8 Generative approaches

Terje Lohndal and Liliane Haegeman

1 Introduction

This chapter introduces generative approaches to syntax. Because space prevents full discussion of the many existing approaches we have chosen to focus on derivational ('transformational') approaches, essentially along the lines developed by Chomsky and many others. The most recent incarnation of this specific approach is called 'The Minimalist Program', or just 'Minimalism': it is an approach which crucially attempts to reduce the inventory of concepts and operations that are postulated as part of the grammar. Rather than presenting a survey of the history of generative grammar (see Freidin 2007 and Lasnik and Lohndal 2013 inter alia) or focussing on one incarnation of the theory, which inevitably has limited shelf-life, our chapter highlights the long-standing and constant ingredients of the mainstream theory such as hierarchy, configuration, abstract structure, movement, dependencies, and not least, argumentation. By focusing on the theory-driven deductive argumentation we hope to be able to bring out important aspects of how syntax is done within generative approaches.

In terms of its philosophical tenets, 'Chomskyan' generative grammar is characterized by an explicit mentalist perspective, which sets it apart from other generative approaches. Because of this latter factor and for reasons of space, we will not have anything to say about the philosophy of mainstream generative grammar; see e.g., Boeckx (2006) and Smith and Allott (2015) on this.

This chapter is organized as follows. Section 2 focuses on the concept of hierarchical structure and introduces the structural relation 'c-command', which is shown to play a crucial role in a number of syntactic dependencies. Section 3 explores the concept of abstract structure through an examination of the impact of syntactic movement on the structure. Arguments are developed to the effect that copies that are the result of movement may play a role in interpretive processes. Pursuing the role of abstract structure in the argumentation, section 4 examines some syntactic properties of VP ellipsis. Arguments are developed to show that while not associated with any overt material the ellipsis site has internal structure. Section 5 summarises the chapter.[1]

2 Constituent Structure

This section illustrates the core concepts of generative syntax: hierarchical structure, binary merge, movement, and c-command, and it shows how referential dependencies are interpreted and encoded based on these concepts.

2.1 Hierarchical structure

Although linear order has a role in language – after all we put one word before the next – there is a large consensus that linguistic units are not simply to be conceived of as strings of words with a linear order but that these units are hierarchically organized. The following examples illustrate the primacy of structure over linearization.

(1) a. [The daughter of my friends] is buying a house.

[1] Liliane Haegeman's research is funded by FWO Belgium as part of 2009-Odysseus-Haegeman-G091409. We are grateful to two reviewers and the editors for very helpful comments on a previous version of this chapter.

b. [The daughters of my friend] are buying a house.

The bracketed strings *the daughter of my friends* in (1a) and *the daughters of my friend* in (1b) are units of structure. Each of these strings functions as a subject and triggers agreement on the finite verb: in (1a) the agreement is singular, in (1b) it is plural. It is clear from the examples that this agreement cannot be defined purely in terms of linear order by some statement such as (2):

(2) Finite verb agreement (i)
The finite verb agrees with the nominal to its immediate left.

According to (2) the relevant nominal to trigger agreement should be *friends* in (1a) and *friend* in (1b), wrongly predicting the agreements in (3):

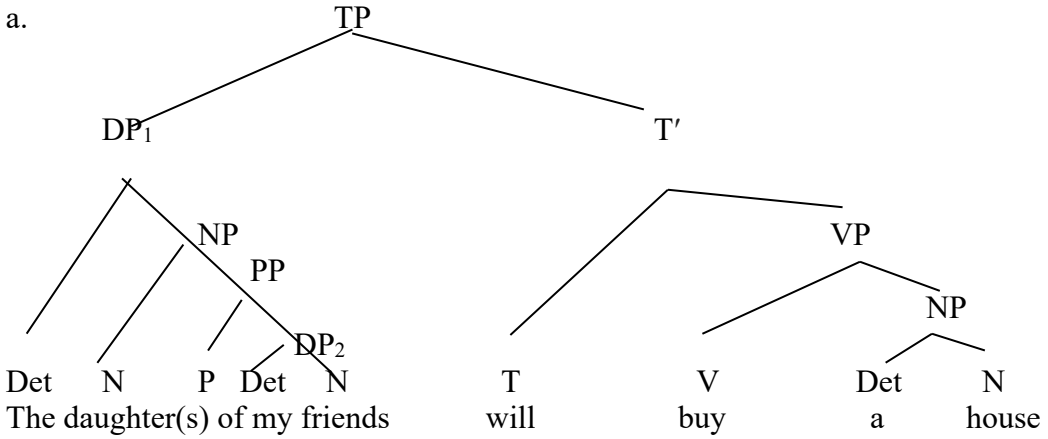
(3) a. *[The daughter of my friends] are buying a house.
b. *[The daughters of my friend] is buying a house.

Agreement must basically be determined by the nominal *daughter/daughters*, which is not adjacent to the finite verb. Intuitively, it is clear that while each of the bracketed nominal expressions contains two nominals, one of them – *daughter/daughters* – is more important than the other and this nominal determines the reference of the entire expression: informally speaking, in (1a) the house buyer is a female with the property of being a 'daughter' rather than the people with the property of being 'friends'. Thus, though linearly organized, strings of words must also be hierarchically organized and the hierarchical organization determines both interpretive and formal relations. In (1a) the nominal constituent *my friends* is contained inside the nominal constituent *the daughter of my friends.* It is the containing constituent that determines, among other things, reference and agreement.

2.2 Binary Merge

Hierarchical structure is the core component of all generative approaches to syntax. The assumption is that cross-linguistically, at a certain level of abstraction, all linguistic units, ranging from elements as small as morphemes to phrasal and clausal units, are uniformly structured. In the Chomskyan tradition of syntax, and especially since Kayne (1984), the assumption has been that the structure building operation ('merge') yields binary branching structures, i.e. structures with maximally two branches coming from each node. The operation Merge selects two elements and combines them into one unit. Obviously, linguistic units may contain more than two units, but such larger units will themselves be built on the basis of recursive binary Merge operations. Schematically, the sentences in (1) will have the binary configuration in (4): We add labels to this tree diagram to be able to identify the constituents:

(4) a.



The structural layering leads to hierarchical organizations of constituents, with, for instance, the noun *friends* being more deeply embedded in the nominal constituent *daughter of my friends* than the nominal *daughter.* In (4a) the nominal *daughter* is the head of DP_1;[2] inside which DP_2 is headed by *friends*. Even though DP2 is linearly adjacent to the auxiliary *is,* DP1 is structurally closer because it is DP_1 as a whole which combines with *is buying a house* to form the clause. Hence DP_1 triggers agreement. In the next section, we briefly outline the structure of the clause as derived by binary Merge.

2.3 The clause: Merge and Move

2.3.1 Merge

Within Minimalism, all syntactic structure, including clauses, is built up by the simple operation of binary Merge.[3] Constituents are identified by means of labels, as already illustrated in the previous section.[4] The constituents created by Merge are associated with a form (their phonetic form (PF)) and a meaning (their logical form (LF)). The sentence shown in (4) is built up incrementally on the basis of its constituents: for instance, the nominal expressions *my friends, the daughter of my friends,* and *a house* are built up according to (4a). They are then integrated in the clausal structure as follows: the constituent *a house* combines ('merges') with the verb *buy* to form the VP. VP encodes the activity, the semantic core of the clause. VP combines with a temporal/aspectual element, here realized as the modal auxiliary *will*, yielding the intermediate constituent T′ (read: T-bar) This constituent forms the core predication of the clause. It combines with the nominal constituent *the daughter of my friends* to form the sentence, labelled TP (read: Tense Phrase). The sentence essentially conveys a predication relation between the subject and T′. The meaning of the sentence is compositional: it is calculated on the basis of its constituents and their respective meanings (setting aside idioms for reasons of space).

---

[2] Nominals are labelled 'DP' for 'determiner phrase', on the assumption that the determiner is the head of the nominal expression (Abney 1987). We do not go into the detailed articulation of the structure of the nominal constituent and we do not address the question of whether it is the determiner or the nominal that is the syntactic head. See Abney (1987), Longobardi (1994), and Alexiadou, Haegeman and Stavrou (2007) and Keizer (this volume) for an overview of the literature.

[3] The use of the word 'operation' does not commit one to a real-time view of syntactic derivations. It is simply a mechanism that the abstract theory makes use of, which may or may not correspond to a theory of parsing. See Lewis and Phillips (2015) for additional discussion.

[4] For current theoretical proposals concerning the role of labelling in the theory, see Adger (2013), Chomsky (2013, 2015), and Rizzi (2015), among others.

In the resulting structure (4a), what is commonly referred to as the subject of the clause takes up a prominent position: the nominal constituent *the daughter of my friends* is added last to the clause. (4a) captures well known subject-object asymmetries such as the fact that there are selectional restrictions between V and its complement in that, for instance, V may impose the presence of a complement and the category of this complement depends on V. This is illustrated in (5): while the verb *trust* selects a nominal complement, the verb *rely* selects a PP complement (though see Borer 2005, Åfarli 2007, and Lohndal 2014, among others, who argue against selection in the syntax).

(5) a. He trusts his friends/*on his friends.
b. He relies *his friends/ on his friends.

A core tenet in generative grammar is the assumption that the subject position is obligatorily present and that in finite clauses subjects are obligatorily present, a requirement which may lead to the insertion of so called expletive or dummy subjects, such as *it* in (6).

(6) a. It is raining.
b. There are more people buying houses.

The obligatory presence of the subject in finite clauses has been a constant concern of the generative approach because it cannot be made to follow simply from the structure building principles or argument structure properties due to examples like (6a) where the expletive *it* does not carry an argument role. There have been formal approaches using special conditions on the head T ('Extended Projection Principle', 'EPP', etc.); other proposals distinguish one or more specialised subject positions (see a.o. Kiss 1996, Cardinaletti 2004, Rizzi 2015).

