

The (in)distinction between wh-movement and c-selection

by

Elise Sophia Bershad Newman

Submitted to the Department of Linguistics and Philosophy
in partial fulfillment of the requirements for the degree of

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Abstract

This thesis asks the following question: what can wh-movement teach us about verb phrase structure? I examine two apparent interactions between wh-movement and Voice: Mayan Agent Focus and the Double Object Movement Asymmetry (DOMA) (Holmberg et al., 2019). In certain Mayan languages, subject but not object wh-questions require the verb to take a special intransitive-looking form; in many languages with symmetrical passives, wh-moving an indirect object in a passive clause is restricted to contexts in which the indirect object is the passive subject. By contrast, wh-moving direct objects face no restrictions about which argument is the passive subject. Typical approaches to these phenomena take the basic underlying verb phrase structure of a language to be insensitive to whether any of its arguments are wh-phrases. In other words, the fact that wh-questions are built from clauses containing a wh-element, while non-questions are built from clauses that lack a wh-element, is assumed to be irrelevant to what we assume the basic underlying clause structure to be in each case — object wh-questions are therefore assumed to be built from clauses that are identical to their non-wh-counterparts; subject wh-questions are assumed to be built from clauses that are identical to their non-wh-counterparts, and so forth. On this view, many researchers propose that the so-called interactions between wh-movement and Voice should be explained by constraints on wh-movement from certain contexts. By contrast, I take the opposite approach. I propose that the observed interactions between wh-movement and Voice are teaching us very transparently about the basic structure of clauses that contain wh-elements, which may be different than their non-wh-counterparts. In other words, Mayan Agent Focus teaches us that clauses containing a wh-subject (as opposed to a non-wh-subject) are built in such a way as to feed intransitive-looking morphosyntax; the DOMA is teaching us that indirect object wh-phrases (in contrast to non-wh-indirect objects) are always generated in such a way as to make them the subject in a passive clause. I propose a theory of the features driving Merge in which the underlying position of a wh-phrase is not only determined by the “selectional” properties of verbs, but also by the feature that controls successive cyclic wh-movement through the edge of the verbal domain. Thus, the structure of a verb phrase is not invariant across all contexts — it depends on the features and categories of the elements that are configured inside of it, including the distribution of wh-elements. This approach likewise has implications for clauses that do not contain wh-elements, which I propose account for symmetric and asymmetric A and \bar{A} -movement in different contexts.

Thesis Supervisor: David Pesetsky

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The MIT Linguistics department has been such an important home to me these past nine years, to the extent that there really isn't a person there who hasn't touched me in some way. I am incredibly grateful for my time here, which has been made especially clear to me by how sad yet excited and prepared I feel to move on. I am convinced that nothing but the happiness and instruction that this place and its members have given me could have made me feel this way.

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I want to thank David for so many things – for bringing me into the field, for trusting me to do what I wanted, for never holding back criticism or praise, for pushing me when I needed it, for expressing concern when I looked tired, and for instilling in me the firm belief that I belong in this field. One of my favorite things about David is that he has a remarkable way of telling me I'm wrong that always leaves me feeling more respected and valued for our disagreement. His unique combination of kindness and honesty (and boundless expertise) has made me a better researcher, writer, and teacher, and has helped me to find joy in all of these roles.

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For Arnie and Bingy

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Chapter 1

Introduction

1.1 The puzzle of wh-movement/Voice interactions

This thesis examines two sorts of distinctions in the literature: internal vs. external Merge and A vs. \bar{A} -movement. There are phenomena that seem to cross-cut these two distinctions by exhibiting an apparent interaction between wh-movement and Voice. Two examples of such interactions are shown in (1) and (2).

In (1), we observe a paradigm found in a number of Mayan languages, in which transitive subject wh-questions exhibit unusual verbal morphology compared to their non-wh-counterparts. Notice that transitive clauses in Q'anjob'al (1a) typically have both subject agreement (glossed A) and object agreement (glossed B). However, when a transitive subject is wh-moved (1c), the verb ceases to agree with the subject, and instead bears a special Voice morpheme *on* (glossed AF, for *Agent Focus*). By contrast, transitive object wh-questions have no unusual verbal morphology and exhibit the full agreement paradigm (1b).

(1) **Mayan Agent Focus**

- a. Max-ach y-il-a'.
ASP-B2S A3S-see-TV
"She saw you." (Q'anjob'al; Coon et al. (2014), p.10)
- b. Maktxel max- \emptyset y-il naq winaq?
who PFV-B3S A3S-see CLF man
"Who did the man see?" (Q'anjob'al; Coon et al. (2014), p.192)
- c. Maktxel max-ach il-**on**-i?
who PFV-B2S see-AF-ITV
"Who saw you?" (Q'anjob'al; Coon et al. (2014), p.213)

A second example of Voice interacting with wh-movement is the so-called *Double object movement asymmetry* (DOMA) (Holmberg et al., 2019). In passives of ditransitives, while some languages (e.g. Norwegian) may raise either the direct or indirect object to subject position in principle, a restriction emerges if the indirect object also wh-moves: only the indirect object may be the passive subject in such a context. By contrast, if the direct object wh-moves, either the indirect object or the direct object may be the passive subject. In active clauses, however, both direct and indirect objects may wh-move despite not being the subject of the clause.

(2) **Double object movement asymmetry (DOMA)**

- a. Hvilken bok ble gitt Jon?
which book was given Jon
'Which book was given to John?' *DO wh-movement from DO passive*
- b. Hvilken bok ble Jon gitt?
which book was Jon given
'Which book was John given?' *DO wh-movement from IO passive*
- c. Hvem ble gitt boka?
who was given the.book
'Who was given the book?' *IO wh-movement from IO passive*
- d. *Hvem ble boka gitt?
who was the.book given
intended: 'To whom was the book given?' *IO wh-movement from DO passive*
(Norwegian; Holmberg et al. (2019), p.680)

These phenomena are puzzling on the following commonly accepted assumption about wh-movement: that wh-questions are derived from underlying representations that look identical to their non-wh-counterparts. In other words, the wh-questions in (3c) and (4c) are typically assumed to be derived from the representations in (3b) and (4b), which are different from (3a) and (4a) only in that one of the arguments is a wh-phrase in the (b) but not (a) examples.

(3) Wh-movement from an active transitive clause

- a. Jo read a book. *transitive clause*
- b. Jo read what. *transitive clause with wh-object*
- c. What did Jo read ~~what~~?
↑ *object wh-question*

(4) Wh-movement from a passive ditransitive clause

- a. A book was read to Amy. *passive clause*
- b. A book was read to who. *passive clause with wh-indirect object*
- c. Who was a book read to ~~who~~?
↑ *indirect object wh-question*

This treatment of wh-movement predicts strange results for Q'anjob'al and Norwegian, however. Q'anjob'al subject wh-questions don't look like they are derived from Q'anjob'al transitive clauses whose subjects just so happen to be wh-phrases. Following the logic of (3), we would have expected Q'anjob'al subject questions to look like (5c), contrary to fact.

(5) Attempting to build a Mayan subject question

- a. Step 1: build transitive clause
Max y-il-a' naq winaq ix ix.
ASP A3S-see-TV CLF man CLF woman
'The man saw the woman.' (Q'anjob'al; (Coon et al., 2014, ex. 21))
- b. Step 2: replace subject with a wh-phrase

Max y-il-a' maktxel ix ix.
 ASP A3S-see-TV who CLF woman
 intended: 'Who saw the woman.' (pre-wh-movement)

- c. Step 3: move the wh-phrase
 * Maktxel max y-il-a' ~~maktxel~~ ix ix?

Norwegian passive indirect object questions defy our expectations in a similar way. Following the logic of (4), we would have expected it to be possible to build an underlying representation like that in (6b), based on (6a), which feeds wh-movement of the indirect object to a clause-initial position. However, (6c) is ungrammatical.

- (6) Attempting to wh-move an indirect object from a passive in Norwegian

- a. Step 1: build passive clause

Boka ble gitt Jon.
 the.book was given Jon

'The book was given to John.' (Haddican & Holmberg, 2015, 145)

- b. Step 2: replace the indirect object with a wh-phrase

Boka ble gitt hvem.
 the.book was given who

intended: 'The book was given to who.' (pre-wh-movement)

- c. Step 3: move the wh-phrase

* Hvem ble boka gitt ~~hvem~~?

A possible resolution to these puzzles would be to posit constraints on wh-movement ruling out (5c) and (6c) (a strategy taken up by Coon et al. 2014; Assmann et al. 2015; Erlewine 2016; Holmberg et al. 2019, a.o.). On this view, we would maintain the belief that the underlying representations in (5b) and (6b) are generated by the grammar, but modify our assumptions about movement so as to rule out (5c) and (6c).

- (7) Q'anjob'al subjects can't move in (5c)

* Maktxel max y-il-a' ~~maktxel~~ ix ix?

- (8) Norwegian indirect objects can't move in (6c)

* Hvem ble boka gitt ~~hvem~~?

There are at least two problems with this kind of approach, both of which are problems of generality. The first is that not all transitive subjects behave alike in Q'anjob'al with respect to wh-movement. If the \bar{A} -moving subject is a participant rather than third person, canonical transitive verbal morphology reappears (9a). The same is true for \bar{A} -moving subjects that bind the object (9b). If the verbal morphology found in Q'anjob'al subject questions truly reflected constraints on movement from subject position, it is not clear why the φ -features of the subject or index on the object should obviate the restriction.

- (9) Focus fronted/wh-moved participant/reflexive antecedent subjects obviate AF
- a. Ayin max hin-maq' no tx'i'.
 PRON1S PFV A1S-hit CLF dog
 'I hit the dog.' (Q'anjob'al; Coon et al. 2014, 223)
- b. Maktxel max y-il s-b'a?
 who PFV A3S-see A3S-self
 "Who saw herself?" (Q'anjob'al; Coon et al. 2014, 225)

The second problem is one of cross-linguistic generality. Greek, for example, is like Norwegian in having passives like (6a), as shown in (10a). However, Greek is unlike Norwegian in that the indirect object can wh-move in (10b), suggesting that if a restriction on movement is responsible for the Norwegian pattern, that restriction is somehow inactive in Greek. Assuming that properties of movement are properties of UG, it therefore becomes a serious task to explain the parametric differences between languages such that movement is restricted in some context in one language but not in that same context in another.

- (10) Greek doesn't restrict indirect object movement in passives
- a. To vivlio tis charistike tis Marias.
 the book.NOM cl.GEN award.NACT the Maria.GEN
 'The book was awarded to Mary.' (Anagnostopoulou, 2003, ex. 33)
- b. Tinos dhothike to vivlio?
 who.GEN gave.NACT.3SG the book.NOM
 'Who was the book given to?' (Anagnostopoulou, 2003, ex.308)

Recall that the motivation for the proposed constraints on movement in (7) and (8) crucially relies on the assumption that the underlying representations in (5b) and (6b) exist.

- (5b) Max y-il-a' maktxel ix ix.
 ASP A3S-see-TV who CLF woman
 intended: 'Who saw the woman.' (pre-wh-movement)
- (6b) Boka ble gitt hvem.
 the.book was given who
 intended: 'The book was given to who.' (pre-wh-movement)

In this thesis, I will take a different approach to the wh-movement/Voice interactions observed in Q'anjob'al and Norwegian, one that does not assume the representations in (5b) and (6b), and therefore does not require constraints on movement to explain the ungrammaticality of (5c) and (6c). I instead propose that the representations in (5b) and (6b) are never generated by Q'anjob'al/Norwegian grammars respectively – no wh-questions can be built from them. As a result, I propose that Q'anjob'al and Norwegian are teaching us that verb phrases which contain wh-phrases are built in ways that differ at times from their non-wh-counterparts.

One of the goals of this thesis is therefore to establish a theory that produces the right underlying representations for Q'anjob'al/Norwegian subject/indirect object wh-questions, which explains the variation observed for different wh-subjects in Q'anjob'al and for different languages' indirect objects. The second goal is to explore the consequences of this approach for

our theories of verb phrase structure more generally, and show that the results not only generate the typology of observed verb phrases, but also resolve certain recalcitrant puzzles about passive and ditransitive structures cross-linguistically.

1.1.1 The proposal in a nutshell

Essentially, I propose that the underlying structure of a verb phrase is sensitive to the distribution of *wh*-phrases in at times surprising ways. This sensitivity comes about for the following reason: *wh*-movement is assumed to be successive-cyclic through the edge of *vP* (Chomsky, 1986), which is also an argument position.

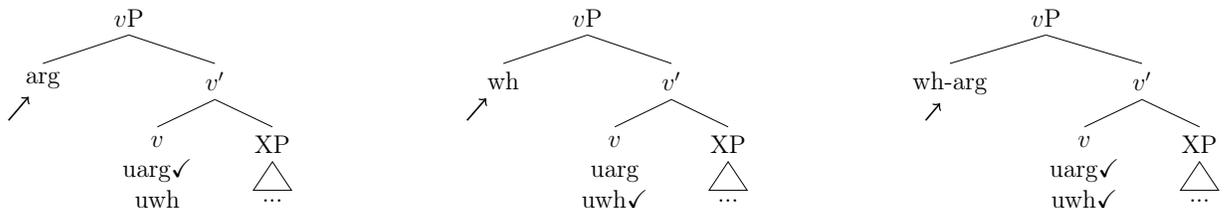
- (11) *v* has two functions
- a. to host an argument
 - b. to host a *wh*-phrase

To understand why these two functions of *v* are important, I take as a starting point the proposal from Chomsky (1995) that there is no formal distinction between the Merge operations involved in \bar{A} -movement vs. *A*-movement vs. external Merge. Moreover, I assume that different instances of Merge are controlled by features on syntactic nodes, which may be projected from a head. Treating the functions of *v* in (11) as features that induce (any kind of) Merge has consequences for how we view the construction of *vP*s with and without *wh*-phrases. Before assigning these features a formal description, I will first discuss more abstractly the proposed logic of how they interact.

Let us imagine for the moment that there are such primitive notions as “argument” and “*wh*-expression”, and that *v*’s argument-hosting feature may be satisfied in principle by any element in the set of all arguments, and that *v*’s *wh*-hosting feature may be satisfied in principle by any element in the set of all *wh*-expressions. Elements that are arguments but not *wh*-phrases can only become specifiers of *v* if they check *v*’s argument-hosting feature; elements that are *wh*-phrases but not arguments can only become specifiers of *v* if they check *v*’s *wh*-hosting feature.

With this in mind, what happens if we have an expression like *who/what*, which is potentially *both* an argument and a *wh*-expression? I propose that these expressions can in principle satisfy either or both of *v*’s features, depending on whether anything else has checked any of *v*’s features. In other words, the fact that the set of arguments and the set of *wh*-expressions may overlap means that elements in the overlapping portion are visible to both of these properties of *v*.

- (12) Merging either a non-*wh*-argument or a non-argument-*wh*-phrase checks just one feature on *v*. Merging a *wh*-argument checks *both* features on *v*.

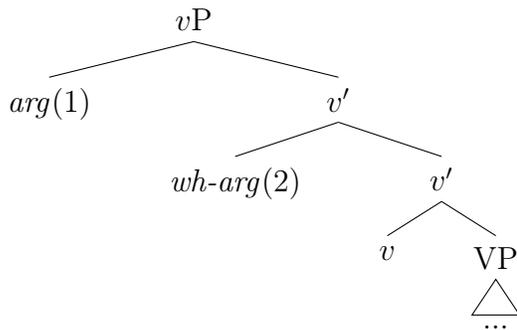


Suppose that we want to build a clause with two arguments, one of which is a *wh*-phrase, and that there are no other *wh*-expressions in the clause. Because *v* has a *wh*-hosting feature that

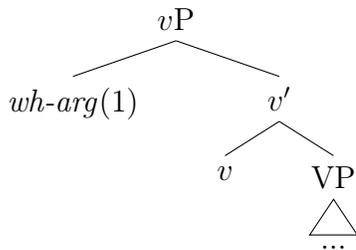
can be checked by the wh-argument but nothing else, that wh-argument will necessarily be a licensed specifier of v no matter what (provided that the Merge step involved doesn't violate any other principles of the grammar). Whether the *non-wh*-argument may also become a specifier of v depends on whether it may check v 's argument-hosting feature *before* the wh-argument does.

As a result, there are two imaginable states of affairs for vP in this scenario, depending on the timing of feature checking: 1) v has two specifiers, in which the non-wh-argument merged first (checking the argument-hosting feature), and the wh-argument merged second (checking the wh-feature), or 2) v has just one specifier, formed by merging the wh-argument first, which checks both features. The first option is shown in (13) and the second option is shown in (14).

- (13) Option 1: v hosts two specifiers, a non-wh-argument and a wh-argument



- (14) Option 2: v hosts one specifier, a wh-argument

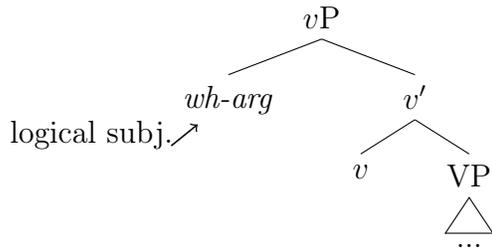


By hypothesis, I propose that whatever element satisfies v 's argument-hosting feature acts as the surface subject of the clause, i.e. it controls subject agreement or raises to subject position, etc. depending on how a given language treats subjects. I have therefore represented it as the outer specifier of v , namely the one that is most local to higher agreement and movement operations, a result which I will ultimately propose is derived via a generalized tucking in condition (Richards, 1997, to be discussed in (39)). As a result, (13) can be viewed as a surface object wh-question but not a surface subject wh-question, because the surface subject is the non-wh-argument that checked v 's argument-hosting feature. By contrast, (14) must be viewed as a surface subject wh-question given that the only argument of v is the wh-phrase.

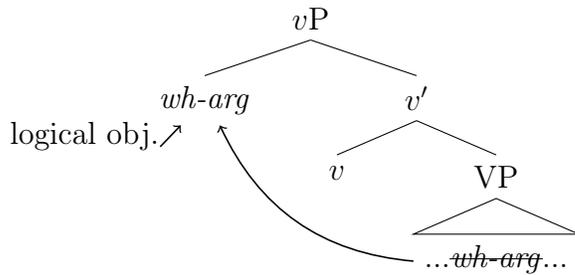
So far, I have not imposed any restrictions on what thematic roles should be assigned in each context. For example, the tree in (14) reflects a subject question in which the wh-argument could be a transitive subject, introduced in Spec vP via external Merge, as schematized in (15). Alternatively, following Legate (2003), Sauerland (2003) and Longenbaugh (2019), it could be the object of an unaccusative verb, which internally merges in Spec vP before moving on, as schematized in (16). Both possibilities are made available by the fact that the "argument hosting" function of v was not proposed to distinguish *which kind* of Merge operation is used

to satisfy it, nor was it proposed to be a property of any specific derivational morpheme (e.g. agentive vs. non-agentive *v*). In (15), where the surface subject is the logical subject, the derivational morpheme inserted into the *v* node may be different than the one inserted into (16), in which the surface subject is not a logical subject of the clause, with consequences for how these different arguments are interpreted.

(15) Surface subject = logical subject

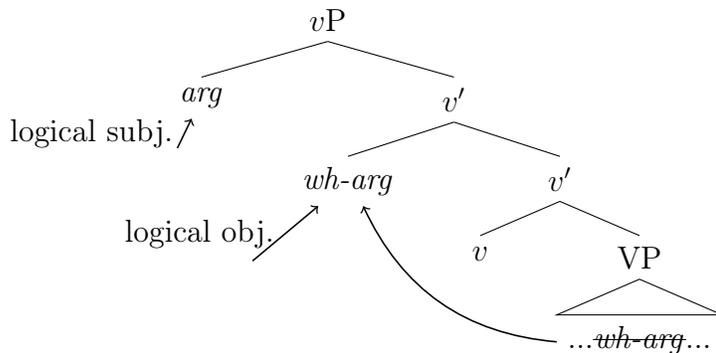


(16) Surface subject ≠ logical subject

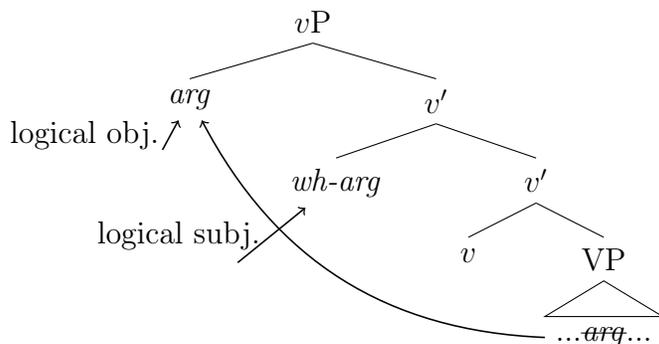


By the same logic, the same two possibilities are available to the surface object wh-question illustrated in (13). The element that satisfies *v*'s argument-hosting function, though necessarily the *surface* subject of the clause, may or may not be its logical subject – it could have merged or moved to that position. The wh-argument is similarly unspecified as to what kind of thematic role it may receive. As the inner specifier of *v*, it is presumably interpreted before the outer specifier. If it moved to that position, it might not be interpreted as an argument of *v* but rather as an argument of some lower head. However, if it externally merged in Spec *v*P, it could be interpreted as the logical subject of the clause, i.e. as an argument of an agentive *v*, despite not being the surface subject. In that case, the surface subject would have to be interpreted as something other than the logical subject, for example as the logical object (I assume we can't have two logical subjects).

(17) Surface subject = logical subject



(18) Surface subject \neq logical subject



In sum, wh-arguments are no different from other arguments in what thematic roles are available to them – they may be logical subjects, objects, etc. However, wh-arguments may appear in *syntactic* configurations relative to other arguments that are unusual compared to their non-wh-counterparts, due to the fact that they may check a different feature on *v* than they usually do. For example, as is evident in (18), a wh-moving logical subject may be exceptionally generated as a surface object. Paying attention to the timing of wh-Merge has consequences for what elements may be the surface subject in a given context, which has consequences for agreement alignment and perceived “Voice”.

To understand Mayan Agent Focus and the DOMA, I propose the following correspondence between linguistic examples and the structures in (15-18): Q’anjob’al subject questions take the form of (18), in which the logical subject is a surface object; Norwegian passive indirect object questions take the form in (16), in which the wh-moving indirect object necessarily becomes the surface subject. In what follows, I offer a formalization of the two proposed functions of *v* and conditions on how they are satisfied such that they derive these results for Q’anjob’al and Norwegian.

(19) Proposal 1: Q’anjob’al subject questions look like (18), where the wh-phrase is the logical subject but the object is the surface subject

Logical subj. Surface subj.
 ↓ ↙
 (1c) *Maktxel* max-**ach** il-on-i?
 who PFV-B2S see-AF-ITV

“Who saw you?” (Q’anjob’al; Coon et al. (2014), p.213)

(20) Proposal 2: Norwegian indirect object wh-movement in passives looks like (14), which blocks the direct object from being the surface subject

Surface subj. can't have 2 surface subj.
 ↓ ↙
 (2c) ***Hvem** ble *boka* gitt?
 who was the.book given

intended: ‘To whom was the book given?’

The crucial insight afforded by this approach is that *v*Ps in wh-contexts are *different* from *v*Ps in non-wh-contexts in the following respect: *v* might have either one or two specifiers in wh-contexts, the choice of which has consequences for which argument may become the surface

subject, which affects agreement alignment and/or the perceived “Voice” of the clause. By contrast, non-wh-environments host just one specifier of *v*, which is the unambiguous surface subject. In other words, a wh-phrase can have a *direct* impact on the relative configuration of arguments in the verbal domain, given that it bears a feature that its non-wh-counterpart lacks. By studying the possible argument configurations in wh-contexts, we can understand interactions between wh-movement and Voice through a lens other than extraction restrictions.

Capitalizing on this insight, however, has consequences for our theories of how verb phrases are built, interpreted and pronounced more generally. A second, but equally important goal of this thesis is therefore to explore what factors control the distribution of arguments in non-wh-contexts, and how the addition of wh-expressions may interact with those factors.

To begin, I must first declare some theoretical assumptions about Case, Agree, and Merge, many of which are clarified in Longenbaugh (2019).

1.2 Uniform Merge vs. the EPP: Longenbaugh (2019)

The central puzzle that Longenbaugh investigates is the fact that Past Participle Agreement (PPA) in Romance is sensitive to transitivity. In transitive clauses, past participles never cross-reference the features of the object. By contrast, past participles in passive and unaccusative clauses bear the gender and number features of the object. PPA only ever cross-references the internal argument so this generalization can be described as follows: object agreement is bled by a promoted transitive subject.

(21) Standard Italian

- a. Ho mangiat-**o**/*a **la mela**
have.1.SG eaten-M.SG/*F.SG the apple.F.SG
“I have eaten the apple.” (D’Alessandro & Roberts 2008)
- b. **Due ladri** sono entrat-**i**/*o dalla finestra
two robbers are entered-M.PL/*M.SG from-the window
“Two robbers entered from the window.” (Belletti 2006: ex.34c)
- c. **Alcuni sindaci** sono stati arrestat-**i**/*o
some.M.PL mayors.M.PL are.PL been.M.PL arrested.M.PL/*SG
“Some mayors were arrested.”

He argues that this pattern has a natural explanation if we formally dissociate the Merge and Agree operations that typically constitute an EPP property, along the lines of Müller (2010). While an EPP property contains a conditional statement *if Agree, then Merge*, Longenbaugh proposes to remove the conditional and just represent each component as a separate feature: a φ -probe and a Merge feature. These two features may act separately to control different operations, or together to Agree with and Merge the same element (as a classical EPP property would). Important to note is that the Merge feature is exactly what it sounds like: a feature that may be satisfied by *Merge*, without reference to which kind of Merge, e.g. external vs. internal Merge. The featural makeup that Longenbaugh proposes for a transitive *v* head in Romance is in (22).

(22) Feature makeup of *v*:

- Agree: [$u\varphi$], for triggering PPA
- Merge: [$\cdot D\cdot$], for introducing the external argument

On this view, the argument that satisfies the φ -probe need not be the argument that satisfies v 's Merge feature. However, they *may* be the same due to an economy condition, which he calls *Feature Maximality* (based on Chomsky (1995)'s *free rider* constraint). This condition requires any element that is merged or agreed with by some head to check as many features on that head as it can.

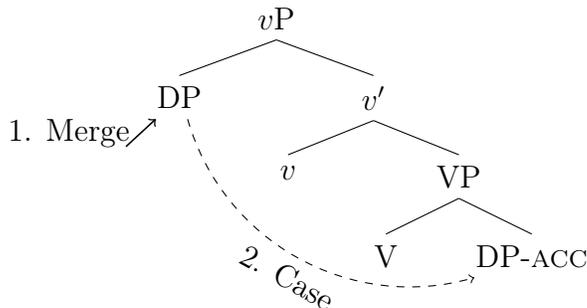
- (23) **Feature Maximality:** Given a head H with features [F_1]...[F_n], if XP discharges [F_i], XP must also discharge each [F_j] that it is capable of (Chomsky, 1995; Pesetsky & Torrego, 2001; Rezac, 2013; van Urk & Richards, 2015; Longenbaugh, 2019)

He proposes that these conditions, combined with a theory of case assignment and case discrimination in agreement, predict two possible derivations for vP in Romance: 1) [$\cdot D\cdot$] is checked by a transitive subject and [$\cdot u\varphi\cdot$] fails (no PPA in transitive clauses), or 2) both [$\cdot D\cdot$] and [$\cdot u\varphi\cdot$] are checked by a raised internal argument (PPA observed in passive/unaccusative clauses). Longenbaugh's assumptions about case and agreement that derive these options are as follows.

- (24) **Case accessibility:** In the Romance languages with this pattern, only DPs with unmarked case are accessible to φ -Agree (based on Bobaljik 2008; Preminger 2014)
- (25) Agree is always downward

Because Romance languages are nominative-accusative, and their φ -probes are proposed to discriminate against accusative case, whether the internal argument is available for Agree depends on when and whether case is assigned. Longenbaugh assumes that accusative case is a dependent case (Marantz, 1991), whose assignment depends on a stage in the derivation where one argument c-commands another in a particular domain. He additionally proposes that the domain for accusative case assignment is vP and that dependent case assignment happens early, upon introduction of a second argument in Spec vP (i.e. upon completion of the vP domain). External Merge of the subject is therefore immediately followed by dependent case assignment, which evaluates both the recently merged subject and any arguments in its c-command domain.

- (26) Dependent case assignment happens when the subject is merged



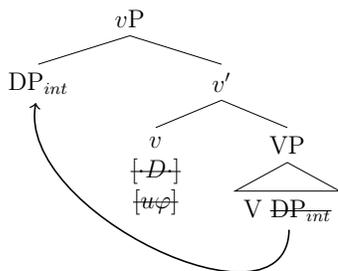
On this view, if external Merge precedes Agree, dependent case assignment renders the internal argument inaccessible to agreement. Following Preminger (2009, 2014), Longenbaugh

assumes that Agree can fail without crashing the derivation.¹ If Agree precedes external Merge, however, PPA should occur. We will now see that Feature Maximality enforces the former derivation for a transitive clause. First consider that if v has a φ -probe and a requirement for a DP specifier, v can choose from amongst three potential operations that would each satisfy one or more of its features after merging a VP complement. Importantly, Longenbaugh proposes (contra Adger 2003; Müller 2010) that the syntax has no inherent ordering requirements telling the derivation which option to choose first.

- (27) Three potential operations controlled by v
- a. Agree with the object
 - b. Internally merge the object
 - c. Externally merge the subject

If v chooses the first option to agree with the internal argument, Feature Maximality requires it to also perform option two and internally merge the argument that it just agreed with. Therefore, agreement with the internal argument leads to a derivation in which the internal argument saturates all of the features on v . Assuming that all Merge is feature driven, this bleeds the possibility of merging an external argument. This derivation must therefore be unaccusative or passive since a normal external argument cannot be introduced in the clause.

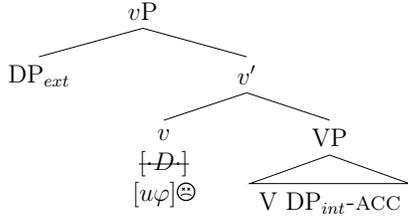
- (28) If Agree happens first \rightarrow agreement+A-movement, no transitive subject



If v instead chooses option three first, namely to externally merge the subject before agreeing with the object, the external argument can now saturate the D feature and the clause can be transitive. However, if merging the subject triggers dependent case assignment on the object, this step now bleeds φ -agreement with the object. Assuming Agree only happens in v 's scope with nominative marked arguments, v 's φ -probe now fails, and the result is the lack of PPA in transitives.

- (29) If external Merge happens first \rightarrow dependent case assignment bleeds Agree

¹In general, he assumes that all conceivable features on a head are always present, but are allowed to fail as long as the resulting structure converges. For example, all of the \bar{A} -features that trigger successive cyclic movement through Spec vP are presumed to be present on v in these cases as well, but since there are no wh-phrases in the transitive derivation under consideration, they can be ignored here.

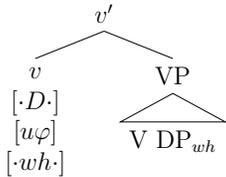


This system therefore makes the right predictions for simple transitive/passive/unaccusative clauses. The idea is that merging one argument bleeds the possibility of merging the other, and which one you do first has consequences for Agree. This raises the question of what would happen if v had to project multiple specifiers. For example, if the object is a *wh*-phrase, it presumably needs to move through the edge of vP at some point in the derivation without blocking the external argument. Object *wh*-movement in Italian neither blocks a transitive subject nor co-occurs with PPA, which is understood if *wh*-movement follows merge of the subject.²

- (30) **Quanti libri** hai lett-**o**/***i**?
 how.many.M.PL books.M.PL have.3.SG read-M.SG/*M.PL
 “How many books have you read?” (Belletti 2006)

To integrate *wh*-movement into the theory, Longenbaugh assumes firstly that in order to project multiple specifiers, v must have some more Merge features. We can represent movement of a *wh*-object to Spec vP as a response to a Merge *wh* feature on v . Longenbaugh additionally proposes to limit Feature Maximality so that *wh*-movement cannot bleed external Merge – he suggests that only one Merge feature may be checked at a time. His picture of *wh*-movement therefore predicts that φ -agreement and *wh*-movement should never directly interact – the object can *wh*-move before or after the subject is merged and case is assigned.

- (31) *wh*-movement is controlled by a $[\cdot wh \cdot]$ on v (and C)



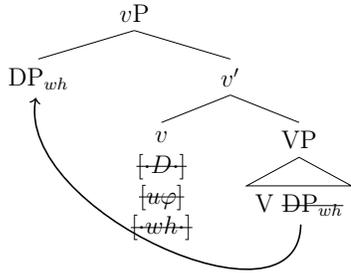
However, if we instead allow multiple Merge features to be checked at a time, object *wh*-movement in (30) is correctly predicted not to correspond to PPA. This is because *wh*-objects have a *superset* of the features that the subject has. If allowed to satisfy multiple Merge features at a time, *wh*-movement could in principle bleed external Merge. In order for the clause to have a transitive subject, the subject must therefore merge first, followed by *wh*-movement of the object. *Wh*-moving the object first would block the transitive subject.

If the subject merges before the object moves, dependent case is necessarily assigned to the object before it can control agreement, thus predicting that there should be no PPA in object

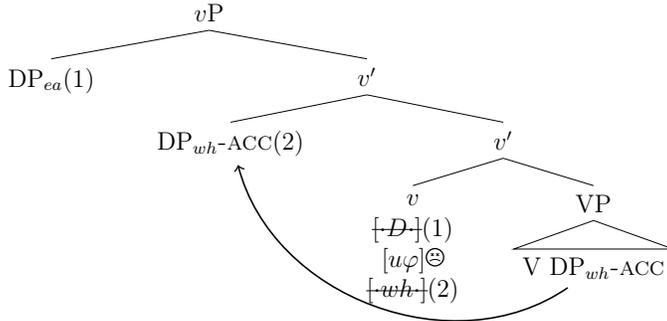
²Longenbaugh also discusses the effects of clitics on PPA, which I will ignore here for expository purposes. He also discusses a different *wh*-movement/PPA interaction in French, which I leave aside because PPA in French has semantic consequences that are not well understood on the present treatment. See Déprez (1998) for discussion.

wh-questions. I furthermore assume that the object tucks in (Richards, 1997) under the subject when it wh-moves, and thus does not block a φ -probe on T from agreeing with the subject.

- (32) If $[\cdot D\cdot]$ and $[\cdot wh\cdot]$ can both be checked in a single operation, object wh-movement could bleed external Merge.



- (33) Object wh-movement in a transitive clause: the external argument has to merge first, bleeding PPA.



The proposal to allow one movement step to check multiple Merge features is reminiscent of van Urk & Richards (2015)'s analysis of the interaction between wh-movement and object movement in Dinka. Dinka word order can be described as V2 at two levels: CP and v P. Some phrase must move to the left of an auxiliary verb in C, and some DP must move to the left of a main verb in v /V. These V2 requirements are obligatory – the only time they may be obviated in a matrix clause is if wh-movement has traveled through one of those positions.

- (34) Dinka v Ps are V2 (van Urk & Richards 2015: 12-13)

- a. yèn cí Ayén yìñ kitàp.
I PRF Ayen give book
'I gave Ayen a book.'
- b. yèn cí kitàp yìñ Ayén.
I PRF book give Ayen
'I gave Ayen a book.'
- c. *yèn cí ____ yìñ Ayén kitàp/kitàp Ayén .
I PRF give Ayen book/book Ayen
intended: 'I gave Ayen a book.'

Unlike for CP V2, the Spec v P position cannot be filled by an adjunct, suggesting that it has a $[\cdot D\cdot]$ feature.

(35) Adjuncts cannot satisfy vP V2 (van Urk & Richards 2015: 13)

- a. Wò cí _____ két dòm-íc.
 we PRF sing garden-in
 ‘We sang in the garden.’
- b. *Wò cí dòm-íc két.
 we PRF garden-in sing
 intended: ‘We sang in the garden.’

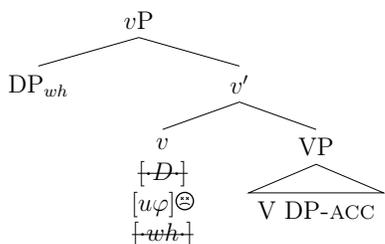
If either internal argument is *wh*-moved, the preverbal position must be unoccupied, suggesting that *wh*-movement through Spec vP blocks another phrase from moving to check a D feature on v .

(36) Wh-traces saturate vP V2 (van Urk & Richards 2015: 15)

- a. Yeṅà cí m̀òc _____ yìṅ kitàp?
 who PRF.NS man give book
 ‘Who did the man give the book to?’
- b. *Yeṅà cí m̀òc kitàp yìṅ?
 who PRF.NS man book give
 intended: ‘Who did the man give the book to?’

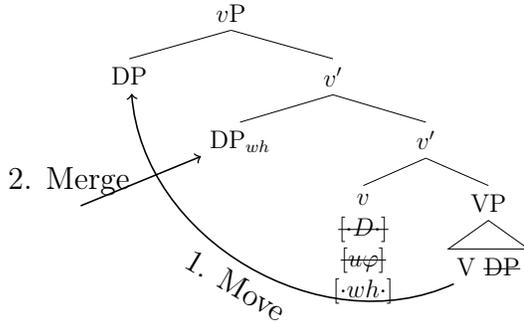
The conjecture that moving elements can check two features at once likewise explains why merging a *wh*-subject in Romance doesn’t always promote the object. If the subject *wh*-phrase could only check a *wh*-feature, the D feature would always be available for A-movement in subject *wh*-questions. If allowed to check two features at once, however, a *wh*-subject can check both the *wh* and D features on v , in which case the object presumably remains in situ.

(37) Externally merging a *wh*-subject checks both $[\cdot D \cdot]$ and $[\cdot wh \cdot]$



However, as will be crucial in Chapter 2, nothing *enforces* the derivation in (37). If the *wh*-subject can check $[\cdot wh \cdot]$ as well as $[\cdot D \cdot]$, a derivation is predicted to be possible in which something else checks $[\cdot D \cdot]$ but the subject checks $[\cdot wh \cdot]$. For instance, the object could A-move *before* the subject is merged, and check $[\cdot D \cdot]$. While A-moving the object early should normally block a transitive subject, it should not block one licensed by $[\cdot wh \cdot]$.

(38) A *wh*-subject could also merge second after agreement with and movement of the internal argument, because a Merge *wh* feature is still unsaturated on $v \rightarrow$ object movement and PPA (see below for a discussion of specifier ordering).



The predicted optionality in the order of operations for subject questions is not observed in Romance. No Romance language that I know of allows PPA in passives, unaccusatives, and subject-wh-questions to the exclusion of transitives and object wh-questions. Longenbaugh therefore proposes to distinguish wh-Merge from external Merge by proposing that wh-features simply cannot be checked by external Merge. Instead they must be satisfied by an operation *Displace*.

However, though Romance subject wh-questions apparently do not utilize the derivational option in (38), as evidenced by the lack of PPA in subject questions, I will argue that some languages do. In particular, certain Mayan languages' subject wh-questions have been argued to look morphosyntactically intransitive, which I will argue comes about if those languages use the derivation in (38) for subject extraction. The reason those languages' subject wh-questions look intransitive, therefore, is that the logical *object* has been exceptionally promoted as the surface subject, while the logical subject is merged second, licensed by the wh-feature. Chapter 2 argues that the derivation in (38), not taken by Romance, captures many seemingly exceptional properties of Mayan subject extraction, and thus advocates for the unification of wh-movement and external Merge as responses to the same sorts of features.

By hypothesis, I have drawn each tree so that whichever argument checks *v*'s [-*D*] feature is the outer specifier of *vP*, and is thus most local for higher subject agreement/*A*-movement operations. To enforce this, I propose a generalized version of Richards (1997)'s *tucking in*, in which specifiers are always projected in the order in which they are merged (i.e. higher specifiers are merged earlier). Thus, the element that checks *v*'s [-*D*] always becomes the surface subject.

- (39) **Generalized tucking in** (an extension of Richards 1997): Specifiers are projected in the order they are merged

To summarize, we assumed from Chomsky (1995) that Merge does at least two different kinds of things: it configures arguments relative to verbs and each other (i.e. external Merge), and it is responsible for establishing dependencies within and across clauses (i.e. *A*- and *A*-movement). Though we typically treat the conditions on verbal argument structure as separate from or prior to those on clausal transformations, the processes involved in both are presumably the same, namely successive applications of Merge in both cases. Longenbaugh's insight was to treat both external Merge and *A*-movement as responses to the same class of features. I propose to extend this unification to *A*-movement as well. Thus, Merge features will henceforth be used to encompass all three traditional notions of c-selection, *A*-movement and *A*-movement.

These Merge features are like classical c-selection in that they signify that a head cares about the features/categories of elements that it merges with. Unlike classical c-selection, however, Merge features are not limited to encoding selectional relationships, but may be used

to establish any kind of syntactic dependency that Merge can form. Thus, when a transitive verb merges with a nominal complement, it does so because the verbal head in question bears a Merge feature specified for DPs. Similarly, when a *wh*-phrase moves to the edge of CP, it does so because C bears a Merge feature specified for a *wh*-phrase.

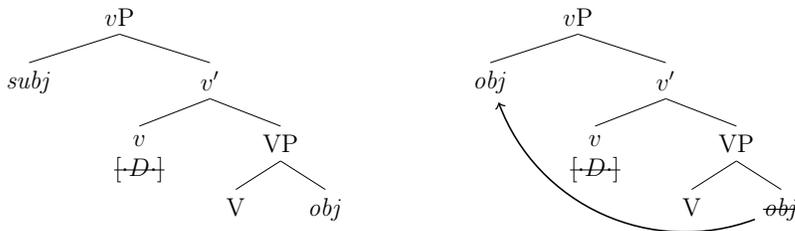
This picture of Merge, in which all kinds of Merge are driven by the same features, entails a particular view of Agree: Agree cannot be a precondition for movement without being a precondition for Merge → Agree is not a precondition for Merge so I assume it is not a precondition for movement either (Müller, 2010; Longenbaugh, 2019).

In sum, uniformity in the treatment of Merge operations that build verb phrases vs. move *wh*-phrases relies on three assumptions:

- (40) Merge is feature driven
- (41) There is no formal distinction between internal and external Merge: both are driven by the same kinds of features
- (42) Agree and Merge are driven by distinct features – there is no EPP feature such that Agree is a precondition for Merge

The proposal that all Merge is driven by the same kinds of features has important consequences for our treatment of the heads that control Merge. For example, if a single $[\cdot D \cdot]$ feature on a head can lead to two distinct derivations: one in which a DP is externally merged vs. one in which a DP is internally merged, there is no need to posit distinct heads/feature bundles corresponding to these different outcomes. In other words, a construction characterized by some DP being externally merged in Spec *v*P may involve the same *syntactic* feature bundles as one in which some DP is internally merged in that position, even if the meaning associated with *v* may be different in each context.

- (43) *v* doesn't need distinct features for transitive vs. intransitive clauses: just an ever present $[\cdot D \cdot]$ feature



That fact that both derivations in (43) arguably exist raises a question about the nature of heads controlling Merge. In particular, are Merge features properties of individual lexical items or of some more abstract entity, like a classical category? If Merge features were properties of lexical items, it would simply be coincidental that the agentive *v* in a transitive clause and non-agentive *v* in an intransitive clause were both specified to carry a $[\cdot D \cdot]$ feature. We could have imagined a world in which agentive *v* has a $[\cdot D \cdot]$ feature but non-agentive *v* does not. In such a world, only transitive clauses would project a DP specifier of *v*P. By contrast, if the derivational morphemes associated with *v* were all tokens of some higher category which carried the $[\cdot D \cdot]$ feature, we would expect both transitive and intransitive *v*P to commonly take a DP specifier, as in (43).

In this thesis, I take up the latter hypothesis, that Merge features are properties of *sets* of lexical items rather than individual lexical items. I will refer to these sets as syntactic categories. For example, I will treat the node V as a category representing the set of verbal roots in the lexicon, and propose a set of Merge features that should be common to all of them. Similarly, I will treat the node *v* as a category corresponding to various derivational morphemes, which may tell us how to interpret the surface subject.

(44) **Categorial Merge hypothesis:**

Merge features are properties of syntactic categories rather than individual lexical items.

I take up the hypothesis in (44) in part because of the profile of wh-movement, which is presumably *always* successive-cyclic through the edge of *v*P, regardless of what kind of subject the clause takes. If indeed wh-movement always proceeds through the edge of *v*P, regardless of which *v* head is present, then the feature driving wh-movement must be a property of *all* *v*P_s, rather than specific tokens of *v*. The strongest hypothesis about the distribution of Merge features would attribute them all to the same source – I therefore propose that all Merge features, not just wh-features, are properties of syntactic categories rather than individual lexical items.

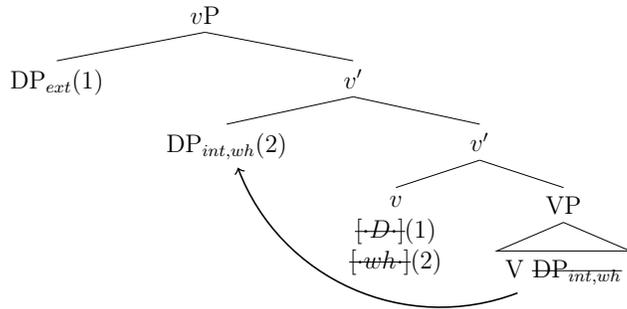
On this view, any claim that I make about the features of *v* or V is very strong – it makes predictions about every imaginable verb phrase, since the same features should be present no matter which derivational morpheme or verbal root is inserted. As we will see, the hypothesis in (44) substantially limits the number and type of possible features we can posit for different verbal categories, making the theory quite restrictive. In what follows, I will motivate a small set of features on V and *v* that together make surprising and correct predictions about verb phrases in both wh- and non-wh contexts.

The following sections contain a short sketch of what proposals and phenomena will be covered in each chapter.

1.3 Chapter 2: wh-movement and the position of subjects

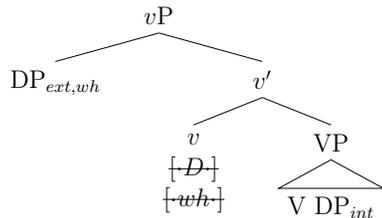
Section 1.2 proposed that allowing one Merge operation to check two Merge features may have important consequences for the order of operations in transitive wh-questions. In order for a clause to be transitive in the first place, *v* needs to have an externally merged subject. If that subject is not a wh-phrase, it must be licensed by the [*D*] feature on *v*. By contrast, if the subject is a wh-phrase, it may be licensed by either/both the [*D*] or the [*wh*] on *v*. As a result, the number of possible derivations corresponding to transitive subject vs. object wh-questions is different: transitive object wh-questions may only correspond to the derivation in (45), in which the external argument merges first, checking the [*D*] on *v* before the wh-object moves. On the other hand, transitive subject wh-questions may correspond to either of the derivations in (46) – the subject may be licensed by either or both features, depending on whether the object checks the [*D*] feature on *v*.

- (45) Only possible derivation for a transitive object wh-question: 1) check [*D*] by merging subject, 2) check [*wh*] by moving object

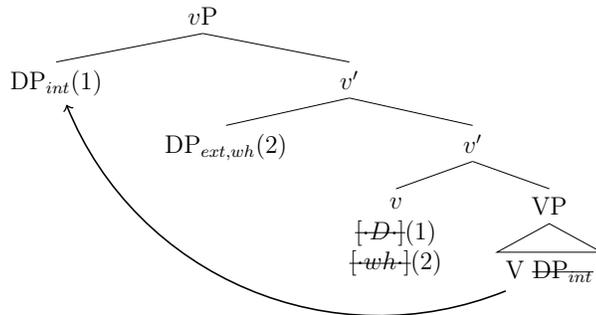


(46) Transitive subject wh-questions have two possible derivations:

a. [$\cdot D \cdot$] and [$\cdot wh \cdot$] checked by the wh-subject



b. [$\cdot D \cdot$] is checked by the object first, and the subject is licensed by [$\cdot wh \cdot$]



This approach predicts that transitive subject wh-movement should have a more varied profile than transitive object wh-movement does, on account of UG offering two derivations corresponding to the former, but only one corresponding to the latter. Chapter 2 explores the possibility that the choice between the derivations in (46) is a parametric one – some languages choose (46a) while others choose (46b). In particular, I argue that certain Mayan languages’ subject extraction strategies are best analyzed as corresponding to the representation in (46b). By contrast, English subject extraction is based on the representation in (46a).

As a result, Mayan subject extraction has a subject anti-agreement effect because the object is exceptionally promoted to surface subject position in (46b) and is therefore a more local φ -goal for the probe that controls subject agreement. In English, however, subject wh-questions still exhibit agreement with the transitive subject because there is just one specifier of v in (46a), namely the transitive subject.

1.4 Chapter 3: the positions of DP and non-DP objects

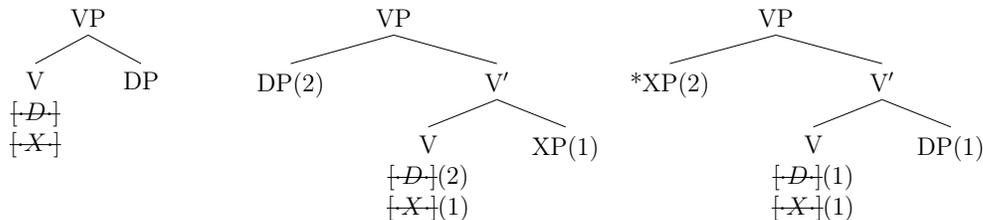
Chapter 3 explores what features might govern the distribution of non-wh-arguments in light of the Categorical Merge Hypothesis. I have proposed that all Merge is driven by the same kinds of features (which look a lot like c-selection), and that Merge is property of syntactic categories rather than individual lexical items. I assume that the clauses in (47) are built from the same set of syntactic categories, i.e. V, *v*, T, C, etc. Thus, the above two ideas have a logical consequence: though the individual verbs in (47) are all different, the syntactic features proposed for V and *v* are presumably the same in each case. The puzzle is: if the features on the verbal heads are always the same, how does each of the verb phrases in (47) come to have different numbers and categories of arguments?

- (47) Verbs c-select for different numbers and categories of arguments
- Jo enjoys fruit. (DP object)
 - Amy turned blue. (AP object)
 - Beth depends on Lauri. (PP object)
 - Meg wants to go camping. (TP object)
 - Jo thinks that Marmie likes carrots. (CP object)
 - Beth introduced Marmie to Lauri. (DP+PP objects)
 - Amy told Meg that she hates carrots. (DP+CP objects)

In order to capture the variation in (47), I propose that the features on verbal heads must be flexible enough to license multiple kinds of arguments. In particular, I propose that argument introducing heads have two Merge features: one for DPs and one for everything else. However, since *not a DP* is not a natural category, I propose that the second feature is actually a non-specific *Merge XP* feature, namely a feature that is unspecified for category.

