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MENTAL SPACES IN GRAMMAR

CONDITIONAL CONSTRUCTIONS

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To the memory of our fathers,
who taught us about books, words, and other things that matter.

The door-scraper in the Wild Wood: an informal lesson in frame metonymy

(From Chapter 3, *The Wind in the Willows*, 1908, by Kenneth Grahame)

[*The Rat and the Mole are lost in the Wild Wood on a snowy night. As they are slogging through the snow, the Mole cuts his leg. The Rat, intrigued, tries to find the object that hurt the Mole*]

Suddenly, the Rat cried "Hooray!" and then "Hooray-oo-ray-oo-ray-oo-ray!" and fell to executing a feeble jig in the snow.

"What *have* you found, Ratty?" asked the Mole, still nursing his leg.

"Come and see!" said the delighted Rat, as he jigged on.

The Mole hobbled up to the spot and had a good look.

"Well," he said at last, slowly, "I *see* it right enough. Seen the same sort of thing before, lots of times. Familiar object, I call it. A door-scraper! Well, what of it? Why dance jigs round a door-scraper?"

"But don't you see what it *means*, you – you dull-witted animal?" cried the Rat impatiently.

"Of course I see what it means," replied the Mole. "It simply means that some *very* careless and forgetful person has left his door-scraper lying about in the middle of the Wild Wood, *just* where it's *sure* to trip *everybody* up. Very thoughtless of him, I call it. When I get home I shall go and complain about it to – to somebody or other, see if I don't!"

"O dear! O dear!" cried the Rat, in despair at his obtuseness. "Here, stop arguing and come and scrape!" And he set to work again and made the snow fly in all directions around him.

After some further toil his efforts were rewarded, and a very shabby doormat lay exposed to view.

"There, what did I tell you?" exclaimed the Rat, in great triumph.

"Absolutely nothing whatever," replied the Mole, with perfect truthfulness. "Well now," he went on, "you seem to have found another piece of domestic litter, done for and thrown away, and I suppose you're perfectly happy. Better go ahead, and dance your jig round that if you've got to, and get it over, and

then perhaps we can go on and not waste any more time over rubbish heaps. Can we *eat* a doormat? Or sleep under a doormat? Or sit on a doormat and sledge home over the snow on it, you exasperating rodent?"

"Do-you-mean-to-say," cried the excited Rat, "that this doormat doesn't *tell* you anything?"

"Really, Rat," said the Mole quite pettishly, "I think we've had enough of this folly. Who ever heard of a doormat *telling* anyone anything? They simply don't do it. They are not that sort at all. Doormats know their place."

"Now look here, you – you thick-headed beast," replied the Rat, really angry, "this must stop. Not another word, but scrape – scrape and scratch and dig and hunt round, especially on the sides of the hummocks, if you want to sleep dry and warm tonight, for it's our last chance!"

The Rat attacked a snow-bank beside them with ardour, probing with his cudgel everywhere and then digging with fury; and the Mole scraped busily too, more to oblige the Rat than for any other reason, for his opinion was that his friend was getting light-headed.

Some ten minutes' hard work, and the point of the Rat's cudgel struck something that sounded hollow. He worked till he could get a paw through and feel; then called the Mole to come and help him. Hard at it went the two animals, till at last the result of their labours stood full in view of the astonished and hitherto incredulous Mole.

In the side of what seemed to be a snow-bank stood a solid-looking little door, painted a dark green. An iron bell-pull hung by the side, and below it, on a small brass plate, neatly engraved in square capital letters, they could read by the aid of moonlight:

MR BADGER

The Mole fell backwards on the snow from sheer surprise and delight. "Rat!" he cried in penitence, "you're a wonder! A real wonder, that's what you are. I see it all now! You argued it out, step by step, in that wise head of yours, from the very moment I fell and cut my shin, and you looked at the cut, and at once your majestic mind said to itself, 'Door-scraper!' And you turned to and found the very door-scraper that done it! Did you stop there? No. Some people would have been satisfied; but not you. Your intellect went on working. 'Let me only just find a doormat,' says you to yourself, 'and my theory is proved!' And of course you found your doormat. You're so clever, I believe you could find anything you liked. 'Now,' says you, 'that door exists, as plain as if I saw it. There's nothing else remains to be done but to find it!' Well, I've read about that sort of thing in books, but I've never come across it before in real life. You

ought to go where you'll be properly appreciated. You're simply wasted here, among us fellows. If I only had your head, Ratty –"

"But as you haven't," interrupted the Rat rather unkindly, "I suppose you're going to sit on the snow all night and *talk*? Get up at once and hang on that bell-pull you see there, and ring hard, as hard as you can, while I hammer!"

While the Rat attacked the door with his stick, the Mole sprang up at the bell-pull, clutched it and swung there, both his feet well off the ground, and from quite a long way off they could hear a deep-toned bell respond.

1 *Conditional constructions, mental spaces, and semantic compositionality*

> "It makes me feel like I'm going to cry," she said. "I can just imagine if it was my daughter." (*Vancouver Sun*, Oct. 4, 2000)
>
> [A woman comments on a reported case where a man assaulted a sleeping girl.]

Readers of the *Vancouver Sun* did not sit back and wonder what the speaker thought would have happened "if" her daughter had been the victim of such an assault. She did not have to present a *then* clause and describe the consequences explicitly. Not only were her actual hearers, and the eventual readers of the paper, able to build up the intended counterfactual situation (marked by the verb *was*); they were also presumably able to envision the likely emotional results on a victim's family. Furthermore, they surely recognized that the woman was not primarily expressing specific fear about her own daughter's safety, but empathy with the real-world victim and her mother. How did they do all this, prompted apparently only by the set-up of a situation where the speaker's daughter was imagined to be an assault victim?

1.1 Conditionals and conditional reasoning

There is something about *if* which engages the curiosity of the analyst. And rightly so: not only is the kind of reasoning manifested in a form such as *imagine if it was my daughter* an important aspect of human thought, but it also seems *uniquely* human to imagine in such detail scenarios which may be unreal and perhaps impossible (the speaker need not necessarily have a daughter in actuality), and to reason from them. In this example, the speaker seems to go further than conventional inference and "reasoning"; she presumably "feels like she's going to cry" because in imagining the effects on her life if she had a daughter who was assaulted in this way, she vividly feels and lives the emotions of this tragic counterfactual world.

Philosophers have long focused on conditional constructions as manifestations of human logical reasoning. Examples such as this show how far conditional usage goes beyond logical inference. Psychologists, philosophers, and anyone who studies human reasoning should be interested in the unique and pervasive cognitive patterns displayed in conditionals.

Simultaneously, everyday usages such as the above quotation present puzzles for linguists and grammarians. Are we to assume that the *if*-clause, *if it was my daughter*, is to be understood as having an unexpressed consequent as part of its interpretation, something on the order of *I can just imagine how I would feel if it was my daughter*? If so, what relation does this structure bear to grammatically conventional constructions where an *if* clause occurs independent of any syntactic consequent ("then") clause – for example, *What if it was my daughter?* What contribution to the conditional meaning is made by the choice of the verb form *was*, a "past" form which is being used here not to refer to past tense, but to the imaginary nature of the situation described? These problems exemplify the complex ways in which linguistic markers such as verb form, conjunction choice, and syntactic constructions such as the *what-if* construction, combine to prompt the cognitive construction of complex mental spaces.