2.3.2. Compositionality: mapping form to meaning

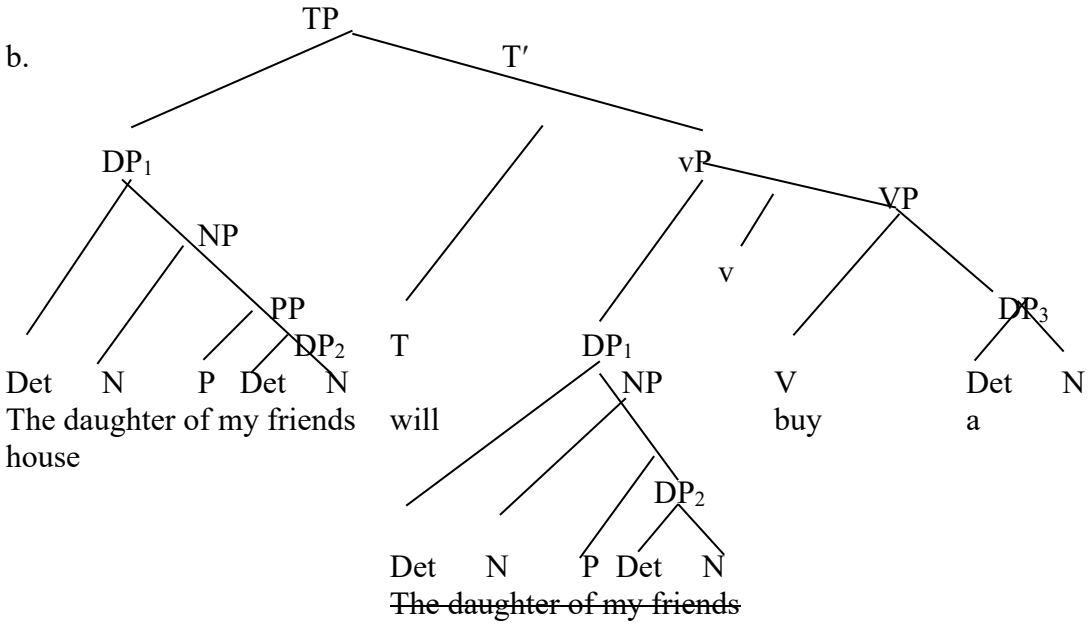
Intuitively, representation (4a) matches the interpretation of the clause, in particular with regard to its articulation in terms of a predication relation between the subject nominal and the clausal predicate. However, upon closer inspection, (4a) fails to capture the semantic relation between the verb or the verb phrase and the subject such that, for instance, the content of the verb phrase determines the participant role (or 'valency' or 'thematic role') of the subject constituent. This shortcoming is illustrated more clearly in (7), where, depending on the specific verb-complement combination, the subject takes on a different semantic role: whereas with 'throw a fit' George is arguably an EXPERIENCER affected by the action expressed by the VP, in the case of 'throw a party/a ball' he is the active AGENT of the action. By divorcing the subject entirely from the VP constituent, representation (4a) fails to capture the semantic link between the two.

(7) George will throw a fit/a party/a rock.

In influential work beginning in the 1980s (especially Kitagawa 1986, Sportiche 1988, Koopman and Sportiche 1991, Huang 1993, Bowers 1993, McCloskey 1997), it has thus been proposed that the derivation of the clause must encode the relation between the subject nominal and the VP. The proposal is that the subject is initially merged with the VP

constituent, by a merger which is mediated by a 'light' head, labeled v ('little v') in (4b).[5] The resulting constituent vP encodes the core predication of the clause ('who is doing what to whom') and will itself be combined with functional material encoding temporal, aspectual and modal values. In a second step of the derivation, the subject exits vP and moves to the top layer of the clausal structure where it merges again with the structure that has already been formed. (4b) represents the dual relation of the subject with VP and with the entire clause. In (4b), the strikethrough representation ~~*the daughter of my friends*~~ encodes the dual affiliation of the displaced subject in its 'first merge position' and in its 'landing site'.

(4) b.



At this point, the hypothesis that the subject is first merged vP internally and moves to its canonical position is conceptual: it emerges from the perception that there exists a semantic relation between the subject and the verb combined with the compositionality approach to interpretation according to which semantic relations are structurally encoded. There is also empirical support for the hypothesis that the subject first merges vP-internally. For instance, a number of quantifiers relating to the subject may typically be separated from the subject they modify and be located in a position to the right of the auxiliary. This is illustrated in (8) in which *all* quantifies over the subject nominal *the daughters of my friend*. In (8b) we sketch the derivation that is envisaged.[6]

(8) a. The daughters of my friend are all buying houses in town.
b. The daughters of my friend are
[[all ~~the daughters of my friend~~] buying houses in town.]

The assumption is that when the subject moves to a hierarchically higher position the original merge site of the subject retains its copy. The effect of introducing traces/copies in positions

[5] The representation is an approximation. There is a considerable literature on the nature of 'v' and its place in the syntax of the verb. See Chomsky (1995), Kratzer (1996), Collins (2005), Alexiadou, Anagnostopoulou and Schäfer (2015), Folli and Harley (2007), Ramchand (2008), and Merchant (2013) for extensive discussion.
[6] Our representation is a simplification. For discussion of the VP-internal subject hypothesis and an evaluation of this and other empirical arguments advanced to support it, we refer to McCloskey (1997).

vacated by movement is structure-preserving (cf. Emonds 1976): once they have been built the structure and structural relations are maintained. In older versions of the theory and also in less detailed representations the strikethrough notation is sometimes replaced by *t* for 'trace'. We return to the role of copies/traces in the theory in section 3.

2.3.3 Movement

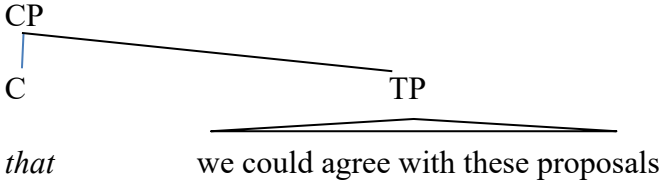
Our discussion above has introduced a second ingredient to the building of structure: movement. Throughout the development of generative grammar, movement operations have been invoked to capture their specific effects of discontinuous constituents, such as the floating quantifier pattern illustrated in (8), as well as the more general displacement effect when a constituent occupies one position but also has a close (semantic) link with another position, as illustrated in relation to the subject nominal which, though occupying a VP external position, is thematically linked to the lexical verb.

(9) provides additional illustrations of displacement as captured by movement. Informally put, in each of the examples, the bracketed sentence-initial constituent has a dual affiliation in the clause: on the one hand, it has a discourse-related function in that it creates a link between the proposition it introduces and its context: on the other, it provides a filler for the gap in the structure. (9a) illustrates fronting of the interrogative *wh*-constituent which serves to encode the scope of the question and is also the complement of the preposition *with*; (9b) illustrates fronting of the complement of the preposition which promotes a constituent to the 'topic' position (a process called 'Topicalization'; see also Chapter 22), and (9c) illustrates VP fronting in which the verbal constituent also represents the discourse topic.[7]

(9) a. [Which proposal] could you agree with _____?
b. [These proposals], we could agree with _____.
c. [Invite him to the party], I won't _____.

To represent the derivation of examples with material to the left of the canonical subject position, the syntactic tree elaborated in (4b) above must be extended with an additional layer which can host these sentence-initial constituents. In the literature, this additional left peripheral layer is the so called 'CP' (Complementizer Phrase) layer.[8] In a sentence such as (10a), the subordinating conjunction *that* fills the 'complementizer' slot C, as shown in (10b). TP is represented by an unanalyzed triangle because its internal structure is not relevant here.

(10) a. I think [$_{CP}$ that [$_{TP}$ we could agree with these proposals]]]
b.



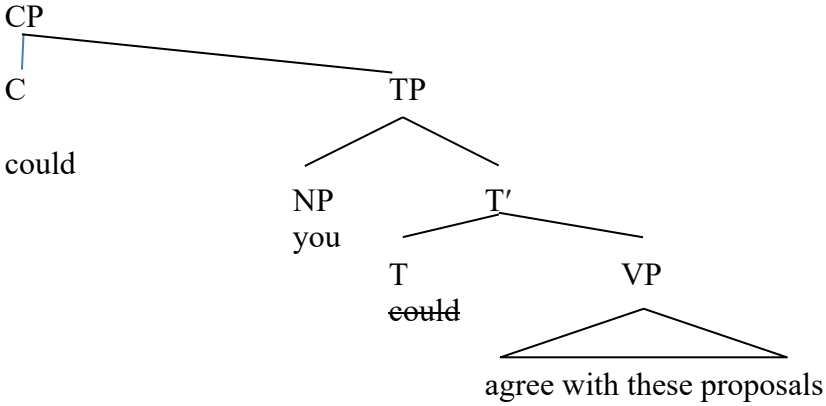
The position C is invoked to host the auxiliary in patterns with inverted auxiliaries, as illustrated in (10c) with the representation in (10d). In (10d) movement is again used: the auxiliary *could* is first merged in the sentential T position, where it encodes temporal and

[7] The fronting operations are subject to specific discourse and syntactic conditions which we abstract away from here (see Haegeman 2012).
[8] The left periphery is closely related to the interplay between syntax and information structure. Space prevents a full discussion of this issue here, but see Rizzi (1997) and much later work for extensive discussion.

modal values, and moves to the left periphery to encode the interrogative force of the sentence.

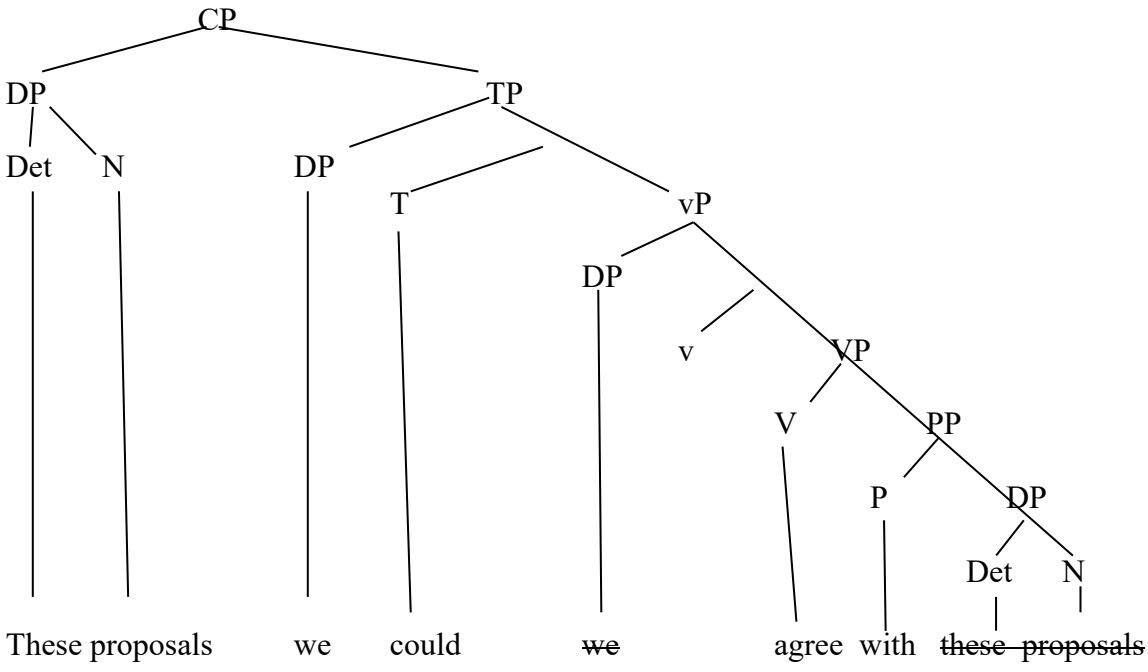
(10) c. Could you agree with these proposals?

d.