The existence of an [*X*] feature induces conditions on the order of Merge: since DPs are XPs, DPs can check [*X*] as well as [*D*]. Just as wh-DPs can block other DPs from merging with *v* by checking [*D*] as well as [*wh*], I likewise propose that DPs can block other XPs from merging in the verb phrase by checking [*X*] as well as [*D*]. As a result, non-DP arguments necessarily merge *first* in their selecting phrases, before any DP arguments merge, or else they might not be able to merge at all. This ordering restriction is proposed to account for the relative order between DP arguments vs. PP/clausal arguments observed in (47) – DPs are merged after non-DPs, and thus appear to the left of non-DPs because of the complement-specifier distinction.

- (48) *The non-DP first theorem*: if V selects for a non-DP, the non-DP must be merged first.



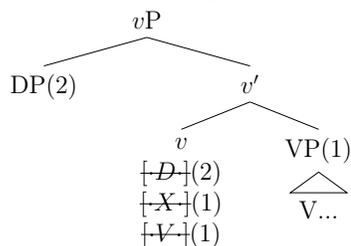
Assuming that both V and *v* introduce arguments, I propose that they have in common the features $\{\cdot D\}, \{\cdot X\}$ and can each host both DPs and non-DPs (together they can host

up to four arguments). I also propose to assign v a $[\cdot V \cdot]$ feature (and a $[\cdot wh \cdot]$ as a phase head) for clause building purposes – v selects for VP. These features work together to predict predominantly familiar syntactic structures with one exception: since non-DPs selected by v are subject to the non-DP first theorem, v Ps in which v selects a non-DP argument are predicted to have a novel constituent structure. The non-DP argument must merge before VP does, or else VP would check the $[\cdot X \cdot]$ feature needed to license the non-DP argument.

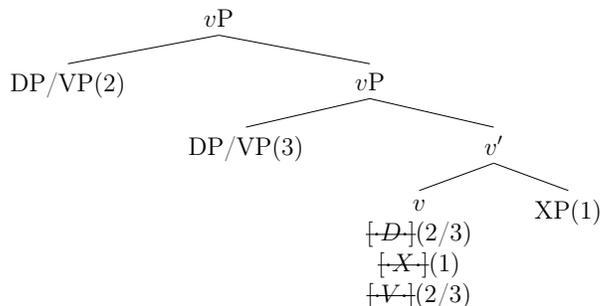
(49) Features on V: $[\cdot D \cdot], [\cdot X \cdot]$

(50) Features on v : $[\cdot D \cdot], [\cdot X \cdot], [\cdot V \cdot], [\cdot wh \cdot]$

(51) Unless XP merges first, only DP and VP can adjoin to v .



(52) If XP merges first, VP is merged as a specifier (as is DP).



To summarize, the proposed features on V and v predict that there should be four kinds of arguments: DP objects (DP arguments of V), DP subjects (DP arguments of v), “low XPs” (non-DP arguments of V), and “high XPs” (non-DP arguments of v). In clauses that either lack a non-DP argument or merge it in VP, VP may be v ’s complement as is typically expected. However, in clauses with a *high* XP argument, VP must be v ’s specifier. The structure in (52) has consequences for which arguments we perceive as most local to higher movement and agreement operations.

1.5 Chapter 4: A-movement and the position of XPs

The features proposed in Chapter 3 license a maximum of two DPs per v P, and up to four arguments total (provided the other two are non-DPs). For clauses with more than two arguments, at least one of them must be a non-DP, unless we want to admit additional functional heads and features into the verbal domain beyond V and v . Rather than increase the number of functional projections in the clausal spine, I propose that clauses with more than two arguments can indeed be analyzed as having only two DPs, with the other arguments treated as prepositional phrases, inherent case-marked elements (treated as prepositional phrases here),

or adjectival/clausal arguments. For example, ditransitives should be treated as having two DPs and one non-DP.

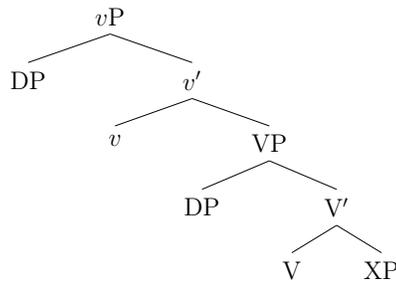
(53) English Dative alternation

- a. Elmer gave [_{DP}a fake present] [_{XP}to Bugs].
- b. Elmer gave [_{XP}Bugs.DAT] [_{DP}a fake present].

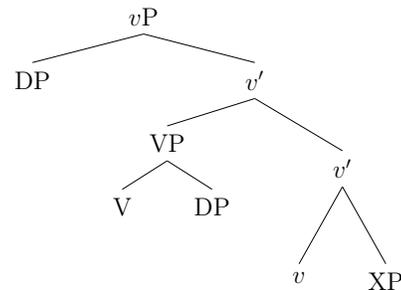
There are in principle two syntactic positions available to non-DP arguments: Comp *v* and Comp *v*. Thus, a clause with a single non-DP argument can be built in either of two ways, depending on which verbal head merges with the non-DP. This inherent flexibility how to build clauses with three arguments is proposed to contribute to the “dative alternation” cross-linguistically.

(54) Two ditransitive structures

- a. XP is low (argument of V)



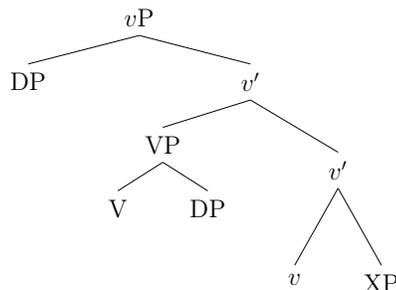
- b. XP is “high” (argument of *v*)



In addition to ambiguity in whether to make the non-DP argument an argument of V vs. *v*, I propose that one of these structures provides two options for linearization – when VP is a specifier of *v*, I propose that it can be linearized either as a left-ward or as a right-ward specifier.³ Taking into account the proposed linear flexibility of VP specifiers compared to VP complements yields the following result: two structures correspond to the relative order of arguments “DP non-DP” (“prepositional dative construction”), while only one structure corresponds to the relative order of arguments “non-DP DP” (“double object construction”).

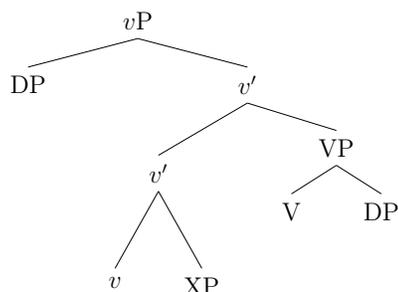
(55) VP specifier position affects word order for high XP ditransitives

- a. VP as a left-ward specifier: DP-XP word order (“prepositional dative construction”)



³VP’s flexible position as a specifier is proposed to result either from its heaviness or as a kind of small-clause extraposition.

- b. VP as a right-ward specifier: XP-DP word order (“double object construction”)



In sum, there are two possible ditransitive structures and two possible ditransitive word orders. One of these word orders (“DP non-DP” or “prepositional dative construction”) is structurally ambiguous, while the other word order (“non-DP DP” or “double object construction”) is structurally unambiguous. This proposed interaction between word order and structure is proposed to account for backwards binding and scope ambiguity observed in ditransitive clauses with “DP non-DP” word order compared to those with “non-DP DP” word order.

On this view, the pronunciation of XP as a *to*-phrase vs. a covert dative phrase is not deterministic from the choice of structure, but is rather determined by the choice of word order. This analysis of ditransitives therefore lends itself to a view of inherent case assignment as sensitive to linear adjacency with the verb in some languages, as suggested by Levin (2015) and Branan (to appear).

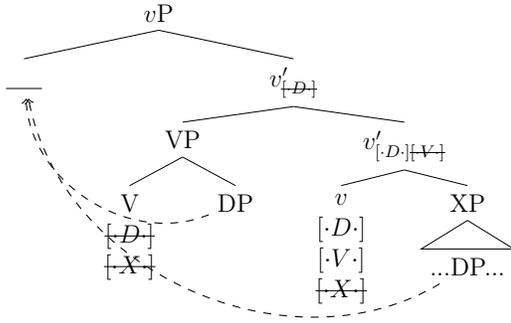
Ditransitive structures in which VP is a specifier have an important consequence for A-movement: the XP argument of *v* and the DP argument of V do not c-command each other. A DP argument of X and a DP argument of V are therefore equally local targets for A-movement to subject position in a passive, for example. This symmetry between XP arguments of *v* and arguments of V is proposed to account for symmetric passives in languages that have them – either the direct object or the indirect object of a “double object construction” may raise to nominative because neither one violates relativized minimality when it moves to subject position.⁴

(56) *Norwegian symmetric passives* (Haddican & Holmberg, 2015, ex. 145)

- a. Boka ble gitt Jon.
 the.book was given Jon
 ‘The book was given to Jon.’
- b. Jon ble gitt boka.
 Jon was given the.book
 ‘Jon was given the book.’

(57) Arguments of X and arguments of V do not cross each other en route to Spec *vP*

⁴This account of symmetric passives bears some resemblance to a “smuggling approach” in that the direct object in a passive of a double object construction is proposed to move from a VP specifier position (see e.g. Collins 2005 for discussion). On my approach, however, the structure in (57) is base generated rather than derived by VP-movement, and is generated according to independent principles of structure building, rather than in an effort to avoid relativized minimality violations.

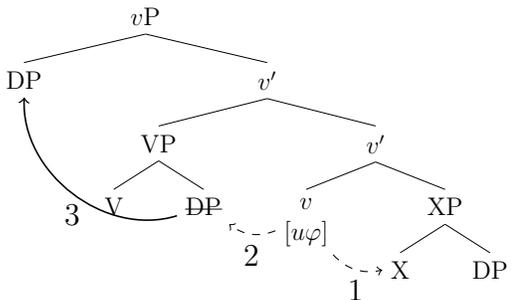


I propose, however, that Agree can introduce an asymmetry in passives of ditransitives. As discussed extensively by Anagnostopoulou (2003), some languages exhibit a so-called “dative intervention effect” when attempting to raise the direct object to subject position in a passive. In Greek, for example, a direct object passive of a double object construction requires clitic doubling with the indirect object. Note also that Greek lacks indirect object passives, making the asymmetry two-fold: only one argument can become the passive subject (the direct object), and making the direct object the subject is sensitive to operations involving the indirect object (namely clitic doubling). By contrast, Norwegian permits either argument to become the passive subject, with no apparent asymmetric morphosyntactic effects.

- (58) To vivlio ?*(tis) charistike (tis Marias).
 the book.NOM cl.GEN award.NACT the Maria.GEN
 ‘The book was awarded to Mary.’ (Anagnostopoulou, 2003, ex. 33)

Following Béjar & Rezac (2009), I assume that a φ -probe must probe its complement before it can probe its specifier. As a result, if a language has agreement/clitic doubling that is mediated by a φ -probe on v , agreement/clitic doubling of an XP complement of v should precede any operation involving arguments of the specifier VP. I propose that this ordering restriction is what accounts for “dative intervention effects”. The locality of Agree demands interaction with the indirect object before the direct object despite the fact that neither argument c-commands the other. The fact that Greek does not permit the indirect object to become the passive subject (no indirect object passives), but can only clitic double it, is what enables the φ -probe to reproject and target the direct object.

- (59) “Dative intervention”: if v has a φ -probe, it must probe XP before VP – Agree/clitic doubling precedes raising a direct object



Languages with symmetric passives lack a clitic doubling/ φ -probe on v and thus do not show this asymmetry.

1.6 Chapter 5: wh-movement and the position of XPs

Chapter 5 combines the insights of Chapters 2, 3, and 4 by studying wh-movement in active and passive ditransitive structures. As observed by Holmberg et al. (2019), many languages with symmetric passives of ditransitives become asymmetric for passivization just in case the indirect object is a wh-phrase.

(56) *Norwegian symmetric passives* (Haddican & Holmberg, 2015, ex. 145)

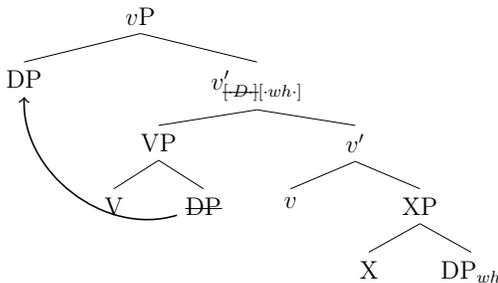
- a. Boka ble gitt Jon.
the.book was given Jon
'The book was given to Jon.'
- b. Jon ble gitt boka.
Jon was given the.book
'Jon was given the book.'

(2) *Norwegian asymmetric passives when IO is a wh-phrase* (Holmberg et al., 2019, p.680)

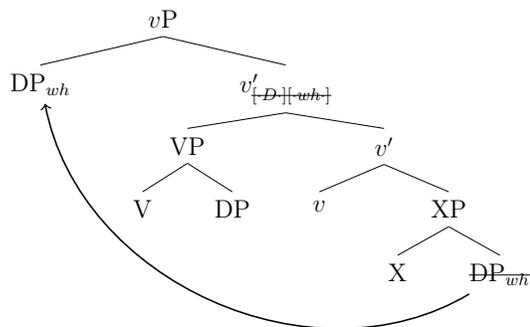
- a. *Hvem ble boka gitt?
who was the.book given
intended: 'To whom was the book given?'
- b. Hvem ble gitt boka?
who was given the.book
'Who was given the book?'

I propose that the difference between passive clauses with no wh-movement and passive clauses with wh-movement is that in the former scenario, only one feature on v is relevant ($[\cdot D \cdot]$), while in the latter scenario, two features on v are relevant ($[\cdot D \cdot]$ and $[\cdot wh \cdot]$). This distinction is important for the following reason: in a passive clause with no wh-phrases, the choice of which argument to raise to subject position only amounts to the choice of which argument to use to check v 's $[\cdot D \cdot]$ feature. When one of those arguments is a wh-phrase, however, the choice of which argument to raise may now take into account that moving one argument but not the other may check $[\cdot wh \cdot]$ in addition to $[\cdot D \cdot]$. In (60) and (61), for example, where the complement of X is a wh-argument but the complement of V is a non-wh-argument, making the complement of X the passive subject checks a superset of the features that making the complement of V the passive subject does.

(60) Moving the complement of V only checks $[\cdot D \cdot]$



(61) Moving the wh-phrase within XP checks [$\cdot D \cdot$] and [$\cdot wh \cdot$]



Recall that the complement of X will always be a licensed specifier of v no matter what, given that it has a wh-feature. The question under discussion is whether the complement of V is ever predicted to be licensed as the passive subject in this context, as in (60). In order for the complement of V to move to Spec vP , it would have to move *before* DP_{wh} , or else DP_{wh} would check all the features.

I propose that the complement-specifier distinction introduces a timing asymmetry such that if the complement of X wh-moves at all, it does so before VP containing the direct object is even merged as a specifier. As a result, a wh-moving indirect object in (61) always becomes the passive subject because it wh-moves earlier than the direct object has been introduced into the clause. By contrast, if the direct object is the wh-phrase, it is introduced too late to affect the movement prospects of the indirect object. Asymmetric passivization in wh-movement is therefore reserved for contexts in which the *indirect* but not the direct object is a wh-phrase.

(2) *Norwegian symmetric passives when DO is a wh-phrase* (Holmberg et al., 2019, p.680)

- a. Hvilken bok ble gitt Jon?
 which book was given Jon
 ‘Which book was given to John?’
- b. Hvilken bok ble Jon gitt?
 which book was Jon given
 ‘Which book was John given?’

The effect of the complement-specifier asymmetry on the timing of wh-movement is proposed to be a response to a revised *Multitasking* condition, adapted from van Urk & Richards (2015). Since XP is a complement and VP is a specifier, there is a stage in the derivation in which v has the option to check both [$\cdot D \cdot$] and [$\cdot wh \cdot$] with the DP_{wh} argument of X before merging the VP that contains the direct object. The condition in (62) enforces early wh-movement in this context, which makes the argument of X the passive subject in the process. The result is an asymmetry in passivization whenever XP contains a wh-phrase.

(62) *Multitasking* (revised from van Urk & Richards 2015):

At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing B would check a proper subset of the features checked by A.

- (63) Multitasking enforces DP_{wh} -movement earlier than VP-Merge because it checks both $[\cdot D \cdot]$ and $[\cdot wh \cdot]$, while VP-Merge would only check $[\cdot V \cdot]$



1.7 Chapter 6: a smaller functional/thematic hierarchy

The preceding chapters advanced a theory of verb phrase syntax in which there are just two functional categories in the verbal domain: V and v . As a result, this theory suggests that while a wide variety of verbs and argument structure-related morphemes may exist in the lexicon, they must be projected in the syntax either as a token of V or v , or as some element selected by V or v . For example, this theory does not include a separate ApplP on the clausal spine to describe ditransitive structures, but rather must treat the morpheme *appl* (in languages that have one) either as a lexical verb or as the head of an XP selected by V or v . Chapter 6 argues that this smaller functional hierarchy demands a new perspective on the thematic hierarchy, but otherwise requires no novel assumptions about how arguments are interpreted.

The core of the proposal is that there are two ways in which some (non-adjunct) phrase may be interpreted by a head: functional application (FA) or event identification (EI, Kratzer 1996). DP arguments of V and v are assumed to always be interpreted via FA, and are thus assigned their thematic roles according to the meanings of their selecting heads. Theta roles assigned by v manifest themselves in DP specifiers of vP ; theta roles assigned by V manifest themselves in DP arguments of V . As a result, theta roles associated with v are typically projected in a structurally more prominent position compared to theta roles associated with V , due to the functional hierarchy. To summarize, the functional hierarchy is reminiscent of a thematic hierarchy, which ranks the theta roles of canonical subjects compared to those of canonical objects.

Non-DP arguments of V and v , however, may either be interpreted via FA or EI depending on their semantic type. The rule by which an argument is interpreted affects whether its syntactic position is flexible or fixed. For example, a verb like *say*, which s-selects for a proposition, can presumably interpret a clausal argument via FA. Importantly, if the syntax attempted to merge that clausal argument in a different position other than the sister of *say*, the result would likely be uninterpretable. Thus, non-DPs that are interpreted by FA typically have a fixed syntactic position.

For non-DP arguments that are predicates of events (e.g. most prepositional phrases on my view), however, the picture is different. Such non-DPs may be interpreted via EI instead of FA. Due to the nature of EI, whether the argument is interpreted in VP vs. within vP is predicted to have no consequences for the interpretation of the clause as a whole. Thus, non-DPs that can be interpreted via EI are predicted to have a flexible syntactic distribution, as was proposed to characterize the position of indirect objects in the dative alternation, for example. In sum, to the extent that there is a thematic hierarchy, it cannot strictly rank any

thematic role represented by an XP predicate of events relative to other thematic roles, given that those phrases have no fixed position in the syntax.

Lastly, Chapter 6 discusses the pronounced position of verbs in light of the proposal that VP can be either a complement or a specifier of v in different contexts. I propose that when VP is a complement of v , V may head move to v , and thus may be pronounced there (or higher, depending on the language). When VP is a specifier, however, V and v cannot form a head movement chain, and must each move to a higher projection to form a complex head.

1.8 Cheat sheet

This cheat sheet contains a complete list of proposals and framework assumptions. It is intended to help the reader navigate each chapter by providing a central location in which to reference components of the theory established in other chapters.

- (64) Assumptions about phase theory and spell-out
 - a. C and v are the (clausal) phase heads (agnostic about whether D, P, etc. are phases)
 - b. *Weak PIC/PIC2* (Chomsky, 2001): Given a structure $[_{ZP} Z \dots [_{XP} X [_{HP} \alpha [H YP]]]]$ where H and Z are phase heads, the domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

- (65) Assumptions about Merge
 - a. $[\cdot X \cdot]$ = an instruction to Merge with an element bearing X
 - b. Both internal and external Merge are driven by the same sorts of features (Müller, 2010)
 - c. Features that drive Merge are unordered on a head but may appear ordered due to economy (Longenbaugh 2019, contra e.g. Adger 2003; Müller 2010)
 - d. *Generalized tucking in* (an extension of Richards 1997): Specifiers are projected in the order they are merged
 - e. Unchecked Merge features don't necessarily crash the derivation (Preminger, 2014; Longenbaugh, 2019)

- (66) Economy conditions
 - a. *Feature Maximality/Free Rider* condition: Given a head H with features $[F_1] \dots [F_n]$, if XP discharges $[F_i]$, XP must also discharge each $[F_j]$ that it is capable of (Chomsky, 1995; Pesetsky & Torrego, 2001; Rezac, 2013; van Urk & Richards, 2015; Longenbaugh, 2019)
 - b. *Multitasking* (revised from van Urk & Richards 2015): At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing B would check a proper subset of the features checked by A.
 - c. *Scope Economy* (Fox, 1998): Scope Shifting Operations (SSOs) can't be semantically vacuous.

- (67) Assumptions about projection
 - a. *Projection*: unsaturated features on a head project (Adger, 2003)

- b. *Feature deletion*: saturated features *delete* (or return the identity function, as in Asudeh & Potts (2004))
 - c. φ -probes project just as Merge features do, but they must first attempt to agree with something in their scope before they may project to a higher node (Béjar & Rezac, 2009)
- (68) Assumptions about Case/Agreement
- a. Agree is always downward
 - b. Agree may fail without crashing the derivation (Preminger, 2014)
 - c. *Anti-redundancy*: two adjacent φ -probes that cross-reference the same argument X must delete the lower instance of X's features (cf. Kinyalolo 1991; Oxford 2017)
 - d. *Case Accessibility* (Bobaljik, 2008; Preminger, 2014): Accessibility to Agree is determined according to the *Revised Moravcsik Hierarchy*: unvalued Case > dependent Case > lexical and other Case
 - e. *Dependent Case* (based on Marantz 1991, adapted from Longenbaugh 2019): Given the configuration $[DP_1[\dots[DP_2\dots]]]$ in some domain, where the Case features on DP_1 and DP_2 are unvalued: in a nominative system, value the Case feature on DP_2 to dependent; in an ergative system, value the Case feature on DP_1 to dependent. (based on Marantz 1991, adapted from Longenbaugh 2019)
 - i. Addendum: Dependent case is only assigned once per domain
 - f. Lexical/oblique cases have the structure of prepositional phrases (Rezac, 2008; Petsky, 2013, a.o.), which may have language specific licensing requirements, such as sisterhood or linear adjacency with a particular head (Levin, 2015; Branagan, to appear)
- (69) Binding theory
- a. α binds β iff α and β are coindexed, and (i) or (ii):
 - i. α and β m-command each other and α asymmetrically c-commands β
 - ii. α asymmetrically m-commands β

Chapter 2

Subject extraction in Mayan

2.1 Introduction

As Chapter 1 established, by unifying the Merge that introduces arguments with the Merge that displaces wh-phrases, phenomena in language that have been described as an interaction between wh-movement and Voice should be expected. I argue that such apparent interactions can be captured on the present approach to Merge features without positing novel constraints on \bar{A} -movement or Agree. In particular, I suggest that a uniform theory of Merge features predicts languages to exist in which wh-movement of a subject exceptionally co-occurs with A-movement of the object, which should have morphosyntactic consequences.

In this chapter, we will look closely at a strategy for subject wh-movement found in certain Mayan languages and show that it conforms to the predictions of the more general theory of wh-Merge outlined in Chapter 1. On my approach, subject wh-movement in Mayan is not *limited* to a particular Voice, and thus does not really indicate a wh-movement/Voice interaction. Rather, subject wh-questions correspond to a slightly different basic configuration of arguments compared to their non-wh-counterparts, which affects the agreement alignment of the clause in the ways we observe.

Mayan subject wh-questions have received widespread attention and several kinds of treatments. The pattern of interest is demonstrated in (70), (71), and (72). In (70), we observe that Q'anjob'al transitive clauses typically exhibit both subject agreement (glossed A) and object agreement (glossed B). Object wh-questions, as in (71), preserve this agreement alignment (note: 3sg object agreement is always null). Subject wh-questions do not, however, as evidenced by the lack of subject agreement in (72).

- (70) Max-ach y-il-a'.
ASP-B2S A3S-see-TV
"She saw you." (Q'anjob'al; Coon et al. (2014), p.10)
- (71) Maktxel max y-il naq winaq
who PFV A3S-see CLF man
"Who did the man see?" (Q'anjob'al; Coon et al. (2014), p.192)
- (72) Maktxel max-ach il-on-i?
who PFV-B2S see-AF-ITV
"Who saw you?" (Q'anjob'al; Coon et al. (2014), p.213)

In addition to a lack of subject agreement, (72) also contains two additional verbal morphemes: 1) an intransitive status suffix, and 2) what is called the *agent focus* morpheme (glossed AF), which is often used when the subject is wh-moved or focused. There are several subject extraction contexts in which AF is not used, to be discussed in Sections 2.3-2.5. I will refer to the co-occurrence of these properties as the *agent focus construction*. As (73) shows, the agent focus construction is obligatory in (72). Removing the agent focus morpheme and attempting to pronounce agreement with the wh-subject is not allowed.

(73) *Without AF

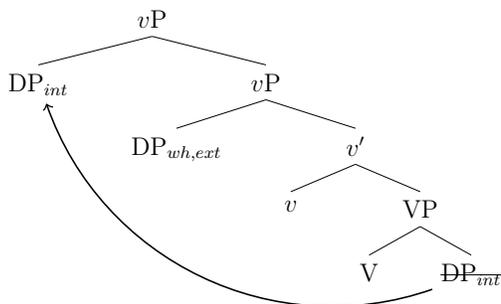
*Maktxel max y-il ix ix?
 who PFV A3S-see CLF woman

intended: “Who saw the woman?” (Q’anjob’al; Coon et al. (2014), p.193)

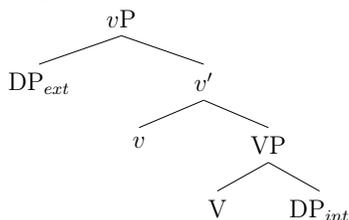
I argue that the requirement for agent focus in (72) is not evidence for a restriction on subject extraction in these languages. Instead I propose that subject wh-questions in the relevant Mayan languages build *v*Ps like that in (74a), while regular transitive clauses build *v*Ps like that in (74b). This is because wh-subjects are licensed by the wh-hosting property of *v* rather than the argument-hosting one, leaving the argument-hosting property to be satisfied by object movement. This reverses the relative order between subject and object, which has consequences for their relative accessibility to higher φ -probes.

(74) Subject wh-questions permit a different base configuration of arguments compared to regular transitive clauses.

a. Subject wh-questions in certain Mayan languages: object outscoopes subject



b. Regular transitive *v*Ps: subject outscoopes object



Building a *v*P like that in (74a) should have 3 consequences:

1. Assuming the φ -probe that normally cross-references the subject is higher than the base position of the subject, the object is now a more local φ -goal to it than the subject is \rightarrow *subject anti-agreement effect* (when the subject is lower on a person-hierarchy than the object).

2. The wh-subject must cross the object when it wh-moves to Spec CP, which should produce crossover effects.
3. If the φ -probe that normally cross-references the subject targets the object instead, the features of the object end up *doubly* cross-referenced on the verb.

I argue that all three of these predicted effects are found in the relevant Mayan languages. The first two are transparently observed in that subject wh-questions both lack agreement with the subject and block coreference between the subject and object in (75).

- (75) Maktxel max bon-on **s-na**?
 who PFV paint-AF A3S-house
 “Who_i painted his_{*i/j} house?” (Q’anjob’al; Coon et al. (2014), p.226)

The third predicted effect, namely that the verb should doubly cross-reference the object, requires elaboration. Mayan subject wh-questions do not co-occur with two morphemes that exhibit the features of the object. Instead we observe the regular object marker plus the agent focus morpheme and an intransitive status suffix. To explain this effect, I invoke the condition in (76), which rules out multiple exponence of a single argument’s features (c.f. *Kinyalolo’s constraint* (Kinyalolo, 1991), Oxford 2017). On this approach, the agent focus morpheme is analyzed as an elsewhere form, namely the spell-out of one of the probes that redundantly agreed with the object. The intransitive status suffix is proposed to be a morphological reflex to the fact that only a single argument’s features have been realized on the verb.

- (76) *Anti-redundancy*: two adjacent φ -probes that cross-reference the same argument X must delete the lower instance of X’s features.

On this view, the agent focus construction does not really instantiate an interaction between wh-movement and Voice, nor is it really a dedicated “construction”. Subject wh-questions are still logically transitive in the sense that there is both a subject and an object, neither of which is oblique, and they are likewise compatible with transitive derivational morphemes. Inserting an agentive *v* head in (74a) should not only be possible, but should result in the same interpretation as (74b). The object gets its theta role having been generated as the complement of V. The subject presumably gets its interpretation from having been generated as the specifier of *v*, which assigns an agentive theta role. The agreement alignment in subject wh-questions merely *looks* Voice-related due to the fact that Voice alternations also affect the basic configuration of arguments, which in turn affects agreement alignment.

In this chapter, we will focus only on the properties of Mayan subject wh-questions and the proposed theory that derives them. Chapters 3, 4 and 6 will elaborate on the consequences of this approach for theta role assignment and Voice alternations more generally. The outline of this chapter is as follows: Section 2.2 outlines the proposed framework that capitalizes on the insights from Chapter 1. Section 2.3 motivates a basic transitive clause structure and agreement alignment in the relevant Mayan languages, and identifies variation within the typology of agent focus behaviors that the theory should cover. Section 2.4 demonstrates how subject but not object wh-questions are predicted to result in a different agreement alignment compared to their non-wh-counterparts, and discusses how the agreement alignment in agent focus constructions is correctly predicted to be sensitive to the person features of the arguments. Section 2.5 considers the known cases in which agent focus is not observed in subject extraction. Section

2.6 offers a comparison between this account and others that treat the agent focus construction as a rescue strategy. Section 7 concludes and identifies avenues for future study.

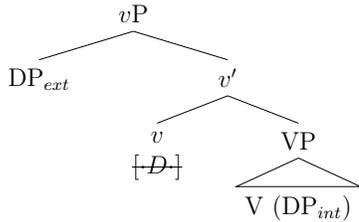
2.2 Uniform Merge and subject wh-questions

The engine that drives the proposed theory is Chomsky’s (1995) proposal that there is just one generalized structure building operation, called Merge. I assume, therefore, that a head with a requirement to Merge with some feature or element of some category cannot formally distinguish whether that element adjoins via internal or external Merge. Following Müller (2010) and Longenbaugh (2019), I propose to represent a requirement for Merge as a feature on a head, which can in principle be checked by any Merged element bearing the requisite feature.

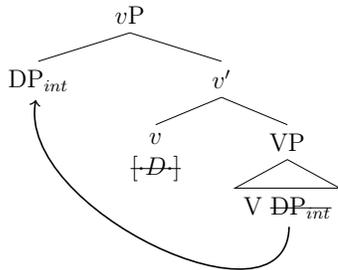
(77) $[\cdot X \cdot]$ = an instruction to Merge with an element bearing X

Following Longenbaugh (2019), different ways of satisfying these Merge features have different consequences for transitivity (and agreement alignment and case assignment by extension). For example, assuming that vP has a general requirement for a DP subject, transitive/unergative clauses can be thought of as vP s whose subject was externally merged, while passive/unaccusative clauses can be thought of as vP s whose subject was internally merged.

(78) Externally merging a DP in Spec vP results in a transitive/unergative clause.



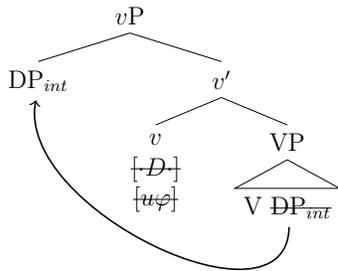
(79) Internally merging a DP in Spec vP results in a passive/unaccusative clause.



Important to note is that this $[\cdot D \cdot]$ feature is proposed to be a *categorial* property of v heads. Different “flavors” of v might exist (following Marantz 1997; Folli & Harley 2005, e.g.) and might have different encyclopedia entries and morphological exponents. According to this theory, however, they should all have in common the syntactic property of having a $[\cdot D \cdot]$ feature. Thus the vP in (78) might contain an agentive v head, while the vP in (79) might contain a non-agentive one with no consequences for the syntactic description of these clauses. I defer further discussion of the syntax-lexicon interface to Chapter 6.

What is important for now is that we establish a basic set of features on v and explore the predicted interactions between them. In addition to Merge features, Müller (2010) and Longenbaugh (2019) suggest that agreement-inducing probes may also occur on a head. Thus a possible v head could have both a requirement for a DP subject as well as a probe that cross-references e.g. the closest φ -bearing element in its scope. The fact that a head can have multiple features specified for different kinds of operations gives rise to the possibility that these features interact. In particular, Longenbaugh (2019) suggests that an economy condition often requires multiple features to be checked at the same time. For example, if a v head with a $[-D\cdot]$ feature and a φ -probe tries to agree with a DP, the condition in (80) requires it to also internally merge the DP, thus satisfying both features, as in (81).

- (80) **Feature Maximality:** Given a head H with features $[F_1] \dots [F_n]$, if XP discharges $[F_i]$, XP must also discharge each $[F_j]$ that it is capable of (Chomsky, 1995; Pesetsky & Torrego, 2001; Rezac, 2013; van Urk & Richards, 2015; Longenbaugh, 2019)
- (81) Attempting to either agree with or move the internal argument requires it to check both features at once.



Important to note is that Feature Maximality is *not* a global economy condition. It does not tell a head what operation to do first. Whatever operation a head happens to choose at a given time, Feature Maximality merely requires it to maximize the number of features checked by the operand. Thus the v head in (81) could have instead decided to externally Merge a DP before attempting to agree with anything, despite the fact that doing so would not have satisfied both the Merge feature and the φ -probe with the same element. Whether the φ -probe is satisfied depends solely on whether there is an accessible φ -goal in the scope of v , which is necessarily satisfied when v 's $[-D\cdot]$ feature is satisfied by internal Merge, but not necessarily when satisfied by external Merge. Longenbaugh (2019) invokes the conditions on Agree in (82-84) in order to understand a movement/agreement correlation in Romance languages.

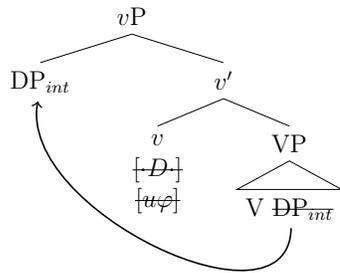
- (82) **Case accessibility:** In Romance languages with this pattern, only DPs with unmarked case are accessible to φ -Agree (based on Bobaljik 2008; Preminger 2014)
- (83) Agree is always downward
- (84) Agree may fail without crashing the derivation (Preminger, 2014)

In many Romance languages, the past participle of a verb only agrees with the object if it has A-moved. Longenbaugh (2019) proposes to explain this, not by invoking EPP properties in some contexts but not others, but by observing that agreement essentially only occurs in contexts when the object has *not* been assigned accusative case.¹ He assumes that accusative

¹With some exceptions in French, see Déprez (1998) for discussion.

case is assigned via a dependent case mechanism (Marantz, 1991) to the lower of two DPs in vP . Whenever the object A-moves through Spec vP , Feature Maximality requires it to satisfy v 's φ -probe at the same time, hence the movement-agreement correlation. Additionally, since the object blocks a transitive subject, it gets assigned nominative. Any time v 's $[-D]$ feature is satisfied by external Merge, however, the object gets assigned dependent accusative case, which renders it inaccessible to Agree.²

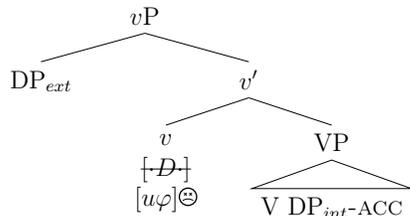
- (85) Agree/movement of the internal argument blocks external Merge by satisfying all the features on v .



- (86) Passives/unaccusatives display object agreement+movement in Standard Italian

- a. **Due ladri** sono entrat-**i**/*o dalla finestra
 two robbers are entered-M.PL/*M.SG from-the window
 “Two robbers entered from the window.” (Belletti 2006: ex.34c)
- b. **Alcuni sindaci** sono stati arrestat-**i**/*o
 some.M.PL mayors.M.PL are.PL been.M.PL arrested.M.PL/*SG
 “Some mayors were arrested.”

- (87) Merging the external argument blocks Agree by triggering accusative case assignment on the internal argument.



- (88) Transitive clauses have neither object agreement nor object movement in Standard Italian

Ho mangiat-**o**/*a **la mela**
 have.1.SG eaten-M.SG/*F.SG the apple.F.SG

“I have eaten the apple.” (D’Alessandro & Roberts 2008)

The result is that v can never agree with the object in a transitive clause. If v agrees with the object before the subject is merged (and thus before it is assigned case), Feature Maximality

²See Longenbaugh (2019) for discussion on post-verbal subjects and expletives.

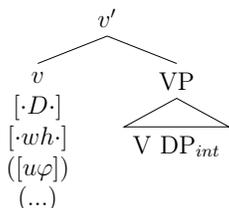
requires it to also Merge, which blocks a transitive subject. If the subject merges first, it triggers case assignment on the object, which blocks Agree.

Following Preminger (2014), the fact that Agree has failed in the transitive variant of these clauses poses no problem for the derivation. It merely affects the pronunciation of these clauses. Additionally assuming that all Merge is feature driven, the fact that the DP feature has been satisfied in both clause-types blocks any future Move/Merge operations involving DPs in vP , because there is no additional feature to license them. Now that we have established the basic insights of the system, we investigate how wh-movement is expected to interact with this notion of transitivity.

2.2.1 Extending the logic to wh-movement

Since vP is a locus of successive cyclic movement (Chomsky 1986, and much subsequent work), and there is no such thing as a *Move* feature, we would expect v to bear a $[\cdot wh \cdot]$ feature in addition to a $[\cdot D \cdot]$ feature (leaving aside φ -probes for now).

(89) v can minimally host a DP specifier and a wh-marked specifier.



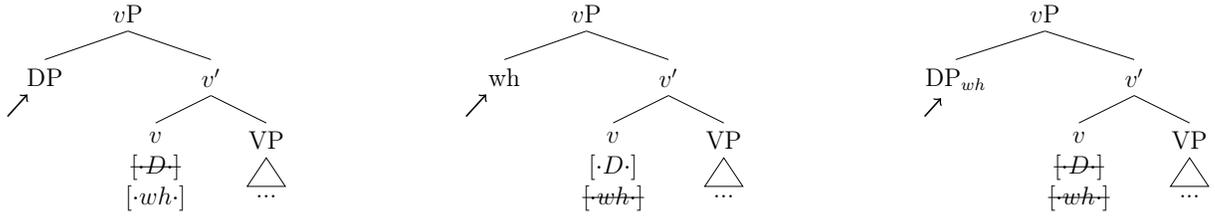
In a clause with no wh-phrases, this $[\cdot wh \cdot]$ feature is allowed to fail, and the only possible derivations should be those that we have already seen (which pertain to the transitivity of the clause): satisfying $[\cdot D \cdot]$ by external Merge results in a transitive clause, satisfying it by internal Merge results in an intransitive clause. If there is a wh-phrase in the clause, however, the $[\cdot wh \cdot]$ feature becomes relevant in interesting ways.

Just as $[\cdot D \cdot]$ features can be satisfied by internal or external Merge, so too can $[\cdot wh \cdot]$ features (by hypothesis). Moreover, if one constituent merges with v that bears both the features of a DP and those of a wh-phrase, Feature Maximality should require it to check both of these features at once. Checking these features has consequences for future operations. The order in which they are checked therefore has consequences for the number of specifiers we observe (as in (91)).³

- (90) The ways of satisfying $[\cdot D \cdot]$ and $[\cdot wh \cdot]$
- a. $[\cdot D \cdot]$ can be satisfied by merging a subject or moving an object
 - b. $[\cdot wh \cdot]$ can be satisfied by merging or moving a wh-phrase
 - c. both can be satisfied simultaneously if one merges/moves a wh-DP

³Longenbaugh (2019) stipulates that only one Merge feature may be satisfied at a time, thus limiting the possible interactions we expect to occur between satisfaction of these different features. There is robust evidence from the behavior of wh-movement in V2 languages, however, that wh-movement can block other constituents from occupying certain clausal positions, which is exactly the kind of behavior we expect if wh-DPs can check the features of other arguments in some positions. See van Urk & Richards (2015).

- (91) Either or both $[\cdot D \cdot]$ and $[\cdot wh \cdot]$ in a single Merge step, depending on the features of the merged element



The choice of which element to merge first might permit or block additional specifiers depending on the features of the merged element. If the derivation first merges a constituent that is either a DP or wh-phrase but not both, a second specifier is permitted. If the first specifier is *both* a DP and a wh-phrase, however, no additional specifiers should be allowed.⁴

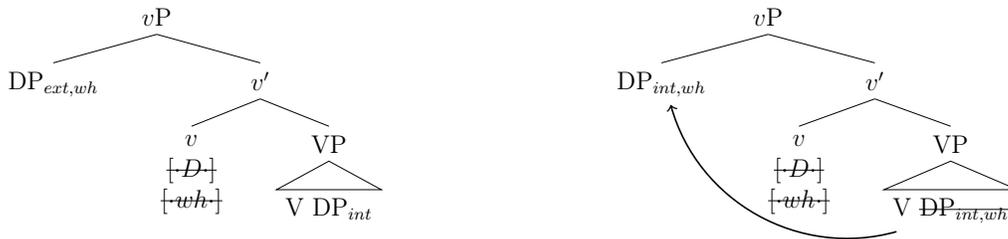
With this in mind, we can consider what derivations are predicted to be possible for wh-questions if either the subject or the object is a wh-phrase. If the clause is to be both transitive and a wh-question, it has two requirements:

- (92) a. Need to merge a subject (transitivity)
 b. Need to merge/move a wh-phrase (successive cyclicity)

As we saw in (91), merging a wh-DP first blocks any other argument from adjoining to Spec vP . Thus, a subject/object asymmetry arises. If the derivation chooses to merge a wh-subject first, both (92a) and (92b) are satisfied. However, if instead v first merges with a wh-object, it blocks a transitive subject from ever adjoining.

- (93) a. wh-subject is externally merged first \rightarrow transitive clause; object can't raise
 b. wh-object is internally merged first \rightarrow intransitive clause; subject can't Merge

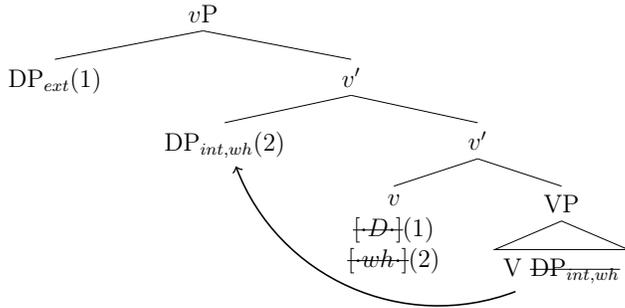
- (94) If a wh-DP is merged first: wh-subject blocks A-movement of the object, wh-object blocks external Merge of the subject



As a result, the derivation of an object wh-question *cannot* move the object first before having Merged a subject if the clause is transitive. A successful object wh-question is therefore one in which v 's $[\cdot D \cdot]$ feature is satisfied by external Merge before its $[\cdot wh \cdot]$ feature is satisfied by object movement. The tree in (95) assumes that the object tucks in under the subject, following Richards (1997).

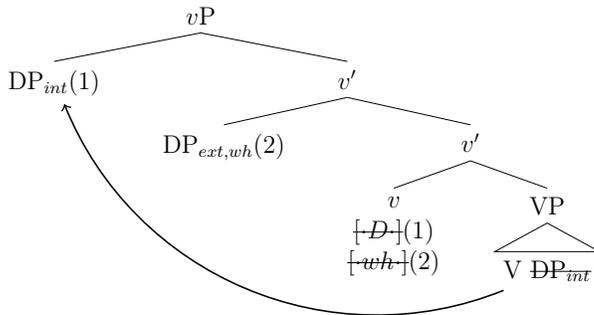
⁴An alert reader may recall from the introduction that I ultimately posit additional features beyond $[\cdot D \cdot]$ and $[\cdot wh \cdot]$ on v for merging VPs and other XPs. I defer discussion of those features to later chapters because they do not affect the current proposal: the VP complement checks both features in all of these contexts.

- (95) Only possible derivation for an object wh-question: 1) check $[\cdot D \cdot]$ by merging subject, 2) check $[\cdot wh \cdot]$ by moving object



In contrast to object wh-questions, a subject wh-question is not predicted to be so selective about the order in which v 's features are satisfied. A wh-subject can be merged first, which satisfies both features and results in a transitive clause (as in (94)). Alternatively, the object could raise first, checking off a $[\cdot D \cdot]$ feature without checking off a $[\cdot wh \cdot]$ feature, which can subsequently be satisfied by the subject.

- (96) Subject wh-questions have two possible derivations: 1) see (94), and 2) $[\cdot D \cdot]$ is checked by the object first, and the subject is licensed by $[\cdot wh \cdot]$



To summarize, transitive object wh-questions must order external Merge *before* internal Merge. However, transitive subject wh-questions can be derived by either order of Merge operations. If this approach is right, we should therefore expect to find evidence of both of these strategies for subject wh-movement in languages.

At this point, one might object to the derivation in (96) on the grounds that a more “economical” derivation exists, namely the one in (94). If both derivations satisfy the requirement for a transitive subject, and both can be interpreted as subject wh-questions, wouldn’t the syntax prefer the derivation that checked those features in fewer operations? If such an economy condition were active here, (96) would be ruled out, and there would be just one strategy for subject wh-questions, namely the one in (94).

I can think of two reasons why we should entertain the derivation in (96) in spite of this potential objection. First, if such a global economy condition were active, it would have to be routinely *violated* in object wh-questions, given that merging a transitive subject checks a subset of the features that moving a wh-object does.

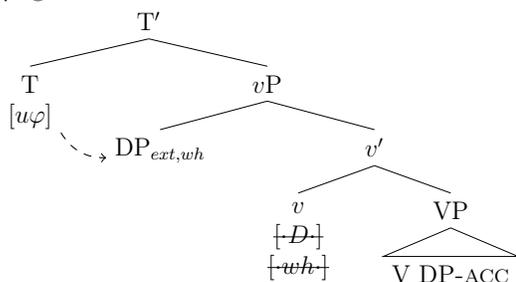
Second, even if we formulated economy as a violable constraint (for the purpose of permitting object wh-questions), there is no guarantee that the derivation in (94) would be more economical

than the one in (96) in *every* language. If, for example, we were to add a φ -probe to v in (94) and (96), both derivations would check the same numbers of features in each step, and neither one checks a superset that the other would check. Merging the subject first would check $[\cdot D \cdot]$ and $[\cdot wh \cdot]$. Moving the object first would check $[\cdot D \cdot]$ and $[u\varphi]$. I know of no economy constraints that would prefer one derivation over the other in such a case.

At this point, I will not take a stand on whether to invoke a global economy constraint because I think further study of cross-linguistic variation is needed to determine the factors that might adjudicate between the derivations in (94) and (96). For now, I will simply entertain the possibility that some languages choose the strategy in (94), while others choose the strategy in (96) for reasons we don't yet understand.

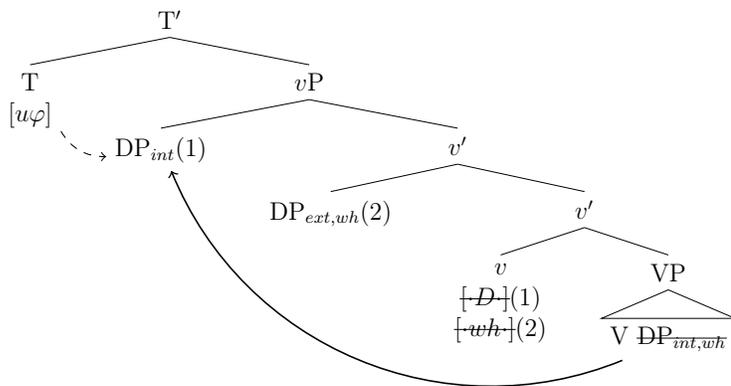
More specifically, I propose that English-type languages choose the derivation in (94), while certain Mayan languages choose the one in (96). It is this choice that enables English wh-questions to agree with the transitive subject, while such agreement is often blocked in the relevant Mayan languages.⁵

- (97) English subject wh-questions: wh-subjects externally merge first, subject is most local φ -goal to T.



- (98) If English had chosen the other option, namely to move first, T should agree with the object instead. This is not observed in English, but I propose that subject anti-agreement in high absolutive Mayan languages results from this tree.

⁵At this point, it might be tempting for some readers to conclude that the parametric difference between English and Mayan is that English is a nominative-accusative language but Mayan languages are ergative. Additionally, Mayan languages with the AF construction have been argued to be *high absolutive*, which, according to some analyses, means the object moves to a higher position in the clause more generally. On the assumption that objects want to be high in high absolutive languages, the proposal that the object moves in (96) would not be surprising at all. This intuition might be on the right track. However, I want to urge some caution at this point and remind the reader that this theory is not about the *general* position of objects in Mayan or elsewhere. I specifically predict the object to exhibit this particular movement step *only* when the subject wants to wh-move. Whether the object normally does a different movement step or stays in situ is not important at this point.



A note on order of specifiers: I have supposed in (95) that when a *wh*-object moves, it tucks in under the merged subject. Thus the order of Merge operations corresponds to the order of specifiers that we observe. I propose that the order of specifiers is more generally affected by the order of Merge, not just in the case of movement, which results in the opposite order of (leftward) specifiers in (96) and (98). If the first element that merges ends up as the outer specifier in (95), that should also be the case in (96). Hence, I have placed the moved object as the outer specifier and the merged subject as the inner specifier in (96), which reflects the same operations as in (95) but in reverse order. If this were not the case, the consequences of choosing one derivation or another would be opaque. I'll call this property *generalized tucking in*, as an extension of Richards (1997).

- (99) **Generalized tucking in** (an extension of Richards 1997): Specifiers are projected in the order they are merged

To summarize, we have seen that this logic of feature-driven Merge predicts two possible derivations for subject *wh*-questions to be permitted by UG, but just one in the case of object *wh*-questions. In Section 2.3, we establish the relevant properties of Mayan languages that, together with this framework, predict the profile and distribution of the agent focus construction in subject *wh*-questions.

2.3 Mayan *wh*-questions

2.3.1 Background on the Mayan language family

In order to understand the profile of agreement in Mayan subject *wh*-questions, we need to first establish certain morphosyntactic properties of Mayan languages, both general to the language family and specific to those languages under discussion. The description of Mayan languages found in this section largely draws on descriptions outlined in Tada (1993); Stiebels (2006); Coon et al. (2014, 2021), and references therein.

Broadly speaking, the Mayan language family consists of roughly thirty languages spoken in southern Mexico, Guatemala, Belize, and Honduras by over six million people (Bennett et al., 2016; Aissen et al., 2017; England, 2017). Though the family is typically divided into six major subgroups, our focus will only extend to the five in (100). The sixth subfamily, namely the Huastecan branch, is quite divergent and is not often discussed in the context of agent focus constructions.