Because English has a rich and varied set of options for marking causal and conditional relations, more and less explicitly, our expression of conditionality is of special interest also as a test case for examining formal and functional relations between constructions: for example, in what ways do *what-if* constructions resemble the broader class of conditionals, and in what ways are they distinct? More broadly, this investigation can become a laboratory for the examination of what it means for a larger construction, as opposed to a word or morpheme, to be meaningful, and how *compositional* such meaning is: i.e., how much of the semantics of *what-if* constructions is entirely predictable from their formal structure and the meanings of the components, and how much needs to be specified as particular to this construction.

Linguists, approaching the grammatical forms involved in encoding conditional reasoning, have generally found plenty of formal complexity to occupy them in *if–then* constructions and their crosslinguistic analogues; semanticists in particular have seen these forms as a central case in any theory of logical semantics which maps logical structures onto linguistic forms. In the last twenty-five years, speech-act theorists and pragmatics scholars have uncovered the uses of conditional forms in presenting speech acts, thus setting up a tradition which parallels the logical one and presents problems for it. (*If you don't mind, please pass the salt* does not seem to be about a relationship between truth values.) And some typologists have noted connections between conditional and

topic markers, and have suggested that *if*-clauses are functionally more topics than premises in many cases (see Haiman 1978, Traugott 1985, Jacobsen 1992, Schiffrin 1992a).

A truly satisfactory theory of conditional forms should bring together all these insights. Indeed, the human ability to reason in a contingent way is crucial to the uses of these linguistic constructions. How can this observation be integrated with the findings of speech-act analysts and typologists about less logical uses of conditionals? Or can it?

Linguists have even more reason than other scholars to await the answer to this question with interest. We presumably want to know about human reasoning, and about speech-act structure; but we also want to know how linguistic forms function in general. When we find that certain diverse functions are attached to a single formal construction (such as the English *if–then* construction), and that parallel diversity of function is common crosslinguistically, then such a class of constructions raises questions for linguistic theory in general. A constructional form may be simply homonymous; that is, the same form may have multiple unrelated functions (consider the synchronic relationship of the English definite article *the* with the homonymous, though historically related, form occurring in *The more, the merrier*). If a construction is in fact polysemous, we then need to investigate the motivation for the polysemy relationship – as, for example, Haiman (1978) has done in examining the link between the functions of conditional protases and topics. A great deal of recent research suggests that it is normal for larger constructions, as well as words and morphemes, to be polysemous (Bolinger 1977; Brugman 1984; 1988; Lakoff 1987; Langacker 1987, 1991a, b; Pederson 1991; Kemmer 1993; Hopper and Traugott 1993; Fillmore 1997 [1971]).[1] The polyfunctional status of conditional forms is thus a valuable laboratory for investigation of constructional polysemy in general.

The voluminous extant literature on conditionality and conditional constructions indicates the importance of these meanings and forms to a broad range of researchers, including linguists, philosophers, and grammarians. But this extensive corpus might make readers question the need for a new book on such an apparently over-documented subject. In fact, conditionality is far from fully documented: as with many subjects of strong interest to a scholarly community, certain examples and problems have been addressed in detail, while others – equally interesting, and perhaps helpful in illuminating the problems focused on – have been neglected or ignored. Even those analyses which attempt to look

[1] Further, it is via such polysemy that semantic change and grammaticalization occur; see Bybee and Pagliuca 1985, Hopper and Traugott 1993, among many others.

at expressions of conditionality in a broader range of forms (not just *if–then* sentences) fail to offer an explanation of the connections among those formally divergent constructions. This book will address whole classes of conditional uses which are ignored or marginalized in the standard literature, and describe this fuller range of conditional constructions within a uniform framework.

The linguistic literature has generally focused on a narrow range of conditional forms. The *If P, (then) Q* conditional in particular has largely eclipsed its neighbors in English, such as the use of *unless* and *since* in ways which are very close to carrying the same message as *If P, (then) Q* sentences – or even apparently coordinate constructions such as *Take another step and I'll shoot*. Formal differences among *if–(then)* constructions, such as the use or absence of *then*, comma intonation or continuous intonation, and even clause order, have also tended to remain unexamined. Descriptive grammarians have focused on the contrasting possibilities for the use of different verb forms, again often neglecting other issues. A recent comprehensive study of conditionals (Declerck and Reed 2001) offers the broadest description to date, documenting a variety of conditional uses (mainly with *if*, but also in other structures), but the classification offered relies primarily on semantic criteria, without attempting to link the meanings identified to the formal features of the constructions.[2] There has therefore been little attempt to examine correlations between these different parameters: how does the choice of a verb form correlate, for example, with the use of *then* or with the choice of comma intonation? Are there any formal features of paratactic constructions that explain their link with conditionality? We will argue that putting conditionals in the context of a range of related constructions allows such correlations to emerge and ultimately allows us to attribute particular aspects of the communicated message more precisely to particular aspects of the linguistic form. We also argue that a broader definition of conditionality can emerge only from the study of such correlations.

The philosophical literature and pragmatics literature, on the other hand, have focused on function, rather than defining conditionality in terms of form-classes. Both definitions have their problems. If a conditional is defined as an English *If P, (then) Q* construction, we have a definition which does not extend to semantically related constructions in English, and also leaves us with little chance of generalizing crosslinguistically. On the other hand, the widely

[2] Declerck and Reed's analysis relies entirely on corpus data and is thus a valuable resource for analysts interested in the variety of conditional usage. Its goals, however, are qualitatively different from ours, as no attempt is made to seek form–function correlations or to define the nature of conditionality as such. For a more detailed discussion of Declerck and Reed's book, see Dancygier's (2003) review article.

varying functions of the single formal construction may leave us wondering *which* functional definition to use in our circumscription of a "conditional" class of uses or meanings. So it is perhaps not surprising that philosophers have differing views about what constitutes "conditionality": can we define it in terms of a relationship between the truths of P and Q (the "conditional" clause and the main clause) and the truth of "If P, Q"? To what extent should we take causal relationships into account (many *If P, (then) Q* utterances seem to invoke such relationships between P and Q)? Is the truth of P and Q the central question, or should we rather be talking about some more pragmatic factor, such as whether it is appropriate (or relevant, or felicitous) to *assert* P or Q?

Implicit assumptions about the relations between form and meaning underlie both the linguistic and philosophical literature. Certain forms are considered more central representatives of conditional functions; others are implicitly seen as less central. Linguists with narrower formal categories of conditionality nonetheless do still see crosslinguistic parallels between functionally similar constructions as "conditionals," suggesting that they are including tacit functional criteria in their understanding.