The fronted constituents in (9) are first merged internally to TP. For instance, in (9b) the nominal constituent *these proposal*s is first merged as the complement of the preposition *with*, forming the PP *with these proposals.* This PP is merged with V *agree*. The derivation proceeds as illustrated in the other examples above. When TP has been built the constituent *these proposal* is merged again as the outer constituent of the structure, leaving a copy in its merge position and building the CP layer. The resulting representation (11) encodes that *these proposals* has a 'dual affiliation': it is the complement of the preposition, as well as marking the topic of the clause.

(11)



Note that the analysis of displacement phenomena is of particular interest because it constitutes a property that sets various generative approaches apart. Displacement is modelled as movement, that is, the claim is that the filler has moved from its gap position. Ross (1967) was among the first to discover a rich range of constraints on displacement, which fuelled a great deal of theoretical work starting with Chomsky (1973, 1977), where so-called 'islands',

from which constituents cannot be moved, became a cornerstone of the theory. Typical islands involve *wh*-islands (12b) and adjunct islands (12c).

(12) a. Mary asked who was talking about that topic.
b. *About which topic did Mary ask [who was talking __]?
c. *About which topic did you leave [because John talked __]?

Islands constitute a rich empirical area, which we cannot go into here for reasons of space (see e.g. Szabolsci and Lohndal in press inter alia for a lengthy discussion of the intricacies of so-called weak islands).

Observe that in terms of the Minimalist principles discussed above, movement has actually been decomposed into more elementary components: it is the outcome of an operation which takes a constituent, makes a copy of it, and merges the copy later in the structure. Interrogatives are a typical example of this: in sentences like *What does Sarah read?* the *wh*-constituent *what* has first merged as the object of the lexical verb *read.* A copy is made and the resulting copy is merged again at the left periphery. Starke (2001) argues that movement can indeed be conceptualized as 'remerge', which quickly leads to the conclusion that natural language only has one type of Merge (Chomsky 2004). If an item from the lexicon is merged, this operation is called External Merge; if a copy is merged, then this is called Internal Merge.

Movement (or its Minimalist reincarnation as External Merge followed by Internal Merge) has been a constant component of all transformational approaches to grammar. However, there also exist non-transformational generative theories which typically do not deploy movement at all. These developed in the late 1970's (but see Harman 1963 for an early incarnation). Here we mention two prominent such theories: Lexical-Functional Grammar and Head-driven Phrase Structure Grammar.

A core component of Lexical-Functional Grammar (LFG) (Kaplan and Bresnan 1982, Sells 2013, Bresnan, Asudeh, Toivonen and Wechsler 2015; see also Chapter 15) involves the elimination of transformations. Instead, lexical expressions are an important ingredient in structural composition, with a rich and hierarchically organised feature structure. An important aspect of the theory is the hypothesis that there are three parallel and independent levels of representation: argument structure, constituent structure, and functional structure. A grammar is a complex set of phrase structures annotated with information about the associated functional structures. Displacement is then captured through interaction between levels of representation and the manipulation of lexical entries.

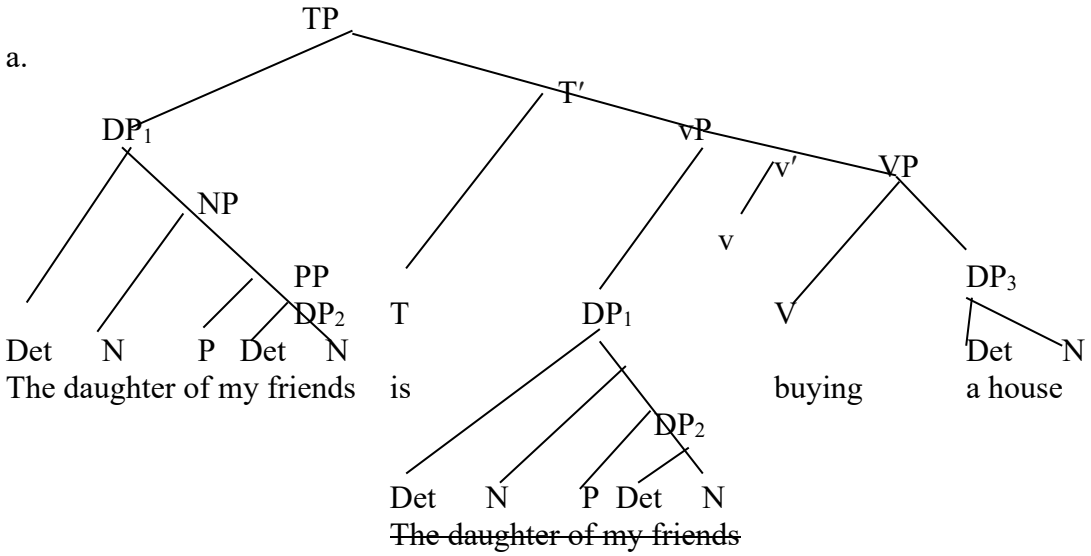
Generalized Phrase Structure Grammar (GPSG) (Gazdar, Klein, Pullum and Sag 1985, Blevins and Sag 2013) and its later incarnations also dispenses with movement to model displacement. Here we will focus on a later development which has led to a constraint-based model-theoretic analysis of grammar, namely Head-driven Phrase Structure Grammar (HPSG), as presented in Pollard and Sag (1987, 1994). To capture displacement dependencies, HPSG makes use of the SLASH feature (Gazdar 1981, Gazdar, Klein, Pullum and Sag 1985, Ginzburg and Sag 2000). SLASH makes it possible for information to be present both higher and lower in the structure. This simultaneous presence is accomplished through sharing of SLASH values, which effectively amounts to feature sharing. See Borsley (2012) for further discussion and for claims in favour of the HPSG analysis and against the transformational movement approach.

2.4 C-command

2.4.1 Structural prominence

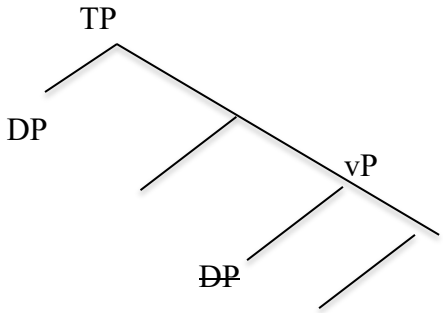
The representations postulated so far have as their main goal that of representing the internal structure of a set of example sentences. Through the development of the theory it has gradually emerged that one specific geometric relationship is key to a wide range of syntactic relations. In (4) we proposed that the subject is first merged as part of a verbal constituent. Specifically, the subject DP merges as the last constituent, it is added to the prefabricated vP. This is a case of so-called External Merge. The same subject nominal undergoes movement: it is remerged or 'internally merged' with the constituent consisting of the finite auxiliary and the vP constituent, as shown below:

(13) a.



In both derivations, the subject DP is added to the partially formed constituents vP and TP and completes them. One can say that the subject DP is structurally prominent in that it connects up directly to the containing projections (vP and TP), and in this respect it is distinct from other constituents such as, say a DP functioning as complement. The subject stands out from other arguments in the structure by its very position. In more abstract terms, the geometric relationship between the subject and the constituent with which it combines, namely vP or TP, is summarized in (13b):

(13) b.



The fronted constituent *these proposals* in (11) attains the same geometric relationship with CP because it too is combined with the other material in the clause to form CP.

The geometric relation between DP, TP/vP and its components as shown in (13b) was defined by Reinhart (1981) as the 'c-command' ('constituent command') relation.

(14) c-command

> Node A c-commands node B iff [if and only if] the branching node α_1 most immediately dominating A either dominates B or is immediately dominated by a node α_2 which dominates B, and α_2 is of the same category type as α_1 (Reinhart 1981: 612)

The relation c-command has become central in the formation of structure. For one thing, whenever a constituent moves (or internally merges), it will merge with a constituent and hence, it will c-command that constituent (see Epstein, Groat, Kawashima and Kitahara 1998 for an approach where c-command is explicitly a by-product of Merge). As a by-product, the moved constituent in effect c-commands the position from which it moved, and which contains its copy.

Returning to the observation that linear adjacency is not decisive in determining agreement on the verb, discussed in section 2.1, we can now reformulate the relevant relation in terms of c-command. In (13a) both the DP *the daughter of my friends* and the DP *my friends* are adjacent to the auxiliary *is.* However, by (14) the DP *the daughter of my friends* c-commands everything to its right, as well as the content of T, namely the auxiliary *is*. The DP *my friends*, on the other hand, is contained within that DP and does not c-command outside it. As a result, it cannot attain an agreement relation with the auxiliary in T.

2.4.2. C-command and referential dependencies

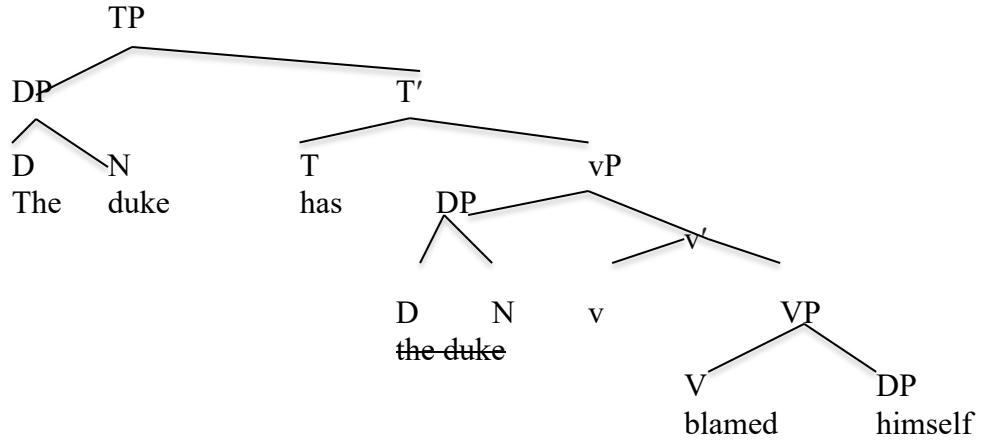
Reinhart's original motivation for singling out c-command as a prime geometric relation in the tree was based on the observation that this geometric relation between constituents has an effect on determining coreference relations in the sentence. Consider the examples in (15):

(15) a. The duke has blamed himself/*herself/*themselves.
b. Supporters of the duke have blamed themselves/*himself.

