVEMENT IN SPACE. And these conceptual metaphors are evident in a range of other sign languages, including Danish Sign Language (Engberg-Pedersen 1993).

3.4 Metonymy

Just as with co-verbal gestures, conceptual metonymy motivates a wide array of signs across a broad range of sign languages (S. Wilcox 2007). For example, Wilcox observes that the metonymy PROTOTYPICAL CHARACTERISTIC FOR WHOLE ENTITY is apparent in the ASL sign for BIRD – the gestured sign is of a beak, and the sign for CAT is a gestured sign for whiskers, both in Catalan Sign Language and ASL.

Catalan Sign Language makes use of a number of signs motivated by the metonymy physical consequence for degree of perceptual quality (S. Wilcox 2007). These include a gestured sign of crazy eyes for REALLY GOOD, an open mouth expression for ASTONISHMENT, and an affected seizure for the INCREDIBLE. Moreover, Italian Sign Language utilises the same metonymy for the sign MAKE AN EFFORT, which is achieved by the gestured sign of jaw strain.

3.5 Mental spaces and blending

Finally, I briefly consider Scott Liddell's (e.g. 1998, 2000) important research on the role of mental spaces and blending in sign language. Liddell's research has been concerned with the problem of reference in sign language, and his research effort has focused, in particular, on the nature of reference in ASL. He observes that in ASL, the sign for a pronoun, PRO, takes on its referential meaning by virtue of the gestured sign being directed towards the intended referent; in short, the sign identifies the referent by virtue of the sign being directed in space towards the intended referent. Moreover, when other signs are directed towards an individual, they relate specifically to that person. For instance, the sign TELL, when directed towards an addressee, takes on the meaning 'tell you'. Accordingly, the problem to be accounted for is this: as referents – the individuals being referred to in space – are not, presumably, part of the grammar of ASL, how can this spatial–referential strategy, unique to sign languages, be accounted for?

Liddell argues compellingly that an account is contingent on the construct of mental spaces, and the way in which entities are integrated, or blended, during the course of mental space construction. Specifically, Liddell proposes that a signer's mental representation of his or her physical setting constitutes a type of mental space (Fauconnier 1997, 1999). However, what is special about this mental space is that it is **grounded**: it constitutes a mental representation of the actual, physical setting in which the signer finds him or herself. And consequently, directing signs towards individual referents is not, hence, dependent on linguistic features – recall, referents themselves don't form part of the grammar of ASL. By virtue of the signer holding a grounded mental space in mind, s/he is able to apply signs, referentially, to entities that populate this grounded mental space. And, consequently, reference works as the grammar of ASL can refer to individuals that are integrated, based on physical reality, in the mental space lattice that the signer constructs as they think and sign. In short, mental space construction provides the signer with a shortcut for using signs in flexible ways, in order to correctly pick out intended referents during the ongoing flow of signed communication.

4 Implications of cognitive approaches to gesture and sign languages

This brief review of some of the representative cognitive linguistic work on gesture and sign language highlights three important implications, for cognitive linguistics, and the study of language and mind more generally. First, as we've seen, both gesture and sign language can be elegantly accounted for using a range of the central theoretical constructs and accounts arising from the cognitive linguistics research literature. And that being the case, these aspects of the human communication potentially provide converging evidence, from a modality other than spoken language, for the psychological reality of the theoretical constructs advanced by cognitive linguists.

The second implication, a corollary of the first, is that the theoretical constructs advanced by cognitive linguists do provide a tractable and elegant way of insightfully studying gestural phenomena, as well as sign languages. And in so doing, they enhance and broaden out the study of these, enabling a deeper and more sophisticated understanding as to the nature of gestures, and the nature and organisation of sign languages. Hence, the theoretical machinery appealed to provides a framework for advancing research in these areas. The reason for this, in the most general terms, is that cognitive linguistics advances the thesis of embodied cognition: much of mental representations are grounded in body-based states. And as gesture and sign languages inherently deploy the body, as a means of facilitating meaning construction – gestures and signs deploy the visual-motoric medium – it stands to reason that cognitive linguistics provides a promising theoretical enterprise within which these aspects of human communication can be insightfully studied.

Third, and more generally, both gesture and sign languages provide compelling evidence for the multimodal nature of language, and human communication more generally. Language is not contingent on a single medium of expression – in fact, spoken language, as we've seen, should always be considered in light of the co-verbal gestures that accompany it, and which through matching and mismatching serve to complement and enhance the spoken message. And the existence of sign languages reveals that language as a system is not contingent on the spoken modality. As a number of commentators have observed (e.g. Cienki 2010; S. Wilcox 2004), the fact that linguistic communication is multimodal, provides a further nail in the coffin of the modular view of language, espoused by rationalist linguistics – recall the discussion of modularity in Chapter 7.