We would like to explicitly address the issue of the form–meaning relationship. We will try to identify the precise aspects of any particular "conditional" construction which convey specific parts of the complex message carried by the use of that construction. Some aspects of the meaning may in fact be carried only by a particular *grouping* of formal elements, rather than by one element in itself. We will view the nebulous class of "conditionals" as part of a broad spectrum of other constructions which share certain of their formal and functional characteristics. For example, conditionals often manifest more general regularities about choice of verb forms, clause order, or intonational patterns. If we can attribute componential meaning contributions to particular formal parameters, we may be able to give a more motivated explanation of the functional similarities and differences between different conditional constructions. But in order to do so, we must examine a broad range of phenomena, rather than focusing on a few constructions in isolation. To explain how rather similar messages can be conveyed by *If you mow the lawn, I'll give you ten dollars* and by *Mow the lawn and I'll give you ten dollars*, or by *If you're too cold, I'll close the window* and *Since you're too cold, I'll close the window*, we need to examine a range of functionally and formally overlapping constructions, identifying co-varying aspects of form and function.

On the functional side, things are even more difficult. We are offered minimalist logical definitions of conditionality; but these do not seem helpful in examining natural language. Speakers are unlikely to accept, for example, that *If Paris is in France, the sky is blue* is logically "true" because its two constituents

are true. Other suggested functional definitions, such as the identification with topicality, seem too general; English subject noun phrases have been said to be topical, but subjects should not be functionally confused with conditionals. Perhaps the biggest problem is that analysts have focused on defining the boundaries of conditionality, without generally examining the category itself or its ties to related meanings. As a result, it is no exaggeration to claim that we simply lack a linguistically useful definition of conditionality.

We will present an analysis of conditional *meaning* which allows us to pick out aspects of that meaning and identify them as shared between constructions which may differ in other meaning parameters. Rather than trying to delimit rigid sets of conditionals and non-conditionals, we will examine the relationships among the various classes of meanings which have been called conditional, and between those meanings and others (e.g., causal, sequential, and concessive) which are linked to them and sometimes share formal means of expression with them. We will also try to map out the areas of predictability and compositionality in the uses of complex forms; does a particular verb form, or a chosen order of clauses, make the same contribution to meaning in, for example, related causal and conditional constructions?

Crucially, we maintain that it is easier to achieve an elegant formal and semantic analysis of conditional constructions when form and function are considered together, and in the context of the kinds of human reasoning in which speakers are engaged. Too narrow a delimitation of the cognitive processes involved (e.g., limiting them to logical truth-conditional meaning relations) will in fact prevent us from being able to make generalizations about the linguistic data. Luckily, available texts and overheard examples provide a wealth of small masterpieces of contextualized conditional reasoning, paired with speakers' and writers' formal choices in those contexts. We hope that our analyses of such examples will prove as relevant to readers primarily interested in language itself as to those whose main interests are in the cognitive processes involved. For the former, this book will put forward some descriptive generalizations not previously noted in grammatical descriptions of English, as well as some broader ones which may have possible crosslinguistic validity. As to the latter, we hope to convince them that close analysis of these rich linguistic data open new windows on the cognitive structures which underlie them.

1.2 Constructional meaning and compositionality

We take what is essentially a very old position, that linguistic form is linguistic because of a form-function mapping. We follow recent work in Cognitive Grammar and Construction Grammar in claiming that not only morphemes and

words but also grammatical constructions at the syntactic level are conventionally tied to semantic and pragmatic aspects of meaning. Functional grammarians, as well as cognitive ones, have a long tradition of setting out pragmatic as well as semantic correlates of particular grammatical constructions (topic constructions, for example). Non-truth-conditional aspects of meaning which are conventionally associated with form are treated in the same way as any other linguistically conventional form–meaning mapping. A topic marker's conventional meaning is to indicate topicality, rather than to add some "truth-conditional meaning" to the utterance; its semantics, in this broader sense, is its pragmatic function.[3]

Questions arise naturally in this framework which could not be posed in a more modular theory of language. Thus one can ask *how much* of the meaning of a construction is compositional, and how much needs to be attributed to the construction as a whole. Pragmatics, as well as semantics, can have varying degrees of compositionality – furthermore, if semantics and pragmatics have no tidy modular separation from each other, then the aspects of *meaning* which have been traditionally labeled pragmatic[4] will be treated as having the same possibilities for compositionality as the "semantic" aspects of meaning (see Sweetser 1999). We shall treat separately those aspects of interpretation which derive from a specific context rather than from linguistic convention. This is not because they are necessarily different in cognitive status from aspects of interpretation which are directly and conventionally prompted by linguistic form; on the contrary, there is good evidence that hearers and understanders do not differentiate well between aspects of meaning which are more directly linked to the speaker's form choices, and those which are less so. What we mean here is that in deciding whether something is part of the conventional meaning of a form, we will be assuming that such conventional meaning must not depend on some particular interactional context. However, the meaning conveyed *via* that conventional meaning will very probably depend on context to a considerable degree.[5]

[3] See Fillmore 1988, Fillmore, Kay, and O'Connor 1988, Goldberg 1995, Fillmore and Kay 1999, for exposition of the Construction Grammar framework; see also Croft 2001 on Radical Construction Grammar, and Talmy (2000) for related semantic work. Work in Cognitive Grammar, following Langacker (1987, 1991a, b), shares with Construction Grammar a number of basic assumptions: for example, that form–meaning mappings need to be described at all levels of the grammar, from the morpheme to lexically unspecified syntactic constructions. Functional work such as that of Prince (1978, 1985) has made parallel points about functions of constructions as well as of lexical-level forms.

[4] For background work on pragmatics, see Levinson 1983, Davis 1991.

[5] For the classic laying out of this kind of relation between context and interpretation, see Grice 1975, 1978; Coulson (2001) investigates some on-line reinterpretation processes of such framings.

Our analysis of meaning is framed in terms of Mental Spaces Theory (Fauconnier 1985 [1994], 1997), a very general formal theory which provides mechanisms for talking about cognitive structures and the connections between them. To some extent, traditional treatments of conditional semantics in terms of Possible Worlds have aimed at capturing similar insights: where some might say that an *if*-clause evokes a Possible World within which a *then*-clause holds, we would argue that an *if*-clause sets up a Mental Space which is the background for the construal of the *then*-clause. For example, in *If we leave it open it will be so hot* (AT.AT.138; a discussion of whether to leave a window open during an absence from home), the *if*-clause sets up a space wherein the window gets left open, and within that space, the speaker predicts that the room will get too hot.[6]

However, mental spaces represent a more general mechanism than possible worlds, referring not only to very partial cognitive "world" or "situation" constructions as well as to more complete ones, but also to a variety of non-world-like structures which can be connected and mapped onto other cognitive structures. For example, the two mental spaces consisting of a mental list of restaurant customers and a mental list of their orders are mapped onto each other to allow utterances such as *The ham sandwich wants his check now*, wherein the name of the food item ordered can be used to refer to the customer who placed that order. World-like structures are not the only consistent models which humans develop and interconnect.