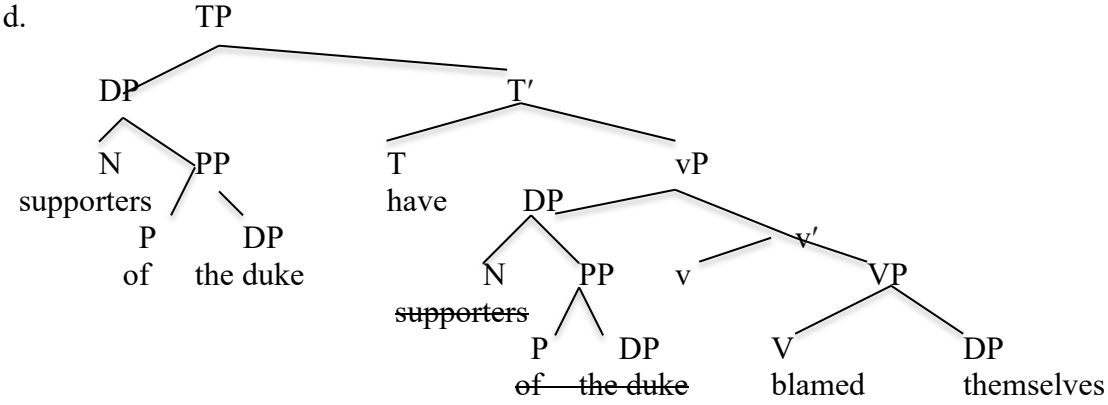
In (15a) only the masculine reflexive *himself* is possible; neither feminine *herself* nor plural *themselves* can be used. This is due to the fact that being referentially dependent, a reflexive requires an antecedent, i.e. a referential element that can complete its referential content.[9] In (15a), the only antecedent available is the subject *the duke*, which is masculine singular, and thus the appropriate reflexive agrees in gender and number with it. In (15b), on the other hand, despite having the same linear relation to the nominal *the duke* as in (15a), the reflexive *himself* is no longer appropriate. In this example, the nominal *the duke* cannot serve as an antecedent for *himself*. The only antecedent-reflexive relation that can be constructed is that between the plural reflexive *themselves* and the nominal *supporters of the duke.* We can capture this difference between (15a) and (15b) in terms of c-command: in (15a) the nominal *the duke* c-commands the constituent vP and all material included inside it, including the reflexive *himself*. In (15b), however, the NP *the duke* is not available as an antecedent, because it does not c-command the reflexive: it is 'trapped' inside the containing nominal *supporters of the duke* and hence the reflexive *himself* remains antecedent-less, in spite of the presence of an appropriate singular nominal in the sentence.

[9] The encoding of referential dependencies is governed by the so called Binding Theory (Chomsky 1981). In non-transformational theories such as LFG and HPSG, anaphors and pronouns do not involve constraints on constituent structure. Rather, the constraints are stated on argument-structure lists in HPSG and on f-structures in LFG. For reasons of space, we cannot provide further details concerning binding theory; see Büring (2005) for a detailed overview.

(15) c.



(15) d.



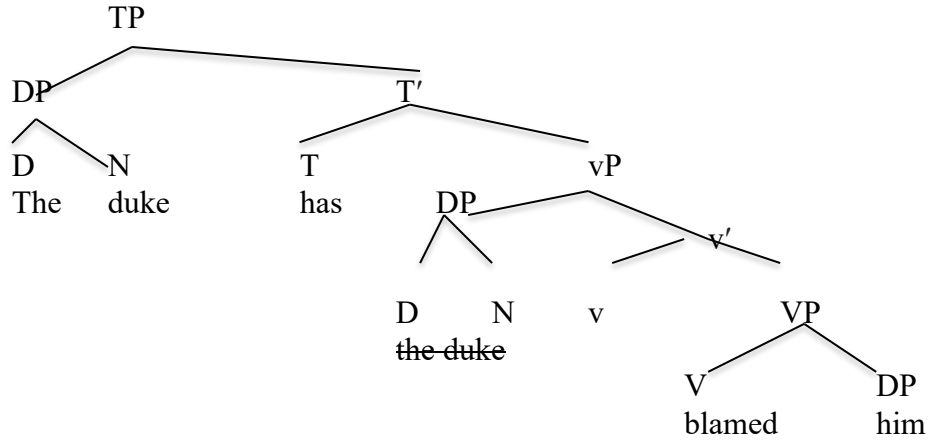
Recall that we assume that the subject moves from a position inside the vP. This means that the referential dependency between the reflexive and the subject can in principle be set up immediately after the nominal has been merged in the vP. In section 3 below, we will return to this point.

Now consider the interpretation of the pronoun *him* in (16):

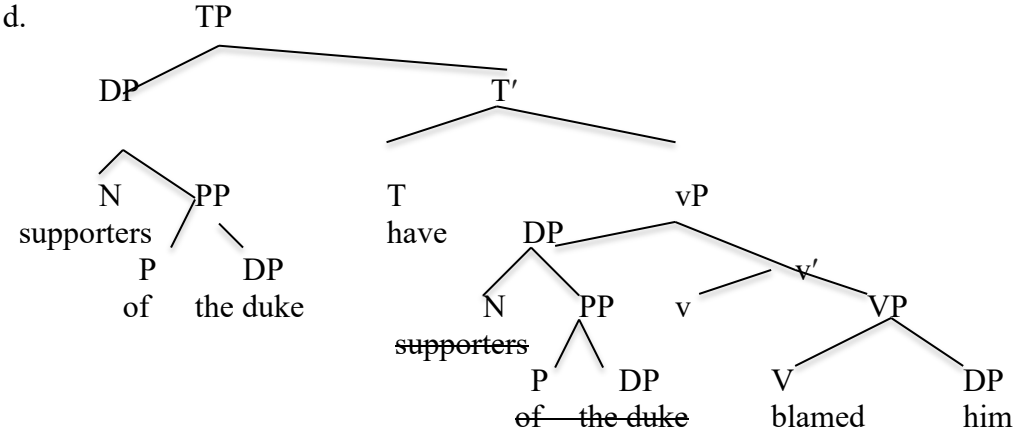
(16) a. The duke has blamed him.
b. Supporters of the duke have blamed him.

In (16a), the pronoun *him* cannot be coreferential with the nominal *the duke*. In (16b), coreference between these two nominals is possible. A purely linear account for this difference is bound to fail: the precedence relations and the distance in terms of intervening words between the noun *duke* and the pronoun *him* are identical. Once again, however, we conclude that it is best to reinterpret the data hierarchically: the data suggest that a pronoun *cannot* be coreferential with a nominal that c-commands it. As was the case in the preceding examples, we can at this point take the condition to be satisfied at the first opportunity that arises, that is within the vP *the duke* and *him* in (16c) must not be coreferential. (16d) shows that there is no c-command relation between *the duke* and *him*, making coreference possible. We note in passing that possessive pronouns such as *his/her*, etc. pattern differently.

(16) c.



(16) d.



Further refinements are needed, however. Consider (17):

(17) a. *The duke says that the supporters have blamed himself.
b. The duke says that the supporters have blamed him.

The nominal *the duke* clearly c-commands the reflexive *himself* in (17a) as well as the pronoun *him* in (17b). So we would expect that the referential dependency can be established in (17a) and that coreference is unacceptable in (17b), contrary to fact. In (17a) the reflexive *himself* cannot be referentially dependent on the nominal *the duke* and, conversely, in (17b) the pronoun *him* can corefer with the same nominal.

From a comparison between the examples in (15/16) and those in (17) we can infer that the difference correlates with the fact that in the former examples the potential antecedent nominal and the pronoun or the reflexive are *clause mates*, while this is not the case in (17).[10] So the referential dependencies apparently must also be established in relation to locality restrictions: for a reflexive to be dependent on a c-commanding nominal, that nominal and the reflexive must be clause mates, i.e. they are located within the same clausal domain. Within the same domain, on the other hand, a pronoun must not be coreferential with a c-commanding nominal. Outside the local domain the referential dependency of the reflexive cannot be set up regardless of the c-command relation, and the pronoun may freely be coreferential with a c-commanding nominal.

Many other examples motivate the pivotal role of c-command in the theory, but for reasons of space, we cannot discuss them here.

[10] As Lasnik (2002: 386) explains, a 'clause mate' restriction is one which holds that "no process or relation […] could involve X and Y if X and Y were separated by any clause boundary". Of course, that raises the question of what the relevant clause boundaries are, which we cannot discuss here.

3 Copies and interpretation

The central role of structural relations in determining syntax and interpretation is one of the hallmarks of most work in the generative tradition. A second distinctive property of this approach is the hypothesis that structure may be 'invisible', i.e. present in the underlying representation but not realized overtly. The copies which we postulated in representations above and which we encoded by means of the strikethrough notation are a case in point. But abstract entities of structure are also postulated in other contexts, as we will illustrate below in relation to the interpretation of reflexives. The same reasoning can be extended to a range of other phenomena.

3.1 Reflexives in complex clauses

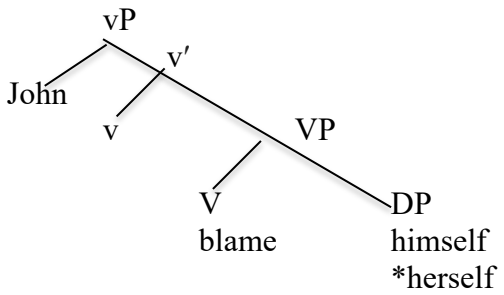
Section 2.4.2 shows that the reference of referentially dependent elements such as reflexive *himself* is established through a c-commanding antecedent. Consider now (18):

(18) a. Blame himself, Mary does not think that John should.
b. *Blame herself, Mary does not think that John should.

Both examples illustrate what is usually called VP fronting: the constituent fronted to the CP periphery contains the lexical verb, *blame*, and its complement, here a reflexive. The result is acceptable in (18a), in which the subject of the lower clause is the antecedent of the reflexive *himself,* but it is unacceptable in (18b) with *Mary* the subject of the higher clause as the intended antecedent of the reflexive *herself*. The data show once again that the locality restrictions on the dependency of a reflexive cannot simply be stated in terms of linear nearness, as *Mary* is much closer to *herself* in (18b) than *John* is to *himself* in (18a). Again, the pattern in (18) follows from the derivations outlined in section 1.