Gesture research reveals that language and gesture form part of a combined system of expression. According to the worldview of rationalist linguistics, linguistic competence is encapsulated, a module of mind that is impervious to cross-talk from other modalities. So if gesture both enhances and reduces the fluency of (spoken) language, then this finding calls further into question the credibility of claiming that linguistic competence is encapsulated – and non-multimodal.

SUMMARY

In this chapter I have examined cognitive linguistics approaches to gesture and sign language. I contextualised the discussion by first providing an overview of the different types of gesture, known as **Kendon's continuum**, so-called by pioneering gesture researcher, David McNeill after another pioneer, Adam Kendon. This continuum runs the gamut from fully conventional **signs**, that serve as the symbolic units for sign languages, which are deployed in the absence of spoken language, to the conventionalised **emblems**, such as the thumbs up sign, to **pantomime**, to **gesticulation** which accompany speech. We also saw that gesticulations consist of a number of **imagistic** and **non-imagistic** types, and appear to function as a continuous communicative system, with spoken language, providing multimodal support for the message being conveyed. I then briefly considered the way in which ideas and theoretical constructs from cognitive linguistics have been applied to the study of both gesture and sign language. We saw that notions such as image schemas and conceptual metaphor have been insightfully applied, and that theories including Cognitive Grammar, mental spaces theory and blending theory can be deployed in order to help uncover the nature, organisation and use of sign languages, and the role and function of gesture in facilitating communication.

FURTHER READING

Background reading in gesture

- **Enfield (2009)**. A book-length examination of the complementary roles of speech and gesture in producing composite utterances, and hence meaning.
- **Goldin-Meadow (2003)**. A detailed book-length study from the perspective of psychology, demonstrating the way in which gesture supports thought.
- **Kendon (2004)**. A comprehensive study of the role of gesture – or visible action as utterance – in constructing meaning in everyday discourse.
- **McNeill (1992)**. Presents a seminal and classic account of the essential unity of thought and gesture in co-producing meaning.
- **McNeill (2000)**. An edited volume containing specially commissioned chapters by many of the world's leading gesture researchers.
- **McNeill (2005)**. Builds on and expands McNeill's 1992 book. McNeill's earlier research demonstrated how gestures provide a window into thought; in the 2005 book, McNeill shows that gestures actively co-create meaning in both speaking and thinking.
- **Müller, Cienki, Fricke, Ladewig, McNeill and Tessendorf. (2013)**. A two-volume set, comprising seventy-two chapters, exploring the relationship between bodily movement, language and communication, by the world's foremost researchers.

Background reading in sign language research

- **Liddell (2003)**. A detailed treatment of the nature of grammar and meaning in American Sign Language.
- **Stokoe (2002)**. Building on his pioneering work in the 1950s and 1960s on the functional equivalence of sign language to spoken language, Stokoe advances the thesis that signing was evolutionarily prior to speech.

- **Sutton-Spence and Woll (1999)**. A highly accessible introduction to the linguistics of British Sign Language.

Cognitive linguistics approaches to gesture

- **Cienki (2016).** A state-of-the-art article-length survey of the way in which cognitive linguistics can be applied to the study of gesture.
- **Cienki (2017)**. Ten lectures on the nature of spoken language and gesture, from the perspective of cognitive linguistics. Published as a book and a DVD of the lectures.
- **Cienki and Müller (2008)**. An important edited volume bringing together leadings experts on metaphor and gesture.
- **Sweetser (1998)**. Classic research on the nature of metaphor in gesture, and an early exemplar of the application of cognitive linguistics to gesture studies.

Cognitive linguistics approaches to sign language

- **Dudis (2004)**. An important article-length application of conceptual blending theory to body-space partitioning in American Sign Language.
- **Leeson and Saeed (2012)**. Drawing upon notions from cognitive linguistics, especially issues relating to embodiment, this book-length treatment provides a detailed presentation of Irish Sign Language, based on one of the largest sign language corpora in the world: the Signs of Ireland corpus.
- **Taub (2001)**. An important book-length treatment exploring the role of embodied experience and conceptual metaphor in the nature and organisation of American Sign Language.
- **Wilcox (2004)**. In this seminal paper, S. Wilcox applies the theory of Cognitive Grammar to sign language and demonstrates its fundamentally iconic basis, arguing against earlier views of the grammatical nature of sign languages.

DISCUSSION QUESTIONS

1. In your own words, provide an overview of the different types of gestures that have been uncovered by researchers.
2. What is the relationship between language and gesture, in terms of supporting thought?
3. Based on what you have learned in this chapter, what has been the contribution of cognitive linguistics to the study of gesture and sign language? Give three specific examples, showing how cognitive linguistics theory has enhanced the study of each.

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