

English notes

Jinyuan Wu

November 16, 2022

Contents

Chapter 1 Introduction	1
Chapter 2 Grammatical overview	2
2.1 Morphology	2
2.1.1 Wordhood in English	3
2.1.2 Morphological devices	4
2.2 Parts of speech	4
2.2.1 Nouns, verbs and adjectives	4
2.3 Nouns and noun phrases	5
2.4 Verbal morphology and the clause	5
2.4.1 TAM categories	5
2.4.2 Negation	6
2.4.3 Transitivity and alignment	6
2.4.4 Finite clause types	7
2.4.5 Valency changing	9
2.4.6 Light verb constructions	9
2.4.7 Nonfinite constructions and nominalization	9
2.5 Adjectives, adverbs, prepositions, and their phrases	9
2.6 Clause combining	10
2.7 Constituent order	10
2.7.1 Overview	10
2.7.2 Typological parameters	10
2.7.3 Adverbial elements	10
2.7.4 Information structure and constituent movements	10
Chapter 3 Nominal categories	11
3.1 Overview	11
3.2 Pronouns	11
3.2.1 Personal pronouns	11
3.2.2 Demonstratives	11
3.3 Numerals	11
Chapter 4 The structure of the noun phrase	12
4.1 Overview	12
4.2 Possessive constructions	12
4.3 Preposition constructions	12
Chapter 5 Verb inflection and TAM marking	13
5.1 Overview of the verb paradigm	13
5.2 Inflectional forms	13
5.2.1 Lexical verbs	13
5.2.2 Types of irregular verbs	14
5.2.3 Auxiliary verbs	14
5.3 Periphrastic constructions with auxiliary verbs	15
5.3.1 The regular auxiliary chain	15
5.3.1.1 Minimal auxiliary chain	15
5.3.1.2 Do insertion	16

5.3.1.2.1	Obligatory <i>do</i> insertion	16
5.3.1.3	<i>Do</i> for emphasis	16
5.3.1.4	Adverbs in the auxiliary chain	16
5.3.1.5	Negation in the auxiliary chain	16
5.3.1.6	Subject-auxiliary inversion	17
5.3.1.7	Summary: the structure of the regular verbal complex	17
5.3.2	Semi-auxiliaries	17
5.3.3	Comparability with moods	17
5.4	TAM meanings of verb inflection	17
5.4.1	Descriptive parameters	17
5.4.2	The simple present	17
5.4.3	The present perfect	17
5.5	Other semantic concepts	17
5.5.1	Overview of strategies	18
5.5.1.1	TAM adverbs	18
5.5.2	Overview of semantic concepts	18
5.5.3	The future time	18
5.5.4	Evidentiality	18
5.5.5	Boundedness	18
5.6	Use and meaning of modality auxiliaries	18
Chapter 6	Verb valency	19
6.1	Overview of arguments of verbs	19
6.2	Prototypical transitive and intransitive verbs	19
Chapter 7	Peripheral arguments	20
Chapter 8	Simple clauses	21
8.1	Overview	21
8.1.1	Canonical clauses	21
8.1.2	Active and passive voices	22
8.1.3	Moods or types of finite clauses	22
8.1.4	Nonfinite clauses and verbless clauses	23
8.1.5	Clausal derivations	23
8.2	Clausal dependents	23
8.2.1	Overview and classification	23
8.2.2	The subject	24
8.2.2.1	Semantic role	24
8.2.2.2	Accusativity	24
8.2.2.3	The subject in clausal derivation	24
8.3	Clausal continuation	24
8.4	Minimal declarative clause	24
8.4.1	Logic and default information structure	24
8.4.1.1	Descriptive parameters	24
8.5	Topicalization	25
8.6	Cleft constructions	25
8.6.1	<i>It</i> -cleft	25
8.6.2	<i>Wh</i> -cleft	25
8.7	Expletive subject constructions	25
8.7.1	<i>There be</i> existential construction	25
8.7.2	<i>It seems that</i> ...	25
8.8	Focus constructions	25
8.9	The passive voices	25
8.9.1	Overall scheme	25
8.9.2	Passivized argument	25
8.10	Interrogative moods	25
8.10.1	Overview	25
8.10.2	Yes-no questions	25
8.10.3	Open questions	25

8.10.4	Tag questions	25
8.11	The imperative mood	25
8.12	The to-infinitive	26
Chapter 9	Clause combining	27
9.1	Complement clause constructions	27
9.1.1	Types of complement clauses	27
9.1.1.1	Subjunctive clauses	27
9.1.2	Complement-taking verbs	27
9.2	Relative clauses	27
9.2.1	Types of relative clauses	27
9.2.2	Purpose relative clause	27
9.3	Clause linking: subordination	27
9.4	Clause linking: coordination	27
Chapter 10	Notable variations	28
10.1	Early Modern English	28

Theoretical preliminaries

In short, this note is based on Basic Linguistic Theory (Dixon 2009, 2010, 2012) with generative flavor, and since I will use this theoretical framework from the first chapter to the last, it's probably a good idea to outline the framework before everything else starts. It's my belief that the descriptive theoretical framework outlined by Dixon is largely – if not completely – compatible with modern generativism, especially the branch of Distributed Morphology and Cartography. This note is partially intended as a demonstration of this idea, and in the main body of this note, I insert many boxes about the general principles of morphosyntactic structure building that look like this:

Box: Description of the content of the box

These boxes can be safely ignored if you are only interested in English grammar itself. For more “substantial” (as opposed to more formal) information, a box with a different style like the follows will be provided:

Box: Description of the content of the box

The dictionary between generativism and Basic Linguistic Theory is roughly the follows:

Correspondence between concepts in generative syntax and BLT

Generativism	BLT
phrase (DP, vP, etc.) with specifiers	dependency relations
phrase without specifier	marking of grammatical category
specifier-complement relation of phrase	grammatical relation (subject, object, etc.)
functional head	grammatical category
several layers of co-occurring projections	constructions
root in Distributed Morphology	head
a batch of spellout result	a phrase (verb phrase = vP-TP-CP span) or word
phase (DP or CP)	word or constituent
tree structure	order of “closeness” of dependency relations
movement	dependency network

One important thing is Basic Linguistic Theory often recognizes the spellout of a functional projection as a phrase – the spellout of the TP-vP projections, for example, is Dixon's *verb phrase*, if there are multiple words in it. Since in practice, if the TP-vP projections are realized as affixes, we recognize them as a part of the word to which the affixes are attached, then if the TP-vP projections are realized as auxiliaries, then calling the sequence of these auxiliaries as a phrase in the surface-oriented analysis isn't quite wrong.

Basic Linguistic Theory still assumes a constituency tree, but it's a highly flat one: The only levels are words, noun phrases and clauses. Inner structures of these constituents are not represented as trees – dependency relations are used instead: Of course, there has to be some ways to take into account phenomena that are easily caught by a constituency-based analysis, and even in works by Dixon himself, we can find notions like “the verb together with the object is modified by an adverb” (Dixon 2005, pp. 376). These differences in the notation are superficial: We can see it's easy to translate between Basic Linguistic Theory and modern lexical-decompositional generative syntax in the table above. What

Dixon calls “underlying structure” is actually “syntax proper” in generative syntax: The former simply can’t be the real semantic structure (Box 2.6, Box 2.7, Box 2.4). Dixon (2009) also firmly argues against the notion of functional heads, but this may be from misunderstanding of what the notion of functional heads are supposed to catch: introduction of each layer of grammatical relation or category slightly changes the syntactic properties of the structure. This note is aimed to be comprehensible as a descriptive one, so the notion of functional heads isn’t emphasized, but I will be fully aware of the fact that grammatical relations and categories are in a hierarchy about how “close” they are to the lexical head (i.e. the root).

Another notable tradition is the structuralist tradition, under which the most important recent work is probably Huddleston and Pullum (2002). Constituency trees in Huddleston and Pullum (2002) are more like generative trees, but there are still differences. First, the notion of head in Huddleston and Pullum (2002) is still not “functional heads” in modern generative grammar, but lexical heads similar to Dixon (2009), though Huddleston and Pullum (2002) seems to want to achieve a compromise between lexical and functional heads and certain inconsistencies arise because of that (Box 5.3); sometimes auxiliaries that are collective realizations of several functional heads are also recognized as heads in Huddleston and Pullum (2002), and controversies like whether prepositions are heads then arise (Box 5.3). And now since functional heads are removed, the dependency relations introduced by these heads now have to be introduced by adding a *syntactic function* tag to every subtree in a tree. Thus “the DP is in the specifier position of TP” is replaced by “the NP is in the subject position”, and the tag of that NP in the tree is now “subject: NP”, not just “NP”. Second, dependency relations that can’t be reflected by the tree structure are still required: Since Huddleston and Pullum (2002) reduces the use of movements, the relation between the subject and the main verb is said to be that “the subject is the external complement of the verb phrase” (here verb phrase means the verbal complex plus internal complements, i.e. Dixon’s verb phrase plus inner arguments). And similarly prepositional phrases in noun phrases that are licensed by an adjective far from it are called “indirect complements”.

The main problem of the approach in Huddleston and Pullum (2002) is if a constituent is broken by some further movements, then it’s impossible to draw a constituency tree that both respects the surface adjacency relations and the deep dependency relations. It’s impossible to talk about the verb phrase in a VSO language, though there are strong evidences suggesting there is a movement that fronts the main verb. Fortunately, this is not the case for basic constructions in English, but even so we can still occasionally find cumbersome treatments of some constructions in Huddleston and Pullum (2002), in which constituency analysis is done but it doesn’t tell us much about the construction, or linear order-based analysis is done while constituency relations are simply ignored. That’s why this note is mostly carried out in terms of Basic Linguistic Theory.