Recall that the subject of the clause in fact is inserted at the vP level, from where it moves to the canonical subject position, leaving a copy in its original site. So when the structure is being put together, at one stage we will have built the constituent in (18c), with two alternative realisations of the object reflexive:

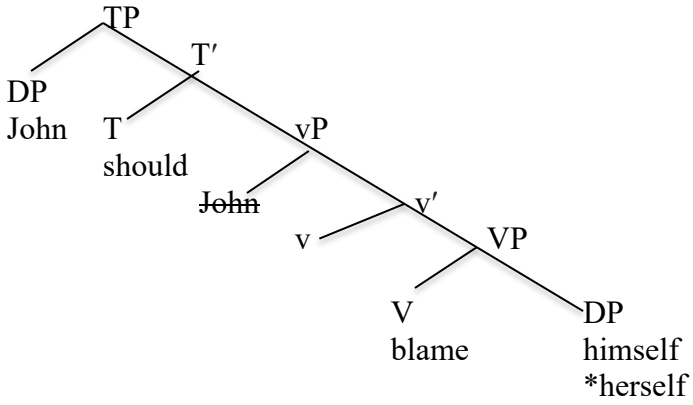
(18) c.



In (18c) *John* is merged as the subject in the vP layer. The dependency of *himself* on *John* can be established. On the other hand, *herself* cannot be dependent on *John* because their grammatical features do not match.

At a further stage the TP layer is built and the subject *John* moves up but this does not affect the potential referential dependencies.

(18) d.



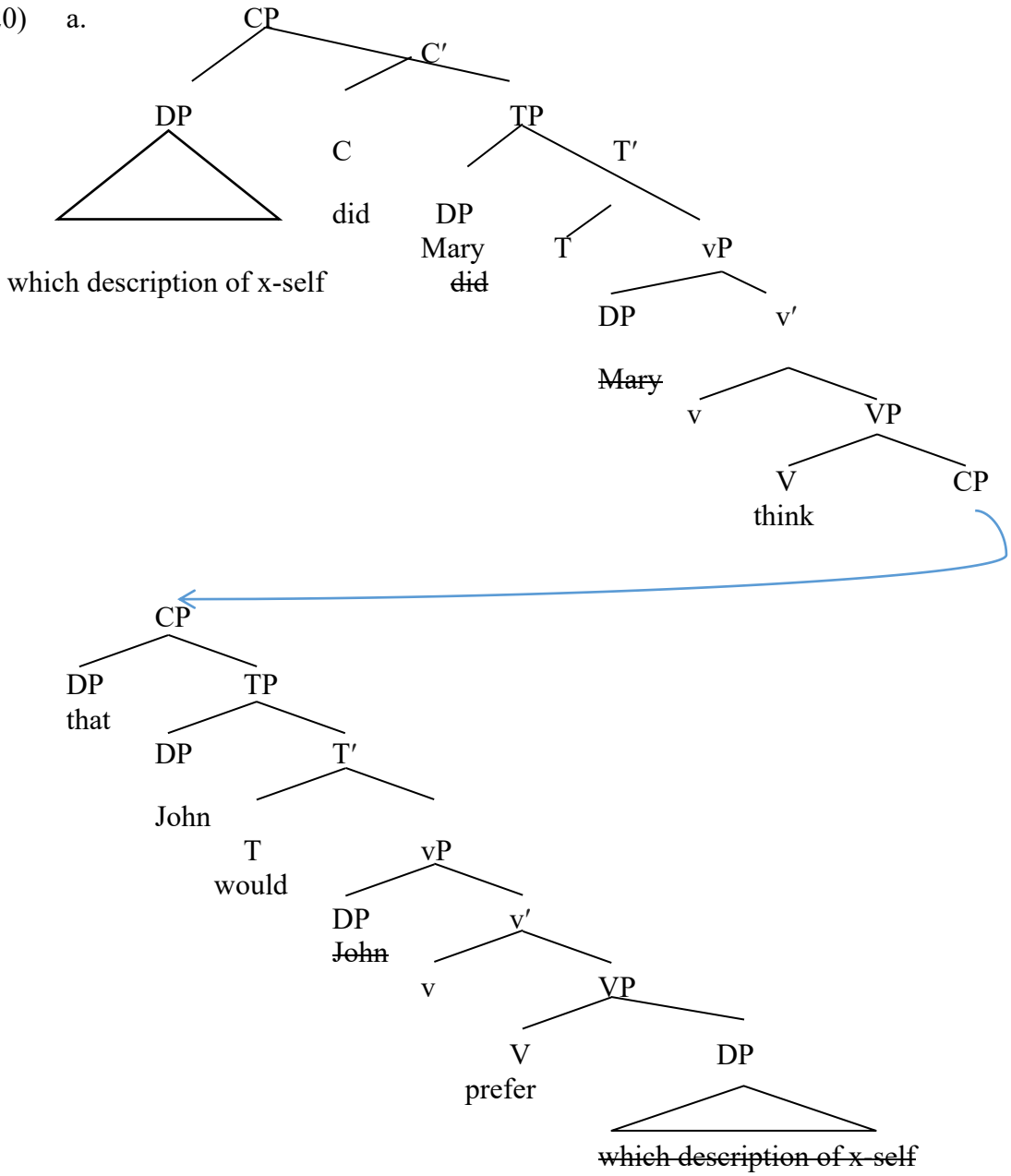
The constituent (18d) is embedded as a complement of *think* in a superordinate domain, where once again, *John* starts out inside vP and is subsequently moved up. Once the superordinate TP is formed the embedded vP itself moves leftward to the higher CP layer. (We return to a more precise characterisation of this movement, and in particular to the whether it is VP or vP that is moved, in section 3.2.)

Before we pursue the discussion of (18) also in the next section, we make a detour and consider (19):

(19) a. [Which description of himself] did Mary think that John would prefer?
b. [Which description of herself] did Mary think that John would prefer?

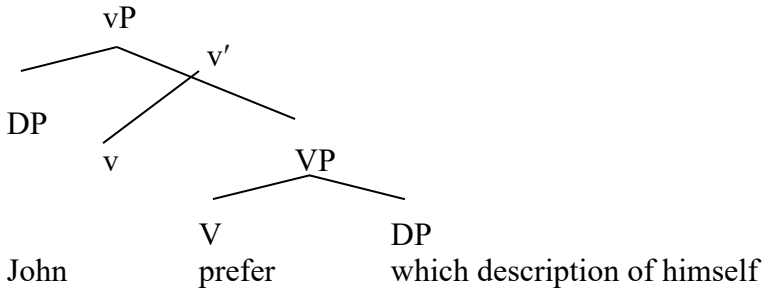
In (19), a reflexive (*himself, herself*) is the complement of the preposition *of* and is embedded in an interrogative nominal constituent whose head noun is *description.* The relevant nominal is bracketed in our example sentences. Unlike is the case in (18), both *himself* and *herself* are possible in (19a) and (19b), implying that both the subject of the embedded clause *John* and the subject of the main clause *Mary* can function as the antecedent of the reflexive. The *wh*-phrase is the direct object of the embedded verb *prefer* but it occupies a sentence-initial position. These examples contain a displaced constituent: merged in the embedded VP as the complement of *prefer*, the *wh*-phrase is moved to the matrix left periphery. Schematically the structure of the examples in (19) is as in (20), with *x-self* standing for both *himself* or *herself*: the constituent *which description of x-self* is fronted to the left peripheral CP of the matrix clause.

(20) a.



It is clear that, regardless of the details of the internal structure of the matrix TP and the embedded CP/TP, neither *John* nor *Mary* c-commands the reflexive, hence the reflexive *x-self* would seem to lack a licit antecedent. Since, in fact, a reflexive is permitted, there must be an alternative way of licensing the reflexive, and indeed, given that both *himself* and *herself* are licit, there must be two alternatives. Recall that it is assumed that a moved (=internally merged) constituent leaves a copy in the original (external) merge position: *which description of x-self* is the object of the verb *prefer* so it is internally merged as a complement of V. Exploiting this hypothesis, we can account for the availability of the form *himself* in the following way. If the reflexive *himself* is merged in the VP, this constituent itself will become a constituent of the vP layer which introduces the subject nominal *John,* which will c-command the reflexive. In (20b), we highlight the relevant part of the structure.

(20) b.

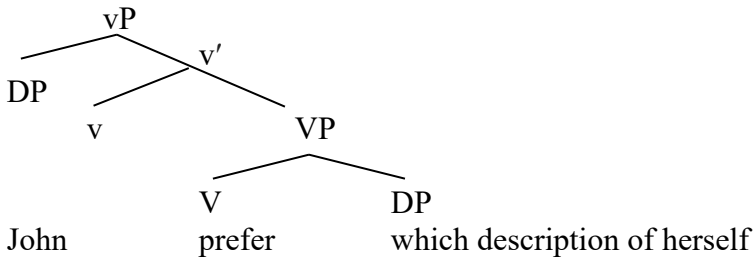


This analysis comes down to saying that the reflexive in (19a) is interpreted like that in (20c):

(20) c. Mary thinks that John would prefer such a description of himself.

However, we must also account for the availability of *herself*. At the point at which the vP has been built, representation (20d) becomes available in the structure:

(20) d.



Based on (19a), one conclusion must be that to determine the interpretation of a reflexive we are allowed to take into consideration the original position of a moved constituent: in (20b) the reflexive picks its antecedent while the containing constituent is still in its first merge position.

However, a second conclusion is enforced upon us by (19b): the referential dependency of the reflexive does not have to be fixed in the original position of the containing constituent. As seen in (20d), vP internally there is only one possible antecedent, the c-commanding nominal *John* and so only *himself* should be available. We might propose that the reflexive *herself* contained in the VP complement in (19b), with partial representation (20d), directly picks as its antecedent the subject of the matrix clause, i.e. *Mary*, but if such a dependency relation were legitimate then we would expect (20e) to be acceptable too, contrary to fact.