Conditionals are not, of course, alone in setting up mental spaces: other constructions such as temporal clauses show quite parallel functions involving set-up of a background mental space, against which the contents of the main clause is understood. And sometimes another construction, such as apparently simple coordinate conjunction with *and*, can perform much the same function as an *if–then* construction. For example, in a scene from Neal Stephenson's *Snow Crash*, police who have arrested a teenage girl inform her that only for a fee will they take her to a safer, more comfortable, incarceration unit (called a Hoosegow, in this mythical world) rather than a much more unpleasant one. They say, *You pay us a trillion bucks and we'll take you to a Hoosegow* (NS.SC.50). This seems to convey much the same message as *If you pay us a trillion bucks, we'll take you to a Hoosegow*. Similarly, *Since I won't see you before Thursday,*

[6] Situation Semantics (Barwise and Perry 1983, Kamp 1984, see comments in Lakoff and Sweetser 1994) is responding to some of the same concerns which prompted the development of Mental Spaces Theory, allowing as it does more local structure and fewer demands for global consistency. But its basis in an objective truth-based semantics is strongly at variance with the claims of Mental Spaces Theory, which assumes that only experientially based construal – rather than objective truth – is accessible to human systems of meaning and interpretation.

have a good Thanksgiving! might be said in some of the same contexts as the attested *If I don't see you before Thursday, have a good Thanksgiving*!;[7] and *a true, if rather trite, observation* might be the same observation as one which was *true, though rather trite.* So the general observation that conditional *if*-clauses set up mental-space structure is only the beginning of an account of conditionality.

Our next step might be to differentiate between markers such as *when*, which seems to be making claims for the factuality of the space it sets up, and ones like *if*, which makes no such promises. The contribution of verb forms to the overall meaning is yet another factor: *If we left it open it would get so hot* (with future reference) treats the possibility of leaving the window open as an unlikely or dispreferred option. By contrast, *if we leave it open it will be so hot* (AT.AT.138), with its "present" and future verb forms, seems instead to remain neutral on this subject.

Local coherence is crucial to successful semantic interpretation: the parts of the construction must add up to a coherent whole. In the case of conditional constructions, one can see that certain combinations would be coherent and others less so: a construction which marks its mental-space set-up as true, or believed in by the speaker, will not be coherent with verb forms which express the speaker's doubt about such truth, while a neutral verb form will be coherent with a wider range of constructions. It is unsurprising, therefore, that English speakers find *When we leave the window open, it would get so hot* to be incoherent as a prediction about the future (see Fillmore 1990a, b; Dancygier 1998).

Language is not "economical" in the sense of minimal coding: a single aspect of meaning may be doubly or triply marked, in which case it may be difficult to tease out a particular formal element's contribution to the message. Sometimes we will be able to isolate a formal element and note its positive meaning contribution in the absence of its collaborators; but it is equally useful to note potential clashes as indicators of the conventional uses of formal elements. For example, an English speaker may not automatically have an intuition that there is much difference in meaning between an *if–then* conditional and the equivalent conditional without *then*. But the observation that *then* is unacceptable in *even if* conditionals (which contain *if*, and have much the same syntactic structure as *if–then* conditionals) is a good clue to the fact that *then* is contributing meaning, even if that meaning is not very noticeable in the context of some conditionals (Dancygier and Sweetser 1997, Chapter 6 of this book).

[7] This example was reported to us by Suzanne Fleischman.

Finally, a number of broad parameters of pragmatic interpretation are involved in the understanding of conditional constructions. Most of these parameters apply quite generally, not only to conditionals. They are available as part of the apparatus involved in constructing the interpretation of a conditional. For example, the function of supplying the background to a **prediction** (Dancygier 1993, 1998; Dancygier and Sweetser 1996, 1997) is filled by many conditional and temporal clauses, and the knowledge that such functions are commonly served by these forms is part of the framework required to explain their interpretation. Further pragmatically related functions, such as suggesting or commanding, may be related to the predictive function in crucial ways. Consider, for example, the predictive and directive functions of an utterance like *Straighten the front end and it'll be as good as ever* (AT.AT.315), in which a character from Anne Tyler's *Accidental Tourist* assesses the damage which her car incurred in an accident. In such uses, the fulfillment of the directive provides the background for the prediction.

Other functions of conditionals are less closely tied to the predictive one. In some cases, conditional space building seems not to set up a basis for prediction but to give the appropriate setting for a speech act, or to state the premises which led to an expressed conclusion (van der Auwera 1986; Sweetser 1984, 1990). The speaker of *If I don't see you before Thursday, have a good Thanksgiving!* is not *predicting* either the Thanksgiving's goodness or her wish for its goodness but setting her (perhaps overly early) good wish in the context of the fear that she may not have another chance for good wishes before the holiday weekend.[8]

Aspects of conditional form are correlated with the contrast between predictive function and non-predictive functions, such as speech-act conditionality. In particular, note the impossibility of a different verb form here: *If I didn't see you before Thursday, have a good Thanksgiving!* is almost uninterpretable.

At this point, logicians may be asking, "Why not give a logical analysis, based on truth conditions, for at least *some* conditionals, saving the pragmatically rooted analysis of conditionality for the cases which require it?" We see varied and cogent reasons for adopting a more unified and less modular framework. First, we do not see modularity per se as a virtue in an analysis; if pragmatic constructs are needed to explain some conditionals, and if they also help us give

[8] We follow Sperber and Wilson's (1986) convention, referring to the generic Speaker (S) as *she*, and to the Hearer or Addressee (H) as *he*. This alternation of pronouns serves simultaneously to avoid exclusive use of masculine forms for ungendered reference, and to improve reference-tracking in our text, since anaphoric reference to S and H will be formally distinct. The initial *s* and *h* serve as mnemonics for Speaker/she and Hearer/he.

a more satisfactory analysis of traditionally "logical" conditionals, then what economy is there in limiting the use of these constructs?

Second, traditional truth-value-based analyses of conditionality have always failed to reflect speakers' intuitions in crucial ways. The claim that *If P, (then) Q* is true whenever P and Q are both true seems nonsensical to anyone examining real linguistic conditionals. Both philosophers and linguists have noticed that conditional forms mark more than coincidence of truth values, and hence more than standard definitions of implicature. Causality is often understood as part of the relationship between clauses of a conditional construction; for example, the right kind of causal inferences are crucial to our ability to listen to *They'll kill you if you break anything else* (PD.SC.6) and understand that the punishment will materialize *only* if the addressee breaks another object. And finally, many of the same factors will turn out to be relevant to the interpretation of both more "logical" and more speech-act-oriented conditionals: causal contingency and relationship remain central to interpretation, no matter what kind of conditional is involved. So giving two essentially different treatments to these classes of conditionals would prevent us from stating important generalizations across them.

Several kinds of pragmatic contextual information are relevant to the present analysis. First, there are pragmatic structures conventionally marked by linguistic form. These structures are part of the conventional meaning of the relevant morphemes and constructions. A topic marker or a topic-comment construction *means*, in the sense of conventionally marking, that the speaker construes the discourse in a certain way; they thereby create such a context for an addressee. It is in this sense that we would like to say that *if* sets up a mental space, or that a particular verb form marks the speaker's commitment to the veracity of the content.