- (100) Mayan language family subgroups (Campbell & Kaufman, 1985)
- a. Yucatecan: Yuctec Maya, Lacandon; Itzaj, Mopan
 - b. Greater Tseltalan: Ch'ol, Yokot'an, Ch'orti; Tsotsil, Tseltal
 - c. K'ichean: Q'eqchi'; Uspantek; Poqom, Poqomchi'; K'iche', Kaqchikel, Tz'utujil, Sakapultek, Sipakapense
 - d. Greater Q'anjob'alan: Q'anjob'al, Akatek, Popti', Mocho'; Chuj, Tojol-ab'al
 - e. Mamean: Mam, Tektitek; Awakatek, Ixil

In general, the Mayan languages are verb initial except for \bar{A} -extracted elements, which appear preverbally. They additionally display an ergative-absolutive agreement alignment. As we see in (70) from Q'anjob'al, the agreement affix closest to the verb, often termed the *Set A* series, cross-references the transitive subject. The agreement affix on the TAM particle, often termed the *Set B* series, cross references the transitive object. In an intransitive clause, as in (101), only the Set B morpheme appears. Set B agreement can therefore be described as controlled by canonically absolutive arguments (intransitive subjects and transitive objects), while Set A is controlled by canonically ergative arguments (namely transitive subjects), despite the fact that no overt case marking appears on the nominals in these examples.

(70) Max-ach y-il-a'.

ASP-B2S A3S-see-TV

"She saw you."

(Q'anjob'al; Coon et al. (2014), p.10)

(101) Max-ach way-i.

ASP-B2S sleep-ITV

"You slept."

(Q'anjob'al; Coon et al. (2014), p.10)

The position of verbal morphemes relative to the verb is shown in the template in (102). Set A morphemes have a fixed position in the verbal template across the language family. Set B morphemes, however, may show up pre- or post-verbally depending on the language. In Q'anjob'al, we see that the Set B morpheme appears preverbally, next to the aspect marker. In Ch'ol, shown in (103), the Set B morpheme is post-verbal.

(102) TAM - (Set B) - Set A - [Root - (Voice) - (Status Suffix)] - (Set B), where Set B has a variable position across the family

(103) *Ch'ol* (Coon et al., 2014, p.13)

a. Tyi y-il-ä-yety.

ASP A3S-see-TV-B2S

"She saw you."

b. Tyi uk'-i-yety.

ASP cry-ITV-B2S

"You cried."

Following the description of Tada (1993), a generalization can be drawn that ties the location of Set B in a language to whether it exhibits the AF construction in subject extraction. Languages with preverbal Set B markers have agent focus in subject extraction contexts, while languages with postverbal Set B markers typically do not. I assume with Coon et al. (2014,

2021), and references there, that the location of Set B morphology in the verb stem tracks a difference in the location of the Set B probe in the clause, and that this variation can be described as a low vs. high absolutive parameter (Aldridge, 2004; Legate, 2008).

High absolutive languages are those in which absolutive agreement is controlled by finite T, so the Set B morpheme is pronounced preverbally. Low absolutive languages are those in which absolutive agreement is controlled by *v*, so the Set B morpheme is pronounced postverbally (assuming that verbs move at least as high as *v*). Evidence for this approach comes from the availability of Set B morphemes in embedded nonfinite clauses. In Ch’ol, Set B agreement surfaces in nonfinite clauses, which is expected if Set B agreement is controlled by *v*, (104a). In K’iche’, a language whose Set B morpheme is preverbal, Set B agreement is not observed in nonfinite clauses, which is expected if Set B agreement is controlled by finite T in that language, (104b).^{6,7}

(104) Set B is sensitive to finiteness in High- but not Low absolutive languages

a. *Ch’ol* - *Low absolutive* (Vázquez Álvarez, 2011, 99)

K-om [j-käñ-ety]
A1-want A1-knowB2

‘I want to know you.’

b. *K’iche’* - *High absolutive* (Can Pixabaj, 2015, 116)

X-u-chap [nu-kuna-x-iik]
PFV-A3S-begin A1S-cure-PASS-ITV

‘She began to cure me.’

(105) Summary of the distribution of φ -probes from Coon et al. (2014)

a. **High-absolutive:** Set B agreement is controlled by finite T

b. **Low-absolutive:** Set B agreement is controlled by *v* in transitives and finite T in intransitives

While the source of Set B differs across languages, there is no reason to suspect that the same is true for Set A agreement. Set A always appears in both finite and nonfinite contexts

⁶Note also that non-finite clauses are argued to be nominalized in Coon et al. (2014) and that Set A marking is also observed in possessed DPs (like genitive agreement).

⁷A complication for this generalization is the fact that Q’anjob’al apparently *does* permit Set B morphology in nonfinite embedded clauses, despite otherwise patterning with high absolutive languages in the location of Set B and the requirement for AF in subject extraction. However, φ agreement induced by T need not be sensitive to what tense value is instantiated by that node. We could imagine a language in which T simply always controls agreement, irrespective of finiteness. Perhaps Q’anjob’al simply is such a language. Additionally, nonfinite embedded clauses in Q’anjob’al also require the agent focus morpheme, a pattern called the “Crazy antipassive”, (i) (Kaufman, 1990; Ordóñez, 1995; Quesada, 1997; Pascual, 2007; Coon et al., 2014). Potentially relevant to understanding this pattern is the fact that the Set B morpheme stands alone as an independent clitic pronoun in (i). This property is also reminiscent of the requirement for (anti)passive in K’iche’ nonfinite embedded clauses.

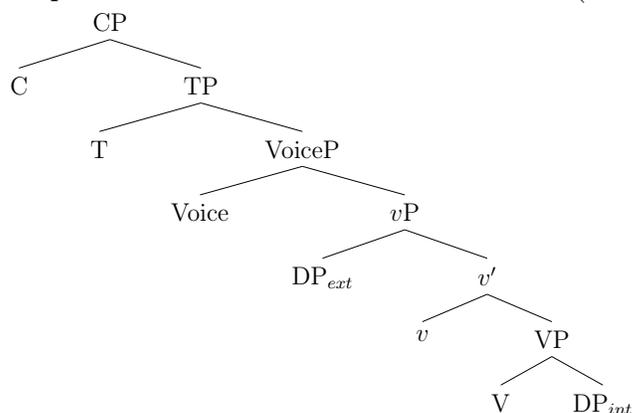
(i) Chi uj [hach y-il-**on**-i]
IPFV be.able.to B2S A3S-see-AF-ITV

‘She can see you.’ (Q’anjob’al; Coon et al. 2014, 180)

and has a uniform position in the verb stem. It seems therefore that Set A must be expounded on a head lower than finite T in both high and low absolutive Mayan languages. Coon et al. (2014) propose that Set A is the exponent of v after a process of feature sharing between v and its specifier. This view requires v to be sensitive to whether its specifier was internally vs. externally merged, however, because Set A only occurs with transitive subjects. If v *always* shared the features of its specifier, we would expect intransitive subjects to yield Set A agreement as well.

In the absence of a general theory of spec-head feature sharing, and in the interest of maintaining the insights of Longenbaugh’s system, I will propose that Set A, like Set B, is a normal downward probing φ -probe on a head between v and finite T. A candidate for this Set A probe is Voice. Ranero (2019) has shown, with evidence from active-passive mismatches in ellipsis, that Mayan languages have a structure like that proposed by Merchant (2013).

(106) Proposed clause structure from Merchant (2013).



Assuming that Voice is the locus of the active-passive distinction, for VP ellipsis to allow active-passive mismatches, it must target a constituent below Voice (or else identity with the antecedent VP would not be met). Merchant has shown for English that the elided constituent may contain the base position of the transitive subject, thus advocating for a view in which Voice c-commands the base position of the external argument in addition to the rest of the verb phrase. Ranero has corroborated similar facts in Kaqchikel, a high absolutive language, so I assume his clause structure is appropriate in general. A Set A probe on Voice could therefore probe downwards and agree with a transitive subject in Spec v P.

An advantage to this approach is that Set A agreement is only predicted to occur in clauses that project a VoiceP. By hypothesis, only clauses that can undergo the passive alternation have a VoiceP. Since the passive alternation requires promotion of an internal argument and demotion of a transitive subject, transitive clauses should project Voice, but unergative/unaccusative clauses should not. This proposal therefore straightforwardly predicts the presence of Set A in finite and non-finite transitive clauses, but its absence in intransitive clauses.

With these assumptions, we are in a position to understand the basic agreement alignment of transitive clauses in high absolutive Mayan languages, which are the focus of our study. Since Set A cross-references canonically ergative arguments while Set B only cross-references absolutive arguments, I propose 1) that ergative is assigned via a dependent case mechanism like that outlined in Section 2.2, except that it is the *higher* of two DPs in v P that gets assigned dependent ergative (Marantz, 1991; Baker, 2014), and 2) that the Set B probe is case

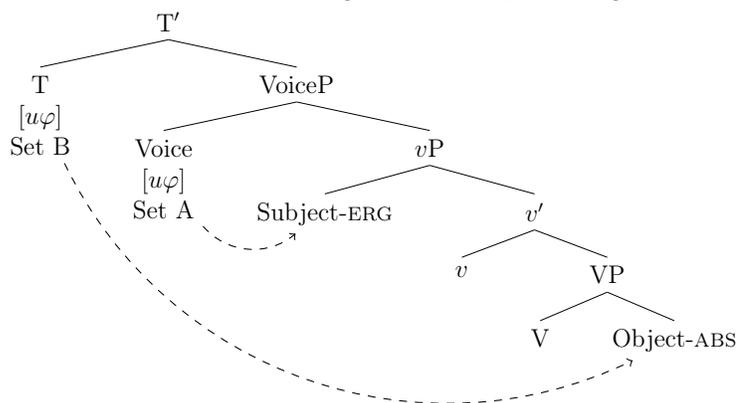
discriminating. Set A, on the other hand, appears not to mind if its closest goal is marked ergative. I therefore propose the following descriptions of these probes.

- (107) a. T's φ -probe agrees with the closest **absolute** argument
 b. Voice's φ -probe agrees with the closest argument

Assuming nothing else happens in the course of the derivation, these assumptions predict that Set A agreement will cross-reference the subject because it is the closest argument to it, while Set B will skip over the subject and agree with the object, which is the closest *absolute* argument to it. I additionally adopt the Weak PIC (108), which makes the object an accessible φ -goal to T until C is merged.⁸

- (108) *Weak PIC/PIC2* (Chomsky, 2001): Given a structure $[_{ZP} Z \dots [_{XP} X [_{HP} \alpha [_{H} YP]]]]$ where H and Z are phase heads, the domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

- (109) If T is case-discriminating, it will skip the ergative subject and agree with the object.



While the basic profile of agreement in non-wh-movement contexts seems to be fairly general to high absolute Mayan languages, there is considerable variation in the profile of agent focus constructions and subject extraction more generally across these languages. Section 2.3.2 introduces some of this variation and establishes what the proposal in Section 2.4 will cover.

⁸Some researchers hypothesize that the object is high in high absolute languages e.g. to be accessible to Agree, and that it is this fact which is responsible for Mayan's apparent restrictions on subject wh-movement (see for example Coon et al. 2014). If they are right, either of two amendments to the present theory is necessary, neither of which affects the predictions of the account. First, if the object raises to Spec *v*P, there needs to be some special feature to license it because the subject already checked the D feature. Alternatively, the object could raise to a higher head, e.g. T. I will remain agnostic about the exploits of the object in transitive clauses, merely noting that if the object *did* move to Spec *v*P, it would have to do so *after* the subject has merged, or else it would prevent the subject from ever adjoining. Tucking in would result in the same relative scope between arguments that I have proposed. Likewise, if the object raised above the head that controls agreement with the subject, its movement would not affect the predicted morphology of a transitive clause. The weak PIC, however, does not provide any theory internal motivation for a high object in Mayan transitive clauses. In the absence of special evidence in favor of a high object, I'll assume it is low.

2.3.2 Mayan AF constructions

Examples (70-73), repeated below, demonstrate the core pattern of interest in certain Mayan languages' wh-questions. These examples are from Q'anjob'al, which can be identified as a high absolutive language by the fact that its Set B marker is preverbal. As we can see, transitive clauses exhibit both Set A and Set B morphology. Object wh-questions have essentially the same verbal morphology as regular transitive clauses. Subject wh-questions, by contrast, lack a Set A marker and have special verbal morphology.

- (70) Max-ach y-il-a'.
 ASP-B2S A3S-see-TV
 "She saw you." (Q'anjob'al; Coon et al. (2014), p.10)
- (71) Maktxel max y-il naq winaq
 who PFV A3S-see CLF man
 "Who did the man see?" (Q'anjob'al; Coon et al. (2014), p.192)
- (72) Maktxel max-ach il-on-i?
 who PFV-B2S see-AF-ITV
 "Who saw you?" (Q'anjob'al; Coon et al. (2014), p.213)
- (73) *Maktxel max y-il ix ix?
 who PFV A3S-see CLF woman
 intended: "Who saw the woman?" (Q'anjob'al; Coon et al. (2014), p.193)

While certain core properties of subject extraction are similar throughout high absolutive Mayan languages, there is some notable variation regarding 1) the use of the AF morpheme outside of wh-questions, 2) the morphological form of the object in these contexts, and 3) the effects of person features on the use of AF and the corresponding agreement alignment. It will therefore take some work to delimit the scope of our investigation and the goals of the proposal.

The main tenet of my proposal is that there is no dedicated "agent focus construction", by which I mean there is no distinct flavor of Voice or *v* that is selected in subject extraction contexts. I propose that the derivation for subject wh-questions exhibited by the relevant Mayan languages often results in the morphology that we observe in (72) simply because the φ -probes in Mayan transitive clauses find different goals in different contexts. In that sense, we will be primarily interested in strategies for subject wh-movement which look *exceptional* compared to constructions found elsewhere in the language. There are some apparent AF-like constructions which do not meet this description and are thus outside the domain of investigation.

In a few high absolutive Mayan languages, e.g. Poqomchi', an AF-like strategy is used in subject extraction contexts that looks identical to the antipassive construction. The AF morpheme in (110) is the same as the morpheme that shows up independently in antipassives. The object appears with an overt oblique marker (glossed RN for *relational noun*), and Set B targets the *subject* instead of the object. These are all hallmarks of antipassive clauses more generally: the normally ergative subject is assigned absolutive when the object is demoted, and is therefore accessible to the Set B probe on T.

- (110) Poqomchi' subject extraction: subject controls Set B+object is oblique = antipassive
 re? hin x-in-b'-uhyu-n-ik r-eh
 the I ASP-B1SG-quiet-AF-ITV 3SG-RN(=OBL)

‘I am the one who quieted him down.’ (Dayley, 1981, p.22)

I will set aside languages like Poqomchi’ for the the most part, assuming with Coon et al. (2021) that such languages do not have a strategy for subject extraction that is distinct from the antipassive. Languages like Poqomchi’ seem to display a pattern shared by some other ergative languages that restrict subject extraction to the antipassive, for reasons that will not be explored here. We will be interested in the Q’anjob’al-type pattern, whose profile in subject extraction contexts is not broadly observed in non-subject-extraction contexts and is distinguishable from an antipassive in multiple ways: 1) by the lack of oblique marking on the object, 2) by not permitting object drop, and 3) by the fact that the AF morpheme is distinct from the AP morpheme. Example (111) shows what a true antipassive construction looks like in Q’anjob’al for comparison. Q’anjob’al is therefore unlike Poqomchi’ in that though it has an antipassive construction, it does not require it in subject extraction contexts.

(111) *Q’anjob’al antipassive: subject controls Set B+object is oblique (and optional)*

Maktxel max maq’-**waj**[-i] (*obly*-in no tx’i’)?
 who ASP hit-AP-ITV 3A-RN CLF dog

‘Who hit the dog?’ (Coon et al. (2014), ex. 60)

Important to note, however is that some languages with the Q’anjob’al pattern for subject extraction, e.g. Tz’utujil, have an AF marker that is homophonous with their antipassive morpheme, as evidenced by the optional oblique marking on the object in (112-113). It is the possibility of a non-oblique object that distinguishes Tz’utujil from Poqomchi’. I therefore assume with Coon et al. (2021) that, in spite of this similarity in verbal morphology, any AF-like construction with a non-oblique argument is distinct from a dedicated antipassive construction, and thus counts as the Q’anjob’al-type pattern of interest. The fact that the AF and antipassive morphemes may be homophonous in a single language will be an important part of the proposal, discussed in Section 2.4.2. It is worth noting that the Proto-Mayan AF suffix, reconstructed by Smith-Stark (1978) as *-(V)n, is often used as the true antipassive, i.e. with demoted objects (see discussion in Stiebels 2006).

(112) *Tz’utujil: agreement with unmarked object permitted in AF construction*

Jar aachi x-**ee**-ch’ey-ow-i jar iixoq-ii’?
 DET man PFV-B3PL-hit-AF-ITV DET woman-PL

‘The man was the one who hit the women.’ (Dayley 1985, p. 349)

(113) *Tz’utujil: agreement blocked with oblique argument in antipassive*

Atet x-**at**-ch’ey-o w-xiin.
 you PFV-B2SG-hit-AP/AF 1SG-OBL

‘You were the one who hit me.’

In sum, the scope of our investigation will be limited to those languages which employ a strategy in subject extraction that is distinct from both an antipassive construction and normal transitive agreement alignment (though such languages’ AF morpheme may also be used in antipassives). Within the languages that meet this description, there is an additional

point of variation regarding the agreement alignment observed in these contexts that will be of interest. In particular, whether the extracted subject is a participant has different effects in different languages. In Q'anjob'al, for example, a focused participant subject obviates the AF construction entirely. In K'iche', a focused participant subject still requires AF, but the Set B morpheme cross-references the *subject* rather than the object.

(114) *Q'anjob'al: focused participant subjects obviate AF*

Ayin max **hin**-maq' no tx'i'.
 PRON1S PFV **A1**-hit CLF dog

'I hit the dog.'

(Coon et al. (2014), p. 223)

(115) *K'iche': Set B cross-references focused participant subject with AF*

In x-**in**-il-ow le ak'al-ab'
 PRON1S PFV-**B1S**-see-AF DET child-PL

"I saw the children." (Davies and Sam-Colop 1990, 531)

A summary from Stiebels (2006) identifying these multiple points of variation across subject extraction in high absolutive Mayan languages is in (117). (This is not a comprehensive list of Mayan languages with AF constructions; notice the lack of Q'anjob'al for example.) Languages whose objects are obligatorily oblique in subject extraction are those whose subject extraction strategy is just the use of the antipassive. Languages with optionally oblique objects in subject extraction are those whose subject extraction strategy is not limited to antipassive clauses but whose AF morpheme is proposed to be homophonous with the antipassive morpheme. Subject agreement in AF constructions generally correlates with oblique marking on the object in these languages, presumably because the Set B probe only targets absolutive arguments.⁹

Within the languages whose subject extraction does not require oblique arguments, i.e. languages with an AF construction that is not the antipassive, we observe variation regarding the controller of Set B agreement like that found in K'iche'. Stiebels uses the notion of *saliency* to describe the variability in Set B realization, suggesting that arguments higher on a person hierarchy are more likely to control Set B agreement.

(116) *Saliency/person hierarchy: 1/2 > 3pl > 3* (Stiebels, 2006, p. 526)

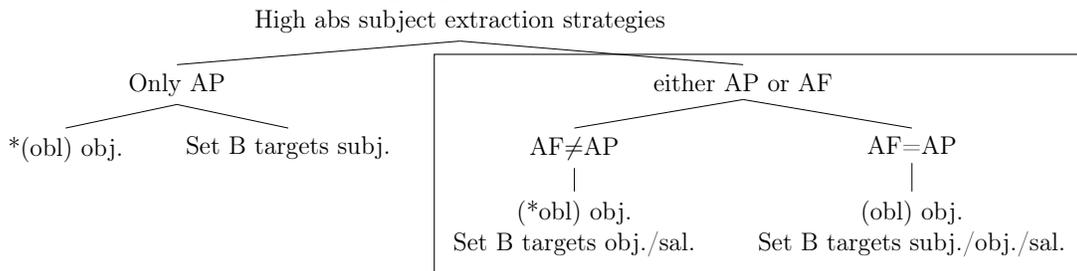
(117) The profile of AF in subject extraction across high absolutive languages. Stiebels (2006)

⁹Stiebels reports from Dayley (1981) that Poqomchi' might be a potential counterexample to the generalization that subject agreement correlates with oblique marking on the object in AF constructions. Apparently oblique marking is optional, but Set B agreement still always targets the subject. However, neither have examples indicating this optionality. The only optionality that they share evidence for pertains to whether the internal argument is pronounced at all.

Language	Set B Agreement in AF	Object morphology in AF
Yucatec	obj	-obl
Tzotzil	obj/subj	-obl
Chuj	obj	-obl
Jakaltek	obj	-obl
Akatek	obj	-obl
Mam	subj (%obj)	+obl
Awakatek	obj/free	-obl
Ixil	obj	-obl
K'iche'	sal	-obl
Tz'utujil	sal/subj	±obl
Sakapultek	sal/subj	±obl
Sipakapense	part/subj	±obl
Poqomam	subj	±obl
Poqomchi'	subj	±obl
Q'eqchi	subj	+obl

Summarizing (117), we can parametrize the space of subject extraction strategies in high absolutive Mayan languages as in (118). There are languages that only make use of the antipassive in subject extraction vs. those that can use either antipassive or a distinct agent focus construction. Amongst the latter category are languages with uniform object agreement vs. salience-based agreement patterns in agent focus constructions. We will be concerned with languages characterized by the boxed portion of (118): i.e. languages that don't require the antipassive to extract subjects, whose agreement profiles show varying sensitivity to person.

- (118) Subject extraction strategies: some languages require the antipassive to extract subjects, others use either the antipassive or a distinct AF construction. Within the latter group (boxed portion), there are languages whose AF morpheme is the same as the morpheme used in antipassives, and languages in which it is a different morpheme.



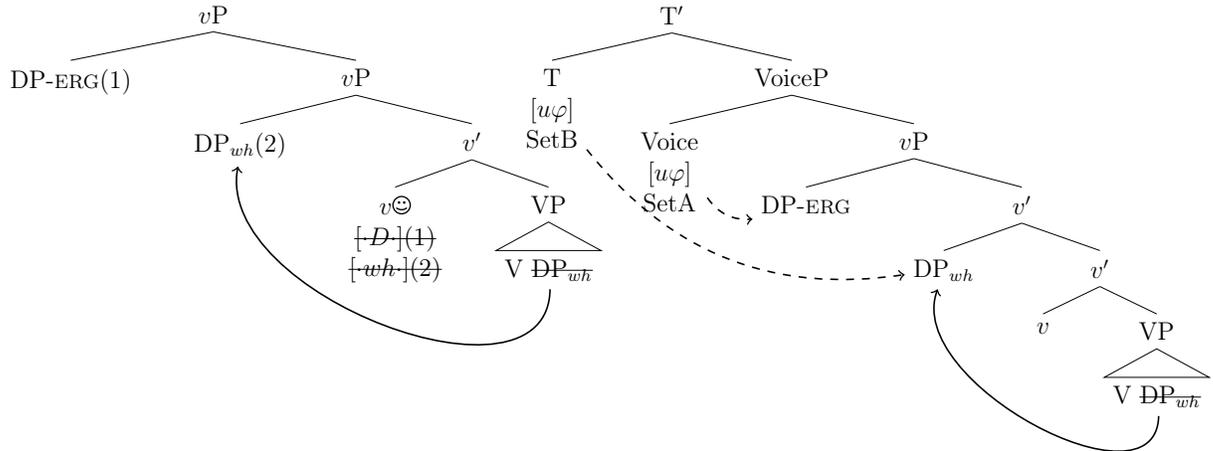
In Section 2.4, I will first demonstrate how the theory in Section 2.2 predicts the profile of subject extraction observed in (70-73). Considering variation in the specifications of the Set A and Set B probes will enable us to understand the typological variation in person effects in these contexts. Lastly, I will compare the derivation of a subject wh-question to the derivation of an anti-passive and show that while the logical structure of each should be different, both derivations have something in common, namely the double application of Agree to the same argument. The ban on redundant Agree in (76) calls for an elsewhere form in both scenarios, which accounts for the fact that some languages' AF marker is identical to the AP marker. The picture that emerges indicates that there is a general strategy for extracting subjects in

these languages, which has varying consequences for Agree due to the specifications of each language’s φ -probes.

2.4 Deriving wh-questions

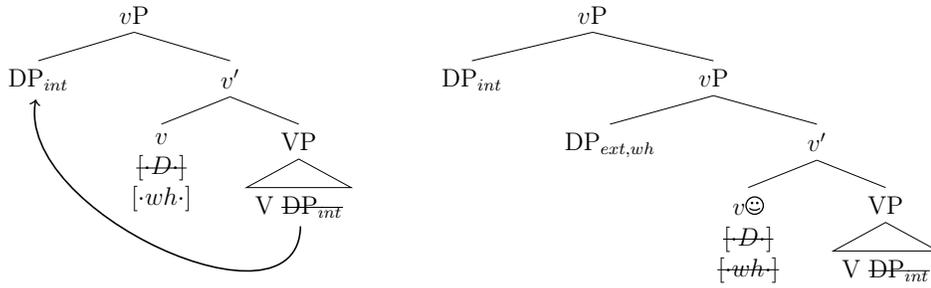
We will now combine the proposed transitive clause structure from Section 2.3.1 with the assumptions about wh-movement from Section 2.2. Starting with object wh-questions, if v has both a requirement for a DP-specifier and a requirement for a wh-specifier, the order in which the subject Merges and the object wh-moves matters. If the object moves first, it will check both $[\cdot D \cdot]$ and $[\cdot wh \cdot]$ and block a transitive subject. Thus the subject must merge first, and the object may move second, tucking in under the subject (before eventually moving to Spec CP). Assuming that ergative case is dependently assigned to the subject, it is accessible to the Set A probe on Voice, but not the Set B probe on T. The Set B probe on T therefore skips the subject and cross-references the features of the object instead. This derivation of an object wh-question therefore predicts the same agreement alignment as that of a regular transitive clause, as is borne out in (70) and (71).

- (119) If the internal argument satisfies all of v ’s features, it must be moved second or else it would block insertion of the external argument \rightarrow regular transitive agreement alignment.



Subject wh-questions, by contrast, are proposed to generate the opposite ordering between subject and object. Since movement of the object checks only a *subset* of the wh-subject’s features, the object is permitted to move first. The subject can then merge second, licensed by the $[\cdot wh \cdot]$ feature, tucking in under the object.

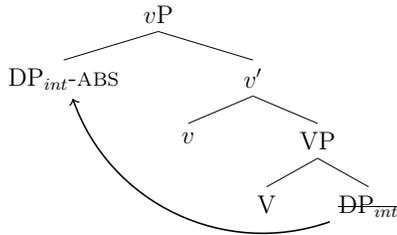
- (120) Subject wh-questions: the object can move first without blocking the subject. The subject merges second, tucking in under the object



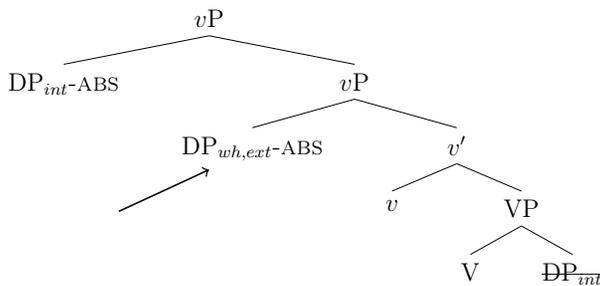
A question now arises, namely what is the case alignment of this clause? And what is the resulting agreement alignment? The derivation starts as an unaccusative clause, which would normally assign absolutive to the object. It ends up as a transitive clause, however, which would normally assign ergative to the subject, except that the subject is now the *lower* of two DPs in *vP* and never c-commands the object.

I propose that both arguments are unmarked for case in (120) because dependent case is only assigned once per domain.¹⁰ Once some element is merged in Spec *vP*, the *vP* domain is evaluated for case. Any arguments that tuck in after case has been assigned are left unevaluated, and therefore unmarked for case.

- (121) Only the outer specifier of *vP* gets evaluated for case.
 a. Step 1: move object. Step 2: evaluate *vP* for case → assign object absolutive



- b. Step 3: merge subject. Case has already been assigned so subject is unmarked (absolutive).

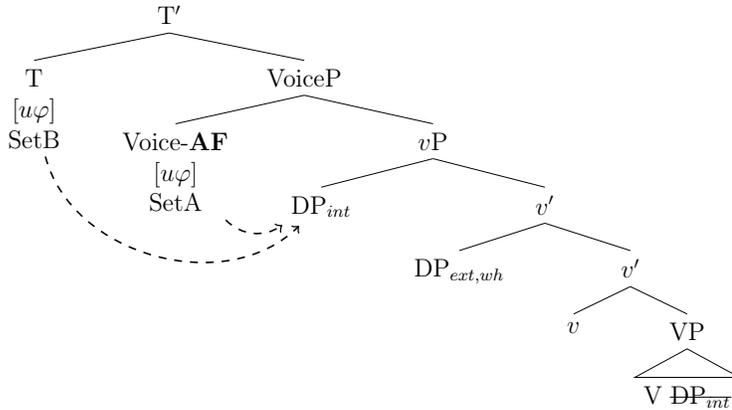


Given that the outer specifier is absolutive, it is accessible to both the Set A probe and the Set B probe, and effectively blocks the features of the inner specifier from getting realized. The condition in (76), repeated below, ensures that such redundant agreement does not result in the object's features being multiply realized. Rather, only the higher of the two instances of Agree is pronounced as such. The lower instance of object agreement is deleted. The failed

¹⁰Alternatively, perhaps dependent case assignment is only triggered by merging with the root.

probe on Voice (where failed = all of its features were deleted) is therefore pronounced as an elsewhere form, namely the agent focus morpheme.

- (76) *Anti-redundancy*: two adjacent φ -probes that cross-reference the same argument X must delete the lower instance of X's features.
- (122) Voice agrees with closest DP, namely the absolutive marked outer specifier of vP . T agrees with the closest absolutive marked DP, which is the same outer specifier of vP . Set A agreement therefore cross-references the same DP as Set B agreement resulting in redundancy, resolved by AF.



This view of the order of operations in subject wh-questions therefore predicts the following observed features of Q'anjob'al subject wh-questions: 1) the lack of agreement with the subject, 2) the presence of an unexpected morpheme on the verb, and 3) the lack of any special oblique morphology on the object.¹¹ This result also lends itself to the kinds of variation we observe in person effects in subject extraction contexts.

2.4.1 The effects of person on subject extraction

We have seen that subject wh-questions are predicted to promote an absolutive object to the highest specifier of vP , which makes it accessible to both the Set A and Set B probes on Voice and T. We demonstrated that at least for a 3rd person extracted agent, this resulted in both probes cross-referencing the object. Only one of these probes is exponed, however; the lower one is deleted and spelled-out as the AF morpheme.

On this view, there is no such thing as a dedicated “agent focus construction” per se. Instead, subject wh-questions result in a derivation in which the controllers of agreement are slightly different than usual, and the hallmarks of the “agent focus construction” are just the spell-out of those effects. In this section, I propose that this premise, combined with a theory of hierarchy effects in agreement, accounts for the range of person effects observed in some languages’ AF constructions.

¹¹We might worry about the order of morphemes. A general problem for any analysis that relates the agent focus morpheme to the head that governs Set A agreement is that Set A is a prefix, while AF is a suffix. I will not discuss morphology extensively, but will assume that valued Set A morphemes can have a different specification for affix-hood compared to the elsewhere form. I will further assume that the status suffix is sensitive to the number of arguments cross-referenced by agreement in a clause, which is why it appears as its “intransitive” allomorph when there is agent focus. For additional discussion, I refer the reader to Coon (2019).

We could imagine, given the derivation in (122), that if either or both of the Set A and B probes were more articulated, we would see hierarchy effects in the agreement alignment of subject extraction contexts. More specifically, if the *lower* of two specifiers of *vP* were higher on the person hierarchy than the higher of the two, a probe that was sensitive to this hierarchy could skip the outer specifier and cross-reference the (absolute) inner specifier of *v*. Depending on which (if any) probes do this, we may or may not get agent focus morphology, and the controller of Set B agreement might vary.

I propose that we see hierarchy-sensitive probing at work in both K'iche' and Q'anjob'al. However, while I propose Q'anjob'al to only have *one* hierarchy-sensitive probe, K'iche' is proposed to have two such probes. As a result, when the subject is a participant in Q'anjob'al, agent focus is obviated because one probe targets the object in the outer specifier of *v*, while the other can skip the object and cross-reference the subject. In K'iche', on the other hand, *both* probes skip the outer specifier and target the participant, thus resulting in an anti-redundancy violation and agent focus, but Set B cross references the subject. (123) and (124) show the general schematic of what agreement pattern accounts for the data in (114) and (115).

(114) *Q'anjob'al: focused participant subjects obviate AF*

Ayin max **hin**-maq' no tx'i'.
 PRON1S PFV **A1**-hit CLF dog

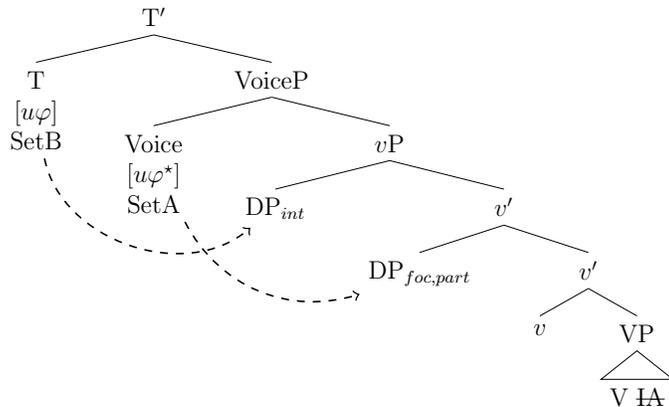
'I hit the dog.' (Coon et al. (2014), p. 223)

(115) *K'iche': Set B cross-references focused participant subject with AF*

In x-**in**-il-ow le ak'al-ab'
 PRON1S PFV-**B1**S-see-AF DET child-PL

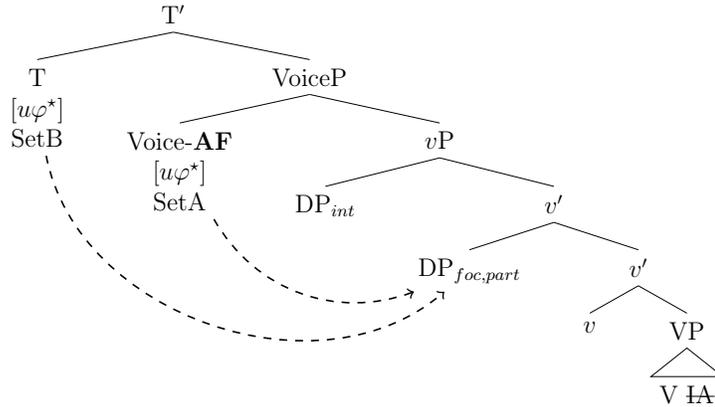
"I saw the children." (Davies & Sam-Colop, 1990, 531)

(123) Q'anjob'al participant subject focus: Voice agrees with closest *participant* DP, namely the absolute marked inner specifier of *vP*. T agrees with the closest absolute DP, which is the outer specifier of *vP*. Set A agreement therefore cross-references the subject and Set B cross-references the object, just as in transitive clauses.



(124) K'iche' participant subject focus: Voice agrees with closest *participant* DP, namely the absolute marked inner specifier of *vP*. T also agrees with the closest absolute

participant DP, which is the same inner specifier of *vP*. Set A agreement therefore cross-references the same DP as Set B agreement resulting in redundancy, resolved by AF.



The literature provides multiple ways to formalize hierarchy sensitive probes so that they target non-local φ -bearing elements. I argue that the descriptions in (125) and (126), which largely follow Béjar & Rezac (2009), are necessary to derive full range of person effects in Q'anjob'al and K'iche' in both subject extraction and non-subject extraction contexts. The conditions in (125) predict that if the lower of two φ -bearing elements has more marked/specified φ -features from the perspective of the hierarchies in (126) than the higher of the two elements, a hierarchy-sensitive probe will copy back the features of both elements. Otherwise, only the features of the structurally higher φ -bearing element will be copied.

(125) “Hierarchy sensitive probes” in Q'anjob'al and K'iche'...

- a. search *omnivorously* (Béjar & Rezac, 2009): they can in principle agree with any φ -element in their scope
- b. copy *coarsely but selectively*:
 - i. *coarse* copying (Preminger, 2014): the probe copies the entire φ -feature set of the goal
 - ii. *selective* copying (Béjar & Rezac, 2009): the probe only copies feature sets that are not entailed by features it has already copied

(126) Feature hierarchies

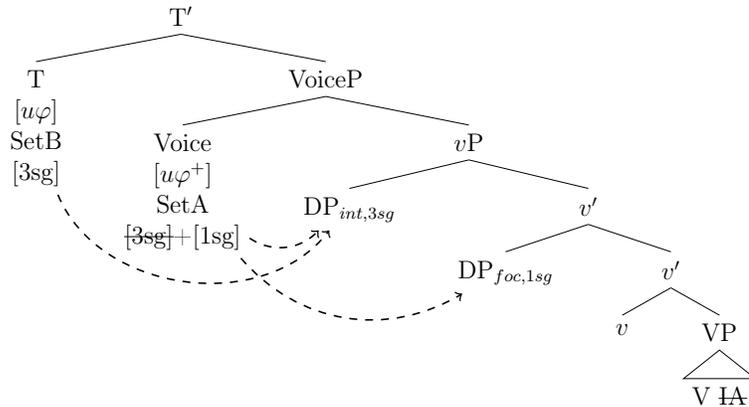
- a. Person hierarchy: 1/2 > 3 (3=unmarked, 1/2=marked; 1/2 therefore entails 3)
- b. Number hierarchy: pl > sg (sg=unmarked, pl=marked; pl therefore entails sg)

(127) demonstrates participant subject extraction in Q'anjob'al (114) with the notion of a hierarchy-sensitive probe outlined in (125) and (126). We can see that the probe on Voice agrees with *both* the subject and the object because the participant argument is the lower of the two phrases. Since agreement involves *coarse* copying, and the second argument's features are not entailed by the first, the probe copies both feature sets, e.g. [3sg]+[1sg] in (127).

The Set B probe, which is a regular, non-hierarchy-sensitive probe, only agrees with the higher argument (the object in this case). At this point, the Set A probe has two feature bundles, namely those of the subject and object, while the Set B probe only has one feature bundle, that of the object. Recall that anti-redundancy rules out multiple exponence of a single argument's features on multiple heads – given that both the Set A probe and the Set B probe have a feature bundle cross-referencing the object, the lower instance of the object's features

must be deleted. If the object were the only features copied to the Set A probe, deleting them should require the probe to be pronounced as its elsewhere (or ‘failed’) form. In (127), however, Voice copied back the features of the subject as well as the object. Voice therefore spells out the features of the subject instead of the AF form, as in a regular transitive clause. I will use the notation φ^+ to identify probes that agree omnivorously.

- (127) Q’anjob’al participant subject focus: Voice omnivorously copies the features of both the subject and the object. T only copies the features of the object. Anti-redundancy deletes the lower instance of the object’s features, leaving Set A to realize the features of the subject.



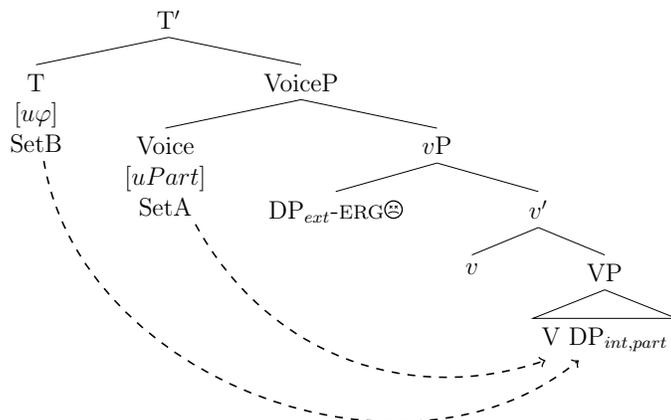
An omnivorous approach to probing is necessary to account for the profile of Set A agreement in regular transitive clauses. If the probe on Voice were relativized to *only* target participants, and to never interact with other phi-bearing elements, we would expect 3rd person subjects never to control Set A agreement in transitive clauses if the object was a participant, contrary to fact. A relativized probe on Voice would skip the subject and target the object. The probe on T would never see the subject because it is marked ergative.

- (70) Max-ach y-il-a’.
ASP-B2S A3S-see-TV

“She saw you.”

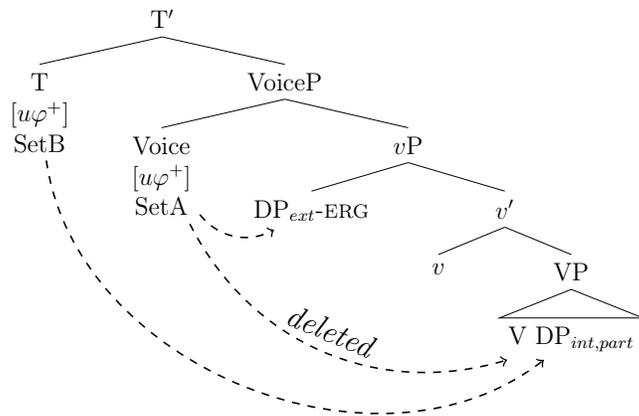
(Q’anjob’al; Coon et al. (2014), p.10)

- (128) Q’anjob’al transitive clauses: the Set A probe cannot be relativized to skip non-participants because it would not be controlled by the subject in (70), contrary to fact.



An omnivorous probe on Voice accounts for the lack of person effects on regular transitive agreement (70) the same way it accounts for the lack of AF in (127). If Voice agrees with *both* the subject and the object in (70), as in (129), but T agrees only with the absolutive object, anti-redundancy deletes the lower instance of the object's features. The only feature set on Set A is that of the subject, which results in the normal transitive alignment in (70). Person effects on the pronunciation of probes in regular transitive clauses are therefore *never* predicted to arise (a good prediction), since the higher argument is ergative and only accessible to one probe, and the features of the lower argument will always be deleted if copied.

- (129) Q'anjob'al transitive clauses: the probe on Voice omnivorously agrees with both the subject and the object. The probe on T skips the ergative subject and copies the features of the object. Redundant agreement with the object is resolved by deleting the lower instance of the object's features, leaving those of the subject to be spelled out as Set A morphology.



The notion of copying that I have outlined is also necessary to explain the following contexts: 1) when the extracted subject is 3pl, and 2) when both the subject and object are participants. In Q'anjob'al, 3pl extracted subjects do not control agreement and require AF (130). When both arguments are participants, however, the clause displays regular transitive agreement alignment.

- (130) Q'anjob'al has no number effects

A heb' x-Ø-'a'-on ayudar.
FOC they COM-B3S-give-AF help

'They were the ones who helped (somebody).' (Toledo, 2012, p.474)

- (131) Ayon-on max-ach ko-tay-ne-j hon.
we-EXCL COM-B2S A1PL-??-CAUSE-TV EXCL

'We were the ones who took care of you.' (Mateo-Toledo, 2008, p. 76)

- (132) *Ayon-on max-ach tay-ne-n-i.
we-EXCL COM-B2S ??-CAUSE-AF-TV

intended: 'We were the ones who took care of you.' (Mateo-Toledo, 2008, p. 76)

These facts come about if Q’anjob’al’s Set A probe is only sensitive to the *person* hierarchy (i.e. it only probes for person features in Béjar & Rezac (2009)’s terms). Since 3pl has the same person features as 3sg, the Set A probe only copies back *one* of the argument’s features, namely the structurally closer one (the object in (130)). That argument is redundantly agreed with by the Set B probe and AF results.

If both arguments are participants (as in (131)), however, both feature sets are copied back to the probe because neither feature outranks the other on the hierarchy: having 1st person features does not entail having 2nd person features and vice versa.¹² When Set B redundantly agrees with the object, anti-redundancy therefore only deletes *one* of the feature sets on the Set A probe. The other feature set is pronounced, which results in transitive agreement alignment. The complete predicted typology of person effects for subject extraction in Q’anjob’al is in (133).

(133) Predictions for Q’anjob’al subject extraction, which has one φ^+ probe, sensitive to person but not number

Subject → Object ↓	3sg	3pl	1sg/pl	2sg/pl
3sg	AF	AF	no AF	no AF
3pl	AF	AF	no AF	no AF
1sg/pl	AF	AF	<i>na</i>	no AF
2sg/pl	AF	AF	no AF	<i>na</i>

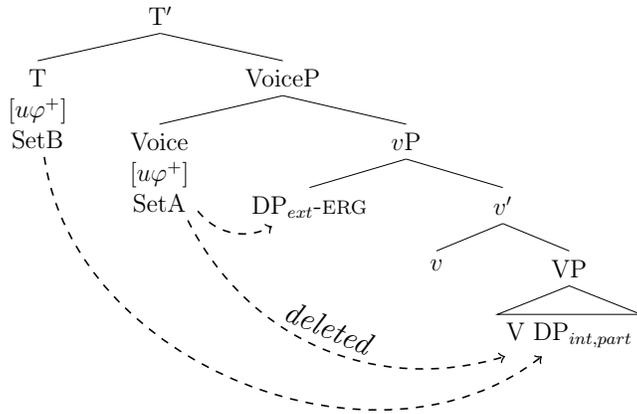
Person effects in K’iche’ can be similarly explained if we imagine that K’iche’ differs from Q’anjob’al in two respects: 1) that the Set B probe on T is *also* omnivorous in addition to the Set A probe on Voice, and 2) that K’iche’ hierarchy distinguishes 3pl from 3sg (Preminger, 2014). In regular transitive clauses, the case on the subject ensures that this property of T’s φ -probe does not affect the predicted agreement alignment. The Set B probe always skips the subject no matter which argument is a participant.

(134) Feature hierarchies

- a. Q’anjob’al: 1/2 > 3
- b. K’iche’: 1/2 > 3pl > 3sg

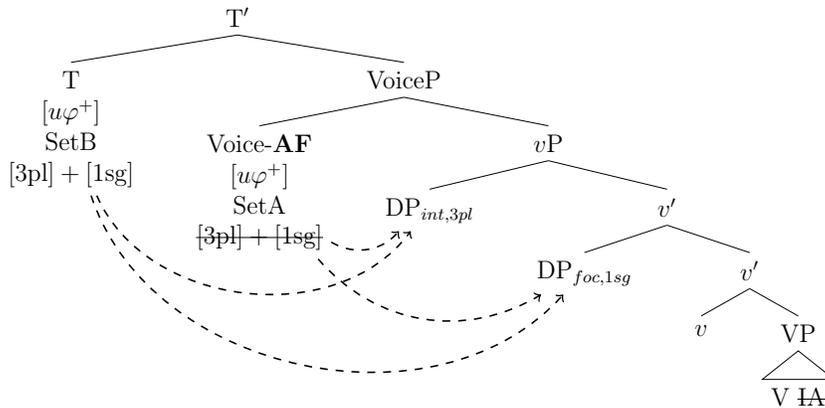
(135) K’iche’ transitive clauses: same as Q’anjob’al. The Set B probe, though omnivorous and hierarchy sensitive, is still case discriminating and only targets the absolutive object.

¹²This notion of the feature hierarchy is a slight departure from Béjar & Rezac (2009)’s original conception. On their view, if 1st and 2nd person features are unranked according to the hierarchy, copying back the features of one should block the probe from copying the features of another participant. On my notion of the feature hierarchy, however, differently marked features are unranked according to the hierarchy *because* they stand in no entailment relation. Therefore, probes can copy back the features of multiple participants.



The fact that the Set B probe is omnivorous makes a difference in subject wh-questions, however, because both arguments are *absolutive* in this case. The features of the subject can therefore be cross-referenced by Set B agreement despite the fact that the subject is structurally lower than the object, so long as it outranks the object on the person and/or number hierarchies. The fact that both probes target both arguments causes anti-redundancy to delete the lower instances of *both* feature bundles, which is resolved by the AF elsewhere form.

- (136) K'iche' participant subject focus: Both Voice and T agree with both arguments, deleting the lower feature sets and resulting in AF. Set B realizes the features of the argument higher on the hierarchy.



Preminger argues against the omnivorousness of the Set B probe in K'iche' because of the following puzzle: how does Set B end up *only* exponing the features of the subject if it has copied the features of both arguments? If the object is 3rd singular, this puzzle is explained by the fact that Set B has no exponent for 3rd singular objects. However, this problem becomes important if we consider an object that is 3rd *plural*, which does have an exponent in the Set B series. In the Kichean language Kaqchikel, Preminger (2014) shows that Set B agreement only realizes the features of the participant in such cases, despite the fact that both arguments' features should be copied onto the probe. Moreover, we do not observe a portmanteau form combining the features of the both arguments.

- (137) Kaqchikel (Preminger, 2014, p. 20)

- a. Ja rje' x-i/*oj-tz'et-ö yin.
 FOC them COM-B1SG/*1PL-see-AF me
 'It was them who saw me.'
- b. Ja yin x-i/*oj-tz'et-ö rje'.
 FOC me COM-B1SG/*1PL-see-AF them
 'It was me who saw them.'

The problem suggested by the lack of 1pl agreement in (137a,b) is partially explained by the notion of feature copying presented here. The sets of features on the probes in (137b), for example, are not lists of individual specifications for person and number, but rather two distinct feature sets: [1sg]+[3pl]. The fact that this set of features is not pronounced with the morpheme associated with [1pl] is not entirely surprising: we would not necessarily expect two distinct feature bundles to have the same VI rule. Nonetheless, we might wonder why the output of Agree doesn't include *both* the morphemes associated with [1sg] and [3pl], given that both are present on the probe.

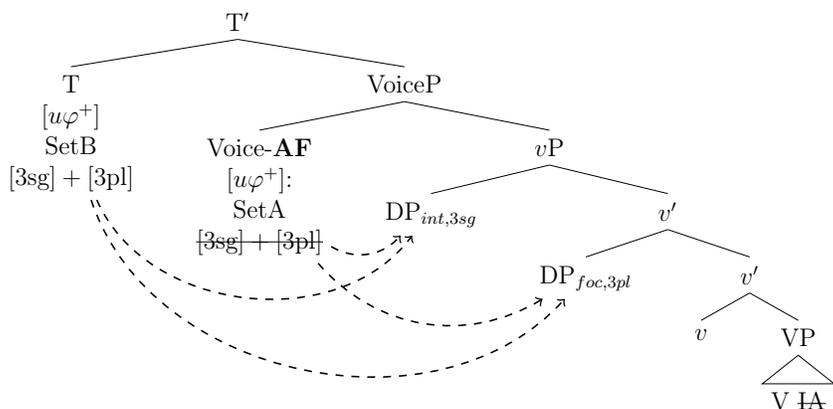
I follow Stiebels (2006); Aissen (2017b); Watanabe (2017); Coon et al. (2021) in attributing the lack of portmanteau agreement on Set B to a morphological restriction on the output of Set B. When two competing feature bundles occur on the same head, the PF interface chooses one or the other, but not both. In this case, given that participants outrank 3pl on the hierarchy, 1sg is apparently chosen as the exponent of Set B.

Another aspect of K'iche' agreement that is relevant is the effect of *number* in addition to person on the agreement alignment we observe in subject extraction. If there are no participants in a clause, but the arguments differ in number, Set B agreement always targets the plural argument. This is the motivation for the proposed elaboration to the K'iche' feature hierarchy, following Stiebels (2006); Preminger (2014). When the 3pl argument is the lower of two specifiers (i.e. the extracted subject), the omnivorous probes on Voice and T copy the features of both, because the lower argument is higher on the number hierarchy (139). AF still results, but Set B cross-references the 3pl *subject*.