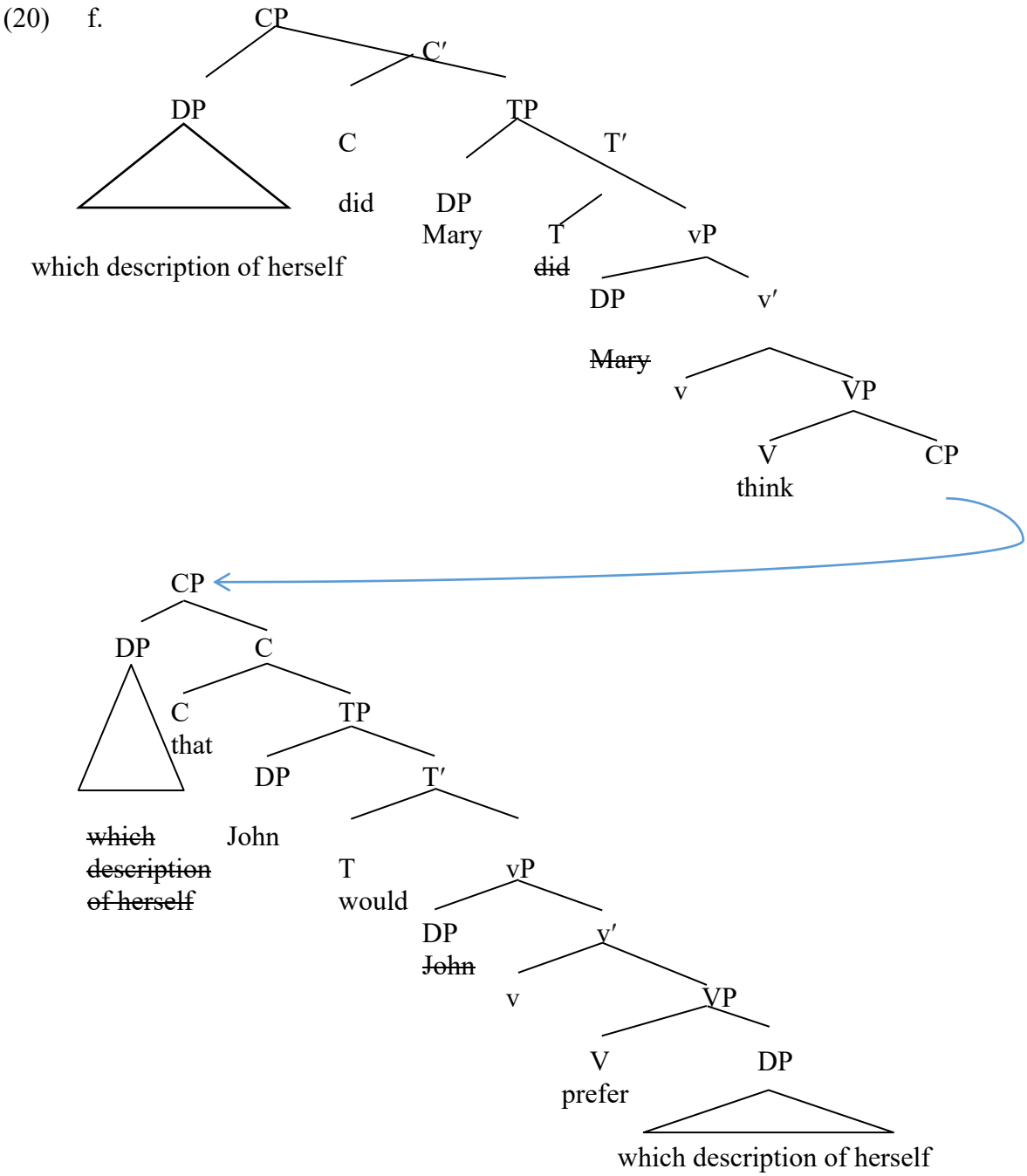
(20) e. *Mary thinks that John would prefer [such a description of herself].

In our example (19b), the nominal *which description of herself* occupies a sentence-initial position so, unlike the constituent *such a description of herself* in (20e), it must have undergone movement. In the left peripheral position attained by the constituent *which description of herself* , the nominal *Mary* does not c-command the reflexive inside that constituent either, so the dependency between *Mary* and the reflexive cannot be established in that configuration.

In order to capture the dependency between *Mary* and *herself*, we can explore a further implementation of the concept of locality which plays a prominent role in formal syntax. The nominal *which pictures of x-self* is moved to the left periphery (CP) of the matrix clause. If we assume that syntactic operations apply to local domains then we can postulate that in order to move there from its original VP internal position the nominal *which picture of*

herself does not make a one-step movement from within the embedded clause straight to the matrix CP, but rather that it moves in two steps: it first moves (i.e. internally merges) to the left periphery of the embedded CP and only then moves up (i.e. internally merges) to the matrix left periphery. Like all movement, we assume that at the intermediate merge position the constituent leaves a copy. This is schematically represented in (20f). The matrix subject *Mary* can now serve as the (local) antecedent for the reflexive contained in the *wh*-phrase in the intermediate CP.

(20) f.



3.2 vP internal subjects and reflexives

We have developed an account for the fact that both *himself* and *herself* are licit in (19a) and (19b), but we may wonder whether we are in danger of over-generating, i.e. having a system

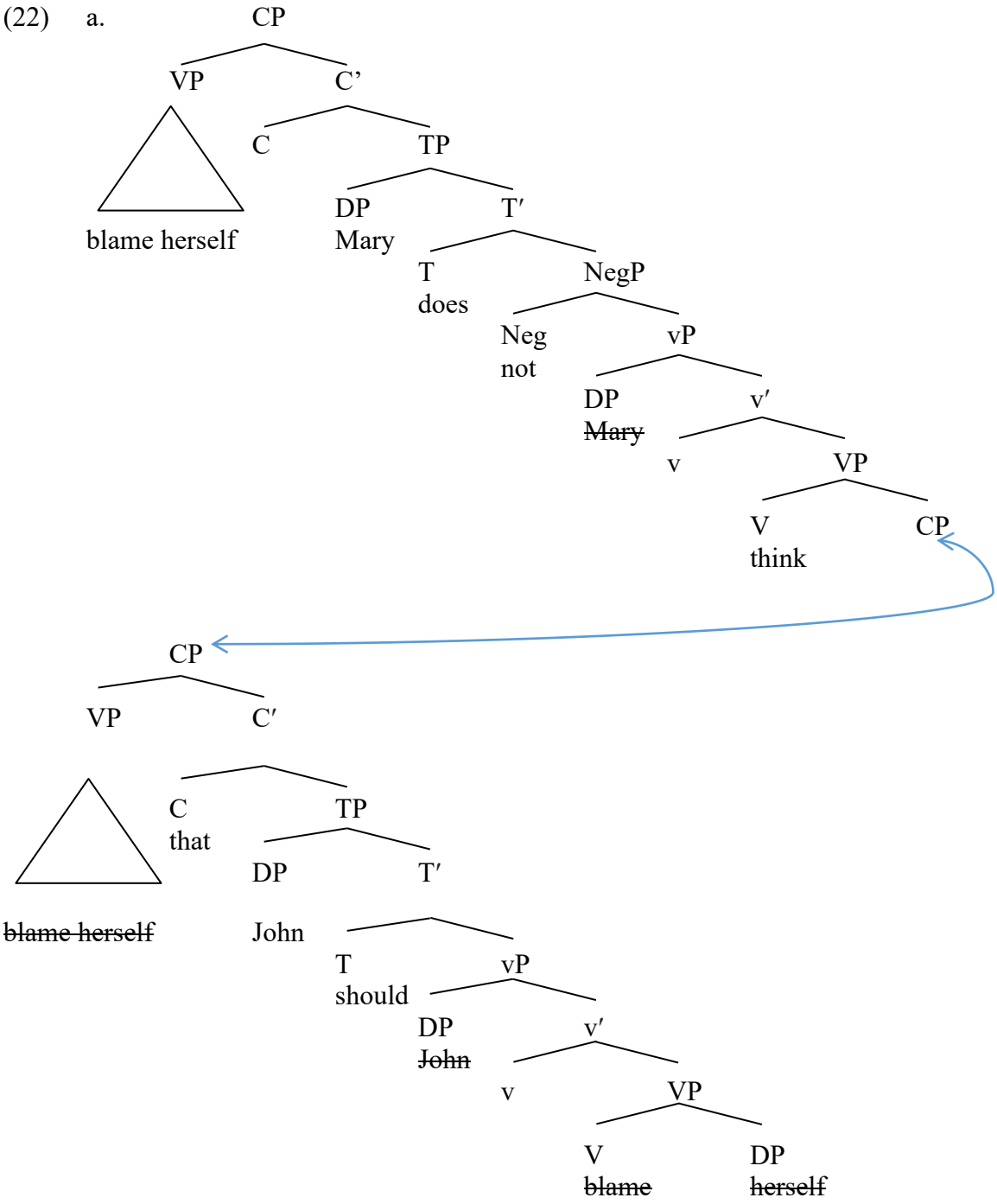
that is too flexible which no longer captures the fact that the reflexive *herself* is illicit in (18b), repeated here for convenience as (21):

(21) *Blame herself, Mary does not think that John should.

If one can always 'postpone' fixing the reference of a reflexive until a later stage of the derivation and use intermediate copies, then why is this not possible in (21)? Suppose that, by analogy with the derivation of the availability of both *himself* and *herself* in (19), we assigned to (21) the representation in (22a), with the two-step derivation[11]. In this scenario, the reflexive *herself* should then become licensed thanks to the movement trajectory of the VP, contrary to fact:

[11] For sake of exposition, we simply assume that *not* is the head of a negation phrase, NegP. For further discussion of negation, see Haegeman (1995).

(22) a.



However, this does not work. Why not? Recall, though, that in the discussion of VP fronting in Section 3.1 we raised the question whether it is VP or vP that is fronted. According to representation (22a), the VP constituent is fronted. Suppose, though, that in fact the fronted constituent must be the entire projection, vP, resulting in representation (22b):

(22) b. *[$_{CP}$ [$_{vP}$ ~~John~~ v blame herself]
[$_{TP}$ Mary does not [$_{vP}$ ~~Mary~~ v [$_{VP}$ think
[$_{CP}$ [$_{vP}$ ~~John blame herself~~] that
[$_{TP}$ John should [$_{vP}$ ~~John v [$_{vp}$ blame herself~~]]]]]]]]

The ungrammaticality of (18b)/(21) now follows: the fronted vP itself contains the copy of the subject of the lower clause, *John*, and hence this nominal will always be the closest antecedent. Observe also that the derivation in (22b) actually presupposes - and hence corroborates – the hypothesis that the subject nominal is externally merged in a vP projection. (see Huang 1993 for further discussion and additional examples).

The discussion above illustrates the interplay between the hypotheses concerning constituent structure and the role of abstract representations ('copies') to encode modifications of the structure through the derivational process. One further conclusion is that reflexives are licensed by a c-commanding antecedent but that the dependency requirement on the reflexive is not necessarily met at the level of the lowest clause: the actual licensing may take place at a (later) point when the constituent containing the reflexive has already moved.