Still, I think making the hierarchy structure of dependency (or constituency) relations clear is important, so I will use the term *verb phrase* in the way of Huddleston and Pullum (2002) (Box 8.1) and do a fine anatomy of clausal syntax (Fig. 8.1) instead of mixing all clausal grammatical relations together on the same plane.

Huddleston and Pullum (2002) also keeps a strict complement-modifier (they use the name *adjunct* for clausal ones) distinction. Some constituents – like the negative adverb *not* or *rarely* – are claimed to modify a lexical head (say, a verb), but that “modification” actually changes both the syntactic and semantic properties of the whole structure drastically. Some modifications, like ordinary adverbs, change the properties of the modified structure more slightly, but still there is a strong tendency of the relative order of these modifications, and each modification, therefore, still changes the syntactic property about what further modifications are possible. For narrative convenience, the complement-modifier distinction will appear in this note, but I will be fully aware of relevant phenomena and do away with the notion of “freely added adjuncts or modifiers fundamentally different from ” (Box 2.5).

Chapter 1

Introduction

TODO list:

- Position of spatial PPs (prototypical peripheral arguments) in clause structure: vP or TP?
 - See Non-oblique syntax for a dative experiencer in Korean: experiencer PP as one element in VP
 - The book The order of prepositional phrases in the structure of the clause may be very useful; but it turns out it only covers abstract concepts that can be used to motivate the PP-as-peripheral argument analysis and how to derive the order of PPs; it doesn't contain a list of all types of PPs
 - But From Minimalism to Cartography: towards a unified account¹ Silvia Martínez-Ferreiro and Meritxell Mata-Vigara claims the above book indeed contains a sequence of PPs; I found this, it's around p107
- Types of numerals
- Comparative constructions

Chapter 2

Grammatical overview

This chapter presents basic (and unavoidably fragmentary) typological information of English, as well as basic principles to be followed in this note, and the arrangement of some sections are more function-oriented, with several structurally heterogeneous implementations of similar semantic concepts placed in one section. I will overview word classes – or more generally, form classes – as well as classes of phrases and clauses, and also their subclassification and distributional information. Topics like combinatorial possibilities of constructions are not touched in this chapter: For more organized, structure-oriented summaries of NPs and clauses, see, for example, Ch 4 and Ch 8. A lot of boxes concerning my theoretical orientation appears in this section, which can be safely skipped if you are not interested in them.

2.1 Morphology

Box 2.1: The exact meaning of *morphology*

In generative syntax, the subject-auxiliary inversion is usually attributed to a T (or other functional heads)-to-C movement. This notion reminds us the inherent vagueness of the term *morphology* in linguistic description: If we equate *morphology* with the stuff about post-syntactic operations i.e. *details of how a syntactic tree is realized*, then definitely the subject-auxiliary inversion is a part of morphology. This claim, however, is too outrageous for descriptive linguistics.

It's better to say there are two dimensions when we divide the grammar of a language into parts. The structure-realization axis is about whether a part of grammar is about abstract categories, dependency relations, constituents, etc. or just the linearization of the above. Note that the first part – constantly called the underlying structure by Dixon (2009) – is still not the semantic structure, because the same semantic concept can be realized by several structurally heterogeneous constructions. The morphology-syntax axis has its own vagueness, because the phonological standard of wordhood (how easily a construction undergoes internal phonological processes compared with its interaction with the neighbors) and the morphosyntactic standard of wordhood (how small a construction is) don't always agree (Box 2.2).

Still, there are descriptive problems with the morphology-as-the-grammar-of-words approach: Too many largely independent concepts are mixed into the same chapter. For example, verb morphology in this sense includes the marking of TAM categories (which, in the perspective of the abstract, underlying structure of syntax, belongs to the clause, not the verb), synchronic verbal derivations (which is essentially syntax within the verb – a good example is De Clercq and Vanden Wyngaerd (2019)), and historical verbal derivations (patterns in the lexicon), and a reader uninterested in the details of conjugation classes has to painfully search for a while before he or she finds whether the language in question has future tense.

The wisest idea therefore may be the follows: Instead of the vague and cumbersome morphology-syntax division, we divide the grammar into the following parts. The first part roughly corresponds to “inflection” but includes periphrastic constructions. This part deals with how functional categories are attached to – phonologically or syntactically – a noun/verb/adjective/... root. In generative terms, it's the syntax of the supine of functional projections. The second part roughly corresponds to “grammatical relations” or simply “syntax” in older grammars. It's about how other constituents are linked to the complex mentioned in the first part. In

generative terms, it's the syntax of specifiers (SpecTP = subject, SpecTransP = object, etc.). The third part – in principle optional but in practice always needed – is about “transformations”, or maybe “derivations” – note that transformations are no longer used in contemporary generative syntax and derivations are used simply as a synonym for “structure building” – about how a construction is related to a more canonical one. (It's always the case that transformations miss some subtle differences between the two constructions, and that's why transformations are no longer recognized as primitive concepts in generative syntax. Also, transformation-based account is awkward when the key point of a construction involves some highly semantic operations (Box 2.11) Do this with care.) An optional fourth part is devoted to historical forms, usually called *derivations* of words (Not that *derivation* in part 3!). The grammarian of course never organizes chapters in this way (especially when he or she just wants to list all attested forms without any concern on how they combine with each other), but it's important to know this is the correct division of labor.

2.1.1 Wordhood in English

Box 2.2: About wordhood

It's impossible to establish an uncontroversial definition of the term *word*. Phonologically we can define a word as a unit in the utterance that has clear pauses as its boundaries and whose inner makeup is targeted by phonological rules much more frequently than larger units (Dixon 2010, § 10.3). The problem is such a unit sometimes doesn't bear any morphosyntactic significance: It may contain two morphosyntactic words, it may be just a part of a morphosyntactic word, or it may even be the combination of two segments from two different morphosyntactic words.

We can also recognize morphosyntactic words, i.e. a unit that is made of one or more roots and morphological processes, and has a conventionalized meaning, and is unable to have its parts scattered through the clause, and have relatively strictly ordered inner components (Dixon 2010, § 10.4). The problem then is the standards conflict with each other, and they are also true for some constructions that clearly are not words. A root-plus-morphology construction can be created in the syntax, as in Chinese verbal resultative or directional complement constructions. Phrases can have conventionalized meanings as well, especially in specialized fields. Speakers are sometimes aware of the inner parts of words and occasionally split them in the syntax, as in *pre- and post-processing*, while on the other hand, some orthographical multiple word constructions are also not active in syntax, like *apple tree* or *American history teacher*, but people usually don't say they are words. And as syntactic cartography shows, in many languages syntax is much more “rigid” than we previously thought, and it's also possible to have words in which a part of affixes are not in a completely rigid order (with a difference in the meaning, obviously, but the same is also true for syntax). The fact that functional heads are often realized as affixes on one word also poses a bracketing dilemma: *American history teachers* should be syntactically partitioned as [*American history teacher*]-s, but this goes against the common sense conception of the construction.

From the Distributed Morphology perspective, this is expected, because morphosyntactic words recognized by the above criteria are sometimes small phrases (as in *American history teacher*, the grammar of which is about grammatical relations as is mentioned at the end of Box 2.1) and sometimes span spellout of a functional projection (the grammar of which is about inflectional pattern as is mentioned at the end of Box 2.1). The first has no substantial difference with a, say, subject-predicate structure, and the latter has no substantial difference with a syntactic constituent or a sequence of auxiliary verbs (“verb phrase” in the definition of Dixon (2009)). It's however useful to define a morphosyntactic word as the *smallest* unit that has some of the above properties, as a layer in Fig. 8.1. After introducing this concept, we can split the burden of describing morphosyntactic into several chapters about “morphology” and several chapters about “syntax”, and the grammar will be very organized for someone who just wants to read at least *something* about the language before figuring out the grand general structure.

Some say we can define the morphology-syntax distinction based on speech production – there are generally less speech errors in the morphology component, the morphology component is more “automated”, etc., but this also doesn't go beyond the “word as small syntactic constituent” definition or the “word as phonologically processed constituent” definition.

In conclusion, the notion of *word* is a good descriptive concept if defined with a few clear criteria, but we shouldn't put too much theoretical emphasis to it. And definitely we shouldn't talk about "categorical differences between words and phrases" (Bruening 2018).

2.1.2 Morphological devices

2.2 Parts of speech

Box 2.3: Determining parts of speech

Parts of speech in this note are mainly determined by morphosyntactic tests of both form and syntactic function, like the standards listed in Dixon (2009, § 3.3). Despite Dixon's strong opinion against the generative or "formalist" approach, his criteria for word classes don't go against generativism, because what are taken for granted in generative syntax is not concrete, surface-oriented labels like "English-like nouns" or "Latin-like verbs", but labels like the noun categorizer, the verb categorizer, the light verb heads, TAM heads, etc., and the allowed combinations of them, like whether a noun is able to replace the main verb in a clause (which may be realized by a BE light verb, or something else) are definitely language-specific: Some combinations just don't spellout in one language, but spellout well in another. That neatly explains why tags like nouns or verbs are universal: Because the relevant functional heads exist in all languages. It also explains why the behaviors of nouns differ cross-linguistically: because the noun categorizer interacts with other ingredients differently.^a

That means I don't use terms like *noun clause* or *adjective clause*, because what they mean are clauses filling argument slots, clauses filling attributive slots, etc., and these clauses are similar with nouns and adjectives in their syntactic functions but not their internal forms, so they are not nouns or adjectives. I will also avoid paying too much attention to the semantics of a word, because the same semantics can be expressed in several ways in the grammar, and the focus of this note is the latter.