Second, the contextual speech-exchange frame generally available to all language users comprises a broad range of pragmatic information. This includes speakers' awareness of (i) an ongoing speaker–addressee exchange, (ii) the purposive nature of this exchange, (iii) the social as well as informational purposes involved (for example, commands and persuasion as well as exchange of information, or purely deductive inference, may be involved in the "message"), and (iv) the speaker's mental states (or her portrayal of supposed mental states) as a central aspect of the content.

Third, there is the metalinguistic fact that we know speech exchanges take place via particular systems of linguistic forms, and these forms themselves are present and can be commented on. It is this kind of background knowledge that allows for multiple uses of conditional forms such as those discussed by

Dancygier (1986, 1992, 1993, 1998) and Dancygier and Sweetser (1996). Conditional clauses such as *If that's the right word* or *If that's the way you say it* comment on a word choice in the preceding clause, rather than on the context for performing the speech act in question. The presence of speech-act interaction or linguistic form choices is not unique to conditionals, or even necessarily part of the semantics of conditional forms. It is generally present, simply by virtue of linguistic exchange taking place, and is thus implicitly accessible to linguistic usage and marking without requiring a great deal of special contextualization. It can also be explicitly marked in conventional ways.

Finally, there is the situation-specific conceptual network which is brought to any particular speech exchange. This network will involve both very general (sometimes non-linguistic) understanding of the world, and also particular understanding of the current interactional context. Although such context-specific knowledge is present in any actual interpretation, it is the more general aspects of linguistic contextual structure which are more likely to be formally marked in grammar. We will not, in our analysis of conditionals, need to argue that grammatical markers are conveying highly situation-specific aspects of the message, although of course grammatically conveyed meaning normally serves as a basis for all kinds of more immediately contextualized inferences.

Conditional forms are fascinating not only in themselves, but also as a particularly salient example of phenomena which are problematic for analysts in a wide range of disciplines. We will argue that they present the linguistic analyst with a strong argument for the need to abandon modularity (especially the strict syntax-semantics-pragmatics boundaries) if we hope to achieve analytic compositionality and generality. They are also a central case in any discussion of the relation between human reasoning and formal logical patterns; we will be arguing that generality and overall economy are best served by incorporating "logical" conditionals into a general analysis which fits human reasoning patterns. And finally, examining conditionals as part of a broad range of constructions – in the case of English, from *If P, then Q* constructions to related forms conjoined with *and* or *or* or *since*, as well as to forms not involving syntactic clausal conjunction – offers a complex and challenging laboratory for the theoretical framework we are practicing.[9]

[9] We will thus be offering a new typology of conditionals. For other general typologies of conditional constructions, see Funk 1985, Comrie 1986, Dirven and Athanasiadou 1996. Dancygier and Mioduszewska (1984) offer thoughts on semantic/pragmatic categorization, and Smith (1983) on conditional interpretation.

1.3 Mental spaces and constructions

Conditional constructions vary widely in function. It would be economical and elegant to be able to attribute some of this functional diversity to a few specific parameters of interpretation. Mental Spaces Theory opens up the possibility for such a treatment, by allowing us to talk about different kinds or classes of mental spaces. Consider the following example of a fictional older brother's advice to his sister about bandaging a cut. He says, *If I tie my handkerchief around it it'll stick* (PD.SC.13). We might say that this speaker is first engaged in setting up a space of mental **content** (see Sweetser 1984, 1990) – that is, a space which is *about* a possible state of affairs in his world, namely the situation where he ties his handkerchief around the cut. Within this space (further filled out by the speaker's and hearers' general knowledge about the situation referred to), the speaker predicts an added aspect of the content of this mental space: the handkerchief will stick to the cut. He predicts this result *only* in the space set up by the *if*-clause; there is no prediction about the handkerchief sticking to the cut if it is not being used to bandage it. These contingency relations are part of the structure of the represented content; that is, the speaker is talking about a possible attempt at bandaging, and the conditional construction marks his representation of a contingent relationship between that portrayed event and its predicted result.

By contrast, in an example like *If I don't see you before Thursday, have a good Thanksgiving!*, the speaker does not predict something about a good Thanksgiving on the basis of information about seeing the addressee before Thursday. Rather, the speaker sets up a discourse context, a **speech-act space** wherein Thursday has arrived without her seeing the hearer, and then utters a speech act which is to be taken as effective within that space. Any contingency relationship marked by *if* must be interpreted as holding not between the contents of the two clauses, but rather between the possible scenario portrayed in the *if*-clause and the speaker's act of well-wishing.

A conditional can thus set up, elaborate, and negotiate possibilities either in the world of linguistically described content, or in the world of current speech-act context and performance – where the events and participants are the Speaker, the Hearer, and the speech act with its interpretive context. Speech-act conditionals have been noticed as a special and interesting class for some time (Sweetser 1984, 1990; van der Auwera 1986).[10] Mental Spaces Theory provides a simple mechanism for the description and analysis of the difference between speech-act and content conditionals: we can construct spaces which

[10] See also Haegeman 1984, Athanasiadou and Dirven 2000, on pragmatic conditionals.

are either representations of content being talked about (or thought about), or representations of aspects of the speech-act structure itself.

What other sorts of spaces might speakers construct with conditionals? Sweetser (1984, 1990) has argued for a distinction between content conditionals and **epistemic conditionals**, which follow the speaker's reasoning process in a conditional manner and set up an **epistemic space**. Unlike causality in the world, reasoning processes may operate either from known cause to likely effect, or from known effect to possible cause. Effect-to-cause reasoning is frequently manifested in epistemic conditionals. To contrast content and epistemic conditionals involving common subject matter, let us consider the following example from *Snow Crash*, which is part of a background narratorial explanation of how characters access a virtual environment called The Street. We have already been told that some users own private access points, referred to as Houses. The narrator continues with the generic content conditional *If you are some peon who does not own a House . . . then you materialize in a Port* (NS.SC.37). Ports are public access points; people normally use them because they don't have their own Houses. Stephenson has already made it clear that when a character notices an entry to the Street via public Port, the inference follows that the newly entered virtual presence doesn't belong to someone who has a private House on the Street. One can easily imagine an epistemic conditional such as *If you materialize in a Port, then you don't own a House*, expressing not the causal contingency relationship between the two states of affairs (entry via public Port will not causally affect your ownership of a House), but the causal contingency relationship between the speaker's belief about an event of Port entry and her conclusion about lack of House ownership. Since reasoning from cause to likely effect is just as possible as reasoning from effect to likely cause, epistemic conditionals can also follow the direction of content causal contingency. Here, a character might possibly say, *If you don't own a House, then (I guess) you (must) materialize (on the Street) in a Port.*[11]

Dancygier (1986, 1992, 1998) has set out a further variety of conditional uses, wherein metalinguistic negotiation is involved rather than reasoning or speech-act structure or content. Consider the following example. The third-person narrator of a novel sums up his reaction to an incoherent rambling

[11] Note how the polysemy of modal verbs meshes with the parallel ambiguity of the conditional construction. A root reading of *must* would cohere with a content conditional: *If you don't own a House, then you must materialize in a Port*, i.e., you are conditionally obliged to *use* a Port. An epistemic modal reading works with the epistemic conditional, yielding a reading where the speaker is conditionally obliged to *conclude* that you materialize in a Port if she knows you are House-less. (See Bybee and Fleischman 1995; Sweetser 1982, 1990.)

epistemic conditionals? – Could this be my restrictive field?

interlocutor in the sentence *The philosophy of life, if it could be defined by such a phrase, was beyond his grasp* (MA.CE.107). The narrator mentally brings up a category such as "philosophy of life" and simultaneously questions the appropriateness of his own label, given the incoherence of the ideas referred to. Crucially, the narrator is not describing a contingency relationship at the content level; the interlocutor's mental processes are *unconditionally* beyond his comprehension. Nor are we to assume that he is describing his conclusion that they are beyond him, or his statement that they are beyond him, as conditional. He is apparently commenting on, or presenting as merely "conditional," his use of the label *philosophy of life*. In this case, we need a somewhat more complex mental-space structure, which we have called (Dancygier and Sweetser 1996) a **metalinguistic space**, and which will be defined and analyzed in Chapter 5.