4 Ellipsis and abstract structure: silent meaning

In this section, we will discuss how VP ellipsis provides additional support for abstract structure.[12]

4.1 VP ellipsis: the problem

Consider (23), in which the bracketed clauses illustrate what is usually referred to as VP ellipsis, or VPE for short, where 'VP' is a shorthand label for vP/VP.

(23) a. Jane has finished the text on time but [Tom hasn't].
b. Jane will finish the text on time but [Tom won't].
c. Jane is working on the text but [Tom isn't].

Interpretively, the bracketed strings contain some implicit information matching material in the preceding clause. In order to interpret the sentences, one has to 'generate meaning from silence' (Merchant 1999: 2). The information which has to be retrieved in the second conjunct is spelt out in (24): where the boldfaced string in the first conjunct is replicated in the second one:

(24) a. Jane has **finished the text on time** but [Tom hasn't finished the text].
b. Jane will **finish the text on time** but [Tom won't finish the text].
c. Jane is **working on the text** but [Tom isn't working on the text].

The information to be retrieved must in some way match that in the antecedent. Let us refer to this as the 'matching condition'. Note that though there happens to be a perfect match between the bolded string and the completion of the ellipsis site in the examples in (23/24), the match need not be perfect. For instance, as suggested by the alternative phrasing *her/his* in (25), the ellipsis site may contain either a feminine or a masculine pronoun.

(25) a. Jane has finished her thesis on time but [Tom hasn't ~~finished her/his thesis on time~~].
b. Jane will finish her thesis on time but [Tom won't finish ~~her/his thesis on time~~].
c. Jane is working on her thesis but [Tom isn't ~~working on her/his thesis~~].

[12] There is generative work that does not assume that elliptical clauses have a full syntactic structure which undergoes deletion. See e.g., Culicover and Jackendoff (2005: chapters 7 and 8).

So the matching condition is somewhat versatile. We refer to the literature for a discussion of issues related to this (see e.g., Merchant 2001, Chung 2013, inter alia).

VPE as illustrated in (23) and in (25) alternates with the replacement of the VP by a perform in the shape of an anaphoric VP such as *do so* or *do it*:

(26) a. Jane has finished the text on time but [Tom hasn't *done so*].
b. Jane will finish the text on time but [Tom won't *do so*].
c. Jane is working on the text but [Tom isn't *doing so*].

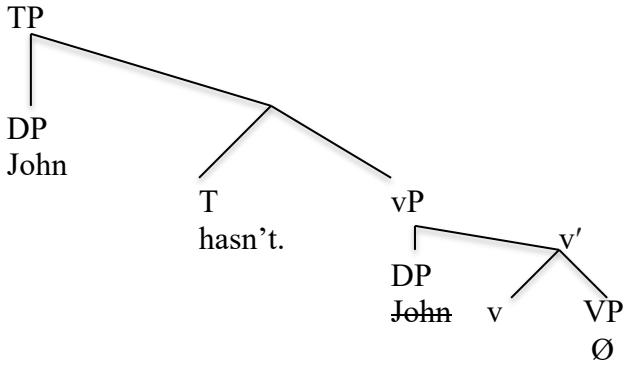
There is a longstanding debate in the literature concerning the status of the ellipsis site in VPE. One option is to imagine that VPE in fact means that the clause in question lacks a VP altogether. So we would postulate novel structures such as (27a) where the second conjunct in (24a) would be seen as a fragment without a VP:

(27) a.

The problem with a representation such as (27a) is that it represents the sentence as simply consisting of a subject and a temporal head 'T'. In such a scenario the subject would have to be merged in its canonical position directly, and it would not establish a thematic relation to a lexical verb. In order to interpret the structure in (27a), one would have to invoke a powerful mechanism that reconstructs, as it were, the vP/VP layer.

A second hypothesis is that the VP of VPE patterns is in fact like an abstract variant of the verbal anaphor, i.e. the structure would be something like (27b) with a non-overt (Ø) element that is 'bound' by the non-elliptical structure:

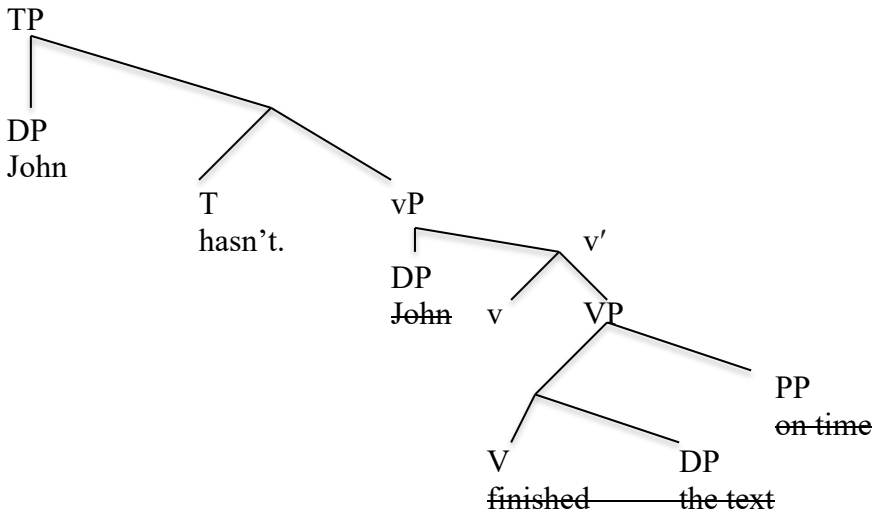
(27) b.



There are various implementations of this idea : in (27b) we assume that the abstract constituent is a VP and that the vP layer unites the subject DP with that VP. Basically the assumption is that in (27b) the VP lacks internal structure and does not allow for internal syntactic operations.

According to a third approach, VPE is literally ellipsis of a VP and thus the representations in (26) would be the most accurate. Roughly, and ignoring many details of execution, we would have something like a structure in (27c). The prediction of (27c) is that given that the VP structure is available, the syntax can operate internally to VP.

(27) c.



3.2 Arguments in favour of a rich structure

With respect to the syntactic properties of VP ellipsis, it would appear that a consensus is emerging in some of the current literature in favour of the approach in (27c) (cf. Fiengo and May 1994, Sag 1976, Williams 1977, Merchant 1999, Johnson 2001). In particular, assuming a full structure for the VP predicts that its internal structure is accessible to syntactic operations, a prediction not compatible with the anaphoric verb option in (27b). The evidence that has been put forward for this comes from the availability of examples such as (28):

(28) a. It took a visiting Mariinsky teacher to spot [what the Royal hadn't]: that with patient coaching, a worldclass dancer could be coaxed into being. (*Observer* 17.2.13, page 23, col 1)
b. He spends too much time with Theresa, the girl he doesn't like, and then with Chloe, [whom he really does]. (*Guardian* 1.2.14, page 11, col 4)

In the examples above the VP inside the bracketed constituent is not overtly realised but in each of them the object (*what, whom*) has been extracted and moved to the periphery of the clause. This extraction would be unexpected if there was a fragment structure as in (27a) with no VP at all or if the VP lacked internal structure. Indeed, the analogues of (29) with an overt VP pro form do not allow such extraction:

(29) a. *It took a visiting Mariinsky teacher to spot what the Royal hadn't done so/done it.
b. *He spends too much time with Theresa, the girl he doesn't like, and then with Chloe, whom he really does do so/do it.

Examples like those in (28) have been used extensively in support of the claim that VPE involves underlying abstract structure. Not only *wh*-constituents can be extracted, topicalization is also possible (30). In the first conjunct of the examples in (30) the topicalised constituent *Theresa* occupies an initial position but it has a thematic relation with the verb *liked.* In order to capture the dependency between the initial constituent and the verb it is proposed that the relevant order is achieved by extracting the object *Theresa* to the left periphery of the clause. In the second conjuncts in (30) the topicalised constituent *Chloe* also

needs to be thematically related to a verb. On the assumption that topicalization involves movement, the logic of the argumentation is parallel to that of (28). The extraction of *Chloe* would be unexpected if there was a fragment structure with no VP at all or if the VP lacked internal structure.

(30) a. Theresa he liked, but Chloe he didn't.
b. Theresa he has invited, but Chloe he hasn't.
c. Theresa he will invite, but Chloe he won't.

Furthermore, the fronted constituent (whether it be a *wh*-constituent (31a,b) or a topicalised constituent (31c)) may be one that originates in a prepositional phrase, providing further support for the idea that the ellipsis site has internal structure (examples based on Johnson, 2001, Schuyler 2002):

(31) a. I know which student Tom will write a report about, but I don't know [which student Mary will].
b I don't know who Tom went to the theatre with, but I know [who Mary did].
c. Theresa I would go to the theatre with but [Chloe I wouldn't].

If the *wh*-constituent in such VPE patterns has been moved out of the ellipsis site, we correctly predict this to be constrained by the conditions on movement. This prediction is correct. In the same way that a constituent cannot be moved out of a complex nominal constituent (32a), a fronted constituent is not available if the VPE site is contained within a complex nominal (32b).

(32) a. * They want to hire someone who speaks a Balkan language, but I don't know which they want to hire [someone who speaks].
b. * They want to hire someone who speaks a Balkan language, but I don't know [which they do]. (Merchant 1999)

In the same way that *which* cannot be extracted from the VP headed by *speaks* contained in the bracketed nominal in (32a), it cannot be extracted from the ellipsis site in (32b). For a discussion of other constraints on VP ellipsis and extraction, see Schuyler (2002).

4 Conclusion

In this chapter, we have mainly focused on Chomskyan approaches to generative syntax, with some remarks to non-Chomskyan generative approaches generative approaches to syntax. Our goal has not been to present a particular implementation of the framework, but rather to focus on the close interplay between data and theory by emphasising the style of argumentation in the generative approaches.

The main focus of our discussion has been on structural configurations which are taken to play a crucial role in determining formal and interpretive dependencies and on the concept of abstract structure.

The importance of constituent structure is, and always has been, a major characteristic of generative grammar, regardless of the precise technical implementations that have been employed. Crucially, structures are a way to combine sound and meaning, or, put differently, structural configurations are the input to semantic interpretation. As a consequence, among other things, the justification of structures always need to take into account what meaning they are related to. Over the years a consensus has also developed that structural

configurations are constructed step by step in a bottom-up fashion and that meaning is incrementally built up on the basis of the structure. A crucial feature of generative thinking about structure involves 'locality', which plays a role in the formation of structure and its mapping to interpretation.