Purely grammatical items, like auxiliary verbs, inflectional suffixes, determiners, don't really need part of speech tags: They are added by the grammar and are phonetic realization of grammatical categories and relations, or in generative terms, phonetic realization of functional heads. Huddleston and Pullum (2002) still assigns part of speech tags for grammatical items, but that's not the position of this note.

^aPeople like Haspelmath may say the universality of *noun* is a "comparative concept" and is rooted in communicative functions of language. The problem with the first claim is its ignorance of equivalence between two ways to formulate a grammatical theory: One is to use primitive concepts to construct larger objects, and the other is to show the relation between the larger objects. Modern generativism is done in the first way, while "comparative concepts" belong to the second approach. They are mathematically equivalent, and asserting there are useful comparative concepts is equivalent to asserting the existence of primitive features. (This is, of course, true for a theory of *competence*; a theory about psycholinguistic reality and *performance* is another story.)

The problem with his second claim is the domain of the so-called domain general communicative functions are actually narrow. To express the concept do some action to something, you don't really need a noun-verb distinction: In functional programming, which is created by the domain-general problem solving skills by the human race, everything is a function – or maybe a "verb", yet you never find a group of people speak like this. And similarly the TOML format is a concise way to communicate facts, while still you never find a tongue with such a structure, though it's understandable using our domain-general cognitive abilities. Sometime semantic information that *are* recognized by people, like the scope of quantifiers, are not reflected in their speech explicitly. So the object – the collection of so-called communicative skills – that Haspelmath's comparative concepts work on is not semantics or pragmatics, and this object only appears when people choose to "talk" or "sign" or "write" – not when they are solving puzzles. This target of Haspelmath's comparative concepts therefore has to be the *syntax proper*. Only in it do we constantly work with things like the verb and its arguments, noun phrases, etc., which, if understood as semantics and pragmatics, are malfunctioning in some aspects and can be recast into equivalent formalism, yet people are content with the former and never do the latter. Note that the above discussion is about the abstract structure building devices, and even for concrete grammatical categories, there are evidences suggesting their innateness (Satick 2022).

2.2.1 Nouns, verbs and adjectives

English has a quite clear distinction between the noun class and the verb class. The inflection patterns are different,

The English adjective class is not quite similar to the noun class or the verb class (Dixon 2010, pp. 73). The adjective class has the following properties. Attributives in NPs are most frequently adjective phrases. Adjectives are

2.3 Nouns and noun phrases

English NPs may have – sometimes must have – one determiner,

Box 2.4: The position of quantifiers (and other NP “modifiers”)

Though quantifiers are often seen inside NPs, their semantic scopes are definitely larger. This is

2.4 Verbal morphology and the clause

2.4.1 TAM categories

English has two tenses: the past and the present. The aspectual system is more complicated. The concept of composition – whether the inner makeup of an event is important (Dixon 2012, § 19.10) – is marked by the so-called plain-progressive distinction. This is a restricted version of the imperfective-perfective distinction (Dixon 2012): TODO: some imperfective constructions can’t be progressive. The English plain-perfect distinction marks a distorted version of the completion concept – whether the time of an event is before the time of narratives defined by tense (Dixon 2012, § 19.7), because sometimes the event time in the English PERFECT is the starting time of the event in question, not the finishing time, and this disagrees with the term *completion*. English also has several modal constructions. The above categories interact freely (§ 5.3.1, TODO: really?).

The category of tense is always realized morphologically on the main verb when there is no auxiliary or on the highest auxiliary verb (§ 5.2). The category of the two aspect categories are marked by auxiliary verbs, as well as modality (§ 5.3).

There is no future tense in English: The future time is marked by the auxiliary *will* or *would* or the *be going to do* construction (§ 5.5.3).

Besides the regular TAM system, there are also some periphrastic constructions marking specific TAM configurations, like *used to* or *would rather* (§ 5.3.2). Adverbs are also an important part in expressing TAM information in English, and have relative positions with auxiliaries that are more rigid than previously thought (TODO: ref).

There are usual compatibility issues between TAM categories with some moods (§ 5.3.3).

Box 2.5: The TP projections

What happens here is the span spellout of grammatical categories in the TP layer. Some adverbs are also involved in the TP domain. Historically they are viewed as adjuncts, but this notion reaches some theoretical challenges (it makes no sense to introduce two structural building mechanism) as well as empirical ones (Sportiche 2017). I follow the practice in Cartography syntax and regard them as specifiers of functional heads, while auxiliaries are a part of the inflection pattern of the verb with the term *inflection* defined at the end of Box 2.1. In this way it’s easy to account for the fact that in the surface form, verbs occur between adverbs: If adverbs are specifiers, then their corresponding heads can be sites of vocabulary insertion. In the prototypical case, the specifier of, say, an Asp_{continuous} head tells us more about *how* continuous the event is, just like that the object – the specifier of the Trans head – tells us more about *what* is the patientive argument. It’s also frequent that the ways to fill this specifier is highly limited, and in this way the semantic function of the adverb is almost the same as the head, though the former is “in the format of specifier” (Shlonsky 2010), and they are by all means a part of the sequence in Table 5.2. Indeed, cross-linguistically, we find the order of adverbs (so-called adjuncts) and the order of related functional morphemes show a very strong correlation – called the Mirror Principle, and disagreements between the two can usually be resolved by postulating some movements. The positions of prepositional phrases receive relatively less attention, but their positions can also be seen as a part of Table 5.2 (Schweikert 2005, pp. 106), though usually prepositional phrases appear at the end of a clause and don’t really appear in Table 5.2 in the

surface order. The correspondence between the order of PPs and verbal extensions – realization of functional heads – can also be found (Cinque 2006, pp. 160).

2.4.2 Negation

Negation in English clauses is usually realized by the negator *not* or negative forms of auxiliaries (§ 5.3.1.5). Negative pronouns like *nobody* can also be used to express a negative idea (TODO: ref). It should be noted that the relation between the semantic scope and the constituent order of negator is subtle: Several factors are involved in determining the former.

Box 2.6: Negation in Cartography

The mismatch between the syntactic position and the semantic scope of negation is prevalent: Both narrowing and widening the scope are possible cross-linguistically (Moscati 2010, pp. 40). The exact status of negation in syntax is still a debated topic. Some quick analysis tells us that besides the complement clause construction-based strategy of negation, clausal negators can be roughly divided into two subtypes: One is the type of “phrasal negators”, which doesn’t disrupt the behavior of the verbal complex, like verb inflection or V-to-C movement (Box 2.1), and fits in the negation-like-adverb picture (Zanuttini 1997, pp. 101; Radford 2009, § 4.7); The other is the type of “negation heads”, which in turn has two subtypes with respect to their morphological properties, the first being the type of verb inflectional affixes, the other particles that are somehow closely attached to the verb (Zeijlstra 2013).

The position of NegP shows strong cross-linguistic variation. This is especially demonstrated by looking at morphologically rich languages, because spelling out a span of functional heads into one phonological word is unmarked compared with incorporating a specifier of a functional head into the word, and while TAM affixes have a strong tendency to be ordered according to the preposed order in Cartography, the position of the negation affix seems to be free (Moscati 2010, pp. 15).^a The category of negation, which is purely logical, is therefore in sharp contrast with the hierarchy of TP, which encodes more substantial semantic information and has a relatively rigid order cross-linguistically.

The problem now is that empirical facts tell us that in some languages, the structural position of negation doesn’t faithfully represent the semantic scope of negation. If we assume the syntactic structure faithfully represents the semantic scope of negation, we need to set multiple negator positions in the TP (and also CP – think about the Latin negative complementizer *ne*) layer, while the PF realization of the negation is fixed to a specific position (in the case of English, after the first auxiliary verb). We can also assume a uniform NegP, but then LF must be able to arbitrarily change the negation scope (Moscati et al. 2012), which may give rise to the theoretical problem if LF operates on the Neg head, because then there now seems to be “real” head movements that change the semantics. However, as is shown above, syntactic negation can be seen as determined by the specifier, and LF scope widening by specifier movement at least doesn’t face theoretical barriers, and agrees with the theory of LF raising of quantifiers (Box 2.4). The meaning of the Neg head, then, is just to remind the listener that the sentence involves *some* kind of negation, without specifying what exactly is negated. This phenomenon – mismatch between PF and LF, or even the syntax proper and LF if we follow the uniform NegP followed by specifier raising approach – is actually quite prevalent (Box 2.4, Box 2.7).

^aNote that since the order of morphemes in the verb has a strong correlation with the syntactic functional head hierarchy motivated by *other* evidences, it’s not a good idea to claim that the position of the negation affix is completely an affair only about the realization of underlying grammatical structures.

2.4.3 Transitivity and alignment

English is a typical accusative language. A subject can be identified syntactically according to constituent order, case, semantic role, and more criteria (§ 8.2.2). The usual tests of syntactic accusativity, like extraction in coordination (1), can be run on English.

- (1) I [wondered around]_{intransitive} and [saw something weird]_{transitive}
- (2) I didn’t hurt him, but he hurt me.

In finite clauses we have **subject-verb agreement** if the tense is PRESENT and the subject is third-person singular.