(138) Kaqchikel (Preminger, 2014, p. 20)

- a. Ja rje' x-e/*Ø-tz'et-ö rja'.
 FOC them COM-B3PL/*3PSG-see-AF him
 'It was them who saw him.'
- b. Ja rja' x-e/*Ø-tz'et-ö rje'.
 FOC him COM-B3PL/*3PSG-see-AF them
 'It was him who saw them.'

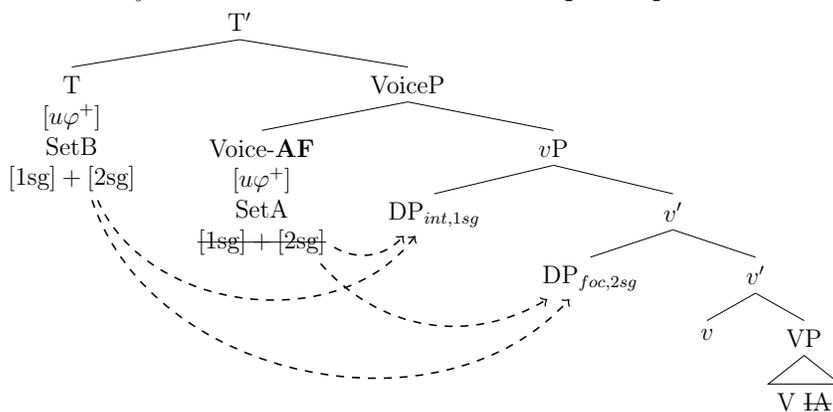
(139) K'iche' subject focus when 1 argument is plural: Both Voice and T agree with both arguments, deleting the lower feature sets and resulting in AF. Set B realizes the features of the argument higher on the hierarchy.



Preminger argues that this sort of pattern advocates for a splitting of the person and number features onto separate probes: the person probe is sensitive to the person hierarchy ($1/2 > 3$) and the number probe is sensitive to a number hierarchy ($pl > sg$). On his view, what would distinguish K'iche' and Q'anjob'al from each other is not their sensitivity to different hierarchies, but the fact that Q'anjob'al only has a person probe, while K'iche' has both person and number probes. I think the present description of these φ -probes is not meaningfully different from Preminger's. On my view, all φ -probes are generalized to copy person and number features, but they may differ in which hierarchy they are sensitive to. On his view, each hierarchy manifests itself as a separate probe. The predictions for the set of facts under discussion are the same: a probe that is specified for the number hierarchy always copies the features of plural arguments, if present. A probe that is specified for the person hierarchy always copies the features of available participants.

Lastly, we want to consider what happens when *both* the subject and the object are participants. Given that the φ -probes on Voice and T are proposed to copy the features of every participant, we would expect AF to arise on account of the redundant agreement with both arguments. However, a question arises as to how to pronounce the output of Set B. If Set B has copied the features of two participants, which one “wins”?

- (140) K'iche': Voice agrees with both participant DPs. T also agrees with both participant DPs. Set A agreement is fully redundant with Set B agreement resulting in redundancy, resolved by AF. But the features of both participants have been copied onto T.



Amongst K'iche' and Kaqchikel speakers, there is variation in how to treat subject extraction

when both arguments are participants. One strategy is to use the agent focus morpheme (as predicted by (140)), and Set B cross-references the object (apparently locality determines which argument’s features are exponed by Set B). Some speakers reject this, however, (shown in (142)), instead preferring to pronounce the clause as a regular transitive clause, with both arguments’ features represented on their respective probes.

(141) K’iche’: some speakers allow AF+Set B when both arguments are participants (expected), others require regular transitive alignment

- a. At x-in-xibi-n pa b’ee.
PRON2S PFV-B1SG-scare-AF PREP path
‘You scared me in the path.’ (López Ixcoy, 1997, 369)
- b. In k-at-in-to’-oh.
PRON1S IPFV-B2S-A1S-help-SS
‘I will help you.’ (Mondloch, 1981, 223)

(142) Some speakers don’t like multiple participant setups with AF in Kaqchikel

- a. *Ja rat x-in/at/∅-ax-an y’in.
FOC you.SG COM-B1SG/2SG/3SG-hear-AF me
intended: ‘It was you that heard me.’
- b. *Ja y’in x-in/at/∅-ax-an rat.
FOC me COM-B1SG/2SG/3SG-hear-AF you.SG
intended: ‘It was me that heard you.’

I will assume that the variation in K’iche’ and Kaqchikel regarding two participant arguments reflects a morphological question about how to resolve PCC-like scenarios, like that discussed in Aissen (2017b). A ban on [1] + [2] bundles on Set B might be circumvented either by simply deleting one of the feature bundles (141a), or by selectively deleting one feature set from each probe, rather than deleting both features sets on the Set A probe (141b).¹³ The full typology of predicted person effects in K’iche’ is in (143).

(143) Predictions for K’iche’, which has two φ^+ probes, sensitive to person and number. (VAR=variation)

Subject → Object ↓	3sg	3pl	1sg/pl	2sg/pl
3sg	AF	AF+S _{agr}	AF+S _{agr}	AF+S _{agr}
3pl	AF	AF	AF+S _{agr}	AF+S _{agr}
1sg/pl	AF	AF	na	VAR
2sg/pl	AF	AF	VAR	na

¹³We could imagine a third language in this typology, where the Set B probe is omnivorous but the Set A probe is not. Such a language would be indistinguishable from K’iche’, except that no speakers of such a language would ever be able to pronounce (141b), given that the Set A probe would have to skip the object to generate (141b). In that sense, it is possible that the speakers who offer (141a) instead are actually the inverse of Q’anjob’al – only one probe is hierarchy sensitive, but it is the higher one rather than the lower one. This possibility does not entirely absolve us of the problem of how to spell out the Set B probe, however, suggesting that perspective on morphological resolution is still necessary.

In sum, Q’anjob’al and K’iche’ were proposed to have hierarchy sensitive probes, which account for their respective sensitivities to person in subject extraction contexts. Q’anjob’al and K’iche’ were proposed to differ in two respects: 1) the number of hierarchy sensitive probes, and 2) the hierarchies they were sensitive to. Q’anjob’al was proposed to only have one hierarchy-sensitive probe, which is only sensitive to the person hierarchy (Q’anjob’al: $1/2 > 3$). K’iche’ was proposed to have two hierarchy-sensitive probes, which are sensitive to both person and number ($1/2 > 3pl > 3sg$). The fact that agreement copies entire feature sets, which may be selectively targeted by anti-redundancy derived the full typology of person effects in both non-subject extraction and subject extraction contexts.

2.4.2 A note on the antipassive

As we established in Section 2.3.2, subject extraction in Q’anjob’al, K’iche’, and other languages with “agent focus constructions” does not pattern with antipassives. Nonetheless, we also observed that in some languages, e.g. Tz’utujil, the agent focus morpheme is identical to the morpheme used in clauses with oblique objects, one of the identifiers of an antipassive clause. In Tz’utujil, “agent focus” and “antipassive” are characterized not by the choice of “Voice” morpheme, but by the morphological realization of the object and the corresponding controller of Set B agreement.

(112) *Tz’utujil: agreement with unmarked object permitted in AF construction*

Jar aachi x-**ee**-ch’ey-**ow**-i jar iixoq-ii?
 DET man PFV-B3PL-hit-AF-ITV DET woman-PL

‘The man was the one who hit the women.’ (Dayley, 1985, p.349)

(113) *Tz’utujil: agreement blocked with oblique argument in antipassive*

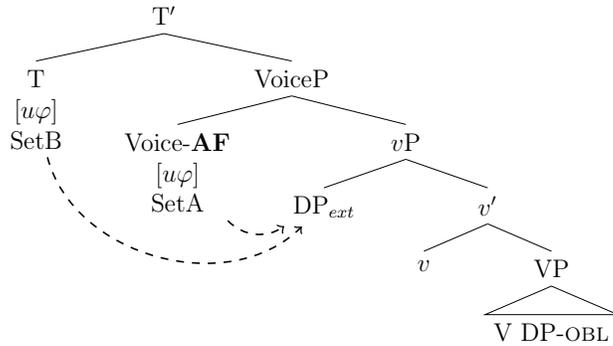
Atet x-**at**-ch’ey-**o** w-xiin.
 you PFV-B2SG-hit-AP/AF 1SG-OBL

‘You were the one who hit me.’

I argue that this is no accident. What subject extraction and the antipassive have in common is the fact that the highest specifier of v is *absolute* in both cases, which makes it accessible to every φ -probe higher in the clause. It is therefore possible that in languages like Tz’utujil, there isn’t really a dedicated “antipassive” flavor of Voice just as there is no dedicated “agent focus” flavor of Voice. Rather, there is optionality in how to realize internal arguments, which has consequences for case and agree. Oblique internal arguments cause external arguments to be unmarked for case. This makes them accessible to both the Set A probe on Voice as well as the Set B probe on T. We therefore expect anti-redundancy to apply in both “agent focus constructions” as well as “antipassives”. Voice should be exponed as the elsewhere form in both contexts.

(144) Antipassives: if the internal argument is no longer a case competitor, the external argument is accessible to both Voice and T \rightarrow anti-redundancy applies, which is resolved

by AF/AP morpheme.



This view of Tz’utujil antipassives corroborates a claim from Polinsky (2017), who notes that it is extremely rare, if attested at all, for an antipassive morpheme to be truly unique in a language. Typically, the antipassive morpheme is syncretic with other Voice or aspect morphemes, suggesting that its distribution is not determined by the choice of a special antipassive Voice head, but is a morphological reflex of other properties of these clauses. If this is generally true, however, it raises questions for the right treatment of antipassives in e.g. Q’anjob’al, whose antipassive morpheme is *different* (-waj) than the morpheme that appears in subject extraction (-on).

(111) *Q’anjob’al antipassive: subject controls Set B+object is oblique (and optional)*

Maktxel max maq’-waj[-i] (*obly*-in no tx’i’)?
 who ASP hit-AP-ITV 3A-RN CLF dog

‘Who hit the dog?’ (Coon et al. (2014), ex. 60)

To understand the Q’anjob’al antipassive, I can imagine either of two views: 1) Q’anjob’al, unlike Tz’utujil, has a dedicated antipassive Voice, or 2) Q’anjob’al does not have a dedicated antipassive Voice, but the morpheme used in antipassives is different from the AF morpheme due to contextual allomorphy. Since an investigation of the Q’anjob’al antipassive is outside the scope of this chapter, I will not offer a solution to this question. I will note, however, that there is some evidence in support of a contextual allomorphy view of the Q’anjob’al antipassive.

As discussed by Mateo-Toledo (2008), the Q’anjob’al antipassive morpheme -waj is not productive – it is apparently only allowed by a small subset of verbs (roughly 30 verbs). By contrast, other Voice morphemes like the passive are fully productive. The availability of oblique internal arguments therefore seems to be lexically determined, and those verbs and aspectual environments which permit oblique internal arguments trigger a different allomorph of the AF/AP morpheme on Voice.

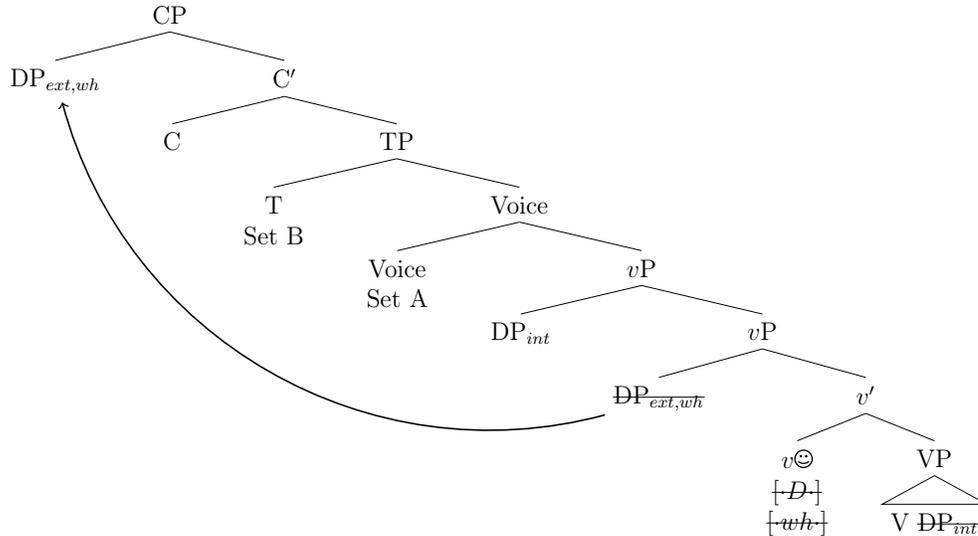
It is therefore possible that the AP morpheme -waj and the AF morpheme -on actually have the same source – they could both be the spell-out of a Voice head which has redundantly agreed with some argument. They end up pronounced differently on account of environmental and lexical factors characteristic of antipassive clauses in Q’anjob’al, which may trigger a different allomorph of the elsewhere form on Voice.¹⁴

¹⁴Another fruitful line of investigation might be the “Crazy antipassive” in Q’anjob’al, mentioned in Section 2.3.1. Certain aspectual environments in Q’anjob’al (e.g. split ergative environments and nonfinite embedded clauses, see Quesada (1997) for discussion) trigger the use of the AF morpheme even when no argument is

2.4.3 Summary

This section has proposed that subject wh-questions in the relevant high absolutive Mayan languages are derived as diagrammed in (145). Unlike object wh-questions or non-wh-transitive clauses, subject wh-questions make the object the most local φ -goal to every agreement-inducing head in the clause. There is nothing *wrong* with this derivation, but it has consequences for the agreement alignment observed in subject questions compared to other clauses.

- (145) Subject wh-questions: the object can move first without blocking the subject. The subject merges second, tucking in under the object before eventually moving to Spec CP.



When the subject is lower on the person/number hierarchy than the object, this configuration results in a *subject-anti-agreement* effect. The object satisfies both of the Set A and Set B probes because it is more local to them. This redundant agreement with the object is ruled out by (76), and is resolved by deleting the copy of the object's features on Voice, and pronouncing Voice as an elsewhere form, namely the AF morpheme.

- (76) *Anti-redundancy*: two adjacent φ -probes that cross-reference the same argument X must delete the lower instance of X's features.

When the subject is *higher* on the person/number hierarchy than the object, the profile of the Set A and Set B probes determines the observed agreement alignment. If one probe but not the other is specified such that it can agree with the non-local subject, this configuration obviates AF morphology entirely (as we saw for Q'anjob'al). That is because anti-redundancy doesn't delete *all* of the features on Voice – Voice was able to copy back both the features of the subject and the object, while T only copied the features of the object. The lower instance of the object's features are deleted by anti-redundancy, but the subject's features are still there, and are thus pronounced as normal subject agreement.

- (114) *Q'anjob'al: focused participant subjects obviate AF*

extracted. Studying the case and agreement profiles of those contexts might bring them within the purview of the treatment of AF in this chapter, but I leave that to future research.

Ayin max **hin**-maq' no tx'i'.
 PRON1S PFV **A1**-hit CLF dog

'I hit the dog.'

(Coon et al., 2014, p.223)

If both probes are able to target the subject in these cases, however, anti-redundancy should delete *both* feature bundles on Voice, and we therefore expect AF morphology to appear. The remaining pronounced probe pronounces the features of the argument that is higher on the person/number hierarchy, namely the *subject* in this case, which is what we observed in K'iche'.

(115) *K'iche'*: Set B cross-references focused participant subject with AF

In x-**in**-il-ow le ak'al-ab'
 PRON1S PFV-**B1**S-see-AF DET child-PL

"I saw the children." (Davies & Sam-Colop, 1990, 531)

If this analysis is right, it supports the view that Agree can apply multiple times, and that each instance of agreement is separately represented on the probe. We never observe multiple agreement pronounced on a single head, but the effects of multiple Agree are detectable in two contexts: 1) in the lack of person effects in regular transitive clauses, where one argument is ergative and the other is absolutive, and 2) in the presence of person effects in subject extraction contexts, where both arguments are absolutive. In regular transitive clauses, only the Set A probe can agree multiple times, given that the Set B probe can only target absolutive arguments. Anti-redundancy ensures that Set A only ever realizes the features of the argument that is inaccessible to Set B. In subject extraction contexts, both arguments are in principle accessible to both probes. If both can agree multiply, anti-redundancy leads to multiple deletions. Even though morpheme competition leads to pronunciation of only the subject's features in (115), the fact that the probe agreed with *both* the subject and the object is what causes all of the features on the Set A probe to delete, leading to the pronunciation of the elsewhere form (AF).

In sum, the "agent focus" construction is logically and lexically indistinct from a regular transitive clause. The features on the arguments affect their relative accessibility to Agree in different contexts on account of the order in which they are introduced in a derivation. A similar logic can be used to analyze the antipassive, thus accounting for the common use of the AF morpheme in both contexts.

2.5 When agent focus does not appear

As described by Coon et al. (2021) and references there, there are three environments that obviate the requirement for agent focus in subject extraction, which are not already covered by the effects of person discussed in Section 2.4.1. These environments include: 1) NP objects, 2) anaphoric objects, and 3) multiple fronting.

I argue that each of these environments is predicted not to have the derivation in (145) due to properties inherent to binding and the categories of Merge features on *v*. Hence they are not predicted to result in the agent focus morphology and agreement alignment. As a result, I propose that these special cases in fact provide evidence for the approach to subject extraction taken here.

2.5.1 NP objects

It has been observed for K’iche’ that subject extraction is permitted without the agent focus construction if the object is an NP rather than a DP. In (146), the subject can extract and control Set A agreement as long as the object has no overt determiner.

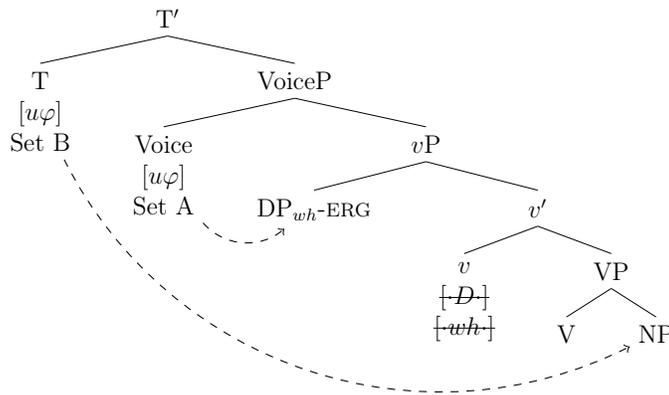
(146) No AF with NP objects (K’iche’; Aissen 2011:12)

Jachiin x-u-loq’ (*rii) uuq?
 WH PFV-A3S-buy DET cloth

‘Who bought the cloth?’

Assuming with Coon et al. (2021) that the object in (146) is an NP rather than a DP, the derivation in (145) that leads to agent focus should never obtain. The reason for agent focus in other contexts is that the object checks v ’s $[\cdot D\cdot]$ feature instead of the subject. However, if the object is *not* a DP, it cannot move to Spec v P and check a $[\cdot D\cdot]$ feature. In this situation, the derivation in (147) is the only one available for a subject wh-question because only one argument, namely the subject can check the $[\cdot D\cdot]$ feature on v .

(147) NPs don’t satisfy D features, so the regular transitive agreement alignment occurs even in subject wh-questions.



The agreement alignment in (146) is still that of a regular transitive clause despite the fact that the object’s category is different than usual. NP objects still control overt Set B agreement in the analogous (148), which follows under the following two assumptions: 1) NPs are case competitors, and 2) NPs are accessible to φ agreement.

(148) NP complements still control set B (Pascual, 2007; Coon et al., 2021)

Ma jun achi taj k-e’-u-b’oq alaj taq chee’
 NEG INDF man IRR INC-B3PL-A3S-uproot DIM PL tree

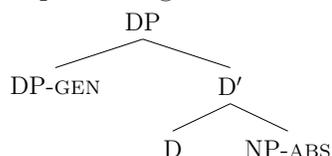
‘It’s not a man that is uprooting little trees.’ (K’iche’; Aissen 2011, 12, citing López Ix-coy 1997)

The conjecture that NPs can control φ -agreement requires a structure for nominals in which φ -features are structurally contained within the D layer of nominals (Carstens, 1991; Ritter,

1991, 1993; Danon, 2011; Harbour, 2011; Fong, 2021, cf.). Thus, φ -agreement does not depend on the presence of a D head because a determiner-less nominal may still have φ -layers, as evidenced by the plural morphology on the determiner-less object in (148).

It is additionally important that the non-DP object in (148) is a case competitor. If the subject were absolutive, it should control *both* Set A and Set B agreement and result in AF morphology. The fact that it doesn't suggests that the subject is still logically ergative, and is thus only accessible to the Set A probe. In support of this analysis, note that Set A marking is used in the nominal domain to cross-reference possessors as well as in the clausal domain to cross-reference ergative subjects, which suggests some unity between ergative subjects and DP-internal possessors. This would be expected if Set A morphology were always the head marking exponent of a dependent ergative/genitive case: assigned v P-internally for transitive subjects, and DP-internally for possessors (Marantz, 2000; McFadden, 2004; Colley, 2015, cf.). If genitive is a DP-internally assigned dependent case, the NP possessee inside the DP must count as a case competitor for the DP possessor.

(149) Dependent genitive case inside nominals: NP must be a case competitor



In summary, NP objects obviate the agent focus construction for the following reason: though NP objects control agreement and figure into dependent case assignment, they cannot check v 's [$\cdot D$] feature. Therefore, subject wh-questions with NP objects have the same derivation as transitive clauses, which results in the same agreement alignment as that of a transitive clause.¹⁵

2.5.2 When the subject binds into the object

When a wh-moved transitive subject binds into the object, the resulting clause may have normal transitive agreement alignment instead of AF. In some languages, like Q'anjob'al, AF is in fact ruled out in these contexts. An AF construction with a possessed object requires non-coreference between the subject and object in (150c).

(150) No AF with Reflexive objects or Extended reflexive objects

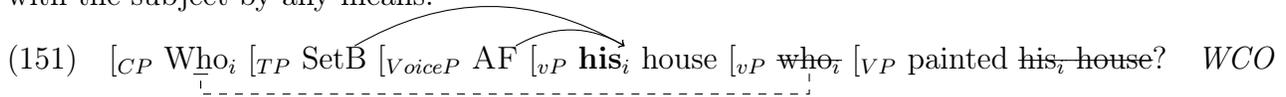
- a. Maktxel max y-il **s-b'a?**
 who PFV A3S-see A3S-self

“Who saw herself?” (Q'anjob'al; Coon et al. 2014, 225)

¹⁵Some might worry that making the feature on v specified for DPs was ad hoc. However, this is a necessary component of the logic of c -selection. If we want heads to be able to c -select elements at all, we need to posit categorial features that can be checked by merging relevant elements. We know for a fact that v can merge with DPs so the most conservative assumption is to posit a [$\cdot D$] feature, which by definition is only satisfiable by DPs. If we wanted v to also c -select for NPs, we would need to posit an additional feature *Merge NP*, which is currently unmotivated given the behavior of NPs in subject extraction. Positing such a feature would also predict that NP objects raise more generally in transitive clauses, which would require investigation (note that NP objects would be exceptional this way – movement of DP objects would be blocked by DP subjects in Spec v P).

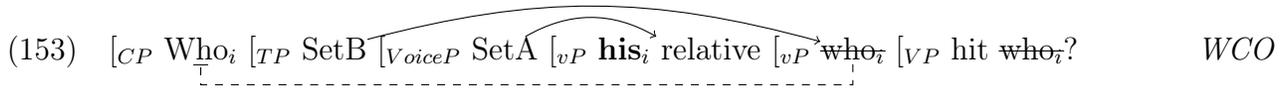
- b. Maktxel max s-bon **s-na?**
 who PFV A3S-paint A3S-house
 ‘Who_i painted his_{i/*j} house?’ (Q’anjob’al; Coon et al. 2014, 226)
- c. Maktxel max bon-on **s-na?**
 who PFV paint-AF A3S-house
 ‘Who_i painted his_{*i/j} house?’ (Q’anjob’al; Coon et al. 2014, 226)

There are two features of (150) that need to be explained: 1) the fact that agent focus corresponds to obligatory non-coreference between the subject and object, and 2) the fact that (150a,b) can be derived without agent focus. The first puzzle is readily explained by the theory. In agent focus constructions, the subject never c-commands the object at any stage of the derivation, and crosses the object when it \bar{A} -moves to Spec CP. This derivation violates Principle A if the object is an anaphor, and violates weak crossover (WCO) if it is coreferent with the subject by any means.¹⁶



Larsen (1987) shows that in K’iche’, which shares the Q’anjob’al pattern in (150) (Hou, 2013), there is obligatory non-coreference between the subject and object in an analogous object wh-question (152), which can likewise be explained by WCO. On the present theory, WCO is predicted for both subject and object wh-questions when the wh-word is coreferent with the other nominal, because both derivations require the wh-word to move past the other nominal (i.e. both derivations check the [*wh*] feature second, making the wh-phrase an inner specifier of *v*). In an agent focus construction, the wh-subject moves past the non-wh-object as in (151), resulting in a WCO violation if the two nominals are coreferent (75c). Object wh-questions are regular transitive derivations, in which the object is the lower specifier of *vP*, and moves past the subject en route to Spec CP. This again results in a WCO violation if the two nominals are coreferent.

- (152) jachin_i x-Ø-u:-ch’ay ri: r_{j/*i}achala:l
 who PFV-3B-3A-hit the his/her_j-relative
 ‘Who_i did his/her_{j/*i} relative hit?’ (Larsen, 1987, p. 46)



The present theory therefore correctly predicts an AF derivation to converge only if there is no coreference between the subject and the object. This raises an immediate problem, which is that subject wh-questions like (150a,b) seem like they should never be generated. All else being equal, the syntax predicts subject wh-phrases in (150a,b) to be merged after the object

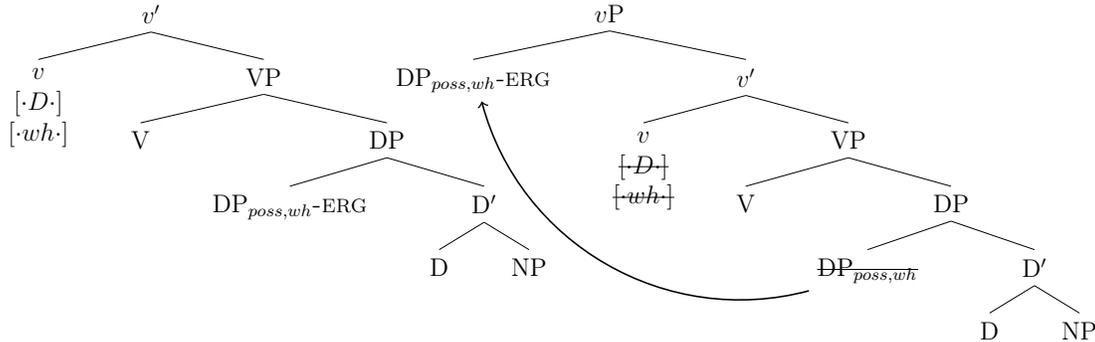
¹⁶It is crucial here that the object cannot reconstruct under the subject. I imagine that the object does not reconstruct because it moved before the time at which the subject was merged, so its movement chain did not actually cross the subject. My intuition is that if the subject is c-commanded by the head of a movement chain that did not cross it, LF treats the tail of that chain as also structurally higher than the subject, even though the tail of the chain ends up lower in the syntax (due to countercyclic Merge). This is an interesting topic for future research.

raises, which leads to AF (and a Principle A violation if the object is an anaphor). Subsequent \bar{A} -movement of the subject leads to a WCO violation because it crosses the coreferent object.

One possible explanation for the existence of examples like (150a,b) is to propose that the conditions requiring object movement in subject questions are sensitive to binding needs. So while UG chooses the derivation in (98) for subject wh-questions more generally in high absolutive Mayan languages, it can alternatively choose the English-like derivation in (97) if the object needs to be bound by the subject. This suggestion has a bit of a look ahead problem, but is in line with a proposal from Coon et al. (2021) that object reconstruction for binding purposes may affect agreement.

Alternatively, we could imagine that reflexives and extended reflexives don't behave like canonical objects for some other reason. For example, Coon et al. (2014) suggest that reflexive arguments incorporate onto the verb and therefore never move to Spec v P. Alternatively, following Rodrigues (2010), it is conceivable that the apparently transitive clauses corresponding to (150a,b) are actually derived by possessor raising to subject position, followed by wh-movement. Notice that the reflexives and extended reflexives contain no overt possessive pronouns, despite exhibiting Set A agreement with a possessor. On the possessor raising approach to (150a,b), this is because DP-internal Set A agrees with the *trace* of the moved possessor.

- (154) Possessor raising to external argument position: wh-marked possessor raises and satisfies all the features, otherwise doesn't get a transitive theta role \rightarrow transitive agreement alignment



Before pursuing an explanation of examples (150a,b), however, it is important to note that the distribution of AF in examples like (150) varies from language to language. Q'anjob'al rules out AF in (150a,b), while Chuj (another member of the Q'anjob'alan branch) allows AF optionally in (150a,b). Other languages have patterns somewhere in between these two by allowing or requiring AF in one environment but not the other.

- (155) Subject wh-questions when the subject binds the object. (Hou, 2013)

Language	Simple reflexive objects	Extended reflexive objects
K'iche', Q'anjob'al	*AF	*AF
Q'eqchi, Jakalteq	*AF	(AF)
Chuj	(AF)	(AF)
Tz'utujil	(AF)	*(AF)

- (156) Chuj has optional AF for reflexive and extended reflexive objects (Hou, 2013)

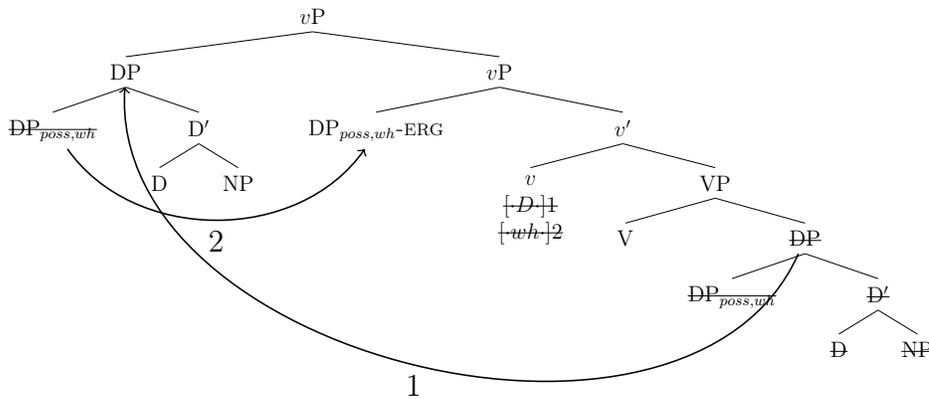
- a. Mach ix- \emptyset -s-b'ik' s-k'ap?
 who ASP-B3SG-A3SG-wash A3SG-hand

- ‘Who washed his own hands?’
- b. Mach ix-Ø-b’ik’an s-k’ap?
 who ASP-B3SG-wash-AF A3SG-hand
 ‘Who washed his own hands?’

Based on evidence from adverb placement and the distribution of pronouns in other contexts, I will argue that bound objects may have different properties in different languages and in different contexts. Some have an incorporation strategy, like that proposed by Coon et al. (2014), which obviates AF. Some have a possessor raising strategy, like that proposed by Rodrigues (2010), which may or may not obviate AF depending on the order of operations. Different combinations of these options for reflexive and extended reflexive objects predicts the typology in Table 155.

Since I imagine WCO to be active in all of these languages (though future research should confirm this), the appearance of AF in some languages without an apparent WCO violation might come as a surprise. However, I argue that this is permissible on a possessor raising theory of (150a,b), given that the order of operations in such a derivation is not fixed by UG. We could imagine the derivation in (154), in which the wh-possessor moves first, saturating both [*D*] and [*wh*] and blocking object movement. Alternatively, we could imagine that the object moves first, followed by subextraction of the wh-possessor, which tucks in under the object (Richards, 1997).

- (157) Alternative possessor raising construction for wh-subjects: UG doesn’t specify whether to raise the DP object or the wh-subject first.



The derivation in (157) is expected to yield AF morphology, but is *not* expected to cause a WCO effect when the transitive subject/possessor wh-moves to Spec CP, on account of it crossing a *copy of itself* rather than a coindexed element. Thus, the AF morphology in Chuj subject questions when the subject binds the object could be generated by a possessor raising account.

At this point, I have mentioned two possible theories of subject wh-questions when the subject binds the object: 1) reflexives incorporate onto the verb and don’t move to Spec *vP* (Coon et al., 2014), and 2) transitive subjects in (150a,b) are raised possessors (as in e.g. (154)). Within the latter proposal, I have demonstrated that UG gives two options for such

a derivation: one leads to transitive agreement alignment (154), the other leads to AF (157). Looking at the behavior of binding in Chuj transitive clauses suggests that both theories of bound objects are viable. Moreover, the space of variation in the distribution of AF predicted by these binding strategies is borne out in (155).

Adverb placement in Chuj advocates for Coon et al. (2014)’s incorporation approach to reflexive objects. When Chuj chooses the AF strategy for subject questions, adverbs are permitted between the verb and a reflexive object (158b). When the verb has transitive agreement alignment, however, adverbs may not appear between the verb and the reflexive object, which is explained if the object has incorporated onto the verb in (158a).

(158) AF has consequences for adverb placement in Chuj (Hou, 2013)

- a. Mach s-mak’ (*ewi) s-b’a?
 who A3S-hit yesterday A3S-self
 intended: ‘Who hit himself yesterday?’
- b. Mach mak’-an (ewi) s-b’a?
 who hit-AF yesterday A3S-self
 ‘Who hit himself yesterday?’

However, evidence from word order and the distribution of pronouns in regular transitive clauses indicates that Chuj also has a possessor raising strategy for bound objects. I propose that the possessor raising strategy is available in general in Chuj and Q’anjob’al, but has variable morphological effects in subject extraction depending on the choice of (154) vs. (157).

Royer (2020) has argued that the distribution of pronounced antecedents to possessive pronouns in Chuj is conditioned in part by linear order rather than solely by structure (he also claims that similar facts are corroborated in Q’anjob’al). On my view, this is because the possessive pronouns and their antecedents are related by movement, and spell-out prefers to realize the left-most copy of the movement chain.

The basic puzzle from Chuj that Royer presents can be found in (159). In general, Chuj is a VOS language, as is evident from (159a) where there is non-coreference between the subject and object. Both the subject and object in this case contain a clitic like element *ix* inside the noun phrase. In (159b), however, coreference between the subject and object deletes one of the instances of *ix*, which he argues advocates for the demonstrated re-bracketing of the components of each argument. In (159b), Royer argues that the R-expression is pronounced inside the object as a possessor, and the subject is null.

(159) *Chuj* (Royer, 2020)

- a. Ix-s-chonh [s-wakax ix] [ix Ana].
 PFV-A3-sell A3-cow CLF.PRON CLF Ana
 ‘Ana₁ sold her_{2/*1} cow.’
- b. Ix-s-chonh [s-wakax ix Ana] [∅].
 PFV-A3-sell A3-cow CLF.PRON Ana
 ‘Ana₁ sold her_{1/*2} cow.’ (Lit. ∅ sold Ana’s cow)

Adverb tests support the proposed bracketing in (159b). While adverbs can typically appear between the subject and the object, as in (160a), they cannot appear between the R-expression and the apparent object in (160b), which advocates for its treatment as a genuine DP-internal

possessor. Thus there is nothing pronounced in subject position in (160b), despite the translation as a transitive clause with an extended reflexive object.

(160) Adverb placement (Royer, 2020)

- a. S-b'o' tek (ewi) **waj Xun** (ewi).
 A3-make meal (yesterday) CLF Xun (yesterday)
 'Xun made the meal yesterday.'
- b. S-b'o' s-tek (*ewi) **waj Xun** (ewi).
 A3-make A3-meal (*yesterday) CLF Xun (yesterday)
 'Xun_i made his_i meal yesterday.' (Lit. *∅ made Xun's meal yesterday*)

This effect is also observed when a possessed object is wh-moved. The possessor/transitive subject is pronounced inside the wh-phrase instead of in the usual post-verbal subject position.

- (161) [Ha s-mam **waj Xun**] ix-y-il-a'.
 FOC A3-father CLF Xun PFV-A3-see-TV
 'Xun₁ saw his₁ father.' (Lit: *∅ saw Xun's father*) (Royer, 2020)
- (162) *[Ha s-mam] ix-y-il-a' **waj Xun**.
 FOC A3-father PFV-A3-see-TV CLF Xun
 intended: 'Xun₁ saw his₁ father.' (Royer, 2020)

It looks like the only context in which we get to see the transitive subject pronounced separately from the extended reflexive object is in subject wh-questions. With or without AF, the possessor/transitive subject appears preverbally in subject questions, and the extended reflexive object appears post-verbally (156).

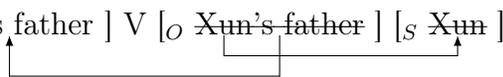
- (156) Mach ix-∅-s-b'ik' s-k'ap?
 who ASP-B3SG-A3SG-wash A3SG-hand
 'Who washed his own hands?'

This result would be puzzling if we thought that the null subject in (159b) and (161) was generated in subject position, because we would expect to see a Condition C effect in (159b) and a strong crossover effect in (161). The R-expression inside the object in (159b) is presumably c-commanded by the position of the subject, and crosses it when it wh-moves in (161).¹⁷

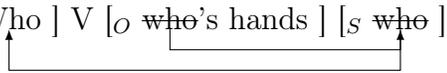
If the null subject and the overt possessor in (159b) and (161) are related by movement, however, Condition C and strong crossover worries do not arise, and (159b) and (161) are correctly predicted to be good. The possessor can raise to subject position, and the object can either stay in situ in (159b) or remnant move in (161). The fact that the possessor is pronounced in the positions that we observe it could indicate a condition on spell-out. The proposed logical structure of (159b) and (161) are in (163).

¹⁷Royer nonetheless proposes that the null subject is a null pronoun coindexed with the possessor, but he proposes that the object A-moves to a higher position in regular transitive clauses, which obviates the Condition C effect. The subject is unpronounced due to a condition on cataphora which deletes the second instance of the clitic-like pronoun. This account, however, depends on objects c-commanding subjects in Chuj, which is not taken for granted on my approach.

- (163) a. V [O Ana's cow] [S Ana] *transitive clause*

- b. [Xun's father] V [O Xun's father] [S Xun] *object focus*


Subject wh-questions as in (156) may have the same logical structure as (163b), but the subject wh-phrase wh-moves to a preverbal position.

- (164) [Who] V [O who's hands] [S who] *subject wh-question*


What transitive clauses, object wh-questions, and subject wh-questions with extended reflexives all have in common is that the left-most copy of the possessor is pronounced. In transitive clauses, the possessor is pronounced in situ, inside the object because the base word order is VOS. In object wh-questions, the possessor is pronounced in the moved wh-phrase for the same reason. In subject wh-questions, the possessor is pronounced in its derived position, because that position is left-most in the clause.

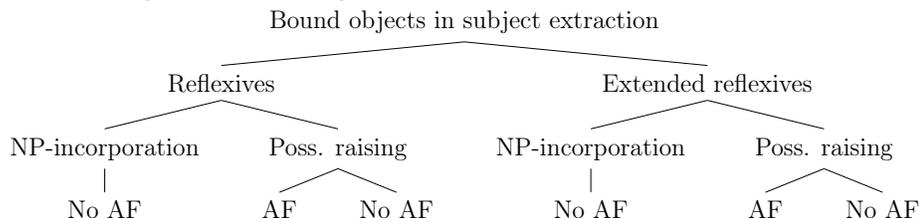
To summarize, it looks like Chuj has access to a possessor raising construction in addition to a reflexive incorporation strategy. Both of these strategies are in principle compatible with subject extraction derivations with no AF. In both cases, the object can stay in situ, either because it has incorporated onto the verb or because the subject moved and blocked it, which allows the subject to control Set A agreement (note that NP objects still act as case competitors, see Section 2.5.2).

However, the possessor raising strategy might also correspond to AF morphology if the possessor raising derivation in (157) is chosen. In (157), the object c-commands the subject and thus controls agreement with Voice and T, resulting in AF. However, the extracted subject does not violate WCO because it crosses a trace of itself in the object rather than a separate coindexed pronoun.

Does this picture account for the full space of variation? In principle, yes, though the theory would have to be tested further in each language for independent evidence (e.g. adverb and word order tests). Given two strategies for realizing bound objects: incorporated vs. free; and two strategies for deriving possessor raising constructions: AF vs. no AF; and two kinds of bound objects: reflexive vs. extended reflexives, we expect multiple points of variation to arise.

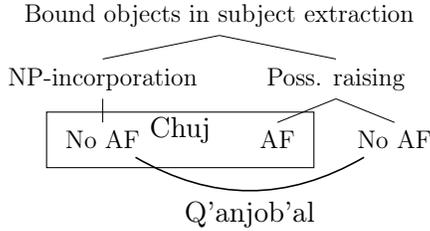
Only having incorporation but not possessor raising predicts no AF. Having possessor raising but only the one in (154) likewise predicts no AF. Having possessor raising and also permitting (157) predicts optional AF. Depending on which of those options a language has, whether it applies them wholesale to both reflexives and extended reflexives vs. just one or the other should predict the mixed profiles.

- (165) Predicted distribution of AF in subject extraction for different kinds of bound objects and strategies for binding them.



For languages that treat reflexive and extended reflexive objects the same, we expect languages like Q'anjob'al, K'iche', and Chuj, where AF is either optional or ruled out across the board when the extracted subject binds the object.

(166) When languages do not distinguish reflexive vs. extended reflexive objects.



For languages that treat reflexive and extended reflexive objects differently, the picture may be different. For example, if a language only has an incorporation strategy for reflexives but not extended reflexives, we might expect AF to arise only for extended reflexive objects (e.g. Q'eqchi). I leave investigation of the binding strategies in other Mayan languages to future research.

2.5.3 Multiple fronting

It has been observed that many of these languages have multiple fronting constructions, in which the order of specifiers at CP determines whether subject extraction requires the agent focus construction. SO orders correspond to regular transitive agreement alignment, while OS corresponds to the agent focus alignment: no Set A agreement, AF morphology, Set B targets the object. In summary, whether the subject extracts apparently doesn't govern AF by itself. The order in which the phrases appear in the left periphery is what counts. This generalization holds irrespective of what type of A-extraction occurred. Topics, foci, wh-phrases, quantifiers, and combinations thereof all demonstrate the same word order-AF interaction.

(167) Multiple fronting: topic+focus (Kaqchikel; García Matzar & Guaján 1997, 405)

a. SOV - no AF

[_{subj}Ja ri utiw-a'], [_{obj}ja ri aq] x-e-ki-tij
 FOC DET coyote-PL FOC DET pig PFV-B3P-A3P-eat

‘(In contrast to) the coyotes, it’s the pigs they eat.’

b. OSV - AF

[_{obj}ja ri aq], [_{subj}Ja utiw-a'] x-e-ti-o
 FOC DET pigs FOC coyote-PL PFV-B3P-eat-AF

‘(In contrast to) the pigs, it’s the coyotes that eat them.’

(168) Multiple fronting: existential+wh (Kaqchikel Erlewine 2016, 29)

a. SOV - no AF

Achike k’o x-∅-u-tz’ët?
 who ∃ COM-BSG-A3SG-see

‘Who saw someone?’ (*Who did someone see?)

b. OSV - AF

Achike k'o x-Ø-tz'ët-ö?
 who ∃ COM-BSG-see-AF

‘Who did someone see?’ (*Who saw someone?)

(169) Multiple fronting: existential+existential (*Kaqchikel* Erlewine 2016, 14)

a. K'o k'o x-Ø-u-tz'ët

∃ ∃ COM-B3S-A3S-see

‘Someone saw something.’ (*There’s something that someone saw)

b. K'o k'o x-Ø-tz'ët-ö

∃ ∃ COM-B3S-see-AF

‘There’s something that someone saw.’ (*Someone saw something)

My account has a natural explanation for these facts if we treat the Mayan left periphery as a generalized \bar{A} -position. Assuming that the examples in (167) are derived by true multiple extraction, and that multiple extraction is order preserving (Richards, 1997; Davis, 2020), we expect the order of specifiers at CP to reflect the order of specifiers at vP . The generalization in (167) can therefore be restated as follows.

(170) If the order of specifiers at vP is SO, we get transitive agreement; if the order of specifiers at vP is OS, we get intransitive agreement and agent focus.

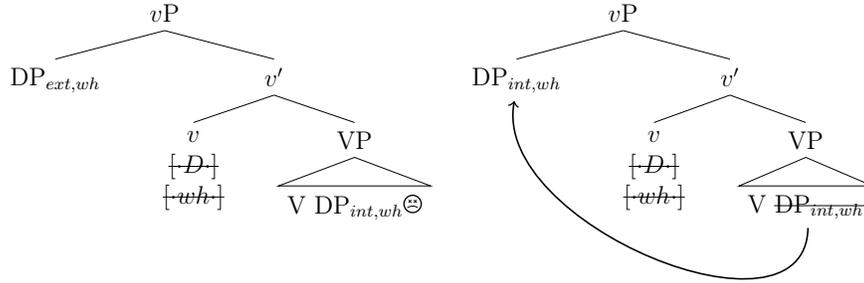
Observe that the generalization in (170) is simply a restatement of the proposal in this chapter that agreement alignment of a transitive clause is sensitive to the order of specifiers at vP . The question is, does the proposal predict both possible orders at vP given two arguments with \bar{A} -features? The answer is yes, so long as the relevant Mayan languages either 1) have some other feature besides $[\cdot D \cdot]/[\cdot wh \cdot]$ features that permits an additional \bar{A} -specifier of vP , or 2) have a perpetually active $[\cdot wh \cdot]$ feature that can be satisfied multiple times.

Before considering these options, recall that the order of specifiers is typically determined in part by whether either argument has a superset of the other’s features. When only one of the arguments is a wh-phrase, object wh-questions yield an SO order of specifiers at vP because the subject only has D features while the object has both D and wh-features. The subject therefore has to merge first or else it would be blocked by wh-movement of the object. The opposite order of specifiers appears in subject wh-questions because the feature profile of each argument is reversed in that context. A wh-subject has superset of a non-wh-object’s features, meaning the subject no longer has to merge first, thus permitting object movement to precede external merge (why high absolute Mayan languages *enforce* this choice is an unresolved issue).

Without any amendments to the theory, this logic should rule out multiple fronting entirely. If *both* the subject and object have both D and wh-features, merging one should block the other. There should therefore only be one wh-specifier of vP in a given derivation. On some analyses of Mayan multiple fronting, this conclusion is not entirely unwelcome. There is debate surrounding whether the leftmost phrase in multiple fronting constructions is base generated high vs. derived by movement.

(171) When both S and O are wh-phrases, S has to merge first or it would be blocked by O. However, if S merges, it blocks O for the same reason. The PIC rules out object

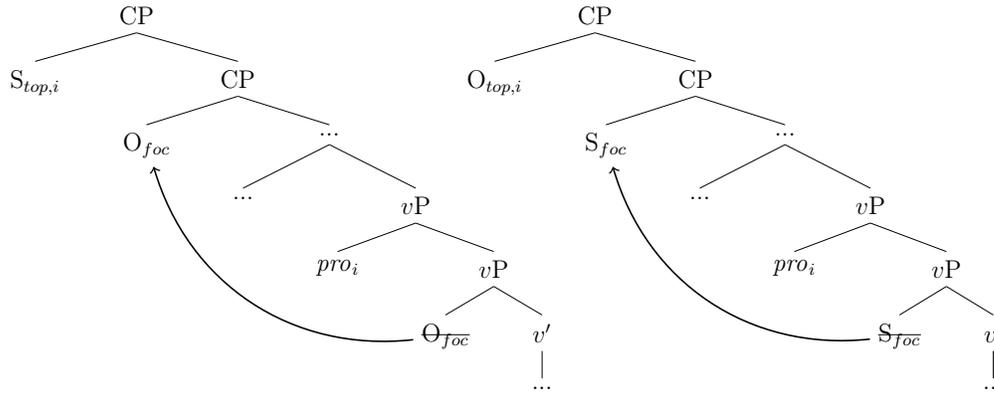
wh-movement in this context.



Aissen (1992); Pixabaj & England (2011) have argued for a more articulated view of the K'ichee' left periphery in which the left-most nominal is always topical, and the inner phrase is always focal. They also observe a prosodic break between the two fronted nominals in (167a,b), which they analyze as evidence that the outer specifier (topical phrase) was base generated high rather than internally merged there.

Coon et al. (2021) adopt this view and argue that this conclusion readily predicts the apparent AF-word order interaction. The only moving constituents on this proposal are the inner specifiers of CP. Therefore, multiple fronting constructions with SO word order should pattern with object wh-questions, since the inner specifier object is the only wh-moving element. Similarly, OS word order should pattern with subject wh-questions and thus result in agent focus because the only moving element is the subject.

- (172) The inner specifier of CP moves from the inner specifier of vP because it is the only element that moves to CP, and \bar{A} -elements are always the inner specifier of vP in the relevant Mayan languages.



A problem for this approach is the fact that the outer specifiers in multiple fronting constructions appear to be island sensitive in Kaqchikel, suggesting that they have in fact undergone movement and were not base generated high. Erlewine (2016) offers examples (173) and (174), which test this for multiply fronted existentials. In general, long distance movement of existentials to preverbal positions is possible in Kaqchikel (173). However, when the outer specifier object in (174b) is associated with a position inside a relative clause, the result is ungrammatical. If the object had been base generated high, this sensitivity to the relative clause island would be unexpected. We can additionally be sure that the object is indeed the outer and not

the inner specifier in these cases because of the AF morphology on the matrix verb, which only shows up if the multiply fronted elements are in OS order.

(173) Baseline: movement of **k'o** from an embedded clause is ok (*Kaqchikel* Erlewine 2016: 17)

- a. K'o n-∅-noji-n [chin **k'o** yawa']
 ∃ INC-B3S-think-AF that ∃ sick
 'Someone thinks that someone is sick.'
- b. **K'o** k'o n-∅-noji-n [chin yawa']
 ∃ ∃ INC-B3S-think-AF that sick
 'There is someone that someone thinks is sick.'