Our claim, then, is that in all these cases a conditional construction involves setting up a mental space (in the case of *if*-conditionals, this is the job of the *if*-clause), and requesting construal of something (in *if*-conditionals, the *then*-clause or main clause) within that space. Much of the diversity of interpretation can be attributed to the fact that the spaces themselves can be quite diverse sorts of entities, related to the linguistic form in a variety of ways.

A skeptic might now say, "But you haven't told us the limits on this kind of construal; the list of varieties of mental spaces could go on forever." In principle, this is true: but we don't intend our theory to address the total limits for possible contextually induced mental-space construction. Only certain kinds of mental spaces are automatically contextually available to the speaker and the hearer simply by virtue of the existence of a speech exchange. In particular, *any* speech exchange involves a speaker–hearer pair and a speech-act context; it expresses content which is related to some described state (although the purpose may not be mere description, but an attempt to bring about, prevent, contemplate, or ask about that state of affairs); it can be assumed to bear a relationship to the speaker's mental states and processes (to "express" ideas or reasoning processes of the speaker); and, in using language, it makes use of form–meaning mappings which are therefore accessible to the speaker and the hearer in the context.

Our position, therefore, is that the current domains of content, epistemic structure, speech-act structure, and metalinguistic structure are privileged domains, in that they are automatically and implicitly available for access in processing utterances, including conditional utterances. This fact is what accounts for the kind of diversity we see in conditional interpretation.

Of course, if it is true that domains related to the current speech interaction are *generally* privileged with respect to mental-space construction, we would

expect that fact to have wide-ranging effects on interpretation, not limited to conditional constructions. And indeed, this is the case. As noted in Sweetser (1990), broad classes of linguistic forms show the same kind of possibility for multiple interpretations depending on the level or domain accessed. Parallel to conditionals are causal and adversative conjunctions, as well as many coordinate conjunction usages:

(1) Joe turned down the stereo because Sam was studying.
[Causal relation is between state of affairs described in P and event described in Q, i.e., between contents of the clauses.]

(2) Sam is (must be) studying, because Joe turned down the stereo.
[Causal relation is between the speaker's *knowledge* about the content of P and the speaker's *conclusion* about the content of Q.]

(3) Could you turn down the stereo, because I'm trying to study.
[Causal relation is between the contextual state expressed in P and the speech-act performance of the request in Q.]

(4) OK, Chris introduced me to her *partner*, since we're being politically correct.
[Causal relation is between contextual situation P and a particular form-content mapping used in Q, as opposed to alternative word choices such as *boyfriend, fiancé*, or *lover*.]

(5) Since you're a linguist, what's the Russian word for "blender"?
[Speech-act level causation or enablement.]

(6) Why aren't you in bed already? -- and NO excuses!
[Coordinated speech acts.]

(7) We could go to that Chinese place -- *or* there's always the Thai restaurant on University Avenue.
[Again, speech-act coordination: note that although *or* felicitously presents two *suggestions* as alternatives, the *contents* of the clauses are construed as both holding simultaneously, rather than alternatively.]

(8) Chris introduced me to her *fiancé* – or her *partner*, whatever you want to call him.
[Metalinguistic comment on the use of the word *fiancé*.]

Such examples can be multiplied with ease in the domain of conjunction. Some conjunctions seem to prefer particular domains: English *since* has only a temporal sense in the content domain, but has causal/enablement senses in the other three domains. If we consider French, *puisque* appears to be restricted to epistemic and speech-act causal uses, while *parce que* covers content causality as well (Ducrot 1972; Sweetser 1984, 1990).

Ranging farther afield, Horn (1985, 1989) has laid out in detail the differences between content and metalinguistic uses of negation. And the well-known contrast between deontic and epistemic modal uses is interpretable in terms of the content/epistemic contrast here invoked. Thus *Joe must be home by ten, because I say so* imposes a modality of compulsion in the content domain of Joe's getting home. But *Joe must be home by ten, because I always see his light go on then* involves instead a metaphoric "compulsion" of the speaker's reasoning processes: "I am forced to conclude that he gets home by ten, because I know that I always see his light go on then" (see Sweetser 1982, 1990; Talmy 1988, 2000).

What all these examples share is that some part of the linguistic form (e.g., *because*) need not be interpreted directly with respect to the expressed content surrounding it but can be interpreted as meaning something about the speaker's mental processes or the speech interaction, *even though those mental processes or that speech interaction have not been explicitly mentioned* in the content. So conditionals are not alone in allowing speakers to implicitly access speech-act, epistemic, and metalinguistic structure as well as content. As we shall see, their uses in negotiating space structure in all of these domains are central to the motivation we offer for their formal characteristics.

In fact, many grammatical markers and constructions explicitly signal aspects of mental-space structure; this is nothing unique to conditionals. Fauconnier (1985 [1994], 1997) has argued that pervasive grammatical markers such as definite and indefinite articles are equally engaged in mental-space construction. Fauconnier and Sweetser (1996) present a set of studies of grammatical marking of mental-space structure; Sweetser (1997) suggests that the choice of a lexical or periphrastic predicate may also be a grammatical marker of space structure. From these and other related work (such as Van Hoek 1992), set-up and structuring of mental spaces appears to be a central component of our production and interpretation of linguistic forms. The *If P, (then) Q* construction itself has been treated as a space-builder since Fauconnier (1985 [1994]), and the choice of verb forms to indicate epistemic stance fills a function similar to that proposed by Fauconnier for the French subjunctive. The point here is that an analysis which treats these constructions as having mental-space semantics can make generalizations which would otherwise be missed about the use of the constructions, and about restrictions on their use.