Box 2.7: Syntactic argument structure is not exactly the semantic argument structure

Though many will tell you “the argument structure is semantic, and the semantic relations are coded as syntactic relations like subject or object”, such claims are kind of misleading. The point here is the semantics of “argument slots” or “semantic roles” *in syntax* is much more than the semantics of an argument slot *in logic*. Consider the sentence: *John didn’t drive that night*. It’s the negation of a usual predicate-argument structure – but what kind of *predicate*? Can you find a predicate with the time specified in a logic textbook? Definitely not. The word *drive*, despite being called a predicate (or *predicator*) in syntax, is *not* a predicate in the sense of logic. The correct semantic interpretation of the sentence should be ‘It’s [not] the case that there is an event *e*, such that [*e* happens at that night], and [*e* is about driving], and [John is the agent in *e*]’ (Zeijlstra 2013). Three predicate-argument structures occur in the interpretation. None of them is “drive”. And there is an argument – the “event argument” – which is described by the whole sentence but (of course) never appears in any of the *syntactic* argument slots. The *syntactic* structural information, like that *John* is somehow higher than the verb *drive* in the clause, also receives no representation in the semantics of the sentence. The conclusion is syntactic structures encode semantic information, but the mapping isn’t trivial: Similar concepts, like *predicate* or *argument position*, have different meaning in syntax and in semantics, and some structural information – like c-command effects as in pronoun binding – helps us interpret the sentence correct, but it doesn’t appear in the final semantic representation (though with the help of formal semantics, like λ expressions, we are still able to assign a semantic interpretation to each subtree in the sentence), and some semantic information, like the existence of the event argument, doesn’t appear explicitly in at least the PF, and whether it’s introduced in the syntax proper depends on your take about how much burden the syntax proper should shoulder.

Box 2.8: Alignment and the subject

Alignment means how arguments in the clause are matched with their clausal dependent statuses: The agentive argument usually receives the nominative case and sits in the subject position, the objective argument usually receives the accusative case and appears after the verb, etc. In accusative languages, the subject is higher than the tense marker and is in the SpecTP (or SpecSubjP, if we are to do fine-grained Cartography) position. When extracted from *vP*, the subject is *probed* and therefore *agrees* with the probing head, so we have subject-verb agreement. Of course it’s still possible to have object-verb agreement when the object is assigned the accusative case, which is also a probe-goal process, but English doesn’t show this pattern.

In world languages, sometimes we see alignment patterns other than the nominative-accusative scheme. When the agentive argument in a transitive clause is assigned an inherent case, we get so-called morphological ergativity, while syntactic ergativity is caused by an early EPP feature targeting the absolutive NP (Aldridge 2008). We even have more unusual direct-inverse system, which possibly arises from the fact that somehow the probe (roughly the tense head *T*) responsible for agreement of verb with arguments searches for a person feature *and* a discourse participant feature, so if a first person argument is present, the agreement affix becomes the first-person version, and the inverse affix appears to avoid two identical person features appearing together, as is observed in the Spanish *se lo* construction (Oxford 2017). The Austronesian focus system (Chen and McDonnell 2019) is another interesting phenomenon, which may be symmetric voice constructions or obligatory topicalization and isn’t comparable with accusative or ergative alignment in the latter case.

2.4.4 Finite clause types

English has the following major types of finite main clauses with regard to the related speech act (note that there are mismatches between form and meaning when it comes to mood): the imperative, the declarative, the open interrogative, the closed interrogative, the exclamative (§ 8.1.3). No further morphosyntactic marking of sentential speech act (such as sentence-final particles) exists in English. The

moods are *not* marked morphologically. The interrogative moods, for example, are formed by introducing an interrogative pronoun (for open interrogative) and subject-auxiliary inversion (§ 5.3.1.6).

Finite relative clauses look similar to open interrogative clauses, though usually without subject-auxiliary inversion, and finite complement clauses look similar to either declarative clauses or interrogative clauses (§ 2.6). English also has nonfinite constructions (§ 2.4.7).

Box 2.9: Mood and modality

Dixon (2009) firmly argues against using the term *mood* for the syntactic marking of modality, while Huddleston and Pullum (2002) uses the term *mood* for the syntactic marking of modality and uses *clause type* to specifically refer to Dixon's *mood*. To avoid confusion (*clause type* is too vague), this note follows the definition of Dixon.

The confusion seems to arise from traditional Latin grammar, in which there is no significant difference between a declarative sentence and an interrogative sentence, while there is significant difference between the verbal morphology in indicative and subjunctive clauses. On the other hand, in imperative clauses there is no indicative-subjunctive distinction. Therefore the imperative-non-imperative distinction is fused with the indicative-subjunctive distinction and is named *mood*. This relies on the specificities of Latin grammar and surely is not a universal category for all languages. English also has subjunctive clauses, but that's about modality, not mood.

Box 2.10: Clause and sentence

Also, note that *mood* is about *sentences*, and not necessarily anything that can be called a clause Dixon (2009, 96). (Here Dixon is trapped into another extreme by claiming the clause linking procedure is flat, and the sentence is the ultimate product of grammar. But of course clause linking can be done recursively, with a tree-like order.) In generative syntax, a TP or a low-level CP is already well qualified as a clause, but in order to construct a sentence – a verbal constituent that serves as a “full” utterance – we still need to include the full functional projections marking speech acts or speech “forces”. In Mandarin Chinese, for example, a clause often needs sentence-final particles attached to it to be an acceptable independent sentence, while clauses without sentence-final particles appear regularly in clause linking, and even more impoverished “small clauses” – basically *vPs* – also appear in clause embedding. Thus, there are several types of clauses with different sizes.

Such phenomena also appear in English, arguably in all languages. Non-embedded finite clauses are of course full CPs, but some embedded finite clauses, like the indirect quoted question in *I asked [why he was always late]*, show different behaviors with their non-embedded counterparts: In the bracketed example, the subject-auxiliary inversion is absent. Participle constructions are likely to be TPs, as well as infinitives in control constructions (Pires 2006), while infinitives are impoverished CPs.

Still, Huddleston and Pullum (2002, pp. 45, pp. 853) uses the term *sentence* almost as a synonym of *utterance*, and all discussions concerning the syntax in their account of English grammar are about clauses. In practice, covering all kinds of TPs and CPs with the catch-all term *clause* doesn't create much confusion, because non-embedded finite clauses, embedded finite clauses, and nonfinite clauses are usually discussed in different places and it's easy to infer whether the term *clause* means a full CP, a defective CP or a TP. So to say mood (or *clause type*, with the specific meaning of the imperative/declarative/interrogative distinction) is marked on a finite clause doesn't create much confusion, and nor do wordings like “the clause type or the mood marks the speech force”, though the latter is not universally true (in Chinese there are several syntactic systems marking the speech force).

2.4.5 Valency changing

Box 2.11: Valency changing

Valency changing involves the lexicon, the vP layer, and the TP layer. The term *valency changing* is kind of misleading, because what actually happens is *valency corresponding*, and the transformational rules used to describe valency changing are just phenomenological.

Some kinds of valency changing is likely to be purely because of the verb in question has two subcategorization frames. The clause *John and Mary will meet tomorrow* has the same meaning of *John will meet with Mary tomorrow*, but it's unlikely the relation between the two arises from some syntactic operations in the vP layer: The case may just be that *meet* is compatible with two vP structures, which turn out to have the same semantic interpretation. A transformation-based account for this argument structure variation inevitably involves transformation on *semantic* concepts, which makes things complicated without any benefits.

Sometimes, however, we can add a v head to an existing vP, and extract one of the arguments introduced in the latter into the specifier of the former or introduce a new argument. This is frequently seen in Old Chinese as well as its sisters, and is still the main way Modern Mandarin Chinese does valency changing.

It's also possible to have two (or more) vP structures that both work for a group of verbs, and for some reason (e.g. the agentive argument is assigned an inherent case, so it's no longer visible for the A-movement to SpecTP), one of them disrupts the way TP usually works. This seems to be the way the English passive works. (This is close to the mechanism of morphological ergativity (Box 2.8).)

In more descriptive terms, the vP-internal strategy lies on the blur line between derivation and inflection (and if the additional v head is realized as a word, that it lines on the line between multi-verb predicates and auxiliary verb constructions), while the vP-TP strategy involves the *alignment*. It's hard to draw a clear line between the first and the second strategy.

There are only two regular valency changing device in English, and both of them belong to the passive or the *passive voice*. The first is the *be*-passive (3), and the second is the lately grammaticalized *get*-passive.

- (3) a. [[A car]_{subject, agent} [hit]_{past} [me]_{object, patient} [this morning]_{time adjunct}]_{active}
b. [[I]_{subject, patient} [was]_{passive, past} [hit]_{ED-participle} [by a car]_{agent} [this morning]_{time adjunct}]_{passive}
- (4) [[I]_{subject, patient} [got]_{past} [hit]_{ED-participle} [by a car]_{agent} [this morning]_{time adjunct}]_{passive}

2.4.6 Light verb constructions

English has several verbs whose semantic contents are somehow bleached.

- (5) a. I [gave [the target]_{object} [a hit]_{action}]_{light verb construction}.
b. I hit the target.

2.4.7 Nonfinite constructions and nominalization

English nonfinite constructions include two participles (the *ING*-participle and the *ED*-participle), the bare infinitive and the *TO*-infinitive (§ 8.1.4). They are all morphologically marked (§ 5.2). English nonfinite constructions are largely restricted to relative clauses and complement clauses; adverbial nonfinite clauses are possible, but there are always finite counterparts (6). This makes English different from languages like Japanese, in which nonfinite adverbial clauses are much more frequent and sometimes are the only choice.

- (6) a. I usually watch jail shows [when waiting for the results of my program]_{temporal:ING-clause}
b. I usually watch jail shows [when I wait for the results of my program]_{temporal:finite}

2.5 Adjectives, adverbs, prepositions, and their phrases

Adverb phrases and prepositional phrases – which may be called **adverbials** collectively – prototypically fill **clausal adjunct** positions, which can be distinguished from clausal complements – which in

English are mostly core arguments – by tests described in [Huddleston and Pullum \(2002, Ch 4.§ 1.2\)](#). It's also possible for them to modify adjectives.