(174) Movement out of a relative clause island ruled out (*Kaqchikel* Erlewine 2016: 17)

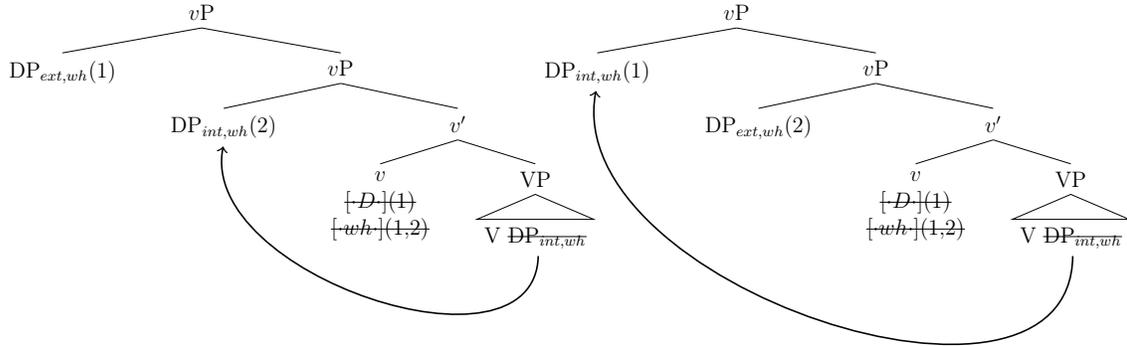
- a. K'o x-∅-k'ul-ö [ri achin ri **k'o** x-∅-u-tz'ët]
 ∃ COM-B3S-meet-AF the man RC ∃ COM-B3S-A3S-see
 'Someone met the man who saw something.'
- b. ***K'o** k'o x-∅-k'ul-ö [ri achin ri x-∅-u-tz'ët]
 ∃ ∃ COM-B3S-meet-AF the man RC ∃ COM-B3S-A3S-see
 intended: 'There is something_i that someone met the man who saw it_i.'

If Erlewine is right that *Kaqchikel* has genuine multiple extraction, the present theory requires some amendment to permit both \bar{A} -arguments as specifiers of vP . I propose that both vP and CP are generalized \bar{A} -positions in the sense that topics, foci, wh-phrases and quantifiers can merge there. What allows multiple fronting is the possibility that \bar{A} -Merge-features don't disappear when they get checked, and can thus remain active in order to license other \bar{A} -phrases.

As a result, the order of Merge at Spec vP is in principle free, because both arguments are independently licensed by their \bar{A} -features. If the \bar{A} -subject merges first, it checks a [\bar{D}] feature, which cannot license any more DPs, and a [\bar{A}] feature, which *can* license more \bar{A} -phrases. Similarly, if the \bar{A} -object merges first instead, it checks the same features, which blocks subsequent DPs but permits subsequent \bar{A} -phrases.¹⁸

(175) Both orders of operations permit both S and O as specifiers, so neither order is enforced.

¹⁸The possibility of multiple wh-movement to the same position in some languages raises the question of whether we ever see parallel behavior in the domain of A-movement. If what sets Mayan and e.g. Bulgarian apart is an eternally active [wh] feature, do any languages have an eternally active [D] feature? Such a language would presumably allow two DPs to occupy Spec vP at the same time without any additional features. It could be that languages with productive object movement or multiple nominative constructions (e.g. Japanese and Korean) have such a feature, though I leave investigation of this possibility to future research.



In summary, the following ordering requirements on Merge are predicted for high absolutive Mayan languages given different combinations of arguments:

- (176) a. \bar{A} -subject, non- \bar{A} -object: Merge O, then S
 b. \bar{A} -object, non- \bar{A} -subject: Merge S, then O
 c. \bar{A} -subject, \bar{A} -object: Either order

Notice, however, that in languages which *never* choose option (176a) for subject wh-questions, presumably don't have access to it in scenario (176c) either. We thus expect parametric variation in multiple fronting across languages: those with English-type subject questions should only permit superiority obeying multiple specifiers of CP (i.e. SO, found in e.g. Bulgarian Richards 1997), those with Mayan-type subject questions should permit superiority violating orders.

In summary, the present proposal accounts for the interaction between agent focus and word order in multiple fronting examples provided that movement to the left periphery is to a generalized \bar{A} -position. Additionally, both word orders are predicted to be possible because \bar{A} -elements are always licensed in Spec *vP*, regardless of the order of Merge. What remains to be investigated is how/whether this account covers the proposed focal and topical interpretations discovered by Pixabaj & England (2011). If it is right that the interpretation of a fronted nominal is entirely predictable from its position, this result might lend itself better to a more cartographic view of the left periphery. According to their typology, however, there are four types of interpretations available to fronted nominals, two topical and two focal, which suggests that examples like (167a,b) should be multiply ambiguous. I leave investigation of the full typology to future research.

2.5.4 Summary of AF-obviating environments

The central claim of this chapter is that subject extraction in certain Mayan languages exceptionally promotes the object above the subject, which has consequences for agreement. In this section, we investigated several environments in which subject extraction apparently did *not* correspond to exceptional promotion of the object: anaphoric objects, NP objects, and multiple fronting (with SO order). In each of these cases we observed that the canonical Mayan subject extraction derivation was either blocked (due to WCO), not relevant (NP objects never check [$\cdot D$] features), or optional (multiple fronting).

To summarize, the distribution of AF in high absolutive Mayan languages was argued to be determined by three things: 1) the order of specifiers at Spec vP , 2) the specifications of the φ -probes on Voice and T, and 3) the features of arguments, *provided that the result is interpretable*. The only case in which subject extraction was proposed to be ruled out on account of grammatical constraints is when movement violated WCO.

The morphological signature of AF is not predicted to be unique to subject extraction, since there might be other contexts in which two φ -probes agree with the same argument, or a probe fails and requires an elsewhere form. The antipassive was one such case in which an AF-like morpheme was expected to appear. There is another attested use of the AF morpheme in Q'anjob'al, called the "Crazy antipassive", which we observe in non-finite embedded clauses, and is reminiscent of the requirement for passive/antipassive in similar contexts in K'iche'. An analysis of Voice effects in nonfinite embedded clauses is outside the scope of this chapter, but future research should investigate agreement in those contexts as well to understand the use of the AF morpheme there.

2.6 AF and the logic of extraction restrictions

I have argued that subject extraction has early effects on the derivation of verb phrases in certain Mayan languages. In other words, I have suggested that v cares about whether the subject is an \bar{A} -element when "deciding" on an order of operations. Choices made in the verb phrase that affect the configuration of arguments have consequences for later agreement and movement operations higher in the clause. I proposed that the organization and specification of φ -probes in Mayan, combined with the proposed derivation of vP when the subject is an \bar{A} -element, are responsible for the morphological effects observed in the agent focus construction.

I have assumed that while the orientation of arguments affects which arguments are accessible for Agree, it does not affect whether an argument can be subsequently \bar{A} -extracted. This is because I assume \bar{A} -movement to be non-local in the standard sense; \bar{A} -movement only cares about the distribution of \bar{A} -elements – no matter how many non-wh-elements structurally intervene between C and a wh-element, that wh-element should be accessible for \bar{A} -extraction.

- (177) \bar{A} -movement is insensitive to intervening nominals
- a. $[_{CP} \text{Who } [_{TP} \text{T ... } [_{vP} \text{DP}_{int} [_{vP} \text{who } [_{VP} \text{ate } \text{DP}_{int}]?]$
- b. $[_{CP} \text{What } [_{TP} \text{T ... } [_{vP} \text{DP}_{ext} [_{vP} \text{what } [_{VP} \text{ate } \text{what}]?]$

A prominent way in which this analysis differs from others pertains to the status of the star in (73). On my approach, (72) is grammatical and (73) is ungrammatical because the derivation of subject wh-questions in Q'anjob'al results in the agreement alignment in (72). The agreement alignment in (73) is simply not generated by the grammar when a 3rd person subject is wh-extracted.

- (72) Maktxel max-ach il-on-i?
 who PFV-B2S see-AF-ITV
 "Who saw you?"

(Q'anjob'al; Coon et al. 2014, 213)

- (73) *Maktxel max y-il ix ix?
 who PFV A3S-see CLF woman
 intended: “Who saw the woman?” (Q’anjob’al; Coon et al. 2014, 193)

By contrast, some analyses of examples like (72) and (73) assume that (73) *is* in principle generated by the grammar, but is not observed due to constraints on movement/agreement/nominal licensing in such a clause. Analyses that make this choice sometimes refer to the contrast in (72) and (73) as a *ban on ergative extraction*, thus presupposing that (73) corresponds to an LF that should exist under normal circumstances but is filtered out.

On these approaches, agent focus in (72) “rescues” the language from a total lack of subject wh-questions by providing an alternative construction in which the subject may extract without violating the relevant conditions on the grammar. Any theory of this sort must therefore 1) propose grammatical constraints that are violated in (73), 2) include a structural description of a novel construction (i.e. the agent focus construction), and 3) provide a theory that regulates the distribution of this construction so it only appears when the subject is \bar{A} -extracted.

Analyses of this sort are predicated on the assumption that wh-questions are universally derived from clauses that look like their non-wh counterparts. More explicitly, they presuppose the existence of an input to (73) that looks like (178), and propose that something goes wrong in the subsequent transformation into a subject wh-question.

- (178) Max y-il-a’ maktxel ix ix.
 ASP A3S-see-TV who CLF woman
 intended: ‘Who saw the woman.’ (pre wh-movement)

The logic of analyses that rely on some sort of a ban on subject extraction is cumbersome for the following reason: Mayan subject extraction simply does not show a uniform profile for all transitive subjects. If the claim is that movement from subject position is ruled out for some reason, it becomes a serious task to explain why this restriction is only active for some subjects.

We observed many situations in which a subject looks like it has wh-moved, but the clause does not have AF (participant subjects, with and without participant objects), binding effects, NP objects, multiple fronting). If subjects are supposed to be unable to move in Mayan, all of these scenarios in which they apparently *do anyway* must be analyzed either as novel constructions that obviate the restriction on movement, or as non-movement constructions. Good attempts have been made to find independently motivated theories of all of the apparent exceptions to the restriction on subject extraction. However, the resulting picture of each proposal finds little consensus with the others, meaning that the status of each exception is subject to much controversy from the perspective of the other theories.

While my analysis of course does not solve every aspect of the distribution of AF in Mayan, it has at least one clear advantage: on my approach, subject extraction in Mayan is a homogeneous process from the perspective of the syntax, which has non-homogeneous effects on the output of Agree, depending on the features and positions of arguments. On my approach, every construction in which a subject looks like it has moved can in principle be analyzed as a subject extraction context, whether or not it co-occurs with AF. The distribution of AF is independently predictable from my proposed derivation for subject extraction, combined with the sensitivities of the φ -probes that control the morphology. The contexts that are treated as

Different authors have different approaches to this problem, including making the subject extraction restriction a violable constraint (Erlewine, 2016), or suggesting that participant subjects are base generated high (Coon et al., 2021) (Assmann et al. (2015) don't discuss the person restrictions). Aside from the person restrictions, they also face individual issues. For example, the fact that bound objects obviate AF means they apparently don't need case from the perspective of Assmann et al. (2015), and somehow allow the subject to perform too-short movement steps from the perspective of Erlewine (2016) for reasons that are unclear.

Finally, each proposal needs to resort to unmotivated A-movement steps to ensure that the offending \bar{A} -movement configurations actually occur. Coon et al. (2014, 2021) propose that objects raise to a high position in regular transitive clauses, mimicking a similar proposal made for certain Austronesian languages with extraction restrictions. However, the scope and binding tests required to test this proposal have not been replicated in the Mayan languages. Assmann et al. (2015) and Erlewine (2016)'s proposals require the subject to move to Spec TP in unexpected contexts. Erlewine (2016) proposes that subjects move to Spec TP when they control Set A agreement, despite evidence from morpheme order and finiteness that finite T controls *Set B* agreement, not Set A agreement. Assmann et al. (2015) propose that the subject has to move through Spec TP in order to \bar{A} -extract, which is what bleeds absolutive assignment/agreement, despite the fact that TP is not typically considered to be a phase.

There also exist analyses of Mayan that do not resort to extraction restrictions, which I argue are also less successful than the present approach, though they do not suffer from the same issues. Stiebels (2006) argues that the distribution of AF actually tells us nothing about the syntax, per se, but is entirely regulated by morphological considerations. In particular, she argues that the AF morpheme is necessary to disambiguate the thematic properties of the fronted element. For example, when both the subject and the object are 3rd person singular, there are no clues from word order or agreement that would tell us whether it was the subject or the object that had moved in (182). Thus, the AF marker is employed to indicate subject vs. object movement: \bar{A} -moved subjects trigger AF while \bar{A} -moved objects don't.

(182) Maktxel max- \emptyset y-il[-a'] ix ix?
 who ASP-B3SG A3SG-see-TV CLF woman

lit: who saw.3sg woman; ambiguous between 'Who saw the woman/Who did the woman see?'

Making the subject a participant in (182) morphologically disambiguates subject from object extraction because Set A agreement will cross reference the subject but not the object. This approach therefore correctly predicts the absence of AF in Q'anjob'al when the subject is a focused participant. Likewise, making the object a reflexive in (182) logically disambiguates the clause by ensuring that the moved element reconstructs to a position that obeys binding principles. Therefore, focused subjects that bind objects should also not need to co-occur with AF.

A problem for this approach is pointed out by Coon et al. (2014), namely the fact that making the *object* a participant, but leaving the subject as 3rd person singular should also disambiguate the structure of (182) by making Set B agreement overt. This environment nonetheless demands AF in every language with the AF construction, as shown in (72) (see Assmann et al. (2015) for other arguments against Stiebels' OT approach to the AF morpheme). This problem indicates that something else besides recoverability of the base position of moved elements accounts for the distribution of AF.

Another purely morphological approach to AF is proposed by Baier (2018), who argues that agreement with *wh*-phrases is sometimes subject to an impoverishment rule. In this case, he suggests that the Set A probe gets pronounced as the AF marker whenever it agrees with an \bar{A} -subject. This line of reasoning has the advantage that it doesn't posit a distinct agent focus construction in the language, but it is not clear why impoverishment doesn't apply when the subject is a participant or when it binds the object.

To summarize, my approach provides a middle ground between the purely syntactic and purely morphological accounts of AF. On my view, the relevance of the syntax is that it generates a different configuration of subject and object in subject questions vs. object questions/transitive clauses. However, I do not impose any restrictions on movement or case assignment that would reject this outcome. Instead, I suggest that this outcome has different effects on pronunciation for different combinations of person features on the arguments. It likewise correctly predicts a specific profile of binding in subject questions, since the relative scope of the arguments is reversed in those contexts.

2.7 Conclusion

The central insight of this chapter is that the order of Merge and Agree at *v*P is not fixed for a given construction or language, but rather depends on the featural makeup of *v* and its arguments. Which operation applies first affects the structural orientation of arguments, and has consequences for Agree.

In most transitive constructions, the subject only satisfies a subset of the features on *v* that the object could, which leads to a derivation in which external Merge must precede any other operation at the *v*P-level. If the subject is a *wh*-phrase, however, external Merge might not apply early because the *wh*-subject can be licensed later by *v*'s [*wh*] feature (just as object *wh*-movement is licensed after a non-*wh* subject has merged). The potential for the subject to merge late just in case it has additional features was proposed to account for the effects of subject extraction in high absolutive Mayan languages.

In the relevant Mayan languages, internal Merge was proposed to be the preferred first operation in subject extraction contexts. This has the effect of making the object the most accessible φ -goal to higher probes. While the apparent promotion of the object was not proposed to have consequences for subject \bar{A} -extraction, it was proposed to have consequences for Agree, resulting in the agreement alignment observed in agent focus constructions. The result was that if the subject was lower on the person hierarchy than the object, we observed an anti-agreement effect resolved by the use of the AF morpheme. When the subject was *higher* on the person hierarchy than the object, subject agreement resurfaced, occasionally accompanied by the AF morpheme depending on the number of hierarchy-sensitive probes in the clause.

One situation in which the promoted object *does* cause problems for subject extraction is when the subject binds the object. When the subject tries to \bar{A} -extract across an object that it binds, a WCO violation occurs, thus accounting for the lack of AF in those contexts in several languages. I argued with evidence from non-extraction contexts, however, that Chuj and Q'anjob'al have two treatments of bound objects that enable subjects to extract without WCO: noun-incorporation and possessor raising. These treatments of bound objects may result in AF (as in Chuj) or not (as in Q'anjob'al) depending on the timing of possessor raising.

The Mayan languages that exhibit AF-strategies for subject extraction therefore proved

to be an ideal testing ground for the generalized approach to EPP properties presented here (introduced in Chapter 1 and fleshed out in Section 2.2). What remains to be seen is *why* these languages make this choice, and whether the answer to that question helps us to understand languages like Poqomchi', which only have an antipassive strategy for subject extraction. I leave such an investigation to future research.

Chapter 3

C-selection and the verb phrase

3.1 Introduction

Chapter 2 established that two features on a head, namely a feature that induces a Merge operation with a DP, and one that induces a Merge operation with a wh-phrase, could interact in surprising ways. In particular, verb phrases without wh-phrases were at times predicted to look different than verb phrases with wh-phrases, particularly when those wh-phrases would otherwise have been introduced by the feature specified for DPs. It was this fact that was proposed to account for the special morphosyntactic consequences observed in certain Mayan languages' subject wh-movement. In other words, making the subject a wh-phrase in Mayan had *direct* consequences for the basic configuration of arguments in the verb phrase, on account of how the D and wh features interact on *v*.

This treatment of Merge-inducing features has potentially far reaching implications for how we treat the construction of clauses more generally, in ways that bear on both basic clause structure and argument structure alternations. Chapter 3 aims to explore some of these implications in two ways: first, by clarifying the significance of these Merge features relative to a theory of syntax and its interfaces, and second, by offering a specific proposal regarding what features account for clause construction and transformation.

I will argue that Merge features, like [*D*] and [*wh*], are basically instances of *c-selection*. However, unlike the classical notion of subcategorization, I propose that *c-selection* is in fact a very coarse phenomenon. C-selective features merely *enable* Merge operations between constituents of certain categories, and the syntax has only a small number of potential features at its disposal that allow it to build structure. The interfaces, rather than the syntax, are responsible for any apparently obligatory selection.

Importantly, as discussed in Chapter 1 (Section 1.2), I propose that *c-selective* features are properties of syntactic categories rather than specific lexical items, as stated in (44). While verb phrases may differ in which roots/*v*-heads/etc. are chosen from the lexicon, they *do not* differ in what syntactic features are present – having a V head at all entails having certain Merge features, which may yield certain VP configurations but not others. Looking at what the syntax can do with the limited tools available to it defines a clear typology of verb phrase structures and alternations, which I argue is exactly the typology of verb phrases and alternations that we observe in natural language. As a result, I motivate a view in which the syntax imposes limitations on the lexicon by only permitting certain numbers and combinations of constituents

(Hale & Keyser, 1993, 2002; Wood & Marantz, 2017).

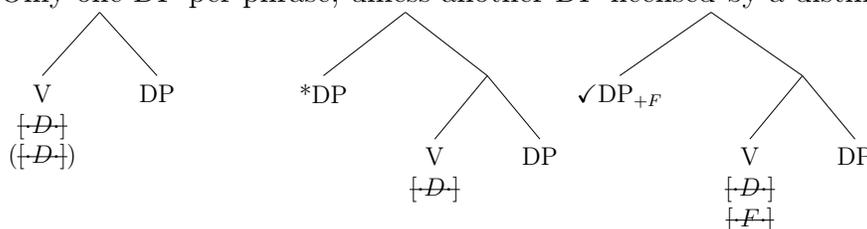
(44) **Categorial Merge hypothesis:**

Merge features are properties of syntactic categories rather than individual lexical items.

Moreover, I will show that the order of Merge in a derivation has surprising consequences for complementation relationships between verbal heads and the arguments they “select” for. One of these consequences is a requirement for non-DP arguments to be *complements* of whatever heads select them. The restricted distribution of non-DPs results in a novel constituent structure for certain clauses with non-DP arguments.

The core of the proposal is as follows: heads are endowed with features that enable them to Merge with elements of particular categories, which guides the construction of a clause. Not every Merge feature needs to correspond to a distinct Merge operation (i.e. Merge features can fail), but no Merge operation can occur in the absence of a licensing feature (i.e. all Merge is feature driven).¹ In that sense, once a DP has checked off a head’s *Merge DP* feature, no other DPs are licensed in that maximal projection unless they have other features c-selected by that head.² Moreover, Feature Maximality demands that every merged constituent check as many features as it can. Thus, even if a head had multiple *Merge DP* features, it would still only permit one DP, because a single DP can check multiple features.

(183) Only one DP per phrase, unless another DP licensed by a distinct feature



So far, this proposal is in keeping with Wood & Marantz (2017), for example, who suggest that only one argument is licensed per functional projection in the verb phrase. Where my proposal diverges, however, is in how I treat arguments that are *not* DPs.

It has been observed many times that verbs do not only select for DPs as arguments, but also CPs, TPs, PPs, APs, etc. I will argue that even though these non-DP arguments are still syntactically *arguments* rather than adjuncts, they are not individually c-selected by *Merge CP/TP/PP/AP* features (Grimshaw, 1979; Pesetsky, 1982; Elliott, 2017). Instead, I propose that they are licensed by a Merge feature that is *unspecified* for category (labelled [*X*] here). On the present approach, there are only two argument introducing features from the perspective of syntax: one for DPs and one for any argument. Thus, all imaginable arguments are *permitted*, but not all imaginable arguments are explicitly subcategorized for.

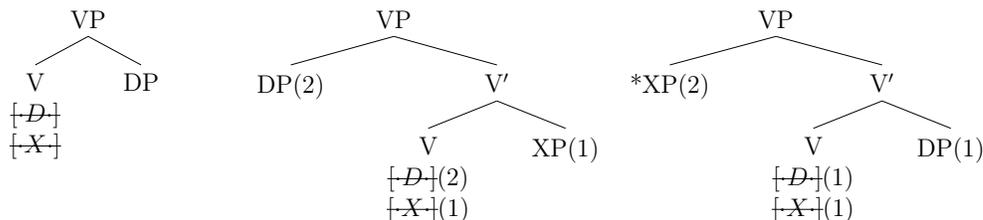
The introduction of an unspecified feature has an important consequence for the order of operations: the fact that DP is itself a kind of XP induces restrictions on the relative order in

¹I mainly leave aside discussion of adjunction for simplicity, though future research should determine whether adjunction obeys the same requirements on Merge advanced here.

²I am assuming that features are generally inaccessible to multiple checking operations, but delete once checked. We saw that multiple fronting languages required an amendment to this view – *some* languages’ wh-features can apparently be checked multiple times. I don’t know whether there exist any languages whose D-features can also be checked multiple times. The languages studied in this chapter are best understood if their D-features do not permit multiple checking, for reasons that will be explored in future research.

which DPs and non-DPs are merged. If a DP is merged first, no other arguments are licensed in that projection due to the fact that Feature Maximality requires that DP to check off both $[\cdot D\cdot]$ and $[\cdot X\cdot]$. However, if a non-DP is merged first, it only checks $[\cdot X\cdot]$, allowing a DP to be merged later, thus allowing each projection to potentially host *two* arguments, so long as only the second one is a DP. For convenience, I will call this ordering restriction *The non-DP first theorem*.

(48) *The non-DP first theorem*: if V selects for a non-DP, the non-DP must be merged first.



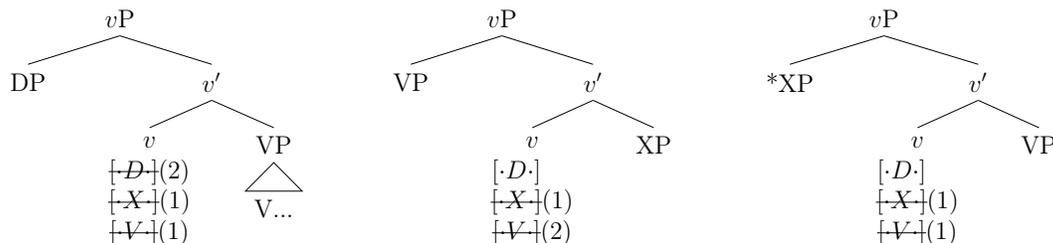
Since only one DP is licensed per functional projection, we need a second verbal head to build a transitive clause (Larson, 1988; Hale & Keyser, 1993; Chomsky, 1995; von Stechow, 1995, a.o.). By convention, I will call the second verbal head v , which is like V in having the two argument licensing features ($[\cdot D\cdot]$ and $[\cdot X\cdot]$), and unlike V in additionally having a $[\cdot V\cdot]$ -feature, so v can merge with VP (necessary for clause construction). I propose that these two heads, V and v , and these three features, $[\cdot D\cdot]$, $[\cdot X\cdot]$, and $[\cdot V\cdot]$ are the only ingredients we need to derive all and only the verb phrases that we find.

An important consequence of this proposal is that it predicts a surprising interaction between non-DP arguments of v and the position of VP in the clause. When v takes a VP complement, merging VP necessarily checks v 's $[\cdot X\cdot]$ feature in the same way that merging a DP would check its $[\cdot X\cdot]$ feature. As a result, whenever v takes a non-DP argument (e.g. potentially the experiencer subject in (184a), the dative argument in (184b), or the *by*-phrase in (184c) (Collins, 2005)), VP must merge as a *specifier*.

(184) v can host an XP argument as well as VP

- a. It seems to Beth that Jo likes writing.
- b. Meg bet Amy.DAT a day's pay that Jo would lose her scarf.
- c. A book was given to Meg by Jo.

(185) v Ps: an XP (non-DP, non-VP) is only licensed if it merges first \rightarrow makes VP a specifier.



The fact that VP is predicted to be a specifier in these contexts should affect constituency, binding between different arguments, locality from the perspective of A-movement, and the interactions between A and A-movement of different arguments. In this chapter, I focus first on establishing the set of features and functional projections in the verb phrase, and demonstrate

the typology that results. Chapters 4 and 5 investigate the predictions that the present view makes for verb phrase alternations such as the passive and dative alternation. The goal for now is to show that this set of functional projections and their features is well suited to develop a typology of verb phrases and their alternations, which forms the basis for the investigation of A- and \bar{A} -effects in Chapters 4 and 5.

To summarize, the fact that $[\cdot X \cdot]$ is an unnamed feature makes the proposed feature structure for V and v compatible with the wide range of selectional requirements that verbs display. The fact that verbs also select for a *named* feature, namely $[\cdot D \cdot]$, induces ordering requirements between the introduction of DPs vs. other kinds of arguments. These types of ordering restrictions are predicted to be general to verb phrases rather than specific to particular lexical verbs. A verb that takes, for example, a DP and PP argument should always configure those two arguments as in (48) or (185), regardless of which verb and which preposition is chosen. Moreover, all non-nominal arguments are predicted to obey the same kinds of ordering restrictions on their introduction into a clause.

A note on UTAH: this chapter focuses on the categorial properties of arguments rather than their thematic properties, while Chapter 6 focuses on integrating this theory of syntax with the interfaces. At points, a predicted structure may look sufficiently different from a standard one that the reader might start to wonder how it is interpreted, and what the pre-theoretic notions of direct vs. indirect objects vs. subjects should refer to (questions that I address in Chapter 6 but not here).

In general, what I have to say about thematic roles is not so different from many other theories: DP arguments of V are canonical “objects” in that they are the first DPs to compose with the root, DP arguments of v are canonical subjects in that they are the first DPs to compose with agent-assigning v , and/or the second DP to compose with the verb on a non-decompositional view of the verb phrase. In that sense, the theory of DP-Merge that I advance doesn’t necessarily interact with whether these arguments get their theta roles via their syntactic relationships to heads, as claimed by UTAH, or via their order of functional application, as indicated by (Kratzer, 1996; Pykkänen, 2008; Ramchand, 2008, e.g.).

For non-DP arguments, however, the picture is different. Since the order of Merge is determined by category, so too should the order of functional application. Questions therefore arise, namely how do non-DP arguments get interpreted and do they interact with the interpretation of DPs? I will ultimately suggest that they don’t (unless their distribution is governed by s-selection) – namely that non-DP arguments may come with their own theta roles and get interpreted via Event Identification (Kratzer, 1996), so they don’t necessarily disrupt the interpretation of DPs. Thus, flexibility in the position of certain XPs is predicted.

The structure of this chapter is as follows: Section 3.2 details and motivates the theoretical ingredients required for constructing verb phrases. Section 3.3 demonstrates how these ingredients work together to constrain the space of possible verb phrases. Section 3.4 investigates the typology of predicted verb phrases and identifies/tests the predictions on corresponding English sentences.

3.2 Merge features and “selection”

In this section, we explore how arguments of verbs are introduced into the verb phrase. The results of this investigation will be used to motivate a set of particular c-selectional features on

verbal categories, which may be checked by arguments in the course of a derivation. The interactions between these features on a head account for the observed orders in which arguments merge.

One of the main points of this work is to suggest, following Adger (2003); Müller (2010); Longenbaugh (2019), that the same mechanism underlies every instance of Merge. External Merge, A-movement, and \bar{A} -movement are all induced by a corresponding *Merge α* feature on a head. From that perspective, it is important to decide what features and/or syntactic objects these Merge features may refer to, and address the conceptual question of why the syntax should be interested in those things.

Chapter 2 proposed that *v*, for example, has both a Merge feature specified for DPs and a feature specified for *wh*/ \bar{A} -elements. Treating both of these Merge features as syntactic properties of *v* might sound strange, however, given that they classically represent two separate kinds of phenomena in language: *Merge DP* is typically treated as a *selectional* requirement by a head that wants to assign a theta role to some argument. *Merge wh*, on the other hand, is typically treated as a clausal requirement for *wh*-phrases to appear in a certain position, and arrive there successive cyclically. Due to the different natures of these two requirements and processes they induce, how can we justify treating them the same way?

To answer this question, I would like to first examine what it means for a verb (or any other element) to “select” for something. There are at least three notions of “selection” that are relevant (borrowing Pesetsky (1982)’s terms):

(186) Pesetsky (1982)’s typology of selection

- a. Category selection (c-selection): the syntactic representation of a head has a featural requirement that can only be satisfied by an element of a particular syntactic category.
- b. Semantic selection (s-selection): the meaning associated with some head is such that it can only functionally compose with elements of a certain type, or elements whose composition with the verb results in a non-contradictory or pragmatically reasonable meaning.
- c. Lexical selection (l-selection): the morphological exponent of some head is such that it demands a particular vocabulary item as the head of its sister.

Examples (187-189) demonstrate each of these notions. Example (187) shows a property of many transitive verbs, which require a nominal complement without specifying what kind. Any DP object is licensed, regardless of definiteness, quantification or possession. It therefore seems that the relevant property of transitivity is categorial in nature, since each of these arguments might mean something different and have a differently pronounced D head. C-selection enables us to state this property easily: transitive verbs have a requirement for a DP complement.

(187) C-selection for category D

- a. Sue devoured **the** cake.
- b. Sue devoured **a** cake.
- c. Sue devoured **three** cakes.
- d. Sue devoured **cake** (for three minutes).
- e. Sue devoured **Sally’s** cake.
- f. Sue devoured **every** cake.

By contrast, examples (188-189) do not exhibit these characteristics, and thus are likely instances of s-selection or l-selection. In (188), we see that the verb *put* does not select for a prepositional phrase wholesale, but specifically selects for a locative one. A selectional requirement that references the meaning of an argument is best characterized by s-selection. In (189), we see that certain verbs like *rely* and *bristle* demand a specific prepositional phrase for a complement. The choice of preposition in (189) is not obviously related to the meaning of the preposition or the verb, nor is it reasonable to suppose that each preposition represents a separate syntactic category. This is a characteristic of l-selection.

(188) S-selection for location

- a. Sue put the cake **on the table**.
- b. Sue put the plate **in the dishwasher**.
- c. Sue put the cake **there**.
- d. *Sue put the plate **at 5 o'clock**.
- e. *Sue put the plate **for Sally**.

(189) L-selection for particular vocabulary items

- a. Sue relies **on/*to/*of/*for the bus**.
- b. Sue bristled **at/*to/*of/*for Sally's insult**.

My proposal is that both *Merge DP* and *Merge wh* are instances of c-selection because the syntactic component of language appears to deal with elements of both kinds. A theory in which the syntax c-selects for features/categories D and wh, however, does not entail a theory in which both of these features have the same import for the interfaces. Merging an argument vs. moving a wh-phrase might have different significance from the perspective of theta role assignment or other aspects of interpretation. I propose that such differences should inform a theory of s-selection, however, rather than our syntactic description of Merge.

In other words, just because a verb may not s-select or l-select for a wh-phrase does not mean that the syntax never c-selects for one. In that sense, the features driving operations in the syntax are wholly independent from those governing morphophonological/semantic well-formedness. In sum, I argue against the idea that D features and wh features should have a different status in the syntax just because they have a different status in the semantics.

The overall picture of selection that I take up is the following: three different components of grammar may engage in some kind of selection, and these different components and selectional requirements may interact. For example, the fact that a verb c-selects for a DP allows structures to be built that are compatible with verbs that s-select for an individual (syntax feeds semantics). Likewise, the fact that the syntax is capable of merging verbs with prepositional phrases allows for structures to be built that are compatible with verbs that l-select for specific prepositions (syntax feeds morphology). The present chapter is specifically about the system that cares about *category* rather than specific meanings or lexical items. In other words, this chapter will not be interested in phenomena characterized by s-/l-selection. It is mainly focused on the combinatorial system that allows clauses to be built in the first place, which I propose is characterized by c-selection, and is insensitive to the requirements of the interfaces. Thus, this chapter focuses on general properties of verbs rather than more specific properties of lexical items.

Moreover, I suggest that c-selection is not a “requirement” – the syntax does not have “requirements” per se (following Preminger 2014; Longenbaugh 2019). If some c-selectional feature goes unchecked, its failure to induce Merge is unproblematic unless the resulting structure is uninterpretable or unpronounceable. The syntax therefore only has *tools*, which work together to create structure from a numeration. These tools include features that trigger Merge and Agree, which may affect interpretation and pronunciation, but which do not themselves have access to the requirements of the interfaces. The conditions on how these tools interact and apply is the focus of this chapter.

I argue that the kind of selection that the syntax does is far poorer than has been previously proposed. There is no idiosyncrasy across verbs in the domain of c-selection, only in the domain of s-selection and l-selection. What the syntax has is a set of categories with c-selectional features. The features in the syntax are specified enough to make sure clauses are built a certain way, but unspecified enough to allow for the significant variation observed in verbal argument structure. Moreover, the interaction between the specified and underspecified features heavily constrains the possible orders of operations in a derivation, which is proposed to account for several generalizations about verb phrases.

Even though the examples in (188-189) were proposed not to indicate facts about c-selection, they *do* teach us something about syntax, namely how nominal and non-nominal arguments are configured relative to each other. The fact that the syntax has the capability to host arguments which satisfy s-selectional and l-selectional requirements demands that those two notions have *some* correlate in the domain of c-selection. In that sense, when developing a theory of c-selection, we need to be sure that said theory *permits* the introduction of the relevant arguments in the order that results in the structures we observe, even though that theory can’t make reference to notions like *location* or *on*.

My goal is to develop such a theory in the following sections. The takeaway is that the syntax has genuine c-selectional features governing selection for nouns and verbs, but an *unspecified* feature for any other kind of argument. These unspecified features may be used to host non-nominal arguments, such as prepositional phrases or embedded clauses. The fact that they are unspecified, however, introduces implications for the time at which they may be introduced in a clause, which accounts for their structural regularity, despite their lexical irregularity.

3.2.1 Arguments vs. adjuncts

Before discussing the mechanics of c-selection, it is crucial to first clarify what I mean by “argument”. Essentially, my use of the term “argument” will be used to cover anything in the verbal domain that is not an adjunct or a verbal head, irrespective of category. I assume that the existence and behavior of arguments provides insight into the nature of c-selection. By contrast, the profile of adjunction does not. In other words, while argument Merge is assumed to be driven by features on a selecting head, I assume that adjunction either is not feature driven, or not driven by features on the hosting clause but rather features on the adjunct itself (Chomsky, 1981; Pollard & Sag, 1994; Steedman, 1996, e.g.).

Following Levin & Rappaport Hovav (2005), and references there, I make use of two diagnostics to distinguish arguments from adjuncts: 1) optionality, and 2) their inclusion in VP-ellipsis/fronting. While arguments may be necessary for grammaticality, adjuncts typi-

cally are not.³ Thus, any element that is routinely obligatory in some verbal context will be considered an argument.

- (190) Arguments may be obligatory
- a. Sue put the cake *(on the table).
 - b. Sue ate the cake (in the garden).
 - c. Sally relies *(on Sue).
 - d. Sally eats (on a wooden table).

Obligatoriness is a sufficient condition for argument-hood, but it is not a necessary one. For example, the fact that the objects in (191) are optional does not make them adjuncts. To distinguish optional arguments from adjuncts, we can employ the VP ellipsis/fronting tests in (192). What these examples show is that some elements, when present, are necessarily part of the VP, and thus must tag along in VP-fronting or get deleted in VP-ellipsis. Other elements, by contrast, are not necessarily part of the VP and may be pronounced separately from it. Following (Levin & Rappaport Hovav, 2005, e.g.), I propose that those elements that are tied to the VP are arguments, while those that are not are adjuncts.

- (191) Obligatoriness is a sufficient but not necessary condition for argument-hood
- a. Terry pushed the cart (into the barn).
 - b. Amy ate (a cake).
- (192) VP-fronting/ellipsis/pro-form substitution is a necessary condition for argument-hood (Levin & Rappaport Hovav, 2005, ex. 40-41)
- a. *Terry pushed the cart into the barn, and Bill did so into the yard.
 - b. Terry read the book in the barn, and Bill did so in the yard.
 - c. *Terry said she would push the cart into the barn, and push the cart she did into the barn.
 - d. Terry said she would read the book in the barn, and read the book she did in the barn.
 - e. *Sue ate a cake, and Bill did so a carrot.
 - f. *Sue said she would eat a cake, and eat she did a cake.

While these diagnostics extend straightforwardly to DPs and PPs, it is slightly more difficult to apply them to clausal constituents. Nonetheless, it is standardly claimed that clausal constituents can also be arguments, due to their arguably obligatory presence in (193-194). Verbs like *want* and *tell* seem to have a requirement for *some* complement that may be clausal or nominal. The fact that clausal constituents can satisfy this requirement suggests that they may be arguments. Puzzlingly, TP arguments satisfy the VP fronting/ellipsis test for argument-hood, while CP arguments do not. Rather than re-evaluate the argument status of CP complements, however, I will assume that this is because CPs can generally extrapose in English.⁴

³There are some environments which seem to require adjuncts, such as the English middle construction and certain nominalizations. However, I argue in Newman (2020) that at least in the case of middles, the obligatory adjuncts are not selected but are necessary for other derivation-related reasons.

⁴As David Pesetsky, p.c., points out, it's not clear whether all clausal arguments pattern alike with respect to these tests, as is evident in the behavior of non-finite complements of *plan* vs. *want*: *I said Mary would make plans, and plan she did to travel to Scotland*.

- (193) Clausal arguments: TPs
- a. Sue wants a new bicycle. (no TP argument)
 - b. Sue wants to win the lottery. (TP argument)
 - c. *Sue wants.
 - d. *Sue said she wanted a new bicycle and want she did a new bicycle.
 - e. *Sue said she wanted to win the lottery and want she did to win the lottery.
- (194) Clausal arguments: CPs
- a. Sue told Sally a story.
 - b. Sue told Sally that Fred likes carrots.
 - c. *Sue told Sally.
 - d. *Sue said she would tell Sally a story, and tell Sally she did a story.
 - e. ?Sue said she would tell Sally that Fred likes carrots, and tell Sally she did that Fred likes carrots.

While I will not attempt to explain why each verb behaves the way it does in (193-194), I draw from these results the following conservative conclusion: there exist DP, AP, PP, TP and CP arguments, which are not adjuncts, as evidenced by their satisfaction of these two diagnostics.⁵

In what follows, I will investigate the nature of c-selection for arguments, irrespective of category. To do this, I will investigate the behaviors of DP, (AP), PP, TP and CP arguments of the verb, whose distribution, I propose, teaches us about the c-selectional features on a head. More specifically, I argue that all non-DP arguments are introduced by the same feature [*X*], which is unspecified for category.

3.2.2 Motivating X

In entertaining the possibility that c-selection is a property of syntactic *categories* rather than distinct lexical items, an immediate question arises, namely how is it that verbs vary so much in what they c-select for? In (195a-d), the underlined argument of each verb seems to be of a different category.

⁵We might wonder whether some PP arguments are truly PP arguments or actually DP arguments of a compound verb, e.g. *rely on-Sue* is actually *rely-on Sue*. Constituency tests and comparison to verb-particle constructions seem to indicate that they are truly PP complements.

- (i) Echo questions and Focus particles
 - a. Sally relies only on Sue for help with gardening.
 - b. Sally does WHAT on Sue for help with gardening?
 - c. *Sally does WHAT Sue for help with gardening?
- (ii) Comparison with verb-particles
 - a. Sally threw the coffee grounds out.
 - b. *Sally relies Sue on.
 - c. *Sally threw out them.
 - d. Sally relies on her.

- (195) Verbs c-select for different categories
- Jo enjoys fruit. (DP complement)
 - Amy turned blue. (AP complement)
 - Beth depends on Lauri. (PP complement)
 - Meg wants to go camping. (TP complement)
 - Jo thinks that Marmie likes carrots. (CP complement)

Classically, we would describe the subcategorization frames of each verb individually as in (196), where each verb root comes with its own, idiosyncratic set of *c*-selectional features. Clearly none of the individual feature structures in (196) are appropriate *for all verbs*, or else we would expect every internal argument to be of the same category.

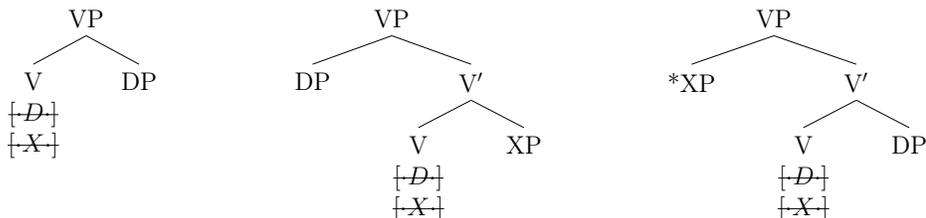
- (196) a. *enjoy*: DP __ DP
 b. *turn*: DP __ AP
 c. *depend*: DP __ PP,P=on
 d. *want*: DP __ TP
 e. *think*: DP __ CP

If we want a uniform feature structure to suit all verbs, there are two options before us. Either we can endow the category V with all possible Merge features, and let individual verbs take their pick (as in (197)), or we can endow V with an underspecified feature, which can be satisfied by an argument of any category (as in (198)). I argue for the presence of an underspecified feature on V (as in (198)). In addition to this underspecified feature, I propose that V, like *v*, has a *Merge DP* feature. In sum, the category V is proposed to have a D feature for nominal arguments (the default argument type) and an X feature for any argument.

- (197) Option 1 (to be rejected): V has every kind of Merge feature
 $V = \{[·D·]; [·P·]; [·T·]; [·C·]...\}$
- (198) Option 2 (to be adopted): V has an underspecified Merge feature
 $V = \{[·D·]; [·X·]\}$

Because D is an instance of X, the proposed features on V in (198) make the following prediction: V can host either a single DP argument (which checks both features), a single non-DP argument (which just checks the X feature), no arguments at all, or both a DP and a non-DP argument, *provided that the non-DP argument merges first* (48). I propose that this approach to *c*-selection is more successful than the classical approach and makes interesting and correct predictions about the shapes of verb phrases more generally.

- (48) *The non-DP first theorem*: if V selects for a non-DP, the non-DP must be merged first.



Before discussing the implications of this choice, I want to discuss some of the reasons for it. First, evidence for the existence of c-selectional features specified for P, T, and C is vanishingly rare. More specifically, the distribution of PP, TP, and CP complements does not display the hallmark properties of c-selection for DPs: selection for PP, TP, and CP is not agnostic about which token of P, T, or C appears, and cases of apparent “selection” for those elements may often be alternately satisfied by DPs. Both of these properties would be unexpected if the feature licensing the PP/TP/CP arguments were specified for those categories. Moreover, the clausal positions of PPs, TPs, and CPs are suspiciously similar, which is accounted for if their distribution is regulated by a common feature, but unexpected if they are selected by distinct features. I therefore propose that while DPs are licensed by a dedicated [*D*] feature, non-DP arguments are introduced by a common, non-specific [*X*] feature. When a particular non-DP appears to be selected by a verb, it must be a result of s-/l-selection for that phrase, rather than c-selection.⁶

Example (189) illustrates the first difference between selection for DP and selection for PP. As was observed in Pesetsky (1995) (p. 246, fn. 86, citing Donca Steriade p.c.), verbs that select for prepositions always *l-select* them. In other words, there is no verb whose prepositional complement could be just any prepositional phrase. They always seem to demand that a specific preposition head the complement phrase, which is not a hallmark of c-selection.

(189) L-selection for particular vocabulary items

- a. Sue relies **on**/**to*/**of*/**for* **the bus**.
- b. Sue bristled **at**/**to*/**of*/**for* **Sally’s insult**.

Verbs that are more accommodating with their prepositional complements appear to *s-select* them (e.g. *put*, which selects for a location argument). It is therefore not clear that a verb exists which behaves as though it bears a [*P*] feature. Such a verb would be satisfied by any prepositional argument (unlike in (189)).⁷

Similarly, TP-complementation (on analyses that posit bare TP complements) typically refers to *infinitival* complements rather than clauses with just any tense value. In that sense,

⁶I will largely set aside adjectival arguments for reasons of space, but assume that they are likewise licensed by an X feature. Like clausal complement selection, it seems like adjectival complement selection is largely governed by semantics rather than category.

- (iii) a. Sue turned blue/12/**hungry*/**tall*.
- b. Bill felt nervous/12/tall/**purple*.

⁷Technically, nothing about the present theory precludes the existence of a *Merge onP* feature, for example, in which case a verb could in principle c-select for *on* instead of P to satisfy the l-selectional requirements of *rely* (provided a definition of c-selection that can target individual instances of P). Since c-selection is proposed to be a property of syntactic categories, however, in order for *rely* to c-select for *on*, the universal category *verb* would have to bear a feature specified for *onPs*. I assume that the universal category *verb* does not bear such a feature (it would have to bear every possible P feature to accommodate verbs that l-select for other prepositions). My point in (189) is as follows: if an argument cannot be made that the universal category *verb* bears even a more generic P feature for licensing prepositions, then selection for more specific prepositions is likely not enforced by Merge features at all, or else the category *verb* would just be a list of idiosyncratic information about the possible l-selectional requirements of every verb. I assume that idiosyncratic information that needs to be memorized is stored in the lexicon rather than the tools available to syntax. Chapter 6 discusses l-selection in more detail in the context of this view.

TP-complementation can be reduced to I-selection for *Inf/to*, rather than c-selection for elements of category T.

Lastly, CP arguments have been shown to exhibit characteristics of s-selection rather than c-selection: CP-complements can be substituted for DP and PP arguments with the right meanings. Moreover, it is not clear that a verb exists that requires a CP complement, irrespective of complementizer.

- (199) Elliott (2017), example 150
- a. Sam promised/said/explained/thought that he would give an extra lecture.
 - b. *Sam promised/said/explained/thought the possibility that he would give an extra lecture.
 - c. Sam promised/said/explained/thought something.
 - d. *Sam promised/said/explained/thought. (except with an object drop use)
- (200) Elliott (2017), example 151
- a. Hans complained that he had extra marking.
 - b. *Hans complained the possibility that he had extra marking.
 - c. *Hans complained something.
 - d. Hans complained about something.
 - e. Hans complained (often).
- (201) Grimshaw (1979); Pesetsky (1982)
- a. Sue asked whether Bill likes carrots.
 - b. Sue asked the time.
 - c. Sue asked for the salt.
- (202)
- a. Bill wondered whether/?that/* \emptyset /*for Sue (*to) likes macaroons.
 - b. Sue promised that/ \emptyset /*whether/*for Bill would/*to like her carrot soup.
 - c. Bill thought that/ \emptyset /*whether/*for Sue would/*to eat his dessert.
 - d. Sue hoped for/that/ \emptyset /*whether Bill would/to eat the soup.

Given facts like these, it is unlikely that verbs ever c-select for a clausal complement, though they may s-select for a proposition, for example. An additional reason not to posit individual *Merge PP/TP/CP* features is that doing so would require verbs like *ask/believe* to be multiply ambiguous in the lexicon. If all of the arguments in (203) were introduced by c-selection, there would have to be four separate feature structures corresponding to the different argument configurations. In other words, there would have to be a *believe* with a *Merge DP* feature, a *believe* with a *Merge PP* feature, a *believe* with a *Merge TP* feature and a *believe* with a *Merge CP* feature. If *believe* has just two features, as proposed here, *Merge DP* and *Merge XP*, all four configurations are allowed by the same feature bundle: DP and non-DP arguments are licensed but not required.

- (203)
- a. Beth believes Lauri's story. (DP object)
 - b. Beth believes in syntax. (PP object)
 - c. Beth believes Lauri that the Earth is round. (DP+CP objects)
 - d. Beth believes that Lauri likes onions. (CP object)

We could imagine that the problem of multiple lexical ambiguity would be ameliorated by choosing (197), in which V just always has *Merge PP, TP, CP* features in addition to *Merge DP* features. On that view, all of the arguments in (203) would be introduced via c-selection, but not every feature needs to be utilized all the time.

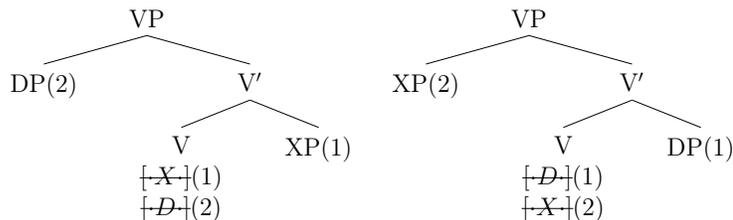
A final argument in favor of an underspecified feature on V compared to having *Merge PP, TP, CP* features (as in (197)) is the regularity in the position of non-DP arguments. Given that non-DP arguments have a fixed order of Merge relative to DP arguments (they must merge first), we expect all non-DP internal arguments to show up in more or less the same position in a clause. A coarse look at some verbs with non-DP arguments confirms this prediction: PPs, TPs, and CPs typically show up clause finally. This does not appear to be a property of heaviness, given that we can make other DP arguments in the clause arbitrarily heavy. If V were instead endowed with separate c-selectional features for PPs, TPs, and CPs, no ordering restrictions would be predicted.

- (204) a. I told (*about syntax) Lauri’s favorite poet’s cat (about syntax).
 b. I promised (*to eat a carrot) Marmie’s mother’s friend Ed (to eat a carrot).
 c. I told (*that the world is round) Beth’s nephew’s stuffed animal (that the world is round).

This last point is also an important argument for the conjecture that *subset* relations between the features of arguments determine the order of Merge. If we thought that features on verbs could be ordered or stacked independently (as in Adger (2003); Müller (2010)), we might expect to see verbs with the opposite order of Merge as *promise* and *tell*. For instance, we could imagine that only one Merge feature becomes available for checking at a time, and the order in which features present themselves is an idiosyncratic property of verbs. Such verbs might merge TP/CP arguments *after* DP arguments by ordering the Merge features on V differently, resulting in (206), and corresponding examples in (205).

- (205) Unattested predicted counterparts to *promise* and *tell*: *spromise* and *stell*
 a. I stold about syntax Lauri’s favorite poet’s cat.
 b. I spromised to eat a carrot Marmie’s mother’s friend Ed.
 c. I stold that the world is round Beth’s nephew’s stuffed animal.

- (206) Two kinds of VPs if features on V could be ordered, supposing only the highest unchecked feature in the stack is accessible to checking.