Another component that is salient in generative grammar is that structural positions may also be realised by non-overt material, i.e. constituents may be structurally represented, and hence play a role in the mapping of interpretation, without having an overt reflex. And there is also a consensus that such non-overt constituents may be internally structured according to the same principles that govern overtly realised constituents. Evidence for abstract structure is drawn from ellipsis patterns and the way that the implied constituents corresponding to the ellipsis sites can be seen to interact with the syntax of the remaining structure.

References

Åfarli, Tor A. (2007). 'Do Verbs have Argument Structure?', in Eric Reuland, Tanmoy Bhattacharya & Giorgos Spathas (eds.), *Argument Structure*, 1-16. Amsterdam: John Benjamins.

Abney, Steven P. (1987). The English noun phrase in its sentential aspect. Doctoral dissertation, MIT.

Adger, David. (2013). *A Syntax of Substance*. Cambridge, MA: MIT Press.

Alexiadou, Artemis, Elena Anagnostopoulou and Florian Schäfer (2015). *External Arguments in Transitivity Alternations: A Layering Approach*. Oxford: Oxford University Press.

Alexiadou, Artemis, Liliane Haegeman, and Melita Stavrou (2007). *Noun Phrase in the Generative Perspective*. Berlin: Mouton de Gruyter.

Blevins, James P. and Ivan Sag (2013). 'Phrase structure grammar', in Marcel den Dikken (ed.),*The Cambridge Handbook of Generative Syntax*, Marcel den Dikken. Cambridge: Cambridge University Press, 202-125.

Boeckx, Cedric (2006). *Linguistic Minimalism*. Oxford: Oxford University Press.

Borer, Hagit (2005). *Structuring Sense*. Vols. I and II. Oxford: Oxford University Press.

Borsley, Robert D. (2012). Don't move! *IBERIA* 4: 110-139.

Bowers, John (1993). 'The syntax of predication', *Linguistic Inquiry* 24: 591-656.

Bresnan, Joan, Ash Asudeh, Ida Toivonen and Stephen Wechsler (2015). *Lexical-Functional Syntax*. 2nd edition. Oxford: Blackwell.

Büring, Daniel (2005). *Binding Theory*. Cambridge: Cambridge University Press.

Cardinaletti, Anna (2004). 'Toward a Cartography of Subject Positions', in Luigi Rizzi (ed.), *The Structure of CP and IP: The Cartography of Syntactic Structures Volume 2*. Oxford: Oxford University Press, 115-165.

Chomsky, Noam (1973). 'Conditions on transformations', in Steven Anderson, and Paul Kiparski (eds.), *A festschrift for Morris Halle*. New York: Holt, Rinehart and Winston, 232-286.

Chomsky, Noam (1977). 'On *wh*-movement', in Peter Culicover, Thomas Wasow, and Adrian Akmajian (eds.), *Formal Syntax*. New York: Academic Press, 71-132.

Chomsky, Noam (1981). *Lectures on Government and Binding*. Dordrecht: Foris.

Chomsky, Noam (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.

Chomsky, Noam (2004). 'Beyond explanatory adequacy', in Adriana Belletti (ed.), *Structures and Beyond: The Cartography of Syntactic Structures Volume 3*. Oxford: Oxford University Press, 104-131.

Chomsky, Noam (2013). 'Problems of projection', *Lingua* 130: 33-49.

Chomsky, Noam (2015). ‘Problems of projection: Extensions’, in Elisa Di Domenico, Cornelia Hamann, and Simona Matteini (eds.), *Structures, Strategies and Beyond: Studies in honour of Adriana Belletti*. Amsterdam: John Benjamins, 3-16.
Chung, Sandra (2013). ‘Syntactic Identity in Sluicing: How Much and Why’, *Linguistic Inquiry* 44: 1-44.
Collins, Chris (2005). ‘A smuggling approach to the passive in English’, *Syntax* 8: 81-120.
Culicover, Peter W., and Ray Jackendoff (2005). *Simpler Syntax*. Oxford: Oxford University Press.
Emonds, Joseph (1976). *A transformational approach to English syntax*. New York: Academic Press.
Epstein, Samuel David, Erich M. Groat, Ruriko Kawashima, and Hisatsugu Kitahara (1998). *A Derivational Approach to Syntactic Relations*. Oxford: Oxford University Press.
Fiengo, Robert, and Robert May (1994). *Indices and Identity*. Cambridge, MA: MIT Press.
Folli, Raffaella, and Heidi Harley (2007). ‘Causation, obligation, and argument structure: On the nature of little v’, *Linguistic Inquiry* 38: 197-238.
Freidin, Robert (2007). *Generative Grammar: Theory and its History*. London: Routledge.
Gazdar, Gerald (1981). ‘Unbounded dependencies and coordinate structure’. *Linguistic Inquiry* 12: 155-184.
Gazdar, Gerald, Ewan Klein, Geoffrey K. Pullum, and Ivan A. Sag (1985). *Generalized Phrase Structure Grammar*. Oxford: Basil Blackell.
Ginzburg, Jonathan and Ivan A. Sag (2000). *Interrogative Investigations: The Form, Meaning and Use of English Interrogatives*. Stanford: CSLI Publications.
Haegeman, Liliane (1995). *The Syntax of Negation*. Cambridge: Cambridge University Press.
Haegeman, Liliane (2012). *Adverbial Clauses, Main Clause Phenomena, and Composition of the Left Periphery*. Oxford: Oxford University Press.
Harman, Gilbert H. (1963). ‘Generative grammars without transformation rules: A defense of phrase structure’, *Language* 39: 597-6161.
Huang, C.-T. James (1993). ‘Reconstruction and the nature of vP: Some theoretical consequences’, *Linguistic Inquiry* 24: 103-138.
Johnson, Kyle (2001). ‘What VP Ellipsis Can Do, and What it Can’t but not Why’, in Mark Baltin and Chris Collins (eds.), *The Handbook of Contemporary Syntactic Theory*. Malden: Blackwell, 439-479.
Kaplan, Ronald M, and Joan Bresnan (1982). ‘Lexical-functional grammar: A formal system for grammatical representation’, in Joan Bresnan (ed.), *The mental representation of grammatical relations*. Cambridge, MA: MIT Press, 173-281.
Kayne, Richard S. (1984). *Connectedness and Binary Branching*. Dordrecht: Foris.
Kiss, Katalin É. (1996), ‘Two subject positions in English’, *The Linguistic Review* 13: 119–142.
Kitagawa, Yoshihisa (1986). Subjects in Japanese and English. Doctoral dissertation, University of Massachusetts at Amherst.
Koopman, Hilda, and Dominique Sportiche (1991). ‘The position of subjects’, *Lingua* 85: 211-258.
Kratzer, Angelika (1996). ‘Severing the external argument from its verb’, in Johan Rooryck and Laurie Zaring (eds.), *Phrase Structure and the Lexicon*. Dordrecht: Kluwer, 109-137.
Lasnik, Howard (2002). ‘Clause-mate conditions’. *Korean Linguistics Today and Tomorrow: Proceedings of the 2002 Association for Korean Linguistics*, 386-393.

Lasnik, Howard, and Terje Lohndal (2013). 'Brief overview of the history of generative syntax', in Marcel den Dikken (ed.), *The Cambridge Handbook of Generative Syntax*, Marcel den Dikken. Cambridge: Cambridge University Press, 26-60.
Lewis, Shevaun, and Colin Phillips (2015). 'Aligning grammatical theories and language processing models', *Journal of Psycholinguistic Research* 44: 27-46.
Lohndal, Terje (2014). *Phrase Structure and Argument Structure: A Case Study of the Syntax Semantics Interface*. Oxford: Oxford University Press.
Longobardi, Guiseppe (1994). 'Reference and proper names: A theory of N-movement in syntax and logical form', *Linguistic Inquiry* 25: 609-665.
McCloskey, Jim (1997). 'Subjecthood and subject positions', Liliane Haegeman (ed.), *Elements of Grammar*. Dordrecht: Kluwer, 197-235.
Merchant, Jason (1999). The Syntax of Silence: Sluicing, islands, and identity in ellipsis. Doctoral dissertation, University of California at Santa Cruz.
Merchant, Jason (2001). *The Syntax of Silence*. Oxford: Oxford University Press.
Merchant, Jason (2013). 'Voice and Ellipsis', *Linguistic Inquiry* 44: 77-108.
Pollard, Carl, and Ivan A. Sag (1987). *Information-based syntax and semantics*. Stanford, CA: CSLI Publications.
Pollard, Carl, and Ivan A. Sag (1994). *Head-driven Phrase Structure Grammar*. Chicago: University of Chicago Press.
Ramchand, Gillian (2008). *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press.
Reinhart, Tanya (1981). 'Definite NP Anaphora and C-Command Domains', *Linguistic Inquiry* 12: 605-635.
Rizzi, Luigi (1997). 'The fine structure of the left periphery', in Liliane Haegeman (ed.), *Elements of Grammar*. Dordrecht: Kluwer, 281-337.
Rizzi, Luigi (2015). 'Notes on labeling and subject positions', in Elisa Di Domenico, Cornelia Hamann, and Simona Matteini (eds.), *Structures, Strategies and Beyond: Studies in honour of Adriana Belletti*. Amsterdam: John Benjamins, 17-46.
Ross, John Robert (1967). Constraints on variables in syntax. Doctoral dissertation, MIT.
Sag, Ivan A. (1976). Deletion and logical form. Doctoral dissertation, MIT.
Schuyler, Tamara (2002). *Wh-movement out of the site of VP Ellipsis*. MA Thesis, UCSC.
Sells, Peter (2013). 'Lexical-Functional Grammar', in Marcel den Dikken (ed.), *The Cambridge Handbook of Generative Syntax*, Marcel den Dikken. Cambridge: Cambridge University Press, 162-201.
Smith, Neil, and Nicholas Allott (2015). *Chomsky. Ideas and Ideals*. Third edition. Cambridge: Cambridge University Press.
Sportiche, Dominique (1988). 'A theory of floating quantifiers and its corollaries for constituent structure', *Linguistic Inquiry* 19: 425-449.
Starke, Michal (2001). Move reduces to merge: A theory of locality. Doctoral dissertation, University of Geneva.
Szabolsci, Anna, and Terje Lohndal (in press) 'Strong vs. Weak Islands', in Martin Everaert and Henk van Riemsdijk (eds.), *The Blackwell Companion to Syntax*, 2nd edition. Malden: Blackwell.
Williams, Edwin (1977). 'Discourse and Logical Form', *Linguistic Inquiry* 8: 101-139.