There are many subclasses in the catch-all adverbial class regarding the syntactic function. Some adverbials – both adverb phrases and prepositional phrases – are peripheral arguments (Ch 7) – the mean, instrument and manner of an event, the spatial and temporal location, etc. Some adverbs are TAM markers (§ 5.5.1.1), and of course, temporal peripheral arguments also have TAM meanings. Some adverbs have higher scopes and are more or less about speech acts.

2.6 Clause combining

All English clause combining devices are on the level of complete clauses: There is no complex predicate or clause chaining. Thus, TODO: types of clause combining

2.7 Constituent order

Box 2.12: Constituent order and syntactic structure

Many functionalists and some generativists have repeated the idea that the real constituency structure of natural languages is much flatter than we previously thought. But then they have to use dependency relations to make up for lost information, and there is a strong tendency that there exists a rigid hierarchy of how “close” the dependency relations are. This note is aimed to mimic how ordinary reference grammar works, so I won't really draw deep, binary constituency trees with lots of movements, but for each so-called constituent order rule, I will point out its structural origin.

2.7.1 Overview

As is said above, probably because of the erosion of the morphology system in historical stages (§ 3.1, TODO: more ref), English has highly rigid constituent orders. Moving of syntactic objects usually indicates non-trivial information structure (§ 8.1.5) or is triggered by the syntactic environment (TODO: interrogative, etc.).

2.7.2 Typological parameters

English doesn't show V2 order in canonical clauses which is frequent in many Germanic languages. It does show V2 order when **subject-auxiliary inversion** appears,

2.7.3 Adverbial elements

Adverbs appear at the initial (7) or at the end of a clause (8, 9), or in the verbal complex (10, 11). The verbal complex positions can be further divided into the positions after the first auxiliary (10) and the position before the main verb (10). Similarly – though less apparently – there are also two types of clause final adverbs, one with a pause in utterance, usually shown by a comma (8), the other without a pause (9). All the five positions – actually there are further subtypes – have structural and meaning differences.

- (7) [Strikingly], he is a liar.
- (8) He is quite smart, [frankly].
- (9) He finished the task [quite cleverly].
- (10) He might [now] be hoping to skip the test.
- (11) If you were me, you would have [smartly] answered the question.

2.7.4 Information structure and constituent movements

Chapter 3

Nominal categories

There are four types of numerals in English: the cardinal numerals, the ordinal numerals, the adverbial numerals, and the multiplicative numerals. There is no affixational derivation to show the rank or quality of something (which is attested in the Latin ordinal numeral plus *-āris* derivation): The meaning is conveyed by

3.1 Overview

The case system of English

3.2 Pronouns

3.2.1 Personal pronouns

3.2.2 Demonstratives

3.3 Numerals

Chapter 4

The structure of the noun phrase

4.1 Overview

4.2 Possessive constructions

4.3 Preposition constructions

A simplistic – though handy – view of prepositions is to regard them as a syntactic realization of the case system (Dixon 2009, pp. 49), and if so, in a surface-based analysis, we should do away with the term *preposition phrase*, because in this case prepositions aren't lexical heads (though they are realization of functional heads). Some English prepositions can indeed be seen as such, but there are more complicated cases (1, 2). The prepositional constructions in English therefore deserve more careful treatment.

- (1) The spot is [[ten meters]_{degree} [behind]_{preposition} the house]_{pp}
- (2) I'm [in front of your home]_{pp}

TODO: read Svenonius (2010); For some reason, the position of spatial PPs in the clause is not discussed

Chapter 5

Verb inflection and TAM marking

This chapter is the first chapter concerning clausal structure. Some forward references are unavoidable when we decompose a clause into its parts and describe its parts and then assemble everything together, and the latter is described in Ch 8.

5.1 Overview of the verb paradigm

5.2 Inflectional forms

5.2.1 Lexical verbs

Box 5.1: Distinguishing inflectional forms

Traditional grammars usually have a large paradigm with its row and column headers being grammatical categories. (When there are too many categories – and in this case the language in question is usually agglutinative – the paradigm will be unbearably large, and another way – like the School Grammar of Japanese – is needed to cover verb inflection. Still, partial paradigms are useful in this case.) This is a morphosyntactic way to represent the inflection of a word, but if we are talking purely about the *morphological* part (i.e. how grammatical relations and categories are realized), then it's sometimes not necessary to recognize so many forms: If a verb appears exactly the same in two different syntactic environments, then we say there is only one *inflectional form* of that verb. For languages like Latin, the traditional large-paradigm way is handy, while for English, we can zip the paradigm severely (Huddleston and Pullum 2002, Ch 3. § 1.2).

Modern English has already lost most of its verb inflection. Following the analysis of Huddleston and Pullum (2002, Ch 3. § 1.1), for lexical verbs, there are six remaining inflectional forms: the past form, the plain present form, the 3sg present form, the plain form, the *ING*-participle, and the *ED*-participle. The two present forms and the past form appear solely with trivial aspectual values and trivial modality. They are **primary** forms: They already have all TAM categories marked on them. The plain form and the two participles are **secondary** forms: They usually appear after auxiliaries in a periphrastic construction to have full TAM marking, though a subjunctive clause may sometimes get rid of any auxiliary verb, as in *he suggests that she [complete] this task first* (§ 9.1.1.1).

Examples of these forms are illustrated in Table 5.1. This is a copy of [1] in Huddleston and Pullum (2002, § 1.1). It can be noticed that the plain form is usually the same as the plain present form. However, since modal verbs (see below) have no plain form, and that the syntactic environments of the plain form and the present plain form are too different, if Table 5.1 is to be regarded as a paradigm – that is, to be incorporated with morphosyntactic information – then the two forms should occupy two cells.

Table 5.1: Paradigms of lexical verbs

			<i>take</i>	<i>want</i>	<i>hit</i>
Primary	past form		<i>took</i>	<i>wanted</i>	<i>hit</i>
	present form	3sg	<i>takes</i>	<i>wants</i>	<i>hits</i>
		plain	<i>take</i>	<i>want</i>	<i>hit</i>
Secondary	plain form		<i>take</i>	<i>want</i>	<i>hit</i>
	ING-participle		<i>taking</i>	<i>wanting</i>	<i>hitting</i>
	ED-participle		<i>taken</i>	<i>wanted</i>	<i>hit</i>

Box 5.2: The name of the forms

Here I deviate from the practice in (Huddleston and Pullum 2002, Ch 3) and pick up the more common names for some of the forms.

The ING-participle is frequently called the *gerund*, because it now has the function of both a gerund and an active participle. Huddleston and Pullum (2002) call it the *gerund-participle*. Some grammars use the term *present participle*. Since in Modern English, the ING-participle no longer carries any tense information, the historical term *present participle* is abandoned in this note.

The traditional name *past participle* for the ED-participle makes more sense, because it's morphologically related to the past form for regular verbs and it still has some sense of "past": It is strongly related to the PERFECT and therefore has some sense of the past, though it doesn't carry the past tense. A better term would be the one in Latin grammar: the *perfect passive participle*, but this is in conflict with the name of the *having been done* construction.

A usual name for the plain form is the infinitive form, which I reject here because the morphological marking of the main verb after modal auxiliary verbs (*would [like]*), the verb in a subjunctive clause (*he suggests that she [complete] this task first*), and the verb in a real infinitive clause are all the same, and therefore it makes no sense to use the term *infinitive* to cover the morphological form of all the three.

The ING-participle is regularly formed by adding *-ing* to the end of the plain form (TODO: -tt- in splitting). The ED-participle and the past form are usually obtained by adding *-ed* to the end of the plain form, but for irregular verbs they can't be inferred from the plain form. Thus English verbs have three **principal forms**: the plain form, the past form, and the ED-participle. We may also say there are three stems in English: the plain form, the past form, and the ED-participle, with only the first one being productive for further morphological processes.

5.2.2 Types of irregular verbs

The formation of the principal parts

5.2.3 Auxiliary verbs

English also has a number of auxiliary verbs (§ 5.3). All auxiliary verbs have tense-dependent forms, because all of them may appear as the first word in an auxiliary chain, and the tense category is to be marked on the highest i.e. the first of them (§ 5.3.1). Thus, we say English auxiliaries also have primary forms. Modal auxiliaries don't have a separate 3sg present form, but *do*, *have* and *be* (when used as auxiliary verbs) do. It should be noted that the past forms of many auxiliary verbs don't just appear in past clauses: They may have distinct meanings (§ 5.6).

Modal auxiliaries don't have secondary forms, probably because they never appear after another auxiliary verb or in nonfinite clauses, but *do*, *have* and *be* do.

English auxiliary verbs also have negative forms, which are obtained by attaching *-nt* to the end of auxiliary. The *-nt* is a contraction form of the negator *not*, but in modern English the negative suffix moves together with the auxiliary in subject-auxiliary inversion (§ 5.3.1.6). Thus, it's recognized as a part of the auxiliary (Huddleston and Pullum 2002, pp. 91). This seems to be purely about phonetic realization: There seems to be no large morphosyntactic differences between auxiliary-*not* and the negative auxiliary besides subject-auxiliary inversion. All auxiliaries don't have secondary negative forms, though *do*, *have* and *be* have primary negative forms.

Since auxiliary verbs are a part of the grammar, here I list the paradigms TODO

Box 5.3: Auxiliary constructions are single-clause ones

Huddleston and Pullum (2002) treats auxiliary verbs as verbs taking complement clauses (as in, say, [11] in pp. 782). This is not the position of this note: Here I follow the standard practice in generative syntax (probably also American structuralism) and assume auxiliary verb constructions are always single-clause constructions. *Historically*, auxiliaries may origin from complement-taking verbs, but now *synchronically*, they have the same function of inflectional affixations. Complement clause constructions may (or may not) have the same *semantics* of auxiliary verb constructions and inflectional affixations, but they never have the same *structure*.