The fact that we don’t see such verbs as *spromise* and *stell* suggests that we either need to stipulate constraints on the possible orders of selectional features, or conclude that the approach taken here is the right one. On this approach, features are unordered on V, but one of V’s features is unspecified, which requires it to be checked first in the course of a derivation.

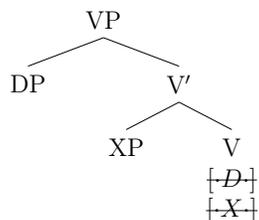
We could alternatively imagine that examples (205) are not telling us something about the order of Merge, but rather something about linear order/case/etc. For example, Stowell (1981) argues that the position immediately following the verb is a case position. Since DPs need case, but PPs/CPs do not (or can't have case), the only available word orders for DP and non-DP arguments are those in which DPs are adjacent to the verb in their clause, and other arguments show up further to the right.

In addition to much recent work offering new perspectives on case and adjacency requirements, head final languages argue against Stowell's approach and in favor of mine. In a head final language, the verb shows up to the right of all of the arguments. If DPs' position relative to verbs were driven by case rather than order of Merge, head final languages would order DPs to the *right* of non-DPs in order to appear next to the verb. If their linear order were conditioned by order of Merge, however, the position of DPs relative to non-DPs would be the same, irrespective of the headedness of VP. In fact, the order of DPs relative to non-DPs appears to be the same in Dutch as in English.

- (207) *Dutch* (Stowell, 1981, ex. 27, from Koster 1978b)
- a. ... dat Peter [John] [naar Amsterdam] stuurt
 ... that Peter John to Amsterdam sends
 'that Peter sends John to Amsterdam'
 - b. ... dat John [Peter] [ziek] maakte
 ... that John Peter sick makes
 'that John makes Peter sick'

On my approach this result is expected because head-finality switches the relative order of V and its complement but not V and its specifier. Assuming that non-DPs Merge first, and are thus complements, they should show up immediately preverbally in a head final language, while the second-Merged DP specifier appears further to the left.

- (208) Head-final VP with DP and XP



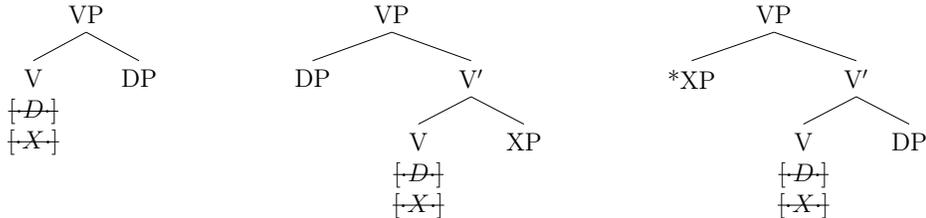
In sum, I propose that V has two c-selectional features, one that licenses DPs and another that licenses non-DPs. Because “non-DP” is not a natural class, the feature in charge of non-DPs must be underspecified, and can therefore be checked by DPs. The fact that DPs can check both features but non-DPs can only check the underspecified feature induces conditions on the order of Merge. We will now explicitly examine the possible interactions and configurations of DP and other XP arguments in VPs and beyond.

3.3 Merging arguments: DPs and XPs

Let us now take for granted that there is a category V and that V is endowed with two features, $[\cdot D \cdot]$ and $[\cdot X \cdot]$. As summarized by the non-DP first theorem (repeated below), because X is an

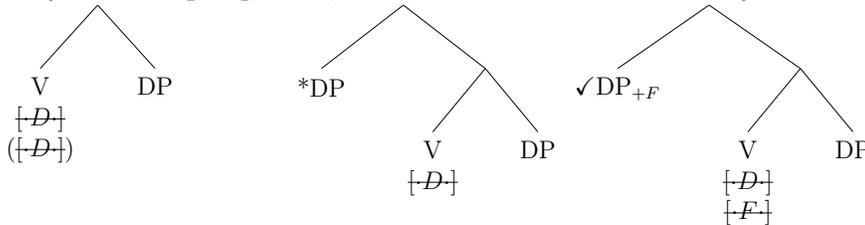
unspecified category, the distribution of non-DPs is inherently more restricted than that of DPs: merging a DP blocks another XP if the DP merges first because it checks both the $[\cdot D\cdot]$ and the $[\cdot X\cdot]$ features. As a result, non-DPs must merge first. We will now explore the predicted distribution of DPs and XPs in VPs and in verbal structures containing other verbal heads. Assuming that V has just these two features, V can host at most one DP and one non-DP, where the non-DP must have merged first.

(48) *The non-DP first theorem*: if V selects for a non-DP, the non-DP must be merged first.



Since Merge must be licensed by a corresponding feature, if a clause is to host two DPs, it must contain at least two heads with $[\cdot D\cdot]$ features. Giving V another $[\cdot D\cdot]$ feature would not allow it to license a second DP because Feature Maximality would require a single DP to check all the features that it can when it merges, which would presumably include every feature specified to check itself against DPs. The number of DPs in a clause therefore interacts directly with the amount of structure in the verb phrase.

(183) Only one DP per phrase, unless another DP licensed by a distinct feature



To summarize, a projection of category V can host at most two arguments, at most one of which may be a DP. If the clause contains two DPs, it must therefore contain another projection somewhere with a *Merge DP* feature. This second projection is what I will call *v* by convention. *v* is like V in that it has the capacity to host arguments (DPs and XPs), but unlike V in two other respects: 1) it selects for VPs, and 2) it hosts successive cyclic wh-movement.⁸

(209) Features on *v*: $[\cdot D\cdot]$, $[\cdot X\cdot]$, $[\cdot V\cdot]$, $[\cdot wh\cdot]$

Two aspects of *v*'s feature structure require elaboration: the introduction of $[\cdot V\cdot]$ and the presence of $[\cdot X\cdot]$. From a theory internal perspective, at least one of them is necessary to allow for VP complementation (*v* can't only select for DPs and wh-phrases or else it would never compose with the root). Both features are necessary to account for the possibility of multiple non-DP arguments in the verb phrase, as in (210).

(210) Sometimes multiple XPs need to be licensed

⁸Whether this difference between V and *v* is categorial or somehow assigned by the syntax is a topic for a later date. For example, we could imagine that *v* is not intrinsically a phase, but by virtue of being the second-merged verbal head, acquires phasal status by some mechanism.

- a. Jo was introduced [to Lauri] [by Beth].
- b. The book seems [to Sue] [to be interesting].
- c. Marmie counted [on Meg] [for help].

Multiple non-DPs require multiple *Merge XP* features, and the heads hosting these features must be able to compose with each other in addition to their arguments. Hence, we need both $[\cdot X \cdot]$ and $[\cdot V \cdot]$. Moreover, the addition of $[\cdot V \cdot]$ is supported by the profile of VP selection, which looks like genuine c-selection as opposed to s-selection or l-selection.

Many researchers have argued that the presence of a projection above the root/V is robust across verb phrases (Marantz, 1997, a.o.), irrespective of verb/root. This projection goes by different names on different approaches to the syntax/morphology interface (and different treatments of the V head). As discussed in Chapter 2, a common approach, following Marantz (1997); Folli & Harley (2005), is to assume that there is some root category (e.g. V), and some derivational category (e.g. v), of which different tokens or “flavors” may be chosen.⁹ Different combinations of verb root and v flavor give rise to the variation in verbal argument structure that we observe. Focusing only on the *categorial* aspect of this system, a simple statement must be true: some head, which I’ll call v , selects for VP. The syntax of v licenses a verbal complement of some kind, leaving the syntax/semantics and syntax/morphology interfaces to impose constraints on the specific combinations of roots and derivational morphemes.

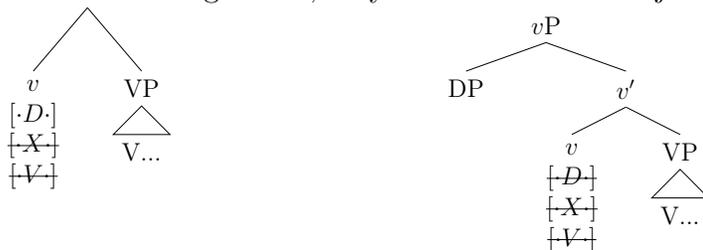
We now explore the consequences of endowing v with both argument licensing features and a $[\cdot V \cdot]$ feature (putting aside wh-features for now). What we find is that non-DP arguments of v disrupt VP complementation, much in the way that non-DP arguments of V disrupt DP complementation.

(211) Features for each verbal category

- a. $V = [\cdot D \cdot], [\cdot X \cdot]$
- b. $v = [\cdot D \cdot], [\cdot X \cdot], [\cdot V \cdot]$ (and $[\cdot wh \cdot]$ for wh-movement)

Because DPs and VPs are specific tokens of XP, merging either a DP or a VP with v has the potential to block a non-DP, non-VP argument from adjoining and checking an $[\cdot X \cdot]$ feature. Non-DP, non-VP arguments must therefore merge first if they are to appear at all. The relative order in which DP and VP merge is not specified, however, since neither one has a superset of the other’s features. By convention, I will assume that VPs usually merge such that they appear lower than DP specifiers, but nothing in this chapter will hinge on this choice.¹⁰

(212) Unless XP merges first, only DP and VP can adjoin to v .

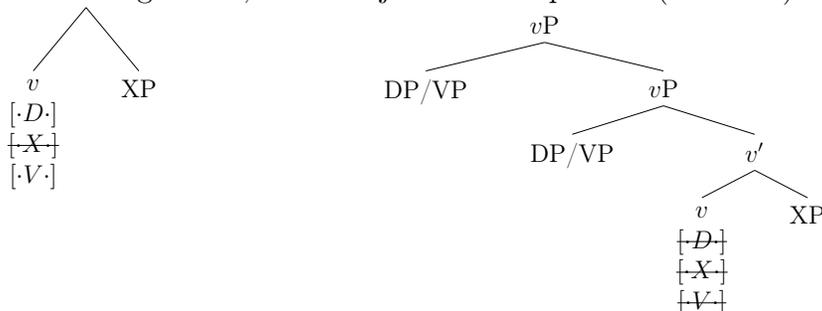


⁹Note, however, that my conception of verbal categories diverges from theirs in multiple respects. Perhaps most importantly, I assume that v is an argument introducer, not just a verbalizing head.

¹⁰It is possible that languages differ in the order of VP vs. DP merge. Notice that if DP and VP were selected in the opposite order, the base word order would be VOS, and the logical subject would not c-command the logical object. Whether there are languages that utilize this option is a topic for future research.

The only way for a non-DP to be licensed by v is if it merges first, namely *before* v takes a VP complement. As a result, the theory predicts that a non-DP argument of v P breaks the complementation relationship between VP and v . The non-DP ends up as v 's complement if it is licensed at all, while the VP becomes a specifier.¹¹

(213) If XP merges first, VP is adjoined as a specifier (as is DP).



While the tree in (213) is unfamiliar, I will argue that a good deal of the syntax of clauses with XP arguments is predicted by this picture of Merge. For instance, a recalcitrant problem introduced by experiencer subjects and *by*-phrases is their tendency to show up clause finally, unexpected on traditional views if they are specifiers of a verb. On the present account, however, their position in the clause is readily explained by the fact that they are always the first-merged element in their selecting phrase. A head-initial language like English should therefore linearize them to the right as complements.

- (214) a. (*by Sue) The book (*by Sue) was (*by Sue) read (by Sue).
 b. (*to me) Sue (*to me) seems (*to me) nice (to me).

The two verbal categories proposed here, v and V , and the features they bear define a clear space of possible verb phrases. These structures can host anywhere from 0-4 arguments, at most two of which are DPs. If there are non-DP arguments in the numeration, they must be merged first or else they will be left out. For convenience, I will henceforth primarily refer to non-DPs simply as *XP*s.

(215) Possible numbers/types of arguments in verb phrases containing just V and v on an unconstrained version of the present theory.

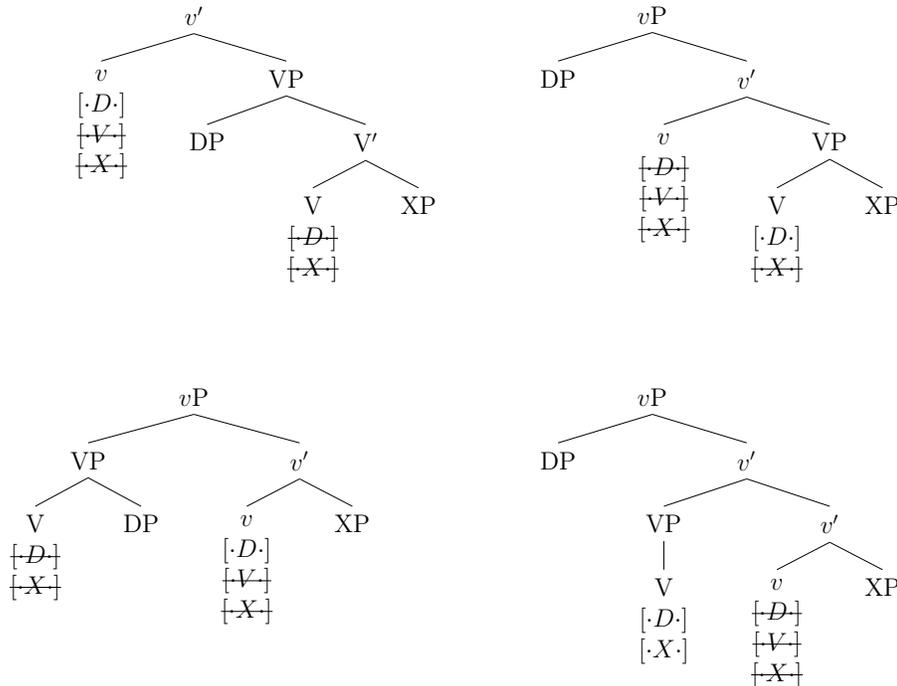
arguments in $V \rightarrow$ arguments in $v \downarrow$	\emptyset	DP	XP	DP+XP
\emptyset		1DP	1XP	1DP,1XP
DP	1DP	2DPs	1DP,1XP	2DPs,1XP
XP	1XP	1DP,1XP	2XPs	1DP,2XPs
DP+XP	1DP,1XP	2DPs,1XP	1DP,2XPs	2DPs,2XPs

As the table in (215) shows, there is a certain amount of structural ambiguity afforded by the system. A clause with 1DP and 1XP, for example, could generate both of those arguments

¹¹A derivation in which v merges with XP before it merges with VP is allowed if we assume that neither the numeration nor Merge have any intrinsic ordering requirements. Thus it is entirely possible to build a VP separately from the main clause (just as DP specifiers are presumably built in a separate work space), and merge that VP with the rest of the clause whenever v decides to check its [-V.] feature.

in VP, or both of them in vP , or one in each verb phrase. I argue that all of these options are attested.

(216) Four ways to project 1DP+1XP



3.3.1 A look at projection

(216) shows four ways to project a single DP and a single XP into a bipartite verb phrase based on the conception of Merge features that we have established so far. Assuming that a Merge feature represents the *capacity* to Merge with an element of the specified category, a question now arises, namely does anything *enforce* satisfaction of these features? Or more specifically, are any of the trees in (216) ruled out? We could imagine that if a constraint on unsatisfied features existed (as suggested by Chomsky (1995)), some of the ambiguity in (216) would be ruled out.

I have argued that nothing enforces satisfaction of Merge features in principle, following the logic of Preminger (2014) and Longenbaugh (2019), contra Chomsky (1995) (so all four options in (216) are available), except for interface pressures regarding pronounceability and interpretability. Nonetheless, there are still important questions regarding the status of unsaturated features in a clause and whether they impact the structure in any meaningful way. In other words, there are still problems of projection that need to be addressed.

So far I have largely ignored the question of projection, assuming that Merge is driven by features on a *head* rather than a *phrase*. This must have been an approximation, however, because of the familiar locality problem. If we believe in a complement/specifier distinction at all, we must believe that only complements merge with heads, while specifiers merge with phrases containing the selecting head. For features to drive the adjunction of specifiers in a clause (assuming the condition in (217)), unsaturated Merge features on a head must therefore be able to percolate or project upward to license later Merge steps. I will essentially adopt

Adger (2003)'s conception of feature percolation, as taken up by and motivated in Asudeh & Potts (2004).¹²

- (217) **Feature-driven Merge:** a constituent X may only merge with a constituent Y if Y bears an unsaturated feature [$\cdot X \cdot$] such that the resulting structure makes [$\cdot X \cdot$] sister to X.



- (218) **Projection proposal:** unsaturated features on a head *project* (adapted from Adger 2003)

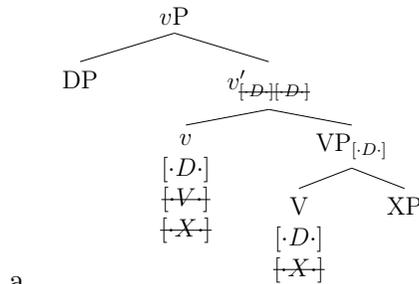
- (219) **Feature deletion:** saturated features *delete* (or return the identity function, as in Asudeh & Potts (2004))

- (220) Building a VP

- a. Step 1: $\text{Merge}(V_{[\cdot D \cdot]}, XP) = \{V_{[\cdot X \cdot]}, XP\}_{[\cdot D \cdot]}$ [$\cdot D \cdot$] projects
 b. Step 2: $\text{Merge}(\{V, XP\}_{[\cdot D \cdot]}, DP) = \{DP, \{V, XP\}_{[\cdot D \cdot]}\}$ nothing projects
 c. Impossible Step 2: $\text{Merge}(V_{[\cdot D \cdot]}, DP) = \{\{V_{[\cdot D \cdot]}, DP\}, XP\}$ heads don't select for multiple complements

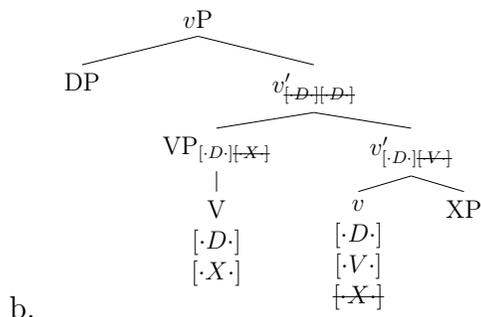
These notions of projection and deletion in principle allow for VP to be selected by v before any of V's features have been satisfied (as in (221)). Doing so has a consequence, however, namely the projection of V's features as well as v 's.

- (221) **Unsaturated features project:** in the absence of a constraint on feature projection, heads project their own unsaturated features, as well as those of their sisters.



- a.
- i. Step 1: $\text{Merge}(V, XP)$ – checks X, projects D
 - ii. Step 2: $\text{Merge}(v, VP)$ – checks V, X, projects D from both v and VP
 - iii. Step 3: $\text{Merge}(v', DP)$ – checks all D features

¹²In order for specifiers to tuck in, as in Richards (1997) and as I proposed in Chapter 2, features must not necessarily project at every instance of Merge. Rather, they project after the *first* instance of Merge from the head to the phrase containing the head and its complement. Once the head has a complement, subsequent Merge steps with additional phrases might or might not project the unsaturated features, according to whether the Merging elements merge cyclically or tuck in. Thus, in (218), unsaturated features are specified to necessarily project from heads but not phrases. For more on feature projection in the context of tucking in, see Chapter 5.



- i. Step 1: Merge (v,XP) – checks X, projects D,V
- ii. Step 2: V projects to VP, projects D,X
- iii. Step 3: Merge(v,VP) – checks V and X, projects D from both v and V
- iv. Step 4: Merge(v',DP) – checks all D features

If unsaturated features project until satisfied, all of the combinations in the table in (215) are in principle derivable. Moreover, all v Ps with at least one DP will have all of their features checked in the course of the derivation, regardless of how many arguments are actually introduced.¹³ In Section 3.4, I show that the predicted typology of verb phrases is attested, given the diagnostics I adopt for XPs. More importantly, it looks complete – there are no verb phrase configurations that I know of in natural language that are not covered by the typology. The table in (222) shows an attempt to label each verbal configuration with a description from the literature. Section 3.4 will elaborate on each one, and investigate the predicted cases of structural ambiguity (how e.g. raising verbs occupy two cells in the table).

(222) Ascribing names to each structure.

arguments in $V \rightarrow$ arguments in $v \downarrow$	\emptyset	DP	XP	DP+XP
\emptyset	<i>weather</i> verbs	unaccusatives	raising verbs	ditransitive unaccusatives
DP	unergatives	transitives	ECM verbs	ditransitives
XP	raising verbs	<i>star</i>	<i>seem/appear</i>	<i>find</i>
DP+XP	<i>wager</i>	ditransitives	<i>hear</i>	<i>bet</i>

3.4 Building verb phrases

This section is meant to provide a proof of concept for the present approach to building verb phrases. I will demonstrate for each imaginable combination of arguments what possible derivations are predicted. I will additionally propose English examples corresponding to each of these structures, based on a handful of diagnostics. We will see that the behavior of unsaturated $[\cdot D \cdot]$ features makes possible a variety of behaviors, such as licensing expletives and raising.

The goal of this dissertation is to advocate for a particular conception of the verb phrase, and show how this approach explains Voice/wh-movement interactions in a number of languages/contexts. As will become clear throughout this section, the claims I make about the verb phrase also bear on a number of other research programs, including (but not limited to)

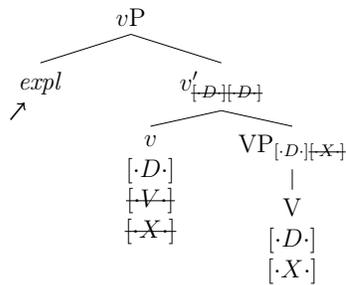
¹³I could also ask the question of whether v is always needs to be present in a derivation. I will assume that it is, but I could imagine an alternative universe where v is only present if it licenses a higher argument.

a theory of *why* certain structures/derivations correspond to some verbs and not others. I will largely leave aside an explanation of the intricacies of English verbal argument structure in the hopes that much of it can be explained by interface pressures. Chapter 6 will revisit this puzzle and argue for a view of the interfaces that makes this move possible.

3.4.1 Weather verbs (no DPs or XPs)

Weather verbs are verbs that seem not to assign any theta roles or select for any arguments. The $[\cdot D\cdot]$ and $[\cdot X\cdot]$ features on V and v are therefore maximally underutilized. Due to the projection principles outlined in Section 3.3.1, only the $[\cdot D\cdot]$ features of each head percolate to v' .

(223) *Weather* verbs don't select for any arguments – unsaturated D features percolate and license expletives in some languages.



In English, which does not tolerate null subjects, the unsaturated $[\cdot D\cdot]$ features must be checked via insertion of an expletive. In principle, the expletive need not be inserted within the verbal domain, since it does not receive a theta role and the $[\cdot D\cdot]$ features could potentially percolate indefinitely. Following Deal (2009); Wu (2018); Longenbaugh (2019), however, I will assume that expletives merge where a transitive subject typically would, i.e. in Spec vP . In Spanish, a language that *does* tolerate null subjects, either nothing checks the $[\cdot D\cdot]$ feature, or something does so covertly.¹⁴

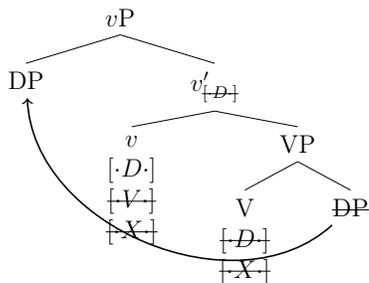
- (224) *Rain* selects for no arguments
- a. It's raining. (English checks D with an expletive)
 - b. Llueve. (Spanish leaves D unchecked)
rain.PRES.IPFV
'It's raining.'

3.4.2 Unaccusatives (1DP, generated low)

Unaccusative verbs are much like *weather* verbs, except that only one $[\cdot D\cdot]$ feature percolates to v' , namely the one from v . That's because V's $[\cdot D\cdot]$ feature is checked by a DP complement (as is its $[\cdot X\cdot]$ feature). The fact that v projects a $[\cdot D\cdot]$ feature, however, leads to three possible outcomes: raising of the DP object to subject position, insertion of an expletive, or leaving that feature unchecked.

¹⁴The present framework potentially invites an analysis of expletive insertion as the morphological manifestation of unchecked $[\cdot D\cdot]$ features in some languages. I will not pursue this idea here, but note it as a possibility for future research.

- (225) Unaccusative verbs select for a low argument, which may or may not raise to Spec *v*P (Legate, 2003; Sauerland, 2003; Longenbaugh, 2019).



A language like English, which does not tolerate null subjects, must check the unsaturated $[\cdot D \cdot]$ feature by either raising the object or inserting an expletive. A pro-drop language (like Spanish) may either raise the object (as in English) or leave it in situ. For some reason, the choice of expletive in these cases is *there* rather than *it* in English. While I do not know why the form of the expletive changes in these different contexts, I will assume that all expletive subjects are alike in being able to check a D feature in order to merge at Spec *v*P (Deal, 2009).¹⁵

- (226) English: expletive or raising
 a. Three flowers grew (in the garden).
 b. There grew three flowers (in the garden).
- (227) Spanish: raising or no raising
 a. Llegaron unos amigos.
 arrive.pst some friends
 ‘Some friends arrived.’
 b. Unos amigos llegaron.
 some friends arrive.pst
 ‘Some friends arrived.’ (Mackenzie 2006:33)

As is the case for expletives, nothing forces the object to remerge in Spec *v*P, given that the unsaturated $[\cdot D \cdot]$ could continue to percolate up to TP, for example. Nonetheless, I will assume by convention with Legate (2003); Sauerland (2003); Longenbaugh (2019) that unaccusative objects raise to Spec *v*P before moving on to Spec TP. Whether this indicates a constraint on percolation or a property of phases, I leave to future research.

A puzzling property of English expletives is the fact that not all unaccusative verbs tolerate them, though all unaccusative verbs are compatible with raising. I will not speculate on the reasons for this apparently pickiness in how $[\cdot D \cdot]$ features are satisfied. Instead I refer the reader to (Milsark, 1974; Diesing, 1992; Freeze, 1992; Deal, 2009, a.o.), who attribute the variation to semantic properties of the relevant verbs and their interactions with definiteness.

- (228) a. Three soldiers died (on the battlefield).
 b. *There died three soldiers (on the battlefield).

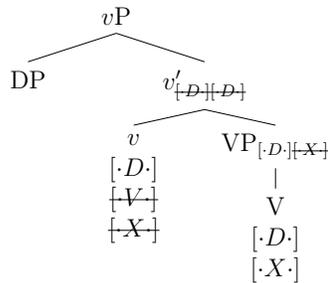
¹⁵Deal (2009) proposes that *there* differs from *it* by having a requirement to agree with an associate. This treatment may account for the different distributions of *there* vs. *it* as sensitive to whether there are other arguments in the clause that could control agreement.

3.4.3 Unergatives (1DP, generated high)

A variety of diagnostics across languages have shown that not all intransitive subjects pattern alike. In other words, the verbs that select for a single DP argument do not form a natural class from the perspective of how those arguments behave. Following Perlmutter (1978), I assume that is because intransitive subjects do not all originate in the same position. It is possible for verbs to vary regarding whether *v* or V introduces a DP argument. Clauses with a single DP introduced by V are unaccusative; clauses with a single DP introduced by *v* are unergative.

The derivation of an unergative *v*P looks the same as it did for *weather* verbs. Unlike *weather* verbs, however, unergative verbs select for a subject, which checks both [*D*] features. Unergative verbs therefore routinely reject expletives and postverbal subjects (Hoekstra & Mulder, 1990; Deal, 2009, a.o.).

- (229) Unergative verbs select for a high DP – VP’s features get checked by *v* and the subject respectively.



- (230) English unergatives block expletives

- a. Jo laughed.
- b. *There laughed three children.

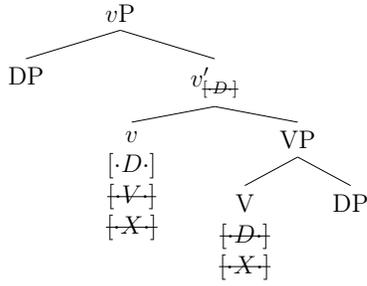
- (231) Spanish unergatives block postverbal subjects (Torrego 1989)

- a. *Han dormido animales.
have slept animals
intended: ‘Animals have slept.’
- b. *Anidan cigüeñas.
shelter storks
intended: ‘Storks shelter.’

3.4.4 Transitives (2DPs)

Transitive clauses maximally utilize the available [*D*] features on *v* and V by merging a DP in both projections.

- (232) Transitive clauses select for two DPs.



- (233) a. Meg devoured the cookie.
b. Marmie buried a seed.

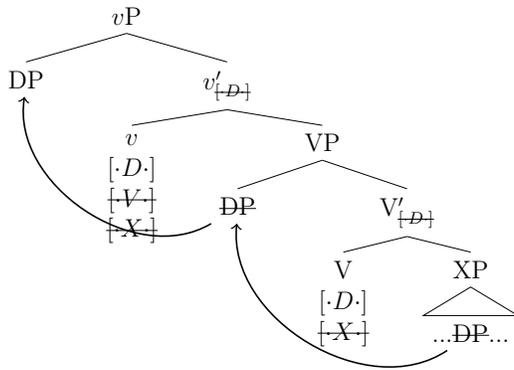
3.4.5 Raising verbs (1XP, low or high/2XPs)

It is also possible for a verb to select for an XP but no DPs. Like intransitive clauses with DP arguments, clauses with a single XP argument should not form a natural class: a single XP argument could be introduced in either V or *v*. The choice of where to merge the XP argument has consequences for the complement-hood of VP.

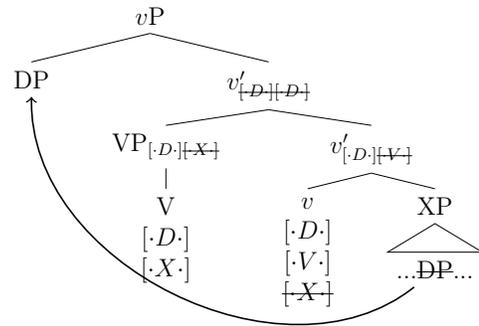
Since XP arguments may contain DPs, unsaturated $[\cdot D \cdot]$ features may be checked either by expletives or by raising a DP from within XP.¹⁶

- (234) Raising verbs select for XPs – D feature may be checked by raising/expletive insertion.

a. XP is generated low



b. XP is generated high



- (235) English: DP can raise from XP or an expletive can be merged

- a. Beth appears to like the piano.
b. It appears that Beth likes the piano.

- (236) Spanish: DP may or may not raise from XP (Holmlander, 2004, ex. 1-2)

¹⁶We would also expect there to be raising verbs whose XP arguments aren't clauses, but rather PPs or APs, for example. Though I won't investigate these fully, the verbs in (iv) appear to have this profile.

- (iv) a. Amy came to.
b. Meg seems nice.

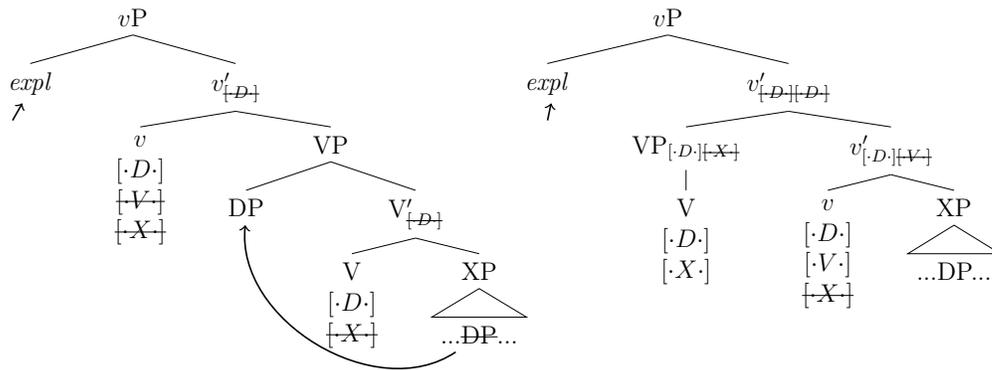
- a. Jorge parecía beber demasiado.
 Jorge seem.ipfv drink.inf too.much
 ‘George seemed to drink too much.’
- b. Pareció haber alguien viviendo allí.
 seem.pst be.inf someone living there
 ‘There seemed to be someone living there.’
- c. Parecía que Jorge bebía demasiado.
 seem.ipfv that Jorge drink.ipfv too.much
 ‘It seemed that George drank too much.’

These two structures make slightly different predictions for the profile of raising. In (234a), two raising steps are possible: 1) from XP to Spec VP, 2) from Spec VP to Spec *v*P. In (234b), only one raising step is possible: from XP to Spec *v*P.

As a consequence, it should be possible in (234a) to do one step of raising to Spec VP, followed by expletive insertion in Spec *v*P. In (234b), raising and expletive insertion should be in complementary distribution (assuming expletives only merge in Spec *v*P). While no partial raising is licensed with *it*-expletives in English, there appears to be partial raising with *there* for some raising constructions but not others. This is expected if the clausal argument of *be likely* is selected by VP, while the clausal argument of *seem* is selected by *v*P.

- (237) a. *It seems/appears/is likely/is certain Jo to write a novel.
 b. There are three guides likely to be waiting for us at the airport.
 c. *There seem three guides to be waiting for us at the airport.

(238) Partial raising is licensed for low XP arguments but not high ones



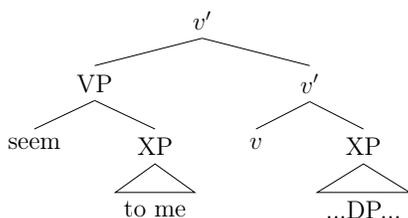
One might object that the contrast in (237b,c) does not necessarily reflect different XP positions for different raising verbs because (237b,c) are not a perfect minimal pair. *Be likely* has a copula while *seem* does not, which could contribute to the apparent availability of partial raising in (237b) but not (237c). If the copula in (239) were entirely responsible for this contrast, however, we should be able to rescue (237c) by adding a *be*-auxiliary. Doing this is tricky, since *seem* is not often accepted in the progressive. Adding contrastive focus, which somewhat licenses the progressive in (239c), however, does not rescue the partial raising version in (239d). Something else must therefore account for the contrast between *seem* and *be likely*, which I propose is the relative position of their clausal arguments.

- (239) Adding a *be*-auxiliary to *seem* clauses
- ??Three guides are seeming to be waiting at the airport.
 - *There are three guides seeming to be waiting at the airport.
 - Three guides are only *seeming* to be waiting at the airport.
 - *There are only *seeming* three guides to be waiting at the airport.

This finding interacts with another difference between *seem* and *be likely*, which is that the former can host an experiencer subject while the latter cannot. The high-XP status of *seem*'s clausal argument is likely a consequence of the fact that *seem* selects *two* XPs, while *be likely* only selects one.

- (240) a. *Beth is likely to me to win the bet.
 b. Jo seems to me to like reading.

- (241) *seem*: both V and *v* host an XP



It is not clear why *seem* would select an experiencer subject as a low argument but clausal arguments higher. We could have imagined a reverse scenario where the experiencer subject was instead selected by *v*. It does seem to be true, however, that the clausal argument of *be likely* behaves more like a “selected” argument than the clausal argument of *seem* does, on account of its ability to be a subject of a *be likely* clause but not a *seem* clause. To the extent that clausal arguments can be subjects, they are acting like thematic arguments of the verb (just like the nominal subjects in (243)), which is allowable for *be likely*, whose clausal arguments are merged with the root, but not *seem*, whose clausal arguments are merged with *v*.

- (242) a. That Beth will master the piano is likely/certain.
 b. *That Jo will write a novel seems/appears (to me).
- (243) a. The imminent arrival of cicadas is likely/certain.
 b. *The imminent arrival of cicadas seems/appears.

The differences between raising verbs like *seem/appear* and *be likely/certain* suggest that it is at least possible that the two structures in (234) exist, though a cross-linguistic study of raising verbs is needed to verify this more generally.¹⁷

¹⁷If the experiencer subject is indeed low in (240), the binding facts in (17) are quite puzzling. I’m not sure what to make of the conflicting evidence that partial raising and binding are exhibiting.

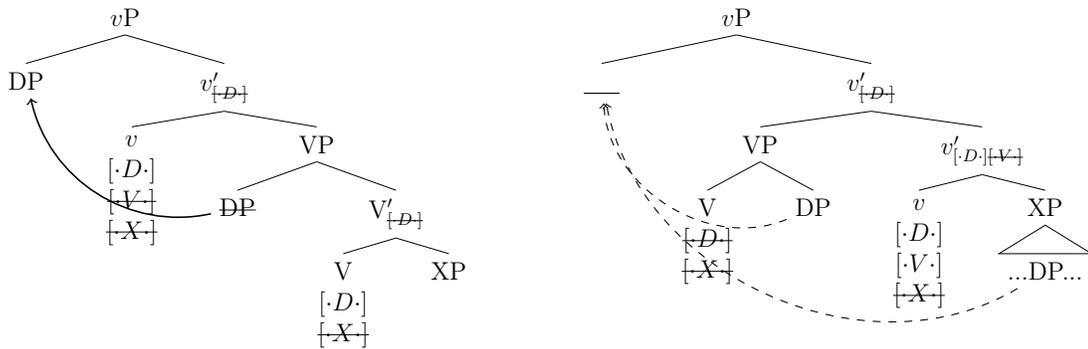
- (v) a. *Sue seems to him_i to like Jim_i.
 b. Sue seems to his_i mother to like Jim_i.

3.4.6 1DP, 1XP verbs

The table in (215) indicates that there are four possible ways to construct a clause with one DP and one XP argument. Both arguments can be introduced in VP, both can be introduced in vP , or one can be introduced in each projection. When there is no DP argument of vP , v 's $[\cdot D \cdot]$ feature can potentially be checked either by raising or by inserting an expletive. When there is no DP argument of VP, V's $[\cdot D \cdot]$ feature can either percolate or license ECM.

Given the multiple avenues of variation in 1DP/1XP clauses, we expect 1DP/1XP clauses to display a wide variety of behaviors. Starting with clauses where the DP is an argument of V (diagnosable by the availability of expletives¹⁸), we expect two kinds of raising patterns to result from the variable location of XP. If XP is low, the highest/most accessible DP for raising is the DP argument of V. If the XP is high, VP becomes a specifier, meaning that the DP and XP arguments no longer stand in a c-command relationship. As a result, either the DP argument of V or a DP from within the XP may raise to subject position. Both behaviors are observed in English, with the puzzling result that X is apparently always deleted when stranded in (246).

(244) When V has the DP argument: the position of XP has consequences for raising



(245) low XP arguments: only DP argument can raise

- a. Such books appeal to Jo.
- b. There appealed to Jo only three books.
- c. *Jo appeals such books (to).
- d. Amy's future matters to Beth.
- e. There mattered to Beth nothing more than Amy's future.
- f. *Beth matters Amy's future (to).

(246) high XP arguments: either DP argument or complement of X may raise (but X must delete)

- a. Three famous actors starred in that film.
- b. There starred in that film three famous actors.

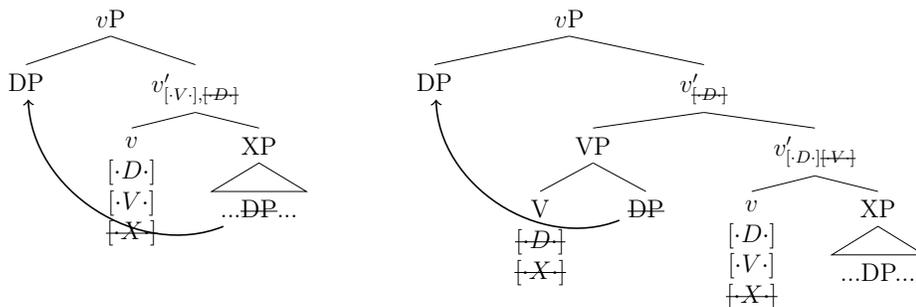
¹⁸For some reason, it seems that the presence of an expletive obviates the normal word order requirements on DPs. While DPs should typically linearly precede XP arguments, on account of their structural position, it appears that the expletive licenses (or maybe even enforces) a stylistic shifting of the DP to the right. Assuming that this shift can be tied to a DP's relationship to an expletive, I will ignore the position of DPs in these examples, focusing on the availability of expletives rather than their impact on word order.

- c. That film starred three famous actors (*in).
- d. We puzzled over Sue's remarks. (Pesetsky, 1995, ex. 38)
- e. There puzzled over Sue's remarks three distinguished-looking professors.
- f. Sue's remarks puzzled us.
- g. Sue delighted in Anna's success.
- h. There delighted in Anna's success an army of supporters.
- i. Anna's success delighted us.
- j. Dust accumulated on the table. (Perlmutter & Postal, 1984)
- k. There accumulated dust on the table.
- l. The table accumulated dust.

Zooming in on (244), I have proposed that raising is symmetric because neither DP c-commands the other. However, one might object to this characterization because there is still a structural asymmetry between them: the *phrase containing* one of the DPs c-commands the *phrase containing* the other (VP c-commands XP). If this type of structural asymmetry were important, it would predict that only the complement of V could raise.

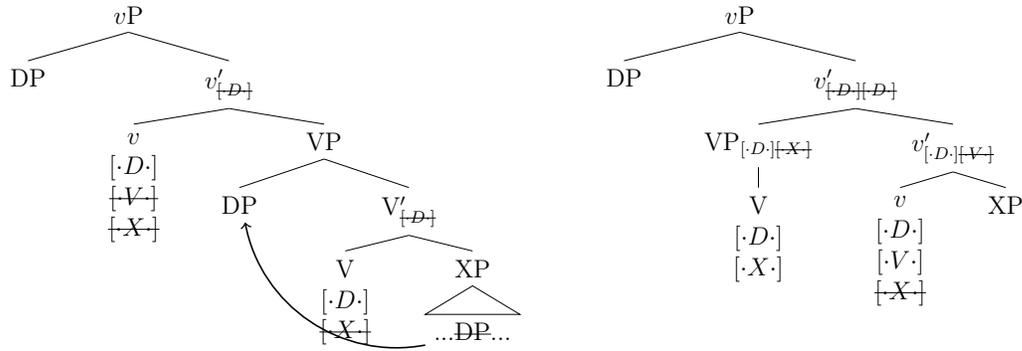
I argue that this structural asymmetry could not matter for relativized minimality because symmetric raising is independently predicted by the order of Merge: there is a stage in the derivation in which the XP argument has merged but the VP argument has not. At that stage, the DP argument of X is the “closest” (namely only argument). Since $[\cdot D \cdot]$ and $[\cdot V \cdot]$ are unordered, there are two options: raise the DP argument of X, and then Merge VP; or Merge VP and raise the complement of V.

(247) Symmetric raising comes about due to ambiguity in the order of DP/VP-Merge



Looking now at the “unergative” counterparts of 1DP, 1XP clauses, the same ambiguity in the position of XP arises, but only one of them permits raising of any kind. When XP is low, ECM-type raising to Spec VP is permitted. When XP is high, raising to Spec vP is blocked by the DP subject.

(248) When v has the DP argument: the position of XP has consequences for ECM



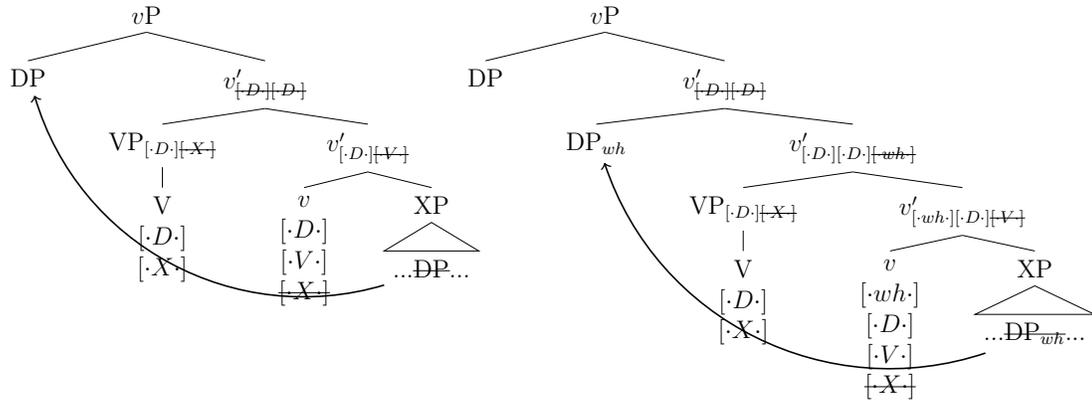
- (249) low XP arguments: ECM
- Amy believes Jo to be talented/it to be raining.
 - Meg considers Beth to be talented/it to be impossible to eat all that dessert.
- (250) high XP arguments: no ECM
- *Marmie hopes Beth to practice the piano.
 - *Lauri tried Amy to take swimming lessons.

When the XP argument is low, a DP can raise from it to check either/both of the D features on V and *v*. When the XP argument is high, however, a DP can only raise to check the D feature on *v*. Thus, in order for a DP to raise from the complement of a non-ECM verb, *v* must either fail to introduce a subject, or there must be another feature on *v* licensing movement. It so happens that there is a class of non-ECM verbs in English that show exactly this profile: raising from XP to any position is blocked in active, declarative contexts (251a,d), but permitted in the passive or if the raising element is a wh-phrase (251b,c,e,f). Importantly, in situ subjects of infinitives are assumed to be independently disallowed in English, so (251a,d) can only be analyzed as attempted ECM-type raising.

- (251) *wager*-class verbs (Postal, 1974)
- *Amy wagers Beth to be the best pianist.
 - Beth was wagered to be the best pianist.
 - Who did Amy wager to be the best pianist?
 - *Jo alleged Meg to be the best actress.
 - Meg was alleged to be the best actress.
 - Who did Jo allege to be the best actress?

Assuming that passive clauses don't base generate a DP subject in Spec *v*P, *v*'s D feature becomes available to a DP inside XP in the passive, and hence licenses raising. Similarly, given that *v* has a wh-feature that licenses an additional wh-specifier, a wh-DP inside XP has the option to raise, whether or not there is a DP subject in Spec *v*P.

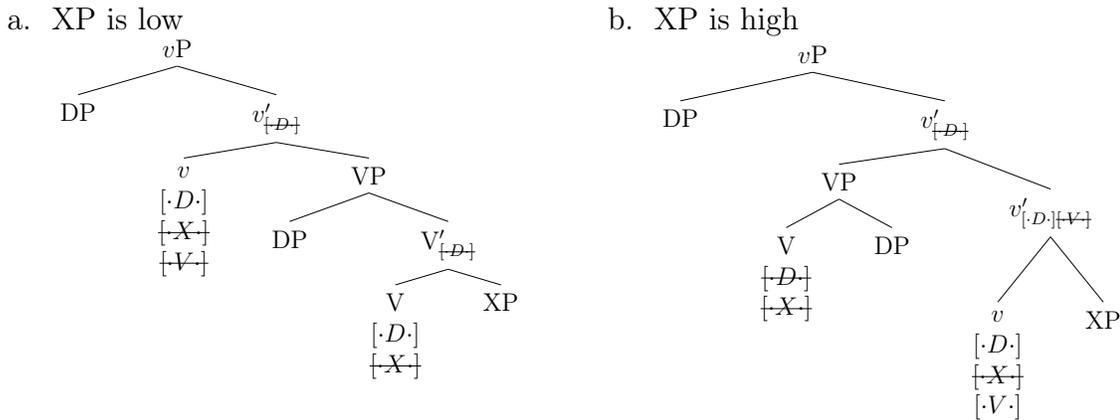
- (252) *Wager*-class verbs license "ECM" if *v*'s D feature is available or if *v* can host another specifier



3.4.7 Ditransitives (2DPs, 1XP)

Clauses with 2DPs and 1XP can be built according to either of the two trees in (253). The DPs have a fixed position: one in each verbal projection, but the XP can either be an argument of V or of *v*. Since all of the D features are satisfied by DP arguments, there should be no raising in such structures.

(253) Two kinds of 2DP/1XP structures



There are many kinds of clauses with what appear to be two DPs and a single XP argument: prepositional variants of the dative alternation, object control verbs, *tell* verbs, etc. The examples in (254) have often been argued to have the structure in (253a).

(254) Ditransitives

- a. Elmer put a rabbit trap under the bridge.
- b. Bugs introduced Elmer to Tweetie.
- c. Bugs asked Elmer to sing him a lullaby.
- d. Elmer told Bugs that he left the rabbit traps at home.

There are also other ditransitive constructions, however, whose structural description is more controversial. For instance, the so-called *double object construction* has three arguments, like the examples in (254), but it is unclear which, if any, of them are XPs. Given that I have

only posited two D features, one of the three arguments in (255b) must be a non-DP (you can't merge three DPs with only two D features), which brings double object structures into the purview of the trees in (253). On this approach, we can imagine either of two treatments of the two objects in (255b): the indirect object is an XP (i.e. dative arguments are XPs, as in e.g. Baker (1988); den Dikken (1991)) or the direct object is an XP (Pesetsky (1995)'s G).

(255) English Dative alternation

- a. Elmer gave a fake present to Bugs.
- b. Elmer gave Bugs.DAT a fake present.

(256) Two ways to treat double objects

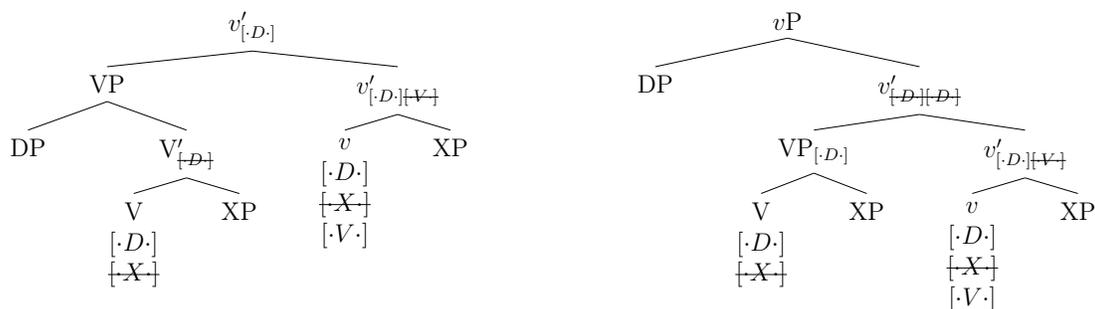
- a. Pesetsky (1995): Elmer gave [_{DP}Bugs] [_{XP} X a fake present].
- b. Baker (1988); den Dikken (1991): Elmer gave [_{XP} X Bugs] [_{DP}a fake present].

Chapter 4 (specifically section 4.2) is devoted to deciding between these possibilities for different languages/verbs. What we find is that both strategies are available and diagnosable with binding and scope diagnostics. Moreover, I will argue that the double object variant of the dative alternation is often best represented by (253b). Taken together, the findings from Section 4.2 and Chapter 5 motivate the overall approach to treat ditransitives as 2DP/1XP clauses.

3.4.8 1DP, 2XP verbs

We could also imagine three-argument clauses that are the inverse of ditransitives, where two of the arguments are XPs and only one is a DP. Verbs like these can be built in either of two ways: where DP is an argument of V or an argument of *v*.