It is important to remember that *content* is not a term referring to a particular mental space, in the way that *epistemic* and *speech act* and *metalinguistic* refer to the spaces of the speaker's current reasoning processes, discourse interaction, and evaluation of form choices. Anything, including the current speech act

or the speaker's thought processes or linguistic judgments, can become the explicit content of what is being said. We will reserve terms such as *speech-act reading* or *metalinguistic conditional* to refer to cases where the speech act or the linguistic form is not the overt content of the utterance but is nonetheless invoked as part of the causal or modal or conditional relationship which is expressed. *Since I know you were awake all night, I imagine you'll want to sleep this afternoon* expresses a relationship between two described mental states of the reasoning speaker. These mental states are the actual content of the utterance, and we would not need any special category of epistemic readings of causal conjunction to explain such an example. On the other hand, *Since you've been awake all night, you'll want to sleep this afternoon* includes no explicit reference to the speaker's mental processes but requires an implicit reference to them in order to interpret the relation expressed by *since*. This is what we refer to as an epistemic reading of a causal conjunction.[12]

1.4 A word about our data and methods

Our goals are both to elucidate the form and meaning of English conditional constructions, and to use them as a case study for theoretical issues concerning constructional polysemy and compositionality. For both of these goals, careful attention to extensive data has been necessary. Readers will probably by now have noticed that we are taking examples from a variety of written English sources. The citation for each attested example will be found following the example; for sources cited multiple times, an abbreviated citation is used in the text, and the full citation can be found following our bibliography. Occasionally an overheard spoken example will be given, and the source cited. Examples with no citation are invented, whether by us or by colleagues; we have tried, however, to minimize the use of invented conditional examples except in the creation of contrast pairs, where we will often contrast an attested example with a plausible unattested one which differs from it minimally in context or in form.

The data was gathered by a variety of methods, including some electronic corpus searches (noted), perusal and search of many hard-copy texts, and the gathering of interesting examples as they happened to crop up in texts or in conversation around us. All of these methods have their advantages. A participant observer who writes down a spoken example will always have extra knowledge

[12] For a functional approach to adverbial clauses which has interesting parallels and contrasts with our cognitive approach, see Harder 1996. For general comparison with current treatments of conditionals, see Athanasiadou and Dirven 1997, Couper-Kuhlen and Kortmann 2000.

about its pragmatic setting which an electronic searcher of a transcribed spoken corpus cannot have. Similarly, though perhaps to a lesser degree, a careful reader of a long written text will have constructed an enriched context for individual uses in the text, which would not have been accessible to an electronic corpus-searcher who might scan only the immediate textual environment. Rare uses of constructions may not happen to occur in a particular corpus, even a fairly large one (e.g., meta-metaphorical conditionals never turned up in an exhaustive corpus search conducted by Declerck and Reed 2001). On the other hand, corpus data is naturally invaluable in ensuring that uses have not been omitted from a description simply because the researcher failed to focus on them, as well as in providing a diagnostic of the frequency of a given constructional use.

Another important factor is searchability of specific constructions. Some of our constructions are all too readily searchable: relatively easy though it would be to single them out, it would have been impossible to analyze individually every example of *If P, Q* in a large on-line corpus, so we were forced to deal with smaller samples. Others are almost impossible to search for precisely: the coordinate constructions described in Chapter 9 are an example of a class of constructions which would have been fully searchable only by examining all instances of *and* and *or* (or even conjunctionless "comma" coordination), and then handpicking the conditional examples from this immense haystack of data. (Context would also have had to be examined for each example, to be sure that the relevant meaning was intended.) For these constructional classes, we necessarily relied more on full human searches of extended texts, and on relevant adventitious examples.

Because this book is about a class of constructions which interact very strongly with the broader surrounding discourse context, our most central data source has been careful reading of longer texts. Each of us has gone through multiple novels in full, and parts of numerous others, collecting all conditional examples. Among the works used are two detective novels in their entirety, and parts of numerous others; this choice was a deliberate one, since we noticed that detective fiction was a prolific source of non-content conditionals – especially epistemic ones. (After all, the real subject of a detective novel is usually not so much the crime to be solved, as the mental processes of the characters engaged in solving it or wondering about it.) Anne Tyler's *Accidental Tourist* was chosen because we noticed her remarkably complex use of conditional forms in depicting characters' conversational negotiations and mental processes. And Stephenson's *Snow Crash* is simply a non-stop tour of mental-space transitions, making it a resulting treasure house for our kinds of data; Stephenson's choice to write the novel in the narrative present also gives analysts an unusual

source of constructions in an extended narrative context, which are not overlaid with the tense markings inherent in standard past-tense narrative structure.

Statistical frequencies of constructions were not centrally relevant to our purposes. We rely to some extent on Ford's (1993) helpful study of the frequencies of clause orders in conditional and causal constructions. There are also two particular cases where we discuss constructional combinations which have been said to be impossible, but which are actually simply very rare because of their unusual pragmatic contextual demands. One of these is the co-occurrence of *even if* and *then*; the other is the use of distanced ("counterfactual") verb forms with *unless*. In both of these cases, early corpus searches failed to find examples; after specific good examples surfaced (we thank Anne Tyler for helping us to see the light on *even if . . . then*), later and more extensive corpus searches turned up a few more examples. It is true that the extreme rarity of these constructions crucially differentiates them from their competitors, in ways that might be relevant in studying their processing, for example. But although it would have been fairly easy to determine the frequency of some of the more common conditional constructions in particular texts, we feel that this might reveal more about the frequency of particular discourse goals and contexts, than about the constructions themselves. We have concentrated on determining the contributions of particular forms to the texts in which they occur, rather than counting the frequency of speakers' and authors' need to express these meanings. We shall return to the issue of frequency at the end of Chapter 5.

For some purposes it would be essential to do careful statistical study of conditional uses. Among these would be the study of the acquisition of conditional forms, and the study of their historical development. Clearly in the former case, one would want to use other data sources, such as adult input to interaction with children; Johnson (1996, 1999a, b) gives a fascinating study of the ways in which adult input, combined with the child's cognitive development, motivates the succession of uses of a form which are acquired by the child (cf. also Tomasello 2000, 2003). In the latter case, there is good evidence that the transfer of contextual inferences to conventional meaning of a form is a crucial component in development of grammatical meaning as well as of lexical meaning (Meillet 1958 [1912], König and Traugott 1982; Traugott 1982, 1985, 1989; Bybee and Pagliuca 1985; Hopper and Traugott 1993; Traugott and Dasher 2002). For examination of the historical development of conditional constructions, one would want to use balanced historical corpora; various researchers have provided evidence that in at least some cases, statistical frequency of a potentially reanalyzable form is part of the context for grammatical reanalysis (Tabor 1994, Bybee 1999, Bybee and Scheibman 1999). Furthermore, in the

study of discourse interaction it seems important to notice frequencies with which participants make use of particular discourse mechanisms. We will be giving some specific analyses of more extended excerpts from longer texts; but in these it has seemed more revealing to concentrate on the specific motivations for the uses in context than to provide added statistical metrics. However, we would like to think that our proposed form–meaning pairings may provide grist for the mill of future discourse analysts, since it is always more fruitful to examine the discourse distribution of specific constructions (proven form–meaning pairings) than of forms whose meaning is less well understood.

Perhaps the most surprising aspect of our data-collection process has been discovering (i) the ease with which one can find new and undocumented uses of over-described constructions such as the English *if–then* conditional or coordinate conjunction, and (ii) the wealth of undocumented "minor" constructions which are formally and/or functionally related to the "major" and better-documented ones. We shall in general be talking about constructions which are relatively common, and known to a wide range of English speakers. Nonetheless, we hope this work will contribute significantly to the simple grammatical documentation of this area of English.