The main reasons Huddleston and Pullum (2002) analyze auxiliary verbs as complement-taking verbs or *concatenative verbs* in their terms are shown in their Ch 14. § 4.2.2. However, these arguments are based on interpretation of constituency trees like [*would* [*like to do*]] as complement clause constructions, which doesn't necessarily hold. They also confuse lexical heads and (PF realization of) functional heads. They therefore bring in much inconsistency when they argue that the complementizer *that* isn't a head. In this note, I follow BLT's standard of headhood while fully being aware of the generative functional head analysis.

Evidences supporting my claim that auxiliary constructions are indeed single-clause ones can be obtained by observing how auxiliaries interact with clausal dependents. If Huddleston and Pullum (2002) is correct on their claim that English auxiliary verbs take bare infinitive clauses, then we expect the verbal phrase after an auxiliary verb to receive any modification that's acceptable for a bare infinitive clause. TODO: some adverbs don't appear

5.3 Periphrastic constructions with auxiliary verbs

5.3.1 The regular auxiliary chain

5.3.1.1 Minimal auxiliary chain

In a declarative finite clause, the order of auxiliaries is constantly given by Table 5.2. Table 5.2 is a part of the larger picture of clause structure: The auxiliary *do* (§ 5.3.1.2), adverbs (§ 5.3.1.4) and the negator (§ 5.3.1.5) may be inserted into somewhere between two auxiliaries. Other types of clauses still largely follow the scheme but may undergo subject-auxiliary inversion (§ 5.3.1.6).

The auxiliaries positions can be filled by the corresponding auxiliaries or be just left blank, without creating ungrammatical constructions. The MODAL slot may be filled by a modal auxiliary. The PERFECT slot may be filled by the auxiliary version of *have* with the correct inflection, and the PROGRESSIVE and *passive* slots may be filled by the auxiliary version of *be* with the correct inflection.

The rules of inflection are the follows. The tense category is always marked on the first auxiliary (not necessarily one of the slots in Table 5.2 – it may be an inserted *do*), and when there is no auxiliary, it's marked on the main verb. Note that it isn't true that if the first auxiliary is in the past form, it always means a past event (§ 5.6). The modal auxiliary is always followed by a plain form, and the progressive marking *be* is always followed by an ING-participle, and the perfect marking *have* is always followed by an ED-participle, and so is the passive marking *be*. When the clause is finite and the tense is PRESENT, and the MODAL slot is empty, if the subject is 3sg in number, then the first non-empty slot in Table 5.2 is in the 3sg present form, which means for verbs other than *be*, the -s suffix is attached to it; for *be* the correct form is *is*. This is the only case subject-verb agreement happens in English other than the case of *be* (1). For *be*, the tense is still TODO: subjunctive

In nonfinite forms, the MODAL slot has to go; the rest are still there, following the same inflectional pattern as is described above (2). Note that the subject-verb agreement is missing in all nonfinite clauses, be it the third person singular -s or inflectional forms of *be*.

Table 5.2: The order of auxiliaries and some examples

MODAL	PERFECT	PROGRESSIVE	PASSIVE	main verb
				<i>takes</i>
			<i>am/are/is/was/were</i>	<i>taken</i>
	<i>have/has/had</i>	<i>am/are/is/was/were</i>		<i>taking</i>
	<i>have/has/had</i>	<i>been</i>	<i>being</i>	<i>taken</i>
<i>will/would</i>	<i>have</i>	<i>been</i>	<i>being</i>	<i>taken</i>

- (1) a. I [like] this.
b. He [likes] this.
- (2) The award is reported [to have been being taken]_{complement clause: TO-infinitive}
- (3)

5.3.1.2 Do insertion

5.3.1.2.1 Obligatory *do* insertion *Do* insertion happens in two circumstances. The first is we need an auxiliary but there isn't one. This is the case when we negate a clause with no auxiliary verb (§ 5.3.1.5), and the case when subject-auxiliary inversion happens but there is no auxiliary verb (§ 5.3.1.6). In both cases, *do* is inserted before the main verb, and is regarded as an auxiliary, which carries the tense feature and the subject-verb agreement information and is inflected accordingly (4, 5).

We may say the *do* is the default realization of the tense category and the agreement when these can't find an appropriate host. It's roughly in the same position of MODAL in Table 5.2. Then, expectedly, adverbs can be inserted between *do* and the main verb (6).

- (4) I do not like the gift. I don't like the gift.
- (5) Did he enter the room that night?
- (6) I do not particularly like that kind of flower.

5.3.1.3 Do for emphasis

Unlike (4, 5, 6), we can also just insert *do* to emphasize on the action, and in this case the inserted *do* receives stress. The morphology of *do* is the same as the obligatory *do* insertion, and so is the distribution of adverbs.

- (7) Your company [*do*]_{do insertion} [have]_{main verb} lots of rules!

5.3.1.4 Adverbs in the auxiliary chain

Adverbs may appear Adverbs are never inserted between the first auxiliary (if any) and the negator. TODO: what else?

- (8) He [is]_{PROGRESSIVE} [vigorously]_{TODO:} [doing]_{main verb} [his job]_{object}.

5.3.1.5 Negation in the auxiliary chain

The rule of the negator *not* is close to the rule of adverbs: If *not* is used, it is *always* after the first auxiliary (while adverbs can appear before the first auxiliary in marked cases), which may be the inserted *do* (9). Any auxiliary-*not* sequence may be replaced by the negative form of that auxiliary if there is one (10, 11).

- (9) He [does]_{do inserted, pres, 3sg} [not]_{negation} love his job.
- (10) He doesn't love his job.
- (11) He isn't vigorously doing his job.

It should be noted the surface position of the negator doesn't determine the scope of negation (Huddleston and Pullum 2002, pp. 668). See, for example, the ambiguity of (12). Here the ambiguity is an indicator that there are at least two available syntactic position of the reason clause (TODO: ref). Another ambiguity arises when negation appears together with modality (13, 14). This means the negator-after-first-auxiliary rule is about *realization* and not about the underlying syntactic structure (Box 2.1), if we assume the semantic difference has structural significance. This, together with the fact that auxiliaries have negative forms and that the existence of *not* blocks subject-auxiliary inversion of the main verb, may lead to the conclusion that the negator *not* is a quasi-verbal clitic which is always attached after the highest verbal element. We, however, shouldn't rush to such a conclusion, because it's also possible that the rule is actually the highest verbal element is always moved *before* the negator. Note that

TODO: the Tense - Negation - Modality - Perfect - ... sequence

- (12) I don't appoint him because he is my son.
'I appoint him, but because of his talent, not because his relation with me. / I don't appoint him, because he's my son and I don't want to appoint him and leave a bad impression on my colleagues.'
- (13) He shouldn't play football in the streets.
'It's required that he doesn't play football in the streets./ *It's not required that he plays football in the streets, but he can if he wants to.'
- (14) He can't play football.
'It's not possible/permitted that he plays football./ *He can suppress the desire to play football.'

5.3.1.6 Subject-auxiliary inversion

In interrogative sentences and in other cases (§ 8.1), the first auxiliary in the chain undergoes leftward movement,¹ often to the initial position but may be preceded by preposed constituents (§ 8.1). This is called **subject-auxiliary inversion**. When there is no auxiliary, the correct form of *do* carrying the tense and agreement features is inserted.

- (15) [Do]_{inverted auxiliary} [you see my umbrella]_{nucleus}
- (16) Only then do we cook

5.3.1.7 Summary: the structure of the regular verbal complex

Now we can combine everything in the verbal complex together. When there is no auxiliary needed, the tense feature is lowered to the main verb. In other cases, the highest auxiliary – the first auxiliary – is lifted to the tense position, before negation and the default position of many adverbs.

5.3.2 Semi-auxiliaries

5.3.3 Comparability with moods

5.4 TAM meanings of verb inflection

5.4.1 Descriptive parameters

5.4.2 The simple present

5.4.3 The present perfect

5.5 Other semantic concepts

Some concepts exist in English but are neither marked by affixation or auxiliary verb constructions.

¹Note that this is head movement and are often attributed to post-syntactic operations in Distributed Morphology, making the operation kind of "morphological". See Box 2.1 for theoretical issues concerning this.

5.5.1 Overview of strategies

5.5.1.1 TAM adverbs

Traditionally, TAM adverbs are regarded as *adjuncts*, which can be relatively freely adjoined to an existing structure. More fine-grained morphosyntactic tests reveal this is not correct: TAM adverbs appear in a rigid hierarchy of positions, quite like the hierarchy of core arguments. Since they usually don't strongly interact with verb inflection (including affixation and auxiliaries; TODO: ref), it's better to treat them as peripheral arguments (Ch 7), providing more information about a syntactically relevant TAM category. It should be noted that some positions can only be filled by a limited number of adverbs (TODO: for example "allegedly"),

5.5.2 Overview of semantic concepts

5.5.3 The future time

5.5.4 Evidentiality

The usual idea is English doesn't have an evidentiality category. The idea of evidentiality may be expressed by TODO: allegedly and by complement clause constructions about quoted speech (TODO: ref).

5.5.5 Boundedness

5.6 Use and meaning of modality auxiliaries

Chapter 6

Verb valency

This chapter mainly discusses the grammatical relations between the main verb and its core arguments in active clauses (§ 8.2) without information packaging. Information packaging devices may change the constituent order of arguments (§ 8.1.5), and passivization changes the argument structure (§ 8.9).