(257) 1DP, 2XP verbs



Some verbs with 1DP/2XPs are shown in (258). Some of them permit expletives (with the relevant modifications) while others do not, which indicates that the base position of the surface subject is indeed different for different verbs. Those verbs whose DP argument is generated in Spec VP (marginally) permit expletives (e.g. *rely/count*), while those that don't generate the DP argument in Spec *vP* (e.g. *hear*).¹⁹

¹⁹Example (259) cannot be analyzed as exhibiting reduced relative clause modification of existential arguments. This is because it is possible to insert a full relative clause *who I met yesterday* between *there's* associate and the progressive verb, which would be impossible if the progressive were part of a reduced relative clause (Deal, 2009, citing Rajesh Bhatt, p.c.). Comparing (259) to (v), the progressive in (259a,b) can be understood to describe the behavior of *there's* associate, while the progressive in (vb) cannot be understood to describe the

- (258) 1DP, 2XPs
- a. Elmer relied on Tom for support.
 - b. Elmer counted on Tom to help him catch Bugs.
 - c. Bugs heard from Jerry that Elmer had set a trap.
- (259)
- a. ?There are three desperate mice (who I met yesterday) relying on Tom for support.
 - b. ?There are three grumpy hunters (who I met yesterday) counting on Tom to help catch Bugs.
 - c. *There are three anxious loony toons (who I met yesterday) hearing from Jerry that Elmer set a trap.

Another predicted point of variation pertains to raising. In principle, either the DP argument of the high XP or the DP specifier of VP could raise to check *v*'s [*·D·*] feature, depending on the timing of VP-Merge. To verify this prediction, we either need to find 1) a verb like *star/puzzle/delight/accumulate* with a second XP argument, or 2) a raising verb that takes an internal argument in addition to experiencer and clausal arguments. I haven't been able to find a raising verb with this pattern, but a 2XP version of *star*, namely *find* shows the expected alternation for a verb phrase with the structure in (257a).

- (260) The profile of verbs we are looking for
- a. We puzzled (XP) over Sue's remarks (XP).
 - b. Sue's remarks puzzled us XP.
 - c. DP seemed to Sue that it is raining.
 - d. It seemed DP to Sue to be raining.
- (261) Perlmutter & Postal (1984)
- a. The US found itself on the brink of disaster in 1993.
 - b. 1993 found the US on the brink of disaster.

Aside from the puzzling requirement for a reflexive argument in (261a), (261a-b) show the kind of alternation we observed for verbs like *star/puzzle/delight/accumulate*. The DP subject can either originate in Spec VP or from within an XP argument. In the latter case, the preposition apparently deletes. The only difference between *find* and *star/puzzle/delight/accumulate* is that *find* may contain a second XP argument *on the brink of disaster*.

Looking now at (257b), we might expect that the lack of a DP argument in VP should license ECM (for a verb with a low clausal argument). Relevant verbs are, again, very hard to find (if they are attested at all). Treating the particle in a verb-particle construction as an XP, however, shows that there do indeed exist ECM-type verbs with 1DP and 2XPs, as in (262).

- (262)
- a. Sue made it out to be raining.
 - b. Sue made Jo out to like carrots.

head of the relative clause.

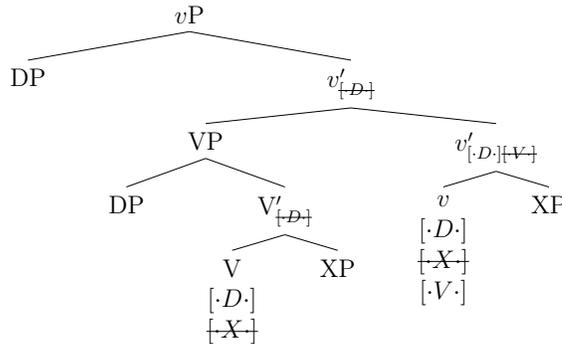
- (v) a. The teacher scolded [the student laughing in the hall who was wearing a Red Sox cap].
- b. *The teacher scolded [the student who was wearing a Red Sox cap laughing in the hall].

The examples presented here raise many questions about why different XP arguments are low vs. high and why raising is permitted or blocked in each case. However, to the extent that these examples exist, they provide the proof of concept that this section is designed to investigate.

3.4.9 Verbs of *betting* (2DPs, 2XPs)

Lastly, and most straightforwardly, verbs are predicted that utilize every single feature on V and *v* to introduce four arguments. It is well known that verbs with four arguments exist, and in English, they typically represent one of them like the dative argument of a ditransitive. I assume that those arguments are therefore inherent case-marked XP arguments, where the X head is unpronounced for reasons related to the English inherent case system (foreshadowing my analysis of English double object constructions). These clauses can thus be analyzed as having two DPs and two XPs, which should be configured as in (263).

(263) 2DP, 2XP verbs - every feature is utilized



- (264) a. Bugs bet Tweety.DAT 7 dollars that Road Runner would escape.
 b. Bill wagered me.DAT a day's pay that the world would end on Wednesday. (Pesetsky, 1995, ex. 478)
 c. Bill sent Mary.DAT a letter to London.

Importantly, no verbs are predicted to have *more* than four genuine arguments, since licensing them would require additional heads and features. The only way to include more arguments is to choose verbs that embed clausal or verbal complements.

(265) 5 arguments allowed for causativized *bet*

- a. Bugs made Tweety bet Elmer a day's pay that Tom would lose sight of Jerry.
 b. Bugs let Tweety bet Elmer his life savings that Elmer would catch him.

In sum, the present proposal about the syntax of verb phrases places a constraint on the lexicon – the lexicon cannot contain verbs with more than four arguments, because the syntax has nowhere to put them. The syntax also places constraints on the categories of arguments in the ways we have seen: there can be at most two DPs, so other arguments must be housed in a PP-shell or in an embedded clause, for example. The structural limitations on these different types of arguments are proposed to account for their behavior in alternating constructions, which are the focus of Chapter 4.

3.5 Conclusion

In this chapter, we explored the implications of feature driven Merge for constructing verb phrases. With the assumption that all Merge is feature driven, and that the features driving Merge cannot distinguish internal from external Merge, we needed to establish the possible features that can drive Merge, and test whether this approach could explain facts about the construction of clauses that were otherwise unexplained. I argued that three assumptions were necessary to predict the full typology of possible verb phrases:

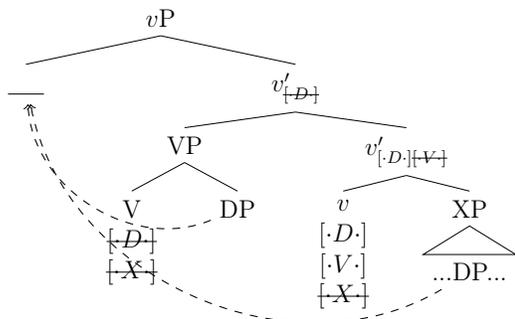
- (266) C-selection is a property of syntactic categories rather than lexical items
- (267) non-DPs and non-VPs are introduced by a feature that is *unspecified* for category: [$\cdot X \cdot$]
- (268) The verbal domain is bipartite: the two argument introducing heads are V and v (Larson, 1988; Hale & Keyser, 1993; Chomsky, 1995; von Stechow, 1995, a.o.)

With these assumptions, we saw that it was possible to construct a finite number of verb phrase configurations, which could host at most four arguments. Moreover, there was a generalization about the position of non-DP arguments: they could only be introduced first in their selecting phrase or they would be blocked by other constituents. This result came about from the fact that the feature licensing them is underspecified – it can be checked by anything.

Given that this approach to the verb phrase deals in syntactic categories rather than lexical items, it makes a strong prediction: *no* lexical item should exist whose selectional requirements are not satisfiable by one of the predicted argument configurations. In other words, we should expect to find verbs in languages that select for at most four arguments: a verb that selects for five arguments will never be satisfied, because the syntax only makes room for four.

The goal of Chapter 4 is to show that these predicted constituent structures do some work to explain the profile of ditransitives and passives. As we saw in Section 3.4.6, XP complements of v cause VP to become a specifier. As a result, a DP complement of X and a DP complement of V do not c-command each other, enabling either one to raise to Spec vP in the absence of a transitive subject. This scenario is proposed to account for symmetric passivization in languages that have it, and also to account for elusive scope and binding facts in the dative alternation and passives.

- (244) The position of XP has consequences for raising to Spec vP



Chapter 4

The dative and passive alternations

4.1 Introduction

Chapter 3 discussed a series of abstract configurations of DPs and other XPs predicted by the present theory of c-selection combined with the proposed features on verbal heads. Chapter 3 also offered a brief tour of correspondences between these predicted structures and linguistic examples. The goal of this work was to show that the theory does not wildly overgenerate imaginable verb phrases, and yet is flexible enough to allow for the considerable variation in verb-argument combinations and behaviors.

We now turn away from “basic” configurations of arguments and investigate two so-called “alternations”, namely the dative and passive alternations. I use these terms with some trepidation because I will argue that neither the dative nor the passive alternation is a transformation on any of the structures we have seen. Instead I propose they involve either of two different notions: 1) UG presents two ways to configure the relevant arguments in a clause, and the language utilizes both; 2) an argument that is typically represented as a DP has an alternative realization as a PP, which affects its position in the clause relative to other arguments. I propose that the dative alternation is a version of the former type of alternation, while the passive is a version of the latter.

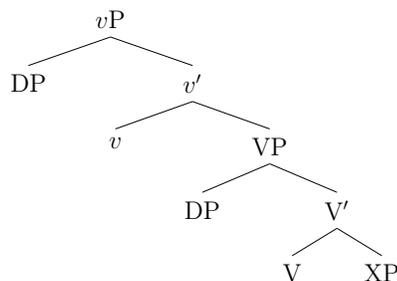
The definition of a ditransitive clause advanced in Chapter 3 was a clause with two DP arguments and one XP argument. There is no flexibility in the position of the DP arguments – one of them needs to merge in VP and the other in *v*P. There are, however, two positions in which the XP argument might merge – either as the complement of V or the complement of *v*.

(255) English Dative alternation

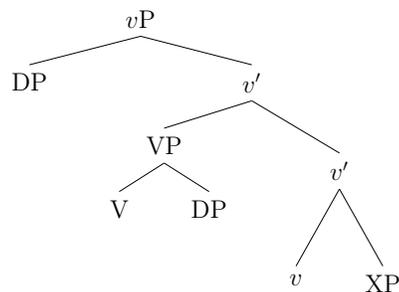
- a. Elmer gave a fake present to Bugs.
- b. Elmer gave Bugs.DAT a fake present.

(269) Two ditransitive structures

- a. XP is low



b. XP is high



I argue that the dative alternation as we know it is really the combination of two properties of ditransitive clauses: 1) their structural ambiguity (on account of the two positions available to XPs), and 2) their word order flexibility (introduced by VP-specifier-hood). My account for the alternation in (255) is as follows: the indirect object can be projected either as an XP argument of V or as an XP argument of *v*. I additionally propose that when VP is a specifier, it can be projected either as a rightward or leftward specifier.

If the indirect object is an argument of V (as in (269a)), it can only be linearized to the right of the direct object because the indirect object is V’s complement and the direct object is V’s specifier; if the indirect object is an argument of *v* (as in (269b)), it can be linearized either to the left or the right of the direct object, depending on how the VP-specifier is linearized. As a result, (255a) is proposed to be structurally ambiguous (the indirect object can be “low” or “high”) but (255b) is not (the indirect object must be “high”). I will henceforth refer to XP arguments of V as *low XPs* and XP arguments of *v* as *high XPs*.

I propose that this treatment of ditransitives explains puzzling word order/scope interactions found in the dative alternation cross-linguistically, as well as the fact that symmetric passivization exists in many languages. Symmetric passivization is often thought to indicate that certain passives violate relativized minimality (Rizzi, 1990) – one argument must cross another en route to subject position. However, on one of the proposed structures for ditransitives (269b), neither object of a ditransitive c-commands the other. Either one can therefore move to subject position without crossing the other, making symmetric passives locality obeying, and therefore the predicted baseline behavior for passives of ditransitives cross-linguistically.

(270) *Norwegian symmetric passives*

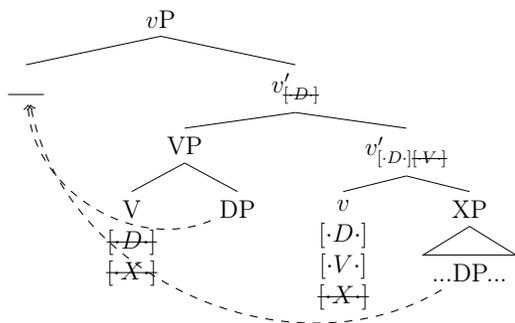
- a. Boka ble gitt Jon.
the.book was given Jon

‘The book was given to Jon.’ *Norwegian* (Haddican & Holmberg, 2015, ex. 145)

- b. Jon ble gitt boka.
Jon was given the.book

‘Jon was given the book.’ *Norwegian* (Haddican & Holmberg, 2015, ex. 145)

(244) The position of XP has consequences for raising to Spec *vP*



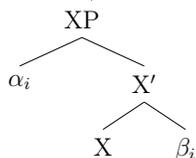
Of course, not every language has symmetric passivization. Some languages lack indirect object passives, for example, and exhibit a so-called “dative intervention effect” when passivizing the direct object of a ditransitive. This effect can be seen in Greek (272), in which the indirect object may not raise to subject position, and must be clitic doubled in order for the direct object to raise to subject position from the double object construction.

- (271) *I Maria stalthike to grama.
 the Maria.NOM sent.nonact.3s the letter.ACC
 intended: ‘Mary was sent the letter.’ (Anagnostopoulou, 2003, ex. 10a)
- (272) To vivlio ?*(tis) charistike (tis Marias).
 the book.NOM cl.GEN award.NACT the Maria.GEN
 ‘The book was awarded to Mary.’ (Anagnostopoulou, 2003, ex. 33)

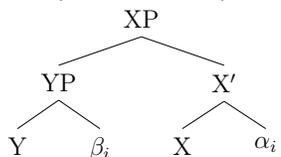
I will argue that the symmetry in raising predicted by (244) may be broken if v has a φ -probe. The locality of Agree requires v to first probe downward into XP before it can search the VP specifier for the direct object (Béjar & Rezac, 2009). As a result, a language with agreement controlled by v necessarily attempts to agree with the indirect object before it can attempt to raise the direct object to subject position. This ordering requirement induced by the locality of Agree may have different consequences in different languages – in languages that cannot raise the indirect object to subject position (i.e. non-X-stranding languages), I propose that obligatory clitic doubling results as a reflex of agreement.

Finally, I will advance a slightly modified binding theory, used to diagnose the various argument configurations. The result of this binding theory is the following generalization: an XP argument of v may bind an argument of V but not vice versa, despite the fact that neither argument c-commands the other.

- (273) Binding theory: α binds β iff α and β are coindexed, and (a) or (b):
 a. α and β m-command each other and α asymmetrically c-commands β



- b. α asymmetrically m-commands β



(274) M-command: α m-commands β iff every *maximal projection* that dominates α dominates β

(275) C-command: α c-commands β iff every *node* that dominates α dominates β

The structure of this chapter is as follows: Section 4.2 investigates the dative alternation cross-linguistically and argues for the treatment of ditransitives in (269). Section 4.3 discusses passives of ditransitives and proposes a treatment of *by*-phrases as flexibly licensed by V or *v* (just as indirect objects are). Section 4.4 discusses evidence from binding for the proposed structures of passives and ditransitives.

4.2 The dative alternation

As discussed in Section 3.4, ditransitives can be described as 2DP, 1XP clauses. They have a subject and object (2DPs) and a second object (1XP), which is often marked with a special case or a preposition. In some cases, e.g. (255a), identifying the XP argument in a ditransitive is easy – it is marked by a preposition *to*. In other cases, however, as in the so-called double object construction (255b), identifying the XP argument is much harder, especially if the relevant language lacks overt case. We entertained two options for which argument assumes XP-status in double object constructions: the indirect object or the direct object.

(255) English Dative alternation

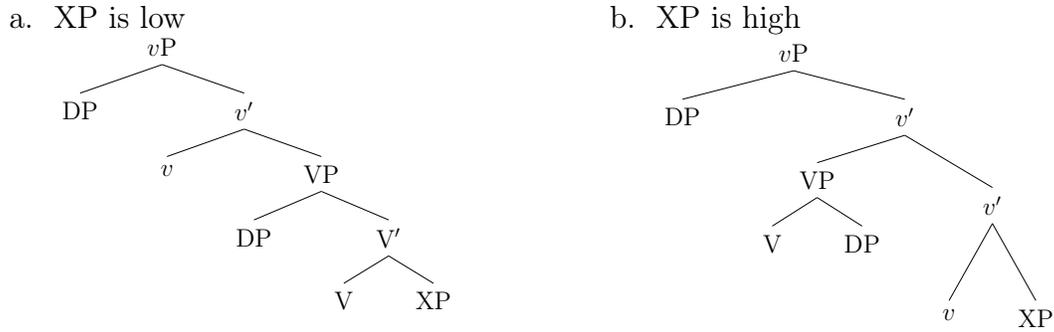
- a. Elmer gave a fake present to Bugs.
- b. Elmer gave Bugs.DAT a fake present.

(256) Two ways to treat double objects

- a. Pesetsky (1995): Elmer gave [_{DP}Bugs] [_{XP} X a fake present].
- b. Baker (1988); den Dikken (1991): Elmer gave [_{XP} X Bugs] [_{DP}a fake present].

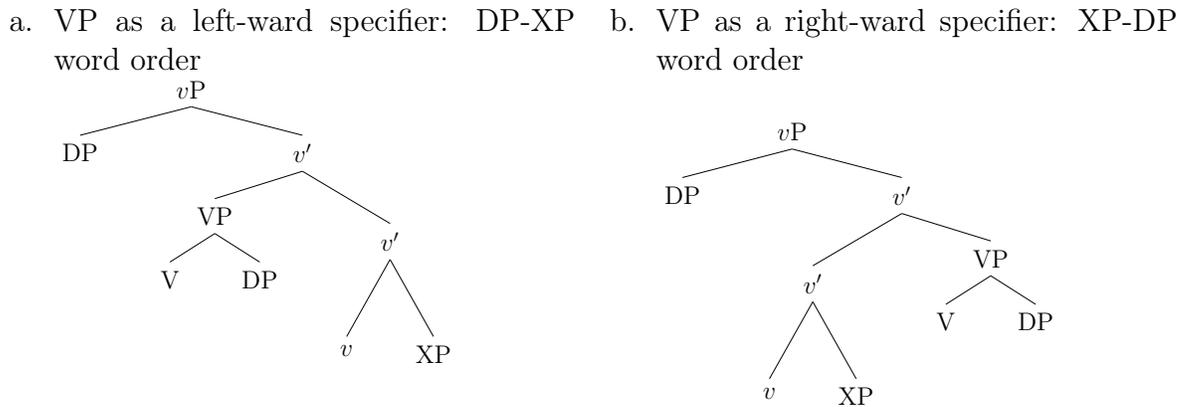
In this section, we will investigate two aspects of ditransitives: 1) the position of XP and its consequences for the “dative alternation”, and 2) which object of a ditransitive has XP status, and what properties diagnose this choice. Starting with the first topic, I argue that the notion of the “dative alternation” is something of a misnomer. As indicated in (269), UG presents two ways to build a ditransitive clause: XP can either be an argument of V or an argument of *v*. I argue that many properties of ditransitive clauses, including each variant of the dative alternation, are explainable by this flexibility in where to introduce the XP argument. In some languages, the choice of where to put XP has morphosyntactic consequences in addition to logical ones. Some constellation of these choices and consequences in each language amounts to what we describe as the “dative alternation”.

(269) Two ditransitive structures



Two aspects of the trees in (269) are important for our investigation: in (269a), the DP argument c-commands the XP argument; in (269b), the DP argument does not c-command the XP argument, and the VP is a specifier. This structural difference should have consequences for binding possibilities between the DP and XP arguments. Additionally, I assume that while (in situ) complements have a rigid linear position in the clause, based on the headedness of the given language, specifiers (especially heavy ones) might have more variable linear position in a clause. I propose that the fact that VP is a more clause-like specifier in (269b) makes it possible for it to be linearized either to the left or to the right of *v*, depending on whether a language has a mechanism for linearizing heavy specifiers differently than lighter ones (for example by simply projecting VP as a rightward specifier, or by extraposing it like a clausal argument).

(276) VP specifier position affects word order



Taking for granted that VP specifiers may be linearized differently than DP specifiers, we therefore expect to see a word order-structure interaction, which is outlined in (277) (concentrating only on the relative position of the DP and XP objects). Essentially, a sentence where the DP internal argument precedes XP is predicted to be structurally ambiguous, but a sentence with the reverse word order is not.

(277) Relative linear order of DP and XP objects in ditransitives

- a. DP XP ((269a): DP can bind XP)
- b. DP XP ((276a): DP cannot bind XP)
- c. XP DP ((276b): DP cannot bind XP)

I propose that the interaction in (277) is straightforwardly observed in English (278), if we adopt two assumptions: 1) to treat the *indirect* object as XP (Baker, 1988; den Dikken, 1991), and 2) if we assume that arguments of *v* obligatorily scope over and can bind arguments of V (to be elaborated on in Section 4.4). With these two assumptions, observe in (278) that when the indirect object (XP) *follows* the direct object (DP) in (278a,b), the direct object can either bind or be bound by the indirect object. When the indirect object (XP) *precedes* the direct object (DP) in (278c,d), the indirect object can bind the direct object but not vice versa. Scope data show the same result: DP-XP order is scopally ambiguous; XP-DP order is unambiguous (Barss & Lasnik, 1986; Burzio, 1986; Larson, 1988, 1990; Aoun & Li, 1989; Pesetsky, 1995; Bruening, 2001, a.o.). This finding verifies the prediction of (277): DP-XP order is structurally ambiguous, while XP-DP order is not.

- (278) a. Jo showed Lauri and Amy_i to each other's_i parents in the mirror. (DP binds XP)
 b. Jo showed pictures of each other_i to Lauri and Amy_i. (XP binds DP)
 c. Jo showed Lauri and Amy_i.DAT each other_i's parents in the mirror. (XP binds DP)
 d. *Jo showed each other_i's parents.DAT Lauri and Amy_i in the mirror. (*XP binds DP)
- (279) a. I gave a doll to each child. *a* > *each*; *each* > *a*
 b. I gave a child each doll. *a* > *each*; **each* > *a*

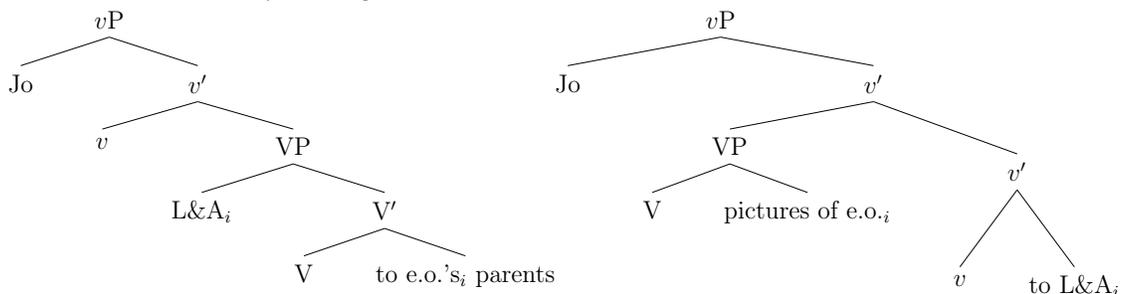
This result reveals an interesting generalization – in English, the structural position of XP in a ditransitive affects binding and scope but it does not directly affect X's morphological realization. What decides between the dative vs. prepositional pronunciation of XP is word order, namely whether or not VP is a rightward specifier. The choice of whether to realize X as a preposition vs. (covert) inherent case is therefore reduced to a pronunciation rule: covert dative is licensed under linear adjacency with the verb, but not otherwise (cf. Levin 2015; Branan to appear).

- (280) **English inherent case rule:** covert inherent case is licensed for XPs that are linearly adjacent to a pronounced verb or preposition

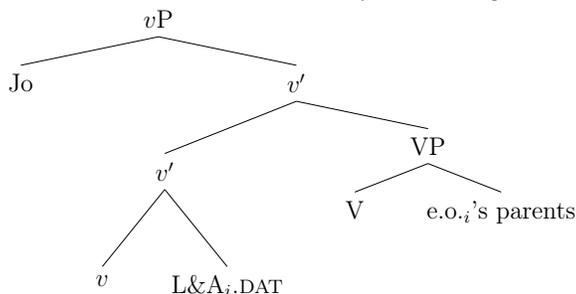
In addition, this result argues against the treatment of the direct object as the XP (as in Pesetsky 1995). If we thought instead that the direct object in English double object constructions were the XP argument, we would incorrectly predict (278d) to be possible for the same reason that (278b) is possible – XP arguments can be low or high.

- (281) English XPs change form depending on word order, which is indirectly related to structural position

- a. *to*Ps are structurally ambiguous



b. Dative XPs are structurally unambiguous



What remains to be explained is *how* high XP arguments can scope over/bind arguments of V, despite not *c*-commanding them. Section 4.4 and Chapter 5 will make a proposal about binding and QR that are consistent with this result. To foreshadow, what matters for binding is a notion of asymmetric m-command; what matters for QR is Scope Economy (Fox, 1998).

Before explaining these results, I first want to show that this pattern is not unique to English, and moreover that cross-linguistic variation in the dative alternation is correctly captured by this account. To clarify the predictions of this account, the English-like word order/structural ambiguity interaction is predicted to be the baseline behavior for ditransitive clauses across languages: DP-XP order is structurally ambiguous while XP-DP order is not. To the extent that languages' dative alternations diverge from this pattern, they should do so in a *more restricted* fashion. For example, a language might only permit one of these word orders for some reason, in which case we would expect the choice of word order to impact whether we observe structural ambiguity in that language's ditransitives at all. Alternatively, a language might have obligatory object movement to some high position, in which case structural ambiguity could be disambiguated by conditions on what arguments move in which configurations.

Important to note is that the word order and scope interaction predicted by (277) is predicted to occur in languages regardless of whether the language has an independent scrambling mechanism. While it is possible to analyze word order-scope interactions more generally as a by-product of scrambling in languages that have it, it is not possible to make the same move for non-scrambling languages, e.g. English. I will show that the present analysis predicts the right interaction for all of the languages in this section, without positing any instances of scrambling. Of course, the fact that *some* of these languages do independently permit scrambling will introduce an opacity problem: two analyses potentially cover the same data. I will argue, however, that a scrambling analysis is not well-suited to explain the fundamental *asymmetry* between the behaviors of different word orders in the dative alternation.

Starting with the baseline pattern, observe that Japanese ditransitives are like English ditransitives relative to both binding and scope diagnostics (Hoji, 1985; Takano, 1998; Yatsushiro, 2003; Miyagawa & Tsujioka, 2004). Japanese uniformly marks its indirect objects with dative case, and the dative argument can appear to the right or to the left of the accusative argument (direct object). When the dative argument follows the accusative argument, it can bind or be bound by the accusative argument. When it precedes the accusative argument, however, the dative argument must bind the accusative one. Similarly, dative arguments have ambiguous scope when they follow the accusative argument, but rigid surface scope when they precede the accusative argument.¹

¹As foreshadowed, Japanese is a language for which my account and a scrambling approach to the scope

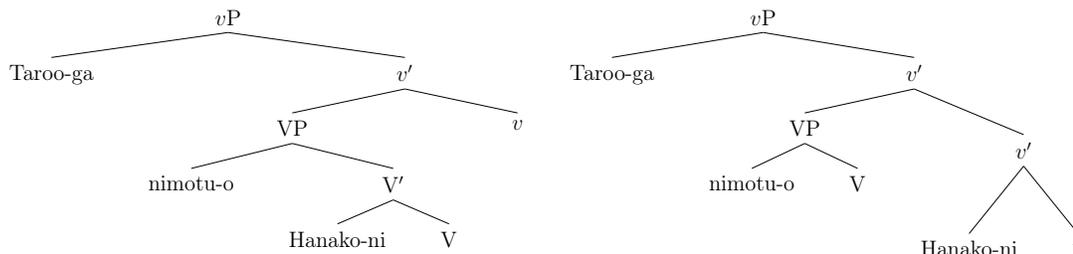
- (282) *Japanese* ditransitives (Miyagawa & Tsujioka, 2004, ex. 10)
- a. Taroo-ga Hanako-ni nimotu-o okutta.
Taro.NOM Hanako.DAT package.ACC sent
'Taro sent Hanako a package.'
 - b. Taroo-ga nimotu-o Hanako-ni okutta.
Taro.NOM package.ACC Hanako.DAT sent
'Taro sent Hanako a package.'
- (283) *Japanese* Principle A (Miyagawa & Tsujioka, 2004, ex. 61)
- a. (?)John-ga [Hanako-to Mary]-o_i (paatii-de) otagai_i-ni syookaisita.
John-NOM [Hanako-and Mary]-ACC (party-at) each.other-DAT introduced
'John introduced Hanako and Mary to each other (at the party).' (acc-dat, forwards binding)
 - b. John-ga [otagai_i-no sensei]-o (paati-de) [Hanako-to Mary]-ni_i
John-NOM [each.other-GEN teacher]-ACC (party-at) [Hanako-and Mary]-DAT
syookaisita.
introduced
'John introduced each other's teachers to Hanako and Mary (at the party).' (acc-dat, backwards binding)
 - c. John-ga [Hanako-to Mary]-ni_i otagai_i-o syookaisita.
John-NOM [Hanako-and Mary]-DAT each.other-ACC introduced
'John introduced Hanako and Mary to each other.' (dat-acc, forwards binding)
 - d. *John-ga [otagai_i-no sensei]-ni [Hanako-to Mary]-o_i syookaisita.
John-NOM [each.other-GEN teacher]-DAT [Hanako-and Mary]-ACC introduced
intended: 'John introduced Hanako and Mary to each other's teachers.' (dat-acc, *backwards binding) (p.c. Shigeru Miyagawa)
- (284) *Japanese* (Miyagawa & Tsujioka, 2004, ex. 10)
- a. Taroo-ga dono-nimotu-mo dareka-ni okutta.
Taro.NOM every-package.ACC someone.DAT sent
'Taro sent every package to someone.' some > every; every > some

behaviors in (283,284) are hard to distinguish. On my approach, there are two ditransitive structures underlyingly, one of which gives rise to two available word orders. On a scrambling approach, there could just be one underlying structure, the one that derives IO-DO word order, while scrambling derives DO-IO order. Optional reconstruction would therefore derive the binding and scope ambiguities rather than genuine structural ambiguity. Shigeru Miyagawa (p.c.) points out, however, that a crucial argument in favor of a genuine structural ambiguity is the behavior of *inanimate* goals relative to scope diagnostics. Inanimate goals have a puzzling requirement – they apparently need to be low XPs (see Miyagawa & Tsujioka 2004 for discussion), which, as complements of V, are never predicted to be linearized to the left of direct objects. As shown in Miyagawa & Tsujioka (2004), it is possible to pronounce inanimate goals in a pre-direct object position, from which they may take optional low scope (behavior which contrasts with the scope rigidity of pre-DO *animate* goals). This behavior is predicted if the *only* way to derive IO-DO order with an inanimate goal is to scramble the IO above the DO, resulting in scope ambiguity. By contrast, IO-DO order with *animate* goals can be generated from a structure where every argument is in situ (by making the IO a high XP and linearizing VP to the right). I therefore assume that word order is interpreted as a reflection of underlying structure whenever possible, and that scrambling is posited only when a word order results that is otherwise not independently generated.

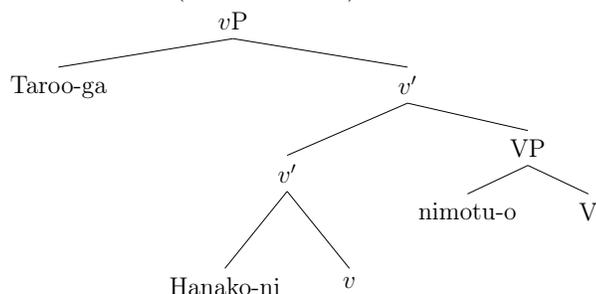
- b. Taroo-ga dareka-ni dono-nimotu-mo okutta.
 Taro.NOM someone.DAT every-package.ACC sent
 ‘Taro sent someone every package.’ some > every; *every > some

(285) Japanese (head final) XPs don’t change form – overt dative marking available for low and high IOs

- a. DP XP.DAT (DP-o DP-ni) order is structurally ambiguous



- b. XP.DAT DP (DP-ni DP-o) order is structurally unambiguous



Greek ditransitives exhibit the same pattern as English and Japanese. Greek ditransitives are English-like in having both a prepositional variant for indirect objects (286a) as well as a non-prepositional variant (286b). Greek is also like Japanese in using overt inherent case to mark the non-prepositional variant. Greek is unlike English and Japanese, however, in that it also has optional clitic doubling (286c). Importantly, Greek exhibits the same word order-scope/binding interaction: when the indirect object follows the direct object, binding and scope are flexible; when the indirect object precedes the direct object, binding and scope are rigid (Anagnostopoulou, 2003, Sabine Iatridou, p.c.).

(286) *Greek* ditransitives (Anagnostopoulou, 2003, ex. 5-7)

- a. O Gianis estile to grama s-tin Maria.
 the Gianis.NOM sent.3SG the letter.ACC to-the Maria.ACC
 ‘John sent the letter to Mary.’
- b. O Gianis estile tis Marias to grama.
 the Gianis.NOM sent.3SG the Maria.GEN the letter.ACC
 ‘John sent Mary the letter.’
- c. **Tu** edhosa tu Giani to vivlio.
 cl.GEN gave.1SG the Gianis.GEN the book.ACC
 ‘I gave John the book.’

(287) *Greek* Principle A (Sabine Iatridou, p.c.)

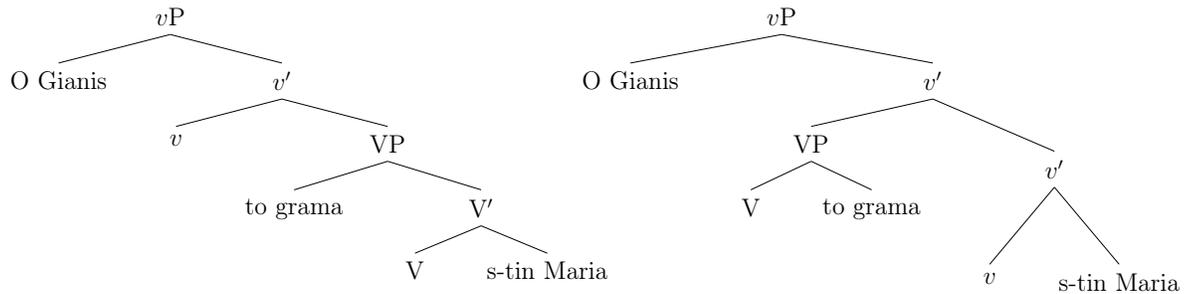
- a. O Gianis edhikse tin Maria s-ton eafton tis s-ton kathrefti.
 the Gianis.NOM showed the Maria.ACC to-the REFL.ACC GEN in-the mirror.ACC
 ‘John showed Mary to herself in the mirror.’
- b. O Gianis edhikse ton eafton tis s-tin Maria s-ton kathrefti.
 the Gianis.NOM showed the REFL.ACC GEN to-the Maria.ACC in-the mirror.ACC
 ‘John showed herself to Mary in the mirror.’
- c. O Gianis edhikse tis Marias ton eafton tis s-ton kathrefti.
 the Gianis.NOM showed the Maria.GEN the REFL.ACC GEN in-the mirror.ACC
 ‘John showed Mary.gen herself in the mirror.’
- d. *O Gianis edhikse tu eaftu tis tin Maria s-ton kathrefti.
 the Gianis.NOM showed the REFL.GEN GEN the Maria.ACC in-the mirror.ACC
 intended: ‘John showed herself.gen Mary in the mirror.’ (speaker comment: “extreme word salad”)

(288) *Greek Scope* (Sabine Iatridou, p.c.)

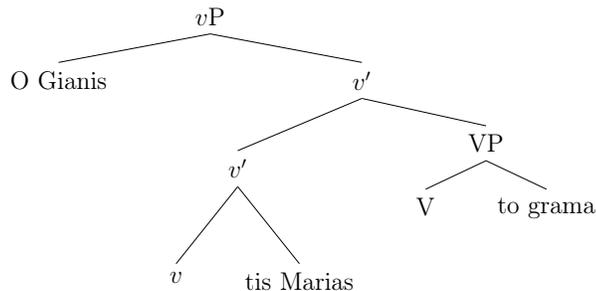
- a. O Gianis estile kapio grama s-tin/se kathe efimerida.
 the Gianis,NOM sent some letter.ACC to-the/to every newspaper.ACC
 ‘John sent some letter to every newspaper.’ some > every; every > some
- b. O Gianis estile kapias fititrias kathe grama.
 the Gianis.NOM sent some students.GEN every letter.ACC
 ‘John sent some students every letter.’ some > every; *every > some

(289) Greek: PP IOs are structurally ambiguous, genitive IOs are always high

- a. *to*Ps are structurally ambiguous



- b. Genitive XPs are structurally unambiguous



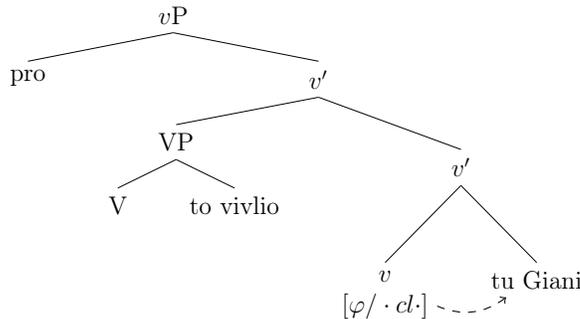
Clitic doubling in Greek can target genitive indirect objects (286c) but not prepositional ones (290).

- (290) *Tu edhosa to vivlio s-ton Giani.
 cl.GEN gave.1SG the book.ACC to-the Giani
 intended: ‘I gave the book to John.’ (Anagnostopoulou, 2003)

Clitic doubling also corresponds to the possibility to project the genitive argument to the right of the accusative argument. Despite this word order flexibility, Anagnostopoulou (2003) presents evidence from bound variable anaphora and weak cross-over that genitive indirect objects are always high in both word orders. The requirement for a clitic in (291) therefore indicates that adjacency with the verb is not a requirement for licensing genitive case, *so long as the genitive argument has been clitic doubled*.² We will see that clitic doubling is only available for high indirect objects (or else the direct object would intervene), in which case the word order effect is again reduced to optionality in VP’s linear position when it is a specifier.

- (291) O Gianis *%o(tis) estile to grama tis Marias.
 the Gianis.NOM CL.GEN sent.3SG the letter.ACC the Maria.GEN
 ‘John sent Mary the letter.’ (Sabine Iatridou, p.c.)

- (292) Greek: genitive arguments are accessible for clitic doubling



Not every language patterns like English, Japanese, and Greek. Spanish, for example, only makes use of one word order for its ditransitives. In Spanish, direct objects always *precede* indirect objects. Like Greek, Spanish indirect objects may be optionally clitic doubled (as can certain direct objects). The indirect object also always appears with a preposition/case marker *a* whether or not it has been clitic doubled.

- (293) Miguelito (le) regaló un caramelo a Mafalda.
 Miguelito cl.DAT gave a candy a Mafalda
 ‘Miguelito gave Mafalda a piece of candy.’

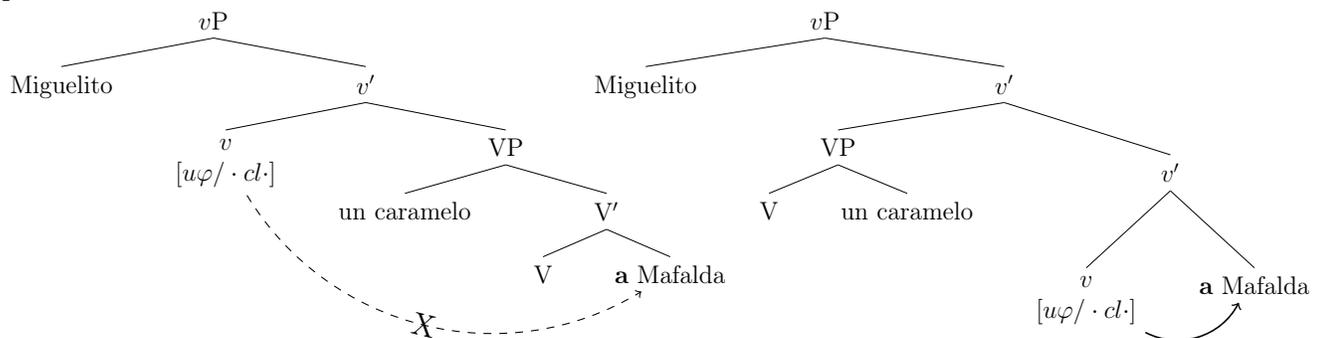
Even though Spanish does not have variable word order, the word order available to it is in principle predicted to be structurally ambiguous: when the direct object precedes the indirect object, we have seen that binding and scope should be variable. This prediction is born out, as argued by (Demonte, 1995; Cuervo, 2003). What we find is that clitic doubling disambiguates the structural ambiguity of direct object-indirect object word order. Clitic doubled indirect objects are obligatorily high, while non-clitic doubled indirect objects are low.

²Anagnostopoulou (2003) suggests that clitic doubling is not required to do this, though it is somewhat marginal without the clitic, and has a “scrambled” or “object shifted” feel, see Markantonatou 1994; Tzartanos 1945 / 1989 and Mackridge 1985 / 1987. According to Sabine Iatridou (p.c.), however, while the sentence is grammatical without the clitic, it requires a reanalysis of the genitive argument as the possessor of the direct object, e.g. *John sent Mary’s letter*.

- (294) Spanish clitic-doubled IOs are high; non-clitic-doubled IOs are low (Demonte, 1995, ex. 9)
- El tratamiento psicoanalítico reintegró a María a sí-misma.
the therapy psychoanalytic gave-back to Mary.DO to herself.IO
‘The psychoanalytic therapy helped Mary to be herself again.’
 - *El tratamiento psicoanalítico reintegró/devolvió a sí-misma a María.
the therapy psychoanalytic gave-back to herself.DO to Mary.IO
intended: ‘The psychoanalytic therapy helped Mary to be herself again.’
 - *El tratamiento psicoanalítico **le** devolvió a María a la estima de sí-misma.
the therapy psychoanalytic CL-DAT gave-back to Mary.DO to the esteem of herself.IO
herself.IO
‘The psychoanalytic therapy helped Mary to be herself again.’
 - El tratamiento psicoanalítico **le** devolvió a la estima de sí-misma a María.
the therapy psychoanalytic CL-DAT gave-back to the esteem of herself.DO to María.
Mary.IO
‘The psychoanalytic therapy helped Mary to be herself again.’

Presumably, the position of the indirect object affects clitic doubling because of relativized minimality. When the indirect object is low, the direct object c-commands it, and thus blocks the relevant probe from clitic doubling the indirect object. When the indirect object is high, however, neither argument c-commands the other. Moreover, if the clitic doubling probe is on *v* (as suggested by Longenbaugh 2019, e.g.), the only argument in its c-command domain is the indirect object, making minimality irrelevant to clitic doubling.

- (295) Spanish XPs don’t change form – IO bears an overt P-like head, clitic doubling tracks position



Another language with a supposed dative alternation that does not share the English/Japanese/Greek pattern is Dinka. As van Urk (2015) argues, Dinka’s dative alternation looks different for a particular reason, namely because Dinka has obligatory V2-like movement of some argument to the edge of the verb phrase. That phrase can be either argument of a ditransitive, and neither argument bears a special, distinct case compared to the other.

- (296) Dinka *vP*’s are V2 (van Urk & Richards 2015: 12-13)

- a. yèn cí Ayén yiǎn kitàp.
I PRF Ayen give book
'I gave Ayen a book.'
- b. yèn cí kitàp yiǎn Ayén.
I PRF book give Ayen
'I gave Ayen a book.'

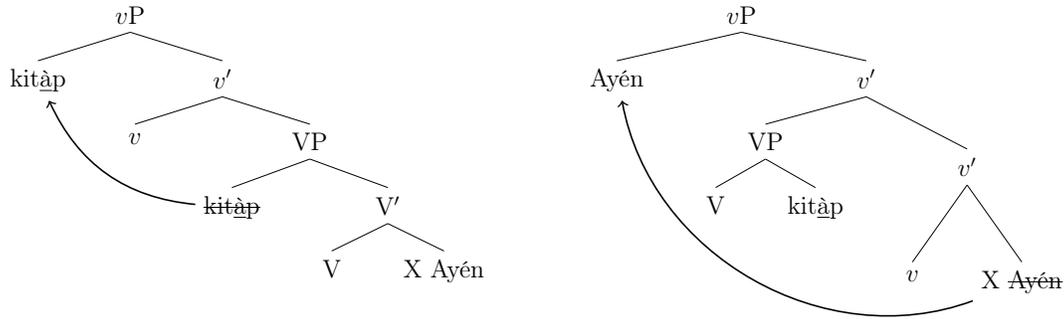
Whichever argument moves to Spec *v*P can bind the other and not vice versa (shown in (297)). van Urk proposes that the pre-movement structure for each (296a,b) must be different or else we would expect at least one of the four examples in (297) to exhibit reconstruction effects. As a result, he proposes that the indirect object must be able to bind the direct object in its base position in (297a), while the reverse is true in (297c). The trees in (298) provide us with both options. Thus, movement in (296) disambiguates the predicted structural ambiguity for word orders in which the direct object precedes the indirect object.³

(297) Object in Spec *v*P can bind into lower object (van Urk 2015, example 46)

- a. yèɛn é-cé [_{*v*P}nyà ébɛ́n_{*i*} lɛ́ɛ́k ákékòl-dè_{*i*}]
1SG PST.PRF.SV **girl every** tell.NF story-SG.2SG
'I had told every girl_{*i*} her_{*i*} story.'
- b. *yèɛn é-cé [_{*v*P}ákékòl-dè_{*i*} lɛ́ɛ́k nyà ébɛ́n_{*i*}]
1SG PST.PRF.SV story-SG.2SG tell.NF **girl every**
intended: 'I had told every girl_{*i*} her_{*i*} story.'
- c. yèɛn é-cé [_{*v*P}kitàap ébɛ́n_{*i*} gâam [_{*D*P}rán [_{*CP*}é-gàr yèen_{*i*}]]]
1SG PST.PRF.SV **book every** give.NF person PST-write.SV 3SG
'I had given every book_{*i*} to the person who wrote it_{*i*}.'
- d. *yèɛn é-cé [_{*v*P}[_{*D*P}rán [_{*CP*}é-gàr yèen_{*i*}]] gâam kitàap ébɛ́n_{*i*}]
1SG PST.PRF.SV person PST-write.SV 3SG give.NF **book every**
intended: 'I had given every book_{*i*} to the person who wrote it_{*i*}.'

(298) Dinka XPs have the same form, can be low or high: Dinka is *v*P V2, which requires some argument to raise to Spec *v*P

³In principle, whenever the indirect object is high, either argument should be able to raise (as was shown for *star/puzzle/delight/accumulate*). However, since the indirect object can bind the direct object from that position, A-moving the direct object should result in a WCO violation. As a result, only the indirect object can move and bind the direct object. Alternatively, if the V2-like movement in question has A-properties (and thus no WCO), we will see in Section 4.3 that the predicted symmetry is broken in favor of indirect object promotion in case *v* has an active φ -probe or wh-feature. van Urk (2015) has argued for such a φ -probe on Dinka's *v* head, in which case the indirect object should be asymmetrically promoted regardless.



In principle, since neither argument bears a special case, and movement derives the word orders between them, either argument could be the XP in (298). I have drawn the indirect object as the XP as in English, but we could have imagined drawing the trees with the direct object as XP instead (as in Pesetsky 1995).

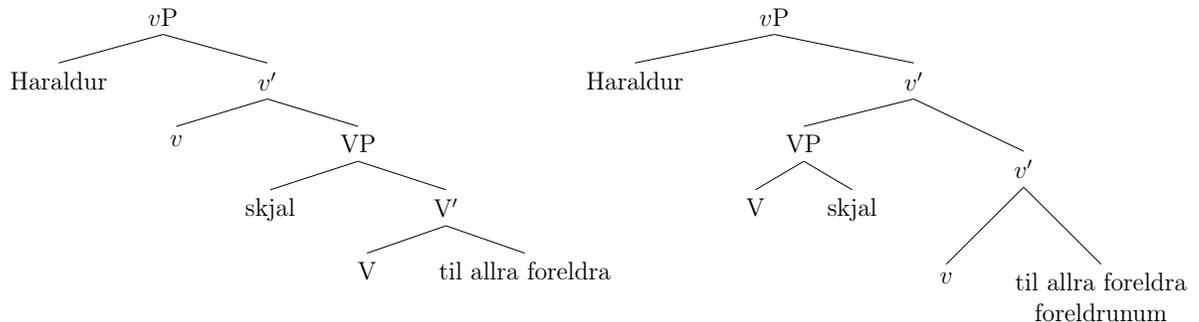
Lastly, a single language may have a variety of ditransitive behaviors that look idiosyncratically determined by lexical properties of different ditransitive verbs. Icelandic, for example, has verbs with an English/Greek-like dative alternation, verbs with a Dinka-like pattern, and verbs that pattern like none of the above.

I could not find evidence of backwards binding in the Icelandic literature on ditransitives (it is unclear whether backwards binding has been systematically tested), but some scope and binding facts indicate a preliminary space of ditransitive behaviors in Icelandic. At least some Icelandic verbs, e.g. *send* behave like English ditransitive verbs relative to scope. When the indirect object follows the direct object, it is pronounced as a prepositional phrase, and is structurally ambiguous. When the indirect object *precedes* the direct object, it is realized as a dative argument and scope is frozen.

(299) *Icelandic: send* (Ussery, 2018, ex. 27-28)

- a. Kennarinn sendi skjal til allra foreldra í skólanum.
 teacher.the sent document.a.ACC to all parents.GEN in school.the
 ‘The teacher sent some document to all the parents in the school.’ some > all; all > some
- b. Haraldur sendi einhverjum blaðamanni öll skjölin.
 Haraldur sent some reporter.a.DAT all documents.the.ACC
 ‘Harold sent some reporter all the documents.’ some > all; *all > some

(300) *Icelandic send*: has the English-type dative alternation with overt case



Unlike English, however, certain Icelandic ditransitive verbs permit the indirect object to appear as a dative argument irrespective of word order. Two such verbs are *show* and *provide*. Examples (301) and (302) show that in each case, the dative argument behaves differently relative to scope and binding. In (301), we see a Dinka-like pattern, where the left-most argument obligatorily binds the rightmost one. In (302), however, we see that the dative argument always takes high scope, irrespective of word order.

(301) *Icelandic: show* rigid forwards binding (Collins & Thráinsson, 1996, ex. 46)

- a. Við sýndum foreldrunum_i krakkana sína_i.
we showed parents.the.DAT kids.the.ACC their.refl.ACC
'We showed the parents their kids.'
- b. Við sýndum krakkana_i foreldrunum sínum_i.
we showed kids.the.ACC parents.the.DAT their.refl.DAT
'We showed the kids to their parents.'
- c. *Við sýndum krakkana sína_i foreldrunum.
we showed kids.the.ACC their.refl.ACC parents.the.DAT
intended: 'We showed their_i kids to the parents_i.'