1.5 The grammatical "door-scraper": compositionality and frames

In cognition, and therefore in language, we can often evoke a larger complex structure without being given all the component pieces. One little piece can be enough. Humans are brilliant at frame-metonymic inference: we are constantly doing things like noting a mug in the dishrack, and inferring that a housemate had tea or coffee; or finding a dead bird on the porch and placing blame for the killing on the cat; or seeing an advertisement and concluding that there is an actual company which placed the advertisement. Any of these inferences could turn out to be wrong. But they are automatic and allow us to know all kinds of things that would be difficult or impossible to verify personally. Unless we videotape our cat all day, or physically visit the facilities of every business we deal with, we have to trust our inferences about how particular sub-events and entities fit into larger frames.

This ability is just as crucial to grammar as to any other area of higher-order cognitive processing. Give us an *if* and a *was*, and we have more than enough to construct a whole conditional semantics and pragmatics, without any further formal structure. As we shall see later in this book, much less will suffice: a construction such as *no pain, no gain* is interpreted conditionally without an *if*, although the order of constituents tells us which is the condition for the

other. *Frame metonymy* is as automatic, as rich in potential, and as pervasive in grammar as in the rest of cognition. We are like the Rat in our book-initial quotation from *The Wind in the Willows*: give us a grammatical "door-scraper," and we can see a whole house, the entire experiential frame within which we understand what door-scrapers are for.

Functional reframing is also as important in grammar as in general cognition. To exemplify this cognitive process, consider the following actual incident, recounted to us by Gilles Fauconnier. People at a party are opening beer bottles with a cigarette lighter, because they can't find a bottle-opener. Later in the evening, a party guest wants to light a cigarette; he requests a lighter. He is handed the bottle-opener which someone (unbeknownst to him) has since managed to unearth. The helpful person offering him the bottle-opener assumes that he asked for the lighter in order to use it as a bottle-opener.

In grammar as in other situations, there are conventional connections between form and function. We conventionally associate lighters with lighting cigarettes, and bottle-openers with opening bottles, without much reflection about how they came to be the way they are, or about what other less conventional affordances are offered by that kind of physical object. Similarly, there are grammatical constructions which we might think of as "dedicated" to some specific communicative function – as conventionally "meaning" a particular meaning. And yet, in the right context, we readily notice the bottle-opening affordances of the lighter, or the conditional-expressing affordances of the particular *NP, NP* pairing involved in *no pain, no gain*. Such situational affordances can go on to become conventionalized – as happened temporarily and locally in the case of the guest who offered the bottle-opener in response to the request for a lighter.

Cognitive and linguistic structure are highly compositional – specifically in language, no analyst would deny the overwhelming regularities in the way linguistic forms combine regularly to produce larger wholes, whose meanings are predictably related to the meanings of the parts. But cognition and language are also less than compositional, and more than compositional. Sometimes relatively fixed combinations of forms have meanings which we just cannot predict from examining the parts: knowledge of the meanings of the words will not tell a non-native speaker of English that *the more, the merrier* means something like "Merriment will increase with number of participants," far less that it extends to cases where no "merriment" is literally involved, such as professional tasks or sharing rides (see Fillmore, Kay, and O'Connor 1988, Michaelis 1994b). At other times, you get the meaning of a whole construction "for free" from the presence of one sub-constituent: the parent who says *One*

more word out of you! in an admonishing tone to a child talking after bedtime evokes immediately the conditional relationship between the hypothetical space of uttering *one more word*, and possible negative consequences.

In this book, we will take English conditional constructions as a sample case of grammatical compositionality, non-compositionality, and extra-compositionality. We shall examine the ways in which they involve compositional combination of regular constructions, as well as the ways in which they require us to postulate specific sub-constructions, even idiomatic formulae, and (on the other hand) the ways in which they often give us more meaning than compositionality could provide. Inferential structure, frame-metonymic reasoning, and contextual affordances are constantly and productively at work in giving us access to such meanings – which may become conventionalized, once they have been accessed. Overall, it makes little sense to see grammatical meaning – or cognition – as purely compositional. Rather, we need to recognize that both may exploit cues which are often minimal, to build a much larger and more complex structure from known context and correlations. And we need to remember that they are inherently that kind of a system; natural language and cognition have never been – and could not be – used by everyday users in context-free logical compositional ways to refer to set-theoretic categories. Grammar, like thought, works with highly specific and very general correlations, exploits relevance in context, and is generally successful at prompting much meaning with minimal form.[13]

English conditional constructions perfectly exemplify the cognitive phenomena just mentioned. They richly display the complex overlaps between meanings and forms of different related constructions, and the contextual pragmatic inferences attendant on their uses in conext. They are also a showcase example of the ways in which the "same" meaning can be conveyed either via a complex compositional construction, with each subcomponent cuing some part of the intended meaning, or via some much more partial cue, which conveys rich meaning only because most of that meaning is already accessible from the context.

[13] Fauconnier's preface to the 1994 printing of *Mental Spaces* gives a particularly clear picture of the extent to which language functions by prompting space construction which goes far beyond what is conventionally expressed – and the extent to which it *can only* function in this way. Interestingly, one of the few general convergences between cognitive and formal approaches to linguistics in recent years has been the increasing recognition that most of meaning is not simply "in" the forms. Work in Relevance Theory is a good example; see Sperber and Wilson 1986, 2002; and related work in Relevance Theory; for a relevance-theoretic account of conditionals in particular, see Smith and Smith 1988.

1.6 Where we're headed

We now turn to the analysis itself. The book is to some extent a tour of English conditional constructions. Since mental spaces are one of our most basic analytic tools, we begin by showing that traditional categories of conditionals, as well as some less traditional but well-supported categories, can be systematically mapped onto semantic and pragmatic structures involving mental-space configurations. We move from mental-space structures such as *prediction* and *alternativity*, which we claim are central to the meaning of certain common (and even "prototypical") conditionals, to other issues such as the order of the space-building process and its relation to the order of clauses. We try to give a relatively full analysis of a range of constructions, supported by close analyses of some specific textual examples and examination of the relevant constructions' contributions to the space-building processes prompted by the examples in context.

We see our specific examples as constantly and inevitably relevant to a deeper understanding of the relation between language and cognition. The speakers and authors of our examples show astounding skill and versatility in achieving their communicative goals, and in the process they necessarily reveal much about the mental processes of reasoning which underlie their performances. An analysis of meaning in terms of mental spaces offers us the means to formally express generalizations about conditional constructions which would be lost if we were to insist on separate descriptions of semantics and pragmatics, for example; this alone is an important observation about what cognitive models of language are plausible. At a higher level of analysis, we concur with Mark Turner (1991, 1996) in feeling that it is at least as important to examine the cognitive structures involved in complex artistic texts, as it is to model other aspects of cognitive processing. Our goal is to provide an analysis of conditionals which may promote understanding on all levels of their use.