Box 6.1: Two-step description of verb-argument relations v.s. one-step description

Ideally, the description of arguments is two-step: The first step is the semantic roles of the verb, and the second step is the correspondence between semantic roles and types of clausal dependents (“The G argument fills the object position”, etc.). Such a division however makes the grammar hard to read, and is not strictly followed in this note, though I will still summarize types of clausal complements in § 6.1.

6.1 Overview of arguments of verbs

6.2 Prototypical transitive and intransitive verbs

Chapter 7

Peripheral arguments

Peripheral arguments, or simply

Chapter 8

Simple clauses

This chapter is mainly about what happens in a single clause. The details of how a clause is embedded into another are not covered in this chapter – they are covered in Ch 9.

8.1 Overview

8.1.1 Canonical clauses

The template of English clause structure is shown in Fig. 8.1. The figure displays the four rough levels of clause structure. Each layer in Fig. 8.1 as well as justification of them, if not described in chapters above, are described in the rest of this chapter.

The first layer contains the verb-argument (core or peripheral) grammatical relations, TAM marking (by inflection, auxiliary construction, or adverbs), and negation. In structuralist tradition as is described in Huddleston and Pullum (2002), this layer is the **verb phrase**. It contains the auxiliary chain and the main verb (§ 5.2, § 5.3.1), internal complements (§ 6.1), and adverbials that prototypically appear in the clause-final position (TODO: ref). The first layer is actually several layers: First the core argument structure, then peripheral arguments, then auxiliary verbs and negation and also TAM marking by adverbs, and also the category of voice.

The second and the third layers shown in Fig. 8.1 are much slimmer than the first layer. They are shown as separate layers mainly because the subject-predicate relation and the subject-auxiliary inversion traditionally gain more attention. The second layer highlights the prominent status of the subject (§ 8.2.2). A subject plus a verb phrase is a **nucleus clause**. A declarative clause without information packaging operations can just be a nucleus clause without further syntactic operations. The third layer is optional: It arises when subject-auxiliary inversion happens (§ 5.3.1.6), which is the case in TODO.

The fourth layer is also optional and may have several preposed constituents, each of which may be preposed by a different reason (TODO: ref), and interacts freely with the subject-auxiliary inversion (§ 8.5). This is also a fat layer: There exist several types of preposing operations (TODO: ref), and the layer also contains some high-level adverbials which are about speech force, etc., like *frankly* (TODO: ref).

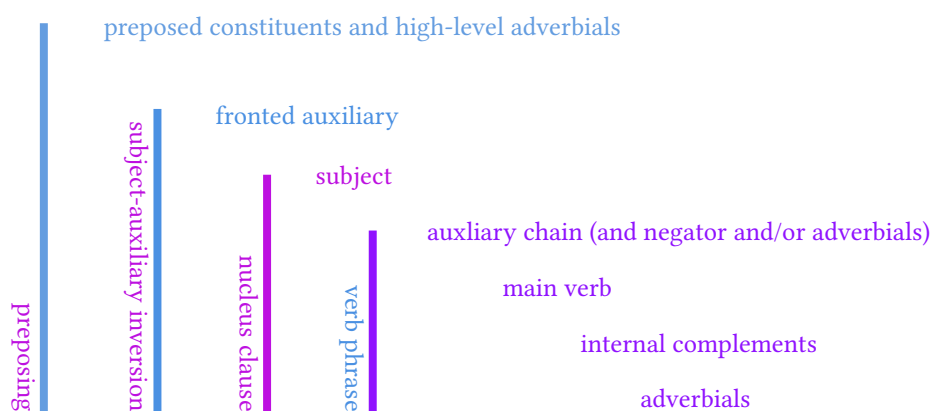


Figure 8.1: English clause structure

Box 8.1: About the term *verb phrase* and *predicate*

Dixon argues against using the term *verb phrase* in the sense of this note; his *verb phrase* is Table 5.2. The two definitions of *verb phrase* are all frequent in modern descriptive grammars. When the term *verb phrase* is used in the sense in Fig. 8.1, Dixon's verb phrase is sometimes called the *verb complex* (Friesen 2017).

Another terminology issue is many people – like Dixon – use the term *predicate* for the syntactic function of the verb complex (i.e. the realization of functional heads), while others use it for the syntactic function of the verb phrase (i.e. a lower part of the TP – see Box 8.2). To avoid this endless confusion, I will just avoid the notion of *predicate* as much as possible (Box 8.3).

Box 8.2: The *vP-TP-CP* projection

Roughly speaking, in Fig. 8.1, the verb phrase is the part of TP that is lower than the projection in which the subject is introduced. The subject-predicate structure is roughly the complete TP. Layer 3 and layer 4 are about CP.

Note that clause linking is not represented in Fig. 8.1. Linked clauses may appear before or after the main clause. Supplementation and subject-sharing coordination is also not covered (TODO: ref). Nor is clausal derivation illustrated in the figure (TODO: heavy NP shift, final adverbial with a pause), because arguably, some post-internal complement adverbials are likely to be the result of heavy constituent postponing (TODO: ref). Apart from the above constructions, the scheme illustrated in Fig. 8.1 works for all clause types (1, 2, 3), including nonfinite clauses, though for the latter, the properties of the subject and the allowed auxiliaries deviate from the finite case, and this is also the same for allowed preposing constructions (TODO: ref). (1) is a fused relative clause, in which there is WH-fronting but no subject-auxiliary inversion (TODO: ref). In (2) we see two preposing constructions, one topicalization (TODO: ref) and WH-movement for question formation (TODO: ref), and the only verb – the copula *is* – is moved out of the verb phrase because of subject-auxiliary inversion. The

- (1) [[What]_{i, WH-preposed: WH-pronoun} [[Max]_{subject:NP} [said Liz bought -_i]_{verb phrase}]_{nucleus}]_{WH-preposing}
- (2) [[In your opinion]_{topicalized} [[what]_{i, WH-preposed} [is [-_i the most dangerous]_{verb phrase}]_{SAI}]_{WH-preposing}]_{topic-preposing}
- (3) [[what]_{i, WH-preposed} [to [do -_i]_{verb phrase}]_{nucleus}]_{WH-preposing}

Box 8.3: Confusing form and function

If you are familiar with the structuralist method documented in Huddleston and Pullum (2002), you may already notice my annotation in Fig. 8.1 and the above examples confuse *function* (predicate) with *form* (verb phrase). However, as is said in Box 2.10, English verb phrases – roughly *vP* after case assignment, etc. – almost never appear outside a clause, and it doesn't provide additional information to introduce separate terms for form and function in Fig. 8.1. This is also the practice taken in most works adopting the notion of verb phrase, like Friesen (2017).

8.1.2 Active and passive voices

One thing that happens in the verb phrase and strongly influences the structural building process is the category *voice*. English doesn't have a rich set of valency changing devices, and the active-passive distinction is the only regular valency changing mechanism. There are other alternations of verb valency, but they are much more strongly determined by the lexicon and therefore are excluded from the discussion on voice (§ 2.4.5).

8.1.3 Moods or types of finite clauses

English has several clause types with regard to the related grammatically marked speech force. From the perspective of compatibility with the auxiliary verbs, the main distinction is the distinction between the imperative mood and non-imperative moods: The former doesn't allow any nontrivial modality and aspect, and the tense is always present, while non-imperative moods interact freely with all TAM categories.

The difference between non-imperative moods is small. The formation of interrogative clauses only takes two (often skipped) syntactic steps (§ 8.10.1), which can be attributed to a focus construction which also happens in declarative clauses (TODO: ref). Indeed, some, like Dixon (2005, pp. 25), only recognize two moods. This note still keeps the declarative-interrogative distinction for narrative convenience.

8.1.4 Nonfinite clauses and verbless clauses

8.1.5 Clausal derivations

8.2 Clausal dependents

8.2.1 Overview and classification

Putting grammatical items aside, clausal dependents can be roughly divided into arguments (or “complements”) and adjuncts. Both types have many diverse subtypes, and sometimes, a subtype of arguments and a subtype of adjuncts can be quite similar. Similar to the case in other languages, clausal dependents in English can be summarized as Table 8.1.

Prototypical core semantic roles, like agent, patient, theme, etc. are always clausal complements and never adjuncts. (The passive *by*-phrase is also an argument, not an adjunct (TODO: ref).)

Prototypical peripheral roles, like location or instrument, can also be arguments, but they can also be adjuncts. The concepts of manner, whether the action in question creates frustration (e.g. *I spent the whole day working on that problem [in vain]*), etc. are sometimes grammaticalized as arguments, as in *we were treated [badly]*, without which the clause is not grammatical, but more frequently they are adjuncts.

The term **peripheral argument** usually means adjuncts with prototypical peripheral semantic role, but it may also be about manner or frustrative expressions like *in a stupid way*: The latter can still be asked about (4), just like prototypical peripheral arguments (5). The cell corresponding to prototypical peripheral arguments is colored blue in Table 8.1; the cell corresponding to less-prototypical peripheral arguments is colored light blue in Table 8.1. The term **oblique argument** means syntactic arguments with oblique case marking, i.e. not nominative or accusative. Their cells are colored light and pale green in Table 8.1.

Table 8.1: English clausal dependents

meaning	syntactic position	
	argument (i.e. complement)	adjunct
prototypical core roles	[I] loves [that apartment]	
prototypical peripheral role	She lives [in that apartment]	The machine is fixed with this new tool
manner, frustrative, etc.	We were treated [quite badly]	He answered the question in a silly manner
TAM-related adverbials		I [always] feel tired
speech act-related adverbial		[Frankly], I think you are fooled by them

(4) - [How] did they treat you? - They treated us [quite badly].