(302) *Icelandic: provide* dative takes rigid high scope (Ussery, 2018, ex. 29-30)

- a. Norðurljósin færa öllum útlendingum einhverja tilfinningu.
northern.lights.the provide all foreigners.pl.DAT some feeling.sg.ACC
'The northern lights provide all foreigners some feeling.' all > some; *some > all
- b. Norðurljósin færa allar tilfinningar einhverjum útlendingi.
northern.lights.the provide all feelings.pl.ACC some foreigner.sg.DAT
'The northern lights provide all foreigners some feeling.' ??all > some; some > all

I propose that the Icelandic verbs *show* and *provide* behave differently than verbs like *send* because dative doesn't have a unique source in Icelandic. Dative can either be licensed productively for XP indirect objects that are pronounced adjacent to the verb (as in (299)), or quirkily via sisterhood with a particular lexical item. Quirky dative arguments need not be adjacent to the pronounced verb because they are licensed independently (i.e. via l-selection). The different profiles of *show* and *provide* depend on *which* verbal head l-selects for quirky dative.

If V is the head that l-selects a quirky dative indirect object, a dative argument can be licensed in a position that is *not* adjacent to the verb, *only* if it takes low scope (i.e. if it is the complement of V). The verb *show* exhibits this profile: if the dative argument is licensed by adjacency (as in (301a)), it is a high XP and it scopes over the direct object DP (rigid forwards binding). If it is licensed via sister-hood with V (as in (301b)), it is a low XP, which both scopes under and linearly follows the direct object DP (rigid forwards binding again).

If *v* is the head that l-selects a quirky dative indirect object, however, a dative argument can be licensed as *v*'s sister, regardless of whether the adjacency requirement is satisfied. The verb *provide* exhibits this profile: the dative argument can be to the right or left of the direct object, with no consequences for scope.⁴

⁴For some of the relevant verbs, prepositional indirect objects are proposed to be ruled out entirely (Thráinsson, 2007, p. 174). The paradigm is therefore reduced to the choice of where/whether a dative argument is l-selected vs. licensed by adjacency.

In sum, languages that use inherent case to mark XPs in ditransitives may also have verbal heads that independently l-select for inherent case-marked elements. The profile of the dative alternation is therefore expected to show some idiosyncrasy across verbs in those languages. The fact remains, however, that if an indirect object XP linearly precedes the direct object, it must be an argument of *v*, which means that it must take high scope and cannot be bound by the direct object. If an indirect object XP follows the direct object, however, the clause is potentially structurally ambiguous (depending on the morphological realization of X and the l-selectional requirements of the verb), which is manifested in the availability of inverse scope readings and backwards binding.

At this point, we have seen a number of features of ditransitive constructions and how they indicate the two structures in (269). Different languages may mark their dative alternations with different features, ranging from only word order, to only clitic doubling, to prepositions and word order, to case, prepositions, and word order, to all of the above. Nearly every case so far has motivated the treatment of the indirect object as an XP, both/either because it is overtly marked with a preposition/inherent case marker, and/or because it behaves a certain way relative to scope/binding diagnostics. This raises a question, namely do any languages make the *direct* object an XP in the double object construction, as suggested in Pesetsky (1995)?

It is possible that Dinka does, since there is no overt case marking that would suggest otherwise. More convincingly, there are so-called “double accusative” verbs in Greek, which look *overtly* as we would expect ditransitives to look if the direct object were in a covert prepositional phrase (the Greek prepositions we have seen so far assign accusative to their complements). Moreover, evidence from passivization (Section 4.3) and scope suggest that these verbs l-select the XP direct object as the complement of V.

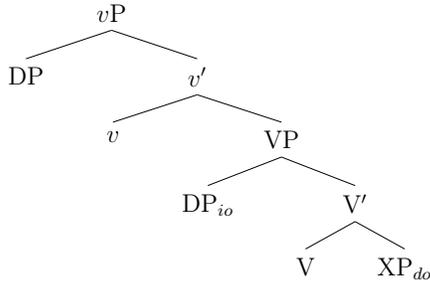
(303) *Greek* (Anagnostopoulou, 2003, ex. 5-7)

- a. Dhidhaksa ghramatiki s-ta pedhia.
taught.1SG grammar.ACC to-the children.ACC
‘I taught grammar to the children.’
- b. Dhidhaksa ta pedhia ghramatiki.
taught.1SG the children.ACC grammar.ACC
‘I taught the children grammar.’

(304) The direct object has obligatory low scope (Sabine Iatridou, p.c.)

- a. Dhidhaksa kapio pedhi kathe glossa.
taught.1SG some child.ACC every language.ACC
‘I taught some child every language.’ some > every; *every > some
- b. Dhidhaksa kathe pedhi tulahiston 2 glosses.
taught.1SG every child.ACC at.least 2 languages.ACC
‘I taught every child at least 2 languages.’ every > 2; *2 > every

(305) Greek double accusative verbs: direct object is l-selected as a low XP



(306) The four visible markers of dative alternations

Language	Dinka	Japanese	Spanish	English	Icelandic	Greek
VP specifier can be rightward	NA	✓	*	✓	✓	✓
has overt inherent case	*	✓	*	*	✓	✓
has overt PP IOs	*	*	✓	✓	✓	✓
has IO clitic doubling	*	*	✓	*	*	✓

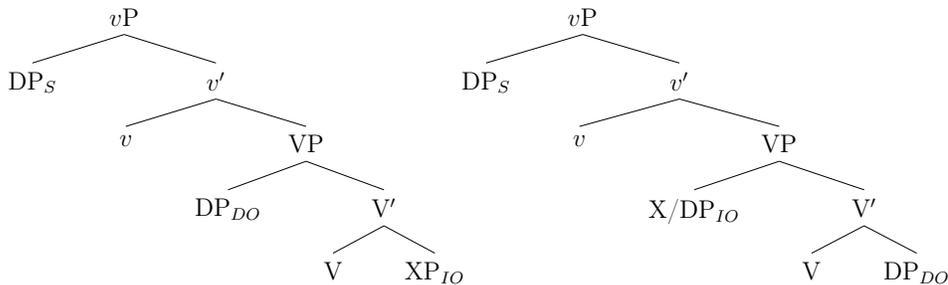
(307) What binding/clitic doubling/word order tell us about the position of XP indirect objects

Language	Dinka	Japanese	Spanish	English	Icelandic	Greek
PP IO can be low or high	NA	NA	✓	✓	✓	✓
non-PP IO can be low or high	✓	✓	NA	only high	%✓	only high

We will see additional arguments from the passive that this treatment of the dative alternation, in its many forms, is on the right track. What we find is that direct object passivization is expected to be structurally ambiguous while indirect object passivization is not. Moreover, the form that the indirect object takes in any passive structure is independently predicted by the language-specific rules for case vs. preposition licensing observed so far.

Before moving on to passives, I want to first highlight what is gained from this approach to the dative alternation compared to other ones. Classically, the dative alternation is reduced to something like the two structures in (308), often called the prepositional dative vs. the double object construction.⁵

(308) Classical prepositional dative vs. double object construction



On the classical approach to the dative alternation, prepositional dative constructions differ from double object constructions in that the direct object should asymmetrically c-command the indirect object in the former, and the reverse is true for the latter. Empirically, however,

⁵The number and content of verbal heads varies across analyses, but the point that I am interested in here is the relative configuration of arguments, not the presence or absence of applicative heads, for example.

we find that sentences described with the tree on the left cooccur with optional inverse scope and backwards binding interpretations, while sentences described with the tree on the right do not. There are many analyses that try to address this problem by positing scrambling/A-movement/Heavy NP-shift to derive one word order from another. What is puzzling about that approach is that some of the languages just discussed do not otherwise exhibit scrambling/object shift as a productive means to change the relative position of arguments (see Jackendoff 1990 for additional arguments against dative shift in English). That so many languages have in common this *particular* kind of word order alternation thus demands an explanation, which on a movement approach would require us to posit a novel construction/transformation in many languages, but on the present approach, is already captured by the space of structures made available by UG.

On my approach, “prepositional datives” and “double object constructions” are incoherent notions. I argue that three argument clauses can take either the form in (269a) or the form in (269b), where the form in (269b) poses two options for linearization. Each structural option has consequences for scope/binding; each linearization option has consequences for the adjacency of indirect objects and verbs, which may have consequences for inherent case licensing. The result is that DO-IO order corresponds to structural ambiguity (cf. Janke & Neeleman 2005) but IO-DO order does not (except in Dinka which requires one of the arguments to move independently). Hence, the inverse scope readings found in many languages’ “prepositional datives” are accounted for, not by language or construction specific transformational strategies, but by the fact that UG offers two structures corresponding to that word order.

4.3 Passives

Section 4.2 showed that many of the properties that we describe as the “dative alternation” reduce to a notion of structural ambiguity. Clauses with three arguments require one of those arguments to behave as an XP rather than a DP, and that XP could in principle be low or high. The choice of where to generate XP, combined with the choice of how to linearize VP has different morphosyntactic consequences in different languages pertaining to the pronunciation of X and the availability of clitic doubling. We now turn our attention to another kind of “alternation” invited by this framework, which I argue is realized as the passive. This second notion of an alternation pertains to the realizations of arguments themselves, which may vary from construction to construction. For example, an argument that is realized as a DP in one context may be realized as a PP, or not at all, in another. The choice of how to represent an argument has consequences for whether and where it is merged.

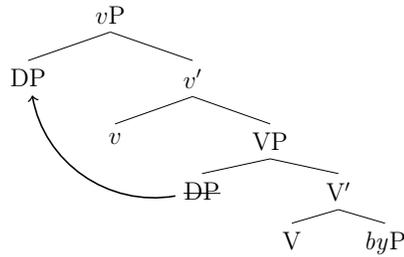
In the passive, the canonical DP subject is instead represented as a PP (e.g. a *by*-phrase in English). Passives therefore take a potentially unambiguous structure, namely a transitive clause, and change the number of DPs and XPs from x and y to $x-1$ and $y+1$. Since XPs have different structural requirements than DPs, the position of the PP subject is expected to be different than that of its DP counterpart. Moreover, the $[-D\cdot]$ feature that would have licensed the subject is now available to another DP in the clause.

We will focus on two aspects of the passive alternation : 1) the promotion of some DP to subject position, and 2) the position of the *by*-phrase. (310) illustrates how these two aspects of the passive interact in a monotransitive clause. A monotransitive clause typically has 2DPs. In the passive, however, it only has one DP. A passive of a monotransitive is therefore a 1DP-1XP

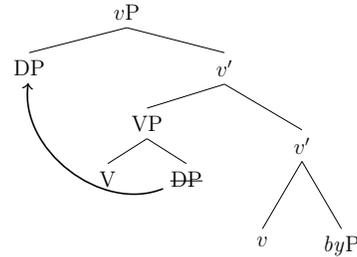
structure like those described in Section 3.4. The canonical object is presumably base generated as an argument of V as usual, limiting the flexibility of relevant 1DP-1XP clauses to the choice of whether to merge the *by*-phrase as an argument of V vs. *v*.

- (309) Transitives vs. Passives
 a. Jo wrote a novel. (2 DPs)
 b. A novel was written by Jo. (1DP, 1XP)
- (310) Two ways to build a passive of a monotransitive

a. *by*-phrase is low



b. *by*-phrase is high



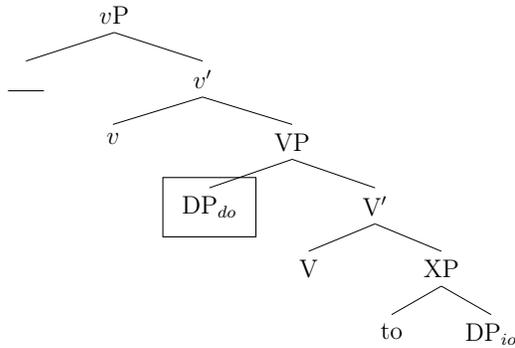
In Section 4.2, we saw that the position of indirect object XPs was flexible on account of the fact that there are two positions available to XPs. I propose that *by*-phrases exhibit this same flexibility, so both options in (310) are utilized. Chapter 6 addresses how the semantic component of grammar deals with this flexibility in the position of certain arguments. For now, we will be interested in how flexibility in the position of *by*-phrases and *to*-phrases interact to predict the different profiles for raising and binding in passives of ditransitives. Section 4.3.1 addresses the question of which argument raises to subject position in different contexts. Section 4.3.2 addresses how the position of the *by*-phrase interacts with binding.

4.3.1 DP promotion

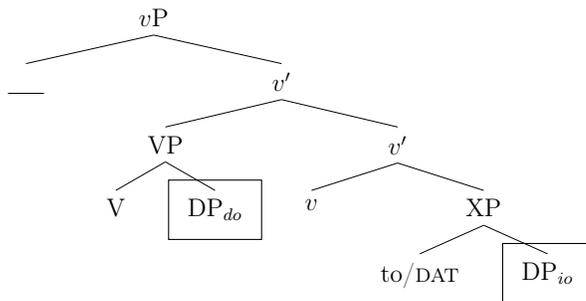
Assuming A-movement is constrained by relativized minimality (Rizzi, 1990), if there is no transitive subject in Spec *v*P, the closest DP to it should raise and check that feature. What counts as the “closest” DP depends on the presence and position of any other XPs in the clause. As has been extensively discussed in e.g. Anagnostopoulou (2003), determining the closest DP to Spec *v*P is particularly interesting in the domain of ditransitives. In this section, I illustrate the predicted profile of passives of ditransitives, leaving aside for the time being the position of *by*-phrases. I will show that the theory predicts essentially two kinds of passive behaviors across languages, depending on whether a *v* has a φ /clitic doubling probe in the relevant language: symmetric passivization vs. dative intervention effects (a simplified version of Anagnostopoulou’s proposed generalization). Moreover, I will argue that languages with dative intervention effects don’t actually *restrict* passivization of any arguments. Instead, they merely order Agree before Merge.

Section 4.2 motivated two positions for XP arguments in a ditransitive: the complement of V or the complement of *v*. Looking at each possibility separately, we see that clauses with only a low XP argument unambiguously promote the DP argument of V in a passive. Clauses with high XP arguments, by contrast, optionally promote the complement of X or the DP argument of V.

(311) Passive with a low IO: only the theme can raise due to locality.



(312) Passive with a high IO: either the theme or the recipient can raise.



As a result, we expect direct object passives to be structurally ambiguous but indirect object passives to be structurally unambiguous: direct objects can raise to Spec *v*P in either (311) or (312), but indirect objects can only raise to Spec *v*P in (312). Additionally, a language without any independent constraints on passivization should be able to utilize all three options. Examples (313) and (314) contain a sample of direct and indirect object passives in English, Japanese, and Norwegian.

(313) Direct object passives

- a. A book was given %_(to) Lauri. *English*
- b. Nimotu-ga Taroo-ni Hanako-ni okur-are-ta.
package.NOM Taro-by Hanako.DAT send.PASS.PST
'The package was sent to Hanako by Taro.' *Japanese* (Miyagawa & Tsujioka, 2004, ex. 48)
- c. Boka ble gitt Jon.
the.book was given Jon
'The book was given Jon.' *Norwegian* (Haddican & Holmberg, 2015, ex. 145)

(314) Indirect object passives

- a. Lauri was given a book. *English*
- b. Taroo-ga nimotu-o okur-are-ta.
Taro.NOM package.ACC send.PASS.PST
'Taro was sent a package.' *Japanese* (Miyagawa & Tsujioka, 2004, ex. 39a)
- c. Jon ble gitt boka.
Jon was given the.book
'Jon was given the book.' *Norwegian* (Haddican & Holmberg, 2015, ex. 145)

Looking at the examples of direct object passives in (313), it is difficult to tell where the indirect object is projected, and thus difficult to tell whether the predicted structural ambiguity of direct object passives is borne out. If it is true that dative case may be sensitive to adjacency rather than structural position, the morphological form of the indirect object in these examples is potentially independently predicted, depending on whether the passive participle intervenes for case licensing, and therefore provides no clues as to its structural position. Spanish, however, provides the crucial diagnostic for the position of the indirect object, namely clitic doubling. Recall that clitic doubled indirect objects are obligatorily high while non-clitic doubled indirect objects are typically low. In (315), we can see that Spanish direct object passives allow optional clitic doubling, which shows that the indirect object may be either low or high when the direct object raises.

- (315) El premio Nobel (le) fue concedido a Cela el año pasado.
 the prize Nobel CL.DAT was awarded a Cela the year last
 ‘The Nobel prize was awarded to Cela last year.’ *Spanish* (Anagnostopoulou, 2003, ex. 323)

This profile is predicted by the fact that both structures in (311) and (312) promote the direct object, but only (312) permits clitic doubling with the indirect object. By contrast, indirect object passives are predicted to be structurally unambiguous – only (312) may promote the indirect object without violating relativized minimality. Though Spanish does not have indirect object passives, we will see evidence from binding in Section 4.3.2 that indirect object passives in languages that have them are indeed structurally unambiguous. We will also see that binding tests verify the predicted structural ambiguity for direct object passives in languages without clitic doubling.

Before investigating this structural ambiguity further, I want to first discuss the significance and consequences of the symmetry in (312). Though both direct and indirect objects are predicted to be allowed to raise to subject position in (312), there is well-studied cross-linguistic variation regarding whether such symmetry is actually observed. Classically, this variation is reduced to two features: 1) whether indirect objects can passivize at all, and 2) whether direct objects can passivize when the indirect object is high.

On my proposal, indirect object passivization requires 1) the indirect object to be an XP complement of *v*, and 2) the DP complement of X to subextract from its XP shell. This is apparently not possible in every language, e.g. Greek and Spanish. Greek additionally exhibits a so-called “dative intervention effect”: high indirect objects are obligatorily clitic doubled in the passive.⁶

- (316) Greek passives of ditransitives
 (271) *I Maria stalthike to grama.
 the Maria.NOM sent.nonact.3s the letter.ACC

⁶Greek direct object passives without clitic doubling are possible if the indirect object is a prepositional phrase (Sabine Iatridou, p.c.).

- (vi) To vivlio charistike s-tin Maria.
 the book.NOM award.NACT to-the Maria.ACC
 ‘The book was awarded to Mary.’

intended: ‘Mary was sent the letter.’ (Anagnostopoulou, 2003, ex. 10a)
 (272) To vivlio ?*(tis) charistike (tis Marias).
 the book.NOM cl.GEN award.NACT the Maria.GEN

‘The book was awarded to Mary.’ (Anagnostopoulou, 2003, ex. 33)

(317) Spanish passives of ditransitives (Montalbetti, 1999, ex. 133)

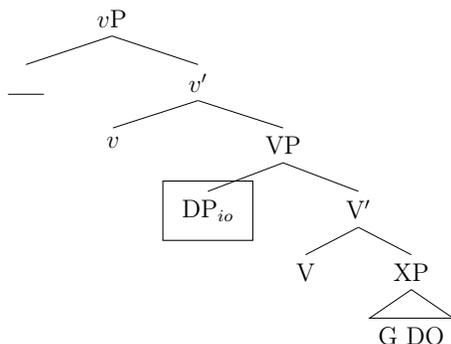
- a. *María fue vendida una casa.
 Maria was sold a house
 intended: ‘Maria was sold a house.’
- b. Una casa le fue vendida a María.
 a house cl.DAT was sold to Maria
 ‘A house was sold to Maria.’

As discussed in Section 4.2, some verbs in Greek have a double accusative ditransitive construction instead of the usual genitive-accusative configuration. These verbs uniquely permit indirect object passivization and block theme passivization/clitic doubling. This profile is predicted if double accusative verbs exceptionally have the structure proposed in Pesetsky (1995), in which the *direct* object is the XP in these cases. The only way to make the second accusative object the subject of a passive is to make the first one a PP. Thus, the restriction on indirect object passivization is not applied to “indirect objects” wholesale, but rather non-DP arguments.

(318) Double accusative verbs permit indirect object passivization

- a. Ta pedhia dhidhachthikan ghramatiki.
 the children.NOM taught.NACT.3PL grammar.ACC
 ‘The children were taught grammar.’ (Anagnostopoulou, 2003, ex. 10b)
- b. *I ghramatiki dhidhachthike ta pedhia.
 the grammar.NOM taught.NACT.3PL the children.ACC
 intended: ‘The grammar was taught the children.’ (Sabine Iatridou, p.c.)
- c. I ghramatiki dhidhachthike s-ta pedhia.
 the grammar.NOM taught.NACT.3PL to-the children.ACC
 ‘The grammar was taught to the children.’ (Sabine Iatridou, p.c.)

(319) Passive of a double accusative verb: only the indirect object can raise due to locality.



As foreshadowed, the lack of productive indirect object passivization in Greek and many Romance languages correlates with another property of these languages, often called the “dative

intervention effect”. It has been observed that movement of another argument across a high XP (e.g. indirect object, experiencer subject, etc.) correlates with either clitic doubling or cliticization of that XP argument, as in (320). In passives, this phenomenon is more easily observed in Greek than Spanish because Greek genitive indirect objects are unambiguously high while Spanish XP morphology doesn’t transparently track the position of indirect objects. Italian demonstrates the dative intervention effect for raising verbs, however.

(320) *Italian* “dative intervention” (Anagnostopoulou, 2003, ex. 67,72)

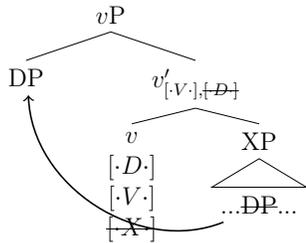
- a. ?*Gianni sembra a Piero [*t* fare il suo dovere]
 Gianni seems to Piero to do the his duty
 intended: ‘Gianni seems to Piero to do his duty.’
- b. Gianni non gli sembra [*t* fare il suo dovere]
 Gianni not cl.DAT seems to do the his duty
 ‘Gianni doesn’t seem to him to do his duty.’

I argue that these two facts (i.e. the lack of IO passives and obligatory clitic doubling with DO passives) are related, and moreover that they are observable in Greek and certain Romance languages simply because such languages *have* clitic doubling and/or φ -agreement with objects. Languages that lack clitic doubling/low object agreement should not have this pattern for the following reason: Merge and Agree are governed by slightly different locality requirements.

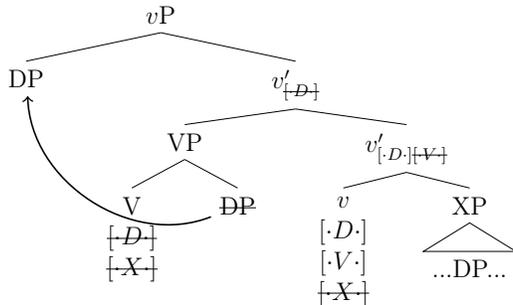
At any given point in a derivation, there is an option to check or not check a Merge feature. If the Merge feature is checked, it does not project. If it is not checked, it can project and attract an element from the expanded domain. Languages that lack a φ -probe on *v* should have symmetric passivization because the timing at which different Merge features are checked is free in (321).

(321) Symmetric passivization comes about due to ambiguity in the order of DP/VP-Merge in languages that lack a φ -probe on *v*

- a. If [*·D·*] checked before [*·V·*] → indirect object passive

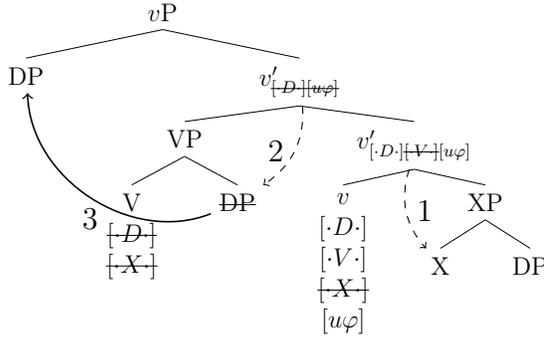


- b. If [*·V·*] checked before [*·D·*], [*·D·*] can percolate and attract direct object → direct object passive



According to Béjar & Rezac (2009), however, Agree behaves differently; φ -probes don't cyclically expand *until they have searched their domain for a goal*. Regardless of when VP is merged, in order for v 's $[\cdot D\cdot]$ feature and φ -probe to project to a position from which they can attract the direct object, the φ -probe must first have probed the complement XP. Failure to attract a DP from XP allows both features to reproject and search for the direct object.

- (322) Languages that have a φ -probe on v : whether VP is merged early or late, $[\cdot D\cdot]$ and $[u\varphi]$ stay low until $[u\varphi]$ has attempted to agree with XP



Based on the order of operations in (322), we would expect languages with a φ -probe on v to simply always attract the indirect object in passives, resulting in asymmetric passivization – attempting to agree with the DP complement of X should cause it to move, due to Feature Maximality. What is interesting about Greek and Romance, however, is that they do not permit the indirect object to raise to subject position, which is what allows the features to project again and attract the direct object. I propose that Greek and Romance exhibit this behavior because indirect objects are inherent case-marked, and are therefore inaccessible to Agree. The next section explores the details of feature projection in the context of agreement and clitic doubling, and motivates the treatment of dative intervention as the result of the derivation in (322).

The projection of φ and “dative intervention”

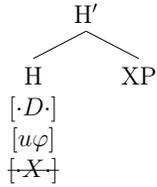
The projection principle, repeated below (218), raises subtle questions regarding the location of φ -probes at various points in the derivation. When a head first merges with its complement, it is proposed to project its unchecked features to the bar-level node to license specifiers. If one of those features is a φ -probe, however, Béjar & Rezac (2009) propose that feature projection must wait until the probe has searched its domain for a φ -goal.⁷

- (217) **Feature-driven Merge:** a constituent X may only merge with a constituent Y if Y bears an unsaturated feature $[\cdot X\cdot]$ such that the resulting structure makes $[\cdot X\cdot]$ sister to X.



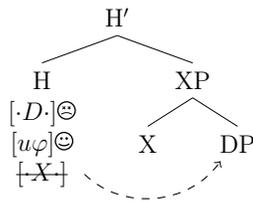
⁷I assume that feature projection is wholesale, i.e. that $[\cdot D\cdot]$ and $[u\varphi]$ must project together to H'. $[\cdot D\cdot]$ couldn't project by itself, stranding $[u\varphi]$ in situ, for example.

- (218) **Projection proposal:** unsaturated features on a head *project* (adapted from Adger 2003)
- (323) **Locality of Agree** (Béjar & Rezac, 2009): $[u\varphi]$ must search first before $[\cdot D\cdot]$ and $[u\varphi]$ can project to H'



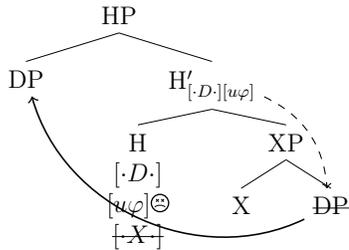
If the domain of the φ -probe were its c-command domain, agreement with H's complement would precede the time at which $[\cdot D\cdot]$ and $[u\varphi]$ could project to H' (because φ must search before it can project). *This is an undesirable result.* If the domain of Agree were based on c-command, the target of agreement could never remerge as a specifier, because the feature licensing said specifier would not have projected to H' in time (see (217)). As a result, all agreement+movement would result in undermerge, and agreement would always strictly precede the introduction of any specifiers (contra Longenbaugh 2019).

- (324) If the domain of Agree were based on c-command: $[u\varphi]$ searches XP before $[\cdot D\cdot]$ and $[u\varphi]$ can project to H' , i.e. before H' can merge with a DP



I therefore propose that the domain of agreement is based on *domination*. If the domain of the φ -probe is whatever it dominates instead of whatever it c-commands, then the probe will fail in situ (the head does not dominate anything). The φ -probe would therefore have to project once before it could probe the complement XP. On this view, the timing of Merge and Agree at H' is flexible – H' can externally merge a DP before probing XP, or probe XP before merging a DP.

- (325) If the domain of Agree is based on domination: $[u\varphi]$ searches and fails in situ – $[\cdot D\cdot]$ and $[u\varphi]$ must project to H' before H' can merge with a DP or $[u\varphi]$ can search XP



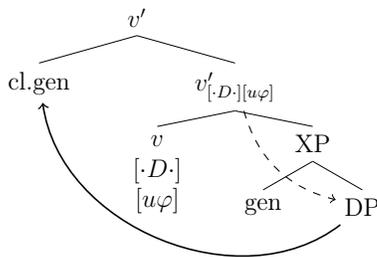
Having established the timing and mechanics of agreement relative to Merge, we can now return to clitic doubling. Following the logic of Anagnostopoulou (2003); Béjar & Rezac (2003) and Preminger (2009, 2014), I propose that attempting to agree with an inherent case marked

argument results in clitic doubling rather than φ -agreement with the inherent case marked element. In essence, an inherent case-marked indirect object acts as an intervener for agreement, without actually controlling agreement (as described in (326), from Longenbaugh 2019). Because inherent case-marked elements are inaccessible to Agree, attempting to agree with them results in the entire case-D complex being copied and internally merged as a clitic, as a reflex of attempted but failed agreement. (327) illustrates the ingredients for clitic doubling, ignoring the VP for simplicity.⁸

(326) Inherent case and φ -agreement (Longenbaugh, 2019, p.73, ex.21)

- a. XPs with inherent case do not trigger agreement
- b. XPs with inherent case intervene for agreement

(327) Clitic doubling: attempted agreement with an inherent case-marked XP results in movement of a case-marked clitic to Spec v P



Given that internal Merge is proposed to be feature driven, some feature needs to license the clitic. I propose that the $[\cdot D \cdot]$ feature on v licenses clitic doubling (clitics look like determiners). However, following Adger (2003)'s approach to φ -valuation, I assume that clitic doubling does not *check* the $[\cdot D \cdot]$ feature that licenses it (i.e. the clitic is too weak to count as a checking element).⁹ Clitic doubling is therefore licensed by the combination of a φ -probe and a $[\cdot D \cdot]$ feature on a head, but does not bleed future A-movement or agreement involving those $[\cdot D \cdot]$ and $[u\varphi]$ features. Once the rest of the clause is built, the remaining DP (namely the direct object) may move to check the $[\cdot D \cdot]$ feature on v .

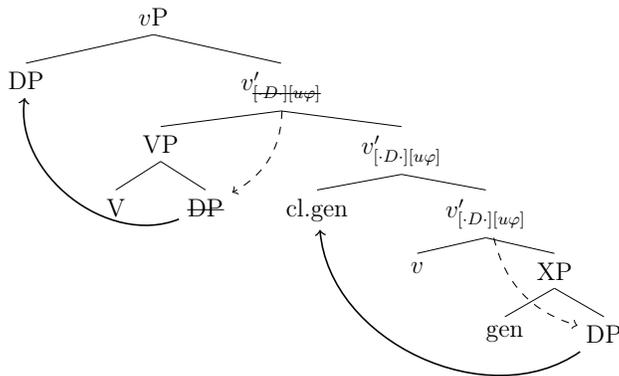
Taking for granted this picture of clitic doubling and the domain of agreement, we are now in a position to evaluate where the φ -probe needs to be to clitic double the indirect object

⁸It should be noted that while there is good reason to suspect that clitic doubling occurs in reaction to some process of Agree, agreement is likely not the only grammatical mechanism relevant to the distribution or profile of clitic doubling. As discussed by (Jaeggli, 1982; Suñer, 1998, a.o.) clitic doubling may co-occur with semantic restrictions in certain languages and constructions. For example, in Spanish, certain direct objects may be clitic doubled, but that process is sensitive to definiteness, quantification, and whether the object is a wh-phrase (unlike indirect object clitics, which are more productively available). The goal of this section is merely to show that, if clitic doubling is mediated by Agree (as argued by e.g. Béjar & Rezac (2003)), the locality of Agree should impact the timing of clitic doubling. Whether other semantic conditions play into the *mechanics* of clitic doubling, I leave to future research (see e.g. Sportiche 1996 for discussion).

⁹Asudeh & Potts (2004) discuss this property in the context of a general typology of feature checking operations. According to their view, there is no formal distinction between an interpretable and an uninterpretable feature. Rather, there are features that return an identity function when they interact with a Merge feature (checkers), and there are features that return the same Merge feature that they interacted with (valuers). In my terms, checkers *delete* the features that they check (equivalent to returning the identity function), and valuers leave Merge features unchecked. On this view, clitics behave as valuers rather than checkers, but look like merged elements due to their inability to value the φ probe in the normal fashion.

vs. find and attract the direct object. In order for the φ -probe to clitic double the indirect object, it needs to dominate XP. In order for it to find and attract the direct object, it needs to dominate VP. In the high XP variant of the dative alternation, XP is a complement but VP is a specifier of vP , so there is a node that dominates XP but does not dominate VP. Due to the locality of Agree, the φ -probe must therefore search XP before it can project to a position from which it dominates VP. Whether the φ -probe searches XP before or after VP is merged does not affect the time at which $[u\varphi]$ may *project* to a position that dominates VP, making the timing of VP-Merge irrelevant – clitic doubling always precedes direct object movement.

- (328) Direct object passivization follows clitic doubling, licensed by the reprojected $[\cdot D \cdot]$ and $[u\varphi]$

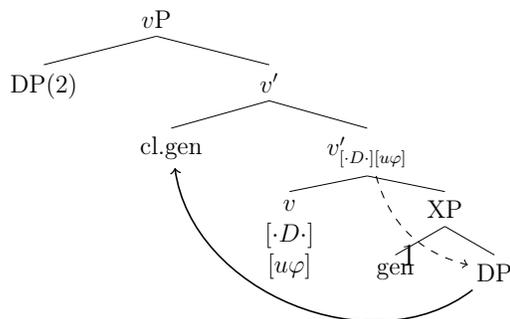


In sum, clitic doubling is not a precondition for direct object movement – the direct object can raise without violating relativized minimality whether or not the indirect object is clitic doubled. However, clitic doubling necessarily *precedes* passivization due to the locality of Agree. Crucially, this effect is only observed in passive rather than active ditransitives – when a transitive subject is merged in Spec vP instead of the direct object, clitic doubling is optional.

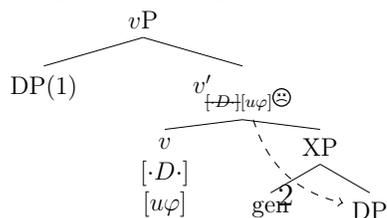
- (329) (Tu) edhosa tu Giani to vivlio.
 cl.GEN gave.1SG the Gianis.GEN the book.ACC
 ‘I gave John the book.’ (Anagnostopoulou, 2003, ex. 18)

Following Longenbaugh (2019), I argue that clitic doubling is optional in transitive clauses but obligatory in passives for the same reason that transitive subjects block PPA in Romance: Merge and Agree are unordered. Revisiting (327), once v has merged with an XP complement and projected $[\cdot D \cdot]$ and $[u\varphi]$, the derivation has two options: search for a φ -goal or Merge a transitive subject (or Merge a VP, but let’s restrict ourselves to the first two options for simplicity). Choosing to Agree first generates a clitic and licenses a later Merge operation with a transitive subject. Choosing to merge the transitive subject first, however, checks the $[\cdot D \cdot]$ feature that would have licensed the clitic.

- (330) Agree before Merge: clitic doubling in a transitive clause



(331) Merge before Agree: no clitic doubling in a transitive clause



The crucial difference between active and passive clauses is that in an active transitive clause, $[\cdot D \cdot]$ may be checked by external Merge before VP has been merged, i.e. early enough for the φ -probe not to have projected a second time. By contrast, in a direct object passive, $[\cdot D \cdot]$ may not be checked until the VP containing the direct object has been merged, and the features on v' projected to a position that dominates VP. As a result, a transitive subject can merge in Spec vP early enough to bleed clitic doubling, but a passive object cannot.

We have seen that languages with φ -probes/clitic doubling strategies on v are expected to Agree with a high indirect object first before passivizing the direct object. The clitic doubling strategy effectively bleeds indirect object passivization due to case discrimination. Languages that lack a φ -probe/clitic doubling strategy on v , however, should have passivization profiles that follow the locality of *Merge* rather than *Agree*. The locality of *Merge* indicates that passivization should be fully symmetric. If this is right, however, why is it that some English varieties require the indirect object to have an overt preposition in (313a), when active ditransitives can represent the indirect object either with or without a preposition?

(313a) A book was given %₀(to) Lauri.

Recall that the presence of a preposition on the indirect object was *not* an indicator of structural position, but rather an indicator of whether the adjacency requirements for inherent case have been met. The fact that many English speakers require the preposition in (313a) therefore does not indicate that such speakers reject passivization in the context of a high indirect object. Rather, it demonstrates that those speakers require the indirect object to take its prepositional form in those contexts. A possible explanation for the preference for prepositional indirect objects in (313a) could be that the passive projection/morphology on the verb blocks inherent case licensing for some speakers (a version of Baker et al. 1989). The passive certainly does not universally block inherent case licensing, or else we would expect Norwegian and Greek, for example, to require a preposition in analogous examples, contrary to fact. However, given that English dative is all but vanished, it is plausible that it is licensed in

fewer environments than in other languages. I leave investigation of inherent case licensing in English as a topic for future research.

To summarize, I have argued that passives of ditransitives show the profile we expect them to have. For low indirect objects, the direct object is the only passivizable element. For high indirect objects, both arguments are accessible for passivization in principle, but might result in clitic doubling if passivization is mediated by Agree in a given language, or require a particular form of the indirect object if passives block the requirements for inherent case.

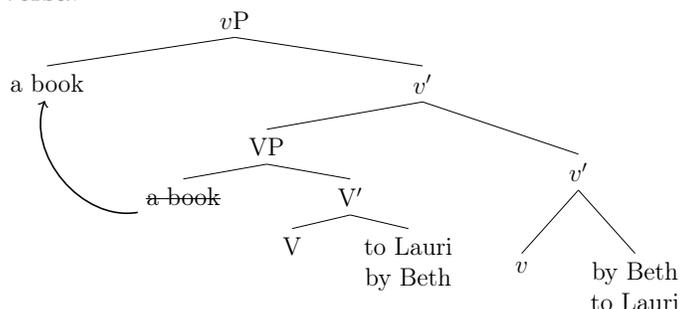
- (332) Proposed relevant features to typological variation in passives of ditransitives
- a. Whether a language can clitic double its indirect objects
 - b. Whether there are special licensing conditions for inherent case

4.3.2 The *by*-phrase

Having investigated the interactions between DPs and XPs in raising to subject position, we now turn to the position of the *by*-phrase. As indicated in (310), there are in principle two XP positions in which to posit a *by*-phrase. Are both positions utilized? I propose that the profile of passives of ditransitives advocates treating the position of the *by*-phrase as flexible rather than fixed.

The reason the *by*-phrase must be flexible is that passives occur in clauses with other XPs, i.e. in ditransitive clauses. If other XP arguments can have a flexible position in a passive, the position of the *by*-phrase must shift accordingly – there are only so many *Merge XP* features to go around. If the lower one is checked by the indirect object, the higher one is available to the *by*-phrase, and vice versa.¹⁰

- (333) Theme-passive is a 1DP-2XP structure. If the IO is low, the *by*-phrase is high and vice versa.

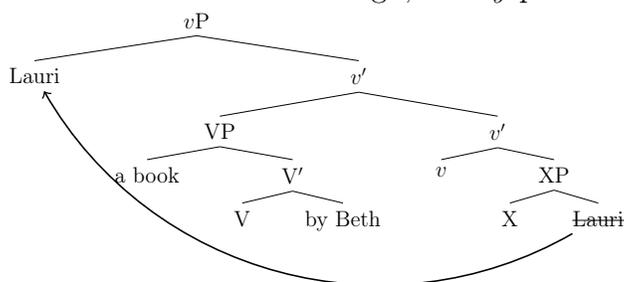


¹⁰The fact that only two XPs are proposed to be licensed raises the immediate question of whether clauses with two non-DP arguments in the active can be passivized (and thus turned into clauses with 3 non-DPs). It appears that at least some such examples can be passivized, contrary to what we would expect if only two non-DPs were ever licensed in a clause.

- (vii) John was bet [_{XP} *t*] 4 dollars [_{XP} *by Mary*] [_{XP} *that she could eat fifty eggs*].

In Chapter 6, I will propose that *by*-phrases themselves may contain more structure than first meets the eye, which may provide a source for an additional [_X·] feature, though the status of examples with too many non-DPs will need to be more fully investigated in future research.

- (334) Recipient-passive is also 1DP-2XP structure, where a second DP has raised from one of the XPs. Since the IO is high, the *by*-phrase must be low.



I propose that the flexibility of the *by*-phrase accounts for binding facts that have long eluded those who study the passive. In direct object passives of ditransitives, it is basically impossible to diagnose a *c*-command relationship between the *by*-phrase and the indirect object phrase.¹¹

- (335) T-passives: Embedded anaphors can be bound in any XP by any XP in any word order
- a. ?The books were given to Jo and Marmie_{*i*} by each other_{*i*}'s parents.
 - b. ?The books were given by each other_{*i*}'s parents to Jo and Marmie_{*i*}.
 - c. The books were given by Jo and Marmie_{*i*} to each other_{*i*}'s parents.
 - d. ?The books were given to each other_{*i*}'s parents by Jo and Marmie_{*i*}.

¹¹Collins (2005); Bowers (2010) propose that the profile of NPI-licensing (among other similar tests) is an argument for an asymmetry between the *by*-phrase and *to*-phrase. They also use bound variable anaphora to motivate different conclusions about the position of the *by*-phrase: Collins (2005) argues that it is high, while Bowers (2010) argues that it is low. However, as discussed extensively in Barker (2012); Barker & Shan (2014) (with predecessors including but not limited to Postal 1971, Wasow 1972, Jacobson 1972, Higginbotham 1980, 1983, Gawron and Peters 1990, Bresnan 1994, 1998, Safir 2004, and others), NPI-licensing and bound variable anaphora pattern differently from binding more generally in a number of respects, which is why I have not made use of these tests extensively (though bound variable anaphora would actually support my conclusion that the *by*-phrase is flexible if it were sensitive to *m*-command). NPI-licensing has been shown to have a linear order requirement and bound variable anaphora is sometimes insensitive to *c*/*m*-command entirely.

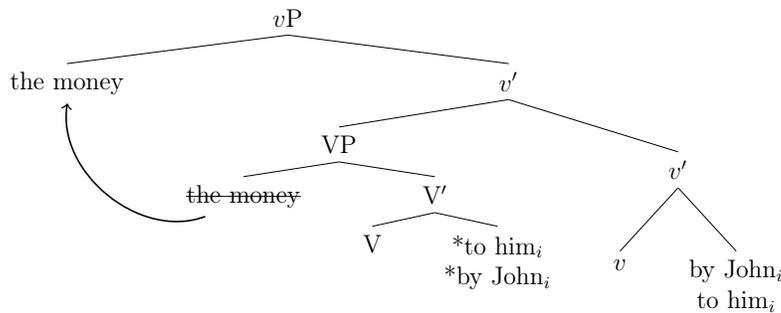
- (viii) NPI-licensing: sensitive to linear order
- a. The books were given to no professor by any student.
 - b. *The books were given by any student to no professor.
 - c. *The books were given to any student by no professor.
 - d. The books were given by no professor to any student.
- (ix) Bound variable anaphora: insensitive to *c*/*m*-command (Barker, 2012)
- a. Everyone_{*i*}'s mother thinks he_{*i*} is a genius.
 - b. Each_{*i*} student's advisor paid his_{*i*} gambling debts for him_{*i*}.
 - c. Everyone_{*i*}'s mother's lawyer's dog likes him_{*i*}.
- (x) Bound variable anaphora in passives of ditransitives (Bowers, 2010)
- a. Money was given to every student by his mother.
 - b. Money was given to his mother by every student.

The data in (335) pose a problem for any theory in which the *by*-phrase has a fixed position. If the *by*-phrase is high (as argued by Collins 2005), we should not expect an indirect object to be able to bind into it as in (335a,b). If the *by*-phrase is low (as argued by Bowers 2010), we should not expect it to bind an indirect object, as in (335c,d). The binding profile in (335) is also observed for Principles B and C. In (336a), no matter where the two phrases are projected, there will either be a principle B or a principle C violation. Further embedding either the R-expression as in (336b), or the pronoun as in (335) will always remedy the situation, because there is always an available structure in which the relevant condition is obviated.

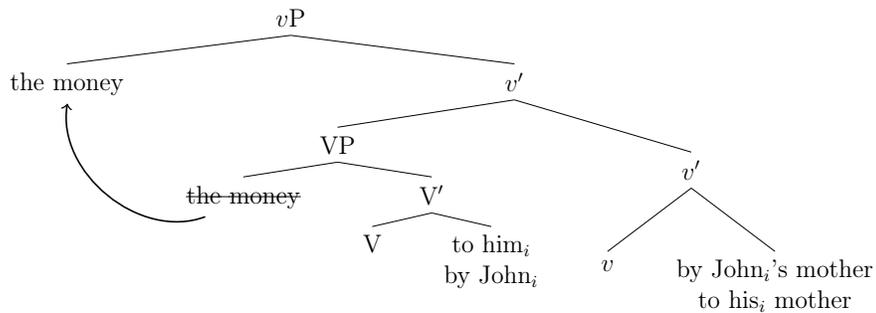
(336) Principles B and C

- a. *The money was sent to him₁ by John₁.
- b. ?The money was sent to him₁ by John₁'s mother.
- c. The money was sent to his₁ mother by John_i.

(337) Principles B/C rule out (336a)



(338) Embedding the R-expression in (336b) or the pronoun in (336c) resolves the issue



As expected, the same principle B/C behavior cannot be replicated when the *indirect* object is passivized. Indirect object passivization is only permitted for high XP indirect objects, so the *by*-phrase must be low. Principle C therefore blocks (339a,b), regardless of how much we embed the R-expression. Only embedding the pronoun in (339d) avoids a Principle C violation.

(339) Replicating the Principle B/C effect in indirect object passives

- a. *Lauri was shown them_i by Jo and Marmie_i.
- b. *Lauri was shown them_i by Jo and Marmie_i's illustrations.
- c. Lauri was shown Jo and Marmie_i by their_i illustrations.
- d. Lauri was shown their_i illustrations by Jo and Marmie_i (themselves).

So far, I have used binding and scope diagnostics to identify phrases that are “high” vs. “low”. As mentioned in Section 4.2, however, these diagnostics don’t quite make sense, given

that the high and low positions that I refer to don't actually stand in a c-command relationship with one another. In Section 4.4, I finally turn to the binding theory that derives these results, and show that it accounts for the observed symmetries and asymmetries in binding between various kinds of arguments.

In sum, a direct object passive of a ditransitive, like a passive of a monotransitive, is predicted to be structurally ambiguous: the *by*-phrase can be low or high. An indirect object passive of a ditransitive is *not* predicted to be structurally ambiguous: the *by*-phrase can only be low. We now move on to an investigation of the diagnostics used to motivate these structures.

A note on the CED

Throughout this section, I have assumed that passivization of a direct object is always possible, despite the fact that it sometimes raises from inside a specifier VP, which should violate the CED (Huang, 1982). I will not take a stand on whether the CED should be abandoned in general. Rather, I note that there are at least two formulations of the CED that would permit subextraction from a specifier VP in these contexts: Müller (2010) and McFadden & Sundaresan (2021).

(340) Müller (2010): only the *last*-merged specifier is an island for extraction

(341) McFadden & Sundaresan (2021): only unselected elements are islands for extraction

Given that VP is selected (i.e. it checks a $[\cdot V \cdot]$ feature), it should not be an island for extraction on a path based view of CED effects (McFadden & Sundaresan, 2021). Likewise, given that raising from VP only occurs in contexts when *v*'s $[\cdot V \cdot]$ feature is checked *before* its $[\cdot D \cdot]$ feature, VP is never the last-merged specifier in direct object passives. Thus VP is not an island for extraction according to Müller (2010) either.

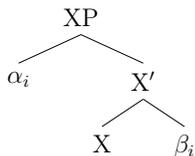
4.4 Diagnosing structure

So far, we have seen that the logic of feature driven Merge, combined with the proposed features $[\cdot D \cdot]$, $[\cdot V \cdot]$, and $[\cdot X \cdot]$, jointly predict two available positions for non-DP arguments of the verb: Comp V and Comp *v*. I proposed that we could diagnose these two positions with binding, scope ambiguities, and word order on the following assumption: the complement of *v* can bind into and take scope over the contents of VP but not vice versa.

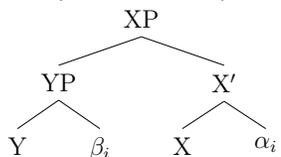
However, given that the complement of *v* does not c-command the domain of VP, I require a slightly modified binding theory that makes use of *m-command* in order to explain these facts. The modified binding theory is in (273).

(273) Binding theory: α binds β iff α and β are coindexed, and (a) or (b):

a. α and β m-command each other and α asymmetrically c-commands β



b. α asymmetrically m-commands β

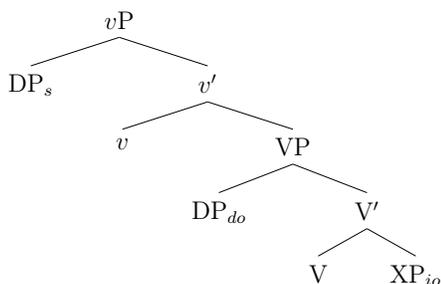


(274) M-command: α m-commands β iff every *maximal projection* that dominates α dominates β

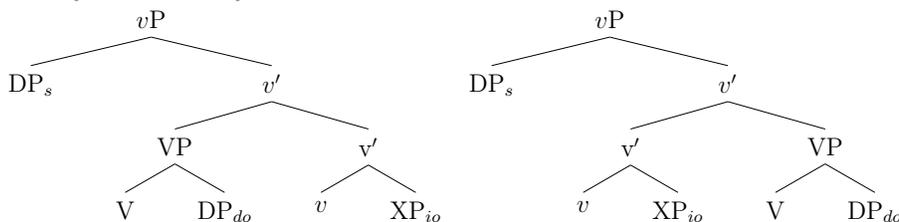
(275) C-command: α c-commands β iff every *node* that dominates α dominates β

Treating β as an indirect object explains the binding patterns observed in Section 4.2. When the indirect object is low, it is c-commanded by the direct object and cannot bind it, and the only possible word order is DO-IO. When the indirect object is high, it asymmetrically m-commands the direct object and can bind it, and there are two available word orders: DO-IO or IO-DO, depending on how VP is linearized. As a result, DO-IO word order can result in both forwards and backwards binding, but IO-DO order is only compatible with forwards binding.

(342) a. DO asymmetrically c-commands IO: DO binds IO and not vice versa



b. IO asymmetrically m-commands DO: IO binds DO and not vice versa



In this section, we will inspect these structural diagnostics a bit more closely and look for other evidence for the proposed structures. Binding and constituency tests have long been known to yield confusing results when applied to verb phrase syntax. As I have already shown, at least some of the historically contradictory data (i.e. binding in passives of ditransitives) is accounted for on my theory but not others due to the inherent flexibility in where to introduce certain arguments. Constituency tests are discussed in Appendix A.2.

4.4.1 Binding

Section 4.2 argued for the structures in (342) primarily with evidence from Principle A rather than Principles B and C. The results of that investigation are replicated here. What we found is that anaphors can be bound by antecedents that linearly follow them in a ditransitive, but only when the relative order of the two arguments is