(5) - [Where] did they detained you? - They detailed us [in a building near the sea].

There are of course subtleties between the classification of meanings in Table 8.1. The instrument role, for example, may appear in the subject position or as a peripheral argument, while the manner expression is similar with the peripheral instrument argument in their forms (prepositional constructions or “oblique cases”) and the ability to be *wh*-extracted (4, 6).

(6) - How did you finish this article? - I finished it with LaTeX.

Prototypical core arguments, peripheral arguments and oblique arguments representing prototypical peripheral semantic roles allow quite diverse choices when it comes to how to fill them. Manner-like phrases – be them oblique arguments or peripheral arguments – allow less variations. TAM adjuncts are usually highly limited in their contents. TODO: speech act-related

Box 8.4: The term *argument* and the argument-adjunct distinction

Note that here is a terminological confusion: The term *argument* is used sometimes as opposed to more grammatical clausal components like TAM adverbs (as in *peripheral argument*, i.e. any specifier positions that allows large variation with regard to its content), and sometimes as opposed to *adjunct*, i.e. an element that doesn't have very strong relation with the verb. Here we have two descriptive parameters when we talk about arguments: one is the ability of variation (core arguments, peripheral arguments, oblique arguments can be filled by diverse constituents, while TAM adverbials only allow a limited number of adverbs), and the other other is the closeness to the lexical head, which is the main verb here (core arguments, oblique arguments are closely related to the main verb, while TAM adverbials and peripheral arguments are not). The parameter of closeness to the lexical head is the parameter used for argument-adjunct distinction in Table 8.1.

8.2.2 The subject

The subject is a position for prototypical core arguments. The grammatical relation subject, as opposed to other types of complements, has the following properties.

8.2.2.1 Semantic role

In active clauses, the subject is usually agentive. In passive clauses it is the argument that is permitted to be passivized, the semantic role of which is usually objective but not always: Locative NPs are sometimes permitted (TODO: ref).

8.2.2.2 Accusativity

The usual tests demonstrating syntactic accusativity can be run on English, like the recovering of extracted subject in coordination (7).

- (7) a. I [saw my mom]_{transitive} and [got into my house]_{intransitive}
'I saw my mom and I (not my mom) got into my house.'
b. * My mom [I saw]_{transitive} and [got into my house]_{intransitive}
'I saw my mom and my mom got into my house.'

8.2.2.3 The subject in clausal derivation

In clausal derivation, the position of the subject may be altered, but what's the subject can still be known by considering the tests listed in Huddleston and Pullum (2002, Ch 4, § 3.2.3).

8.3 Clausal continuation

TODO: *not even* construction, heavy NP shift, etc.

8.4 Minimal declarative clause

8.4.1 Logic and default information structure

8.4.1.1 Descriptive parameters

TODO: position of quantifiers for NPs with or without determiner, and the difference between *all*, *every*, *some*, *any*; the position and scope of negation; how the position of NPs (subject or object) influences quantification; the relation with information structure (if a subject NP is never given, it tends to be read as a representative of its kind and is therefore bound by \forall ; but it's never the case for objects)

8.5 Topicalization

8.6 Cleft constructions

8.6.1 *It*-cleft

- (8) It is you who murdered him!
- (9) It is by this new method that we have achieved such success.

8.6.2 *Wh*-cleft

8.7 Expletive subject constructions

8.7.1 *There be* existential construction

- (10)

8.7.2 *It seems that ...*

8.8 Focus constructions

- (11) [On the top of the mountain]_{locative PP} lies [a small church]_{subject}.

This note follows the analysis in [Huddleston and Pullum \(2002, pp. 244\)](#) and regard this as a type of information packaging, not a voice construction.

Note that the fronted constituent can be a copular complement, a locative adjunct, TODO: list but never an object in a prototypical transitive construction. This seems to be motivated for functional reasons, because in the latter case it's impossible to correctly restore the meaning.

8.9 The passive voices

8.9.1 Overall scheme

8.9.2 Passivized argument

Passivization depends on - though not in a very apparent way – the properties of the main verb. TODO: passivized argument

8.10 Interrogative moods

8.10.1 Overview

There are two movements involved in forming a canonical interrogative clause: the subject-auxiliary inversion, and fronting of the WH-phrase, if any. Both operations can be omitted in casual speech.

8.10.2 Yes-no questions

8.10.3 Open questions

8.10.4 Tag questions

- (12) The car is broken, isn't it?

8.11 The imperative mood

The imperative mood is only compatible with active clauses. Passive imperatives are never possible, and the intended meaning may be alternatively expressed by

8.12 The to-infinitive

Chapter 9

Clause combining

9.1 Complement clause constructions

Complement clauses or *content clauses* (Huddleston and Pullum 2002) are clauses embedded as arguments of certain verbs. English adverbial clauses have the same form of complement clauses, and therefore Huddleston and Pullum (2002) uses the term *content clause*. Here I'll just stick to the more common terminology in linguistic description.

9.1.1 Types of complement clauses

9.1.1.1 Subjunctive clauses

9.1.2 Complement-taking verbs

9.2 Relative clauses

The relative clause construction is formed by

9.2.1 Types of relative clauses

It should be noted that the WH-movement in relative clauses is not structurally the same as the WH-movement in interrogative constructions. Consider the pair in (1): It clearly demonstrates that the relative WH-phrase is structurally higher than the topic, while the opposite is true for interrogative constructions. This may have a semantic motivation Radford (2009, pp. 330): In question formation, the WH-movement is just a marking strategy of the *focus*, which appears below the topic, while in the formation of relative clauses, WH-movement happens *last*, marks the whole clause as a relative clause, and “seals” the whole relative clause, separating its content and the matrix clause.

- (1) a. [In your opinion]_{topic}, [what]_{focus:WH} [is]_{fronted auxiliary} our most urgent task right now?
b. [[What], [in his opinion]_{topic}, is our most urgent task right now]_{relative clause} still remains unknown for the listeners.

9.2.2 Purpose relative clause

A rare type of

- (2) I need [a house [to live]_{purpose}]_{object: NP}
(3) I need [a house [to live in]_{purpose}]_{object: NP}

9.3 Clause linking: subordination

9.4 Clause linking: coordination

This section talks about FANBOY TODO: subject extraction

Chapter 10

Notable variations

10.1 Early Modern English

Dialects, etc.

References

- Edith Aldridge. Generative approaches to ergativity. *Language and Linguistics Compass*, 2(5):966–995, 2008.
- Benjamin Bruening. The lexicalist hypothesis: Both wrong and superfluous. *Language*, 94(1):1–42, 2018.
- Victoria Chen and Bradley McDonnell. Western austronesian voice. *Annual review of linguistics*, 5(1): 173–195, 2019.
- Guglielmo Cinque. *Restructuring and functional heads: the cartography of syntactic structures volume 4*, volume 4. Oxford University Press on Demand, 2006.
- Karen De Clercq and Guido Vanden Wyngaerd. Negation and the functional sequence. *Natural Language & Linguistic Theory*, 37(2):425–460, 2019.
- RM Dixon. Basic linguistic theory. volume 3: Further grammatical topics, 2012.
- Robert MW Dixon. *A semantic approach to English grammar*. OUP Oxford, 2005.
- Robert MW Dixon. *Basic linguistic theory volume 1: Methodology*, volume 1. OUP Oxford, 2009.
- Robert MW Dixon. *Basic linguistic theory volume 2: Grammatical topics*, volume 2. Oxford University Press on Demand, 2010.
- Dianne Friesen. *A grammar of Moloko*. Number 3 in African Language Grammars and Dictionaries. Language Science Press, Berlin, 2017. doi: 10.5281/zenodo.824016.
- Rodney Huddleston and Geoffrey K. Pullum. *The Cambridge Grammar of the English Language*. Cambridge University Press, 2002. doi: 10.1017/9781316423530.
- Vincenzo Moscati. *Negation raising: logical form and linguistic variation*. Cambridge Scholars Publishing, 2010.
- Vincenzo Moscati et al. The cartography of negative markers: why negation breaks the assumption of If/pf isomorphism. *Enjoy linguistics! Papers offered to Luigi Rizzi on the occasion of his 60th birthday*, pages 1–7, 2012.
- Will Oxford. Inverse marking as impoverishment. In *Proceedings of WCCFL*, volume 34, pages 413–422, 2017.
- Acrisio Pires. The minimalist syntax of defective domains. *Gerunds and infinitives*, 2006.
- Andrew Radford. *Analysing English sentences: A minimalist approach*. Cambridge University Press, 2009.
- Deniz Satik. Cartography: Innateness or convergent cultural evolution? *Frontiers in Psychology*, page 1726, 2022.
- Walter Schweikert. *The order of prepositional phrases in the structure of the clause*, volume 83. John Benjamins Publishing, 2005.
- Ur Shlonsky. The cartographic enterprise in syntax. *Language and linguistics compass*, 4(6):417–429, 2010.

Dominique Sportiche. Fewer adjuncts: more relatives. 2017.

Peter Svenonius. Spatial P in English. In *Mapping Spatial PPs: The Cartography of Syntactic Structures, Volume 6*. Oxford University Press, 08 2010. ISBN 9780195393675. doi: 10.1093/acprof:oso/9780195393675.003.0004.

Raffaella Zanuttini. *Negation and clausal structure: A comparative study of Romance languages*. Oxford University Press, 1997.

Hedde Zeijlstra. *Negation and negative polarity*, page 793–826. Cambridge Handbooks in Language and Linguistics. Cambridge University Press, 2013. doi: 10.1017/CBO9780511804571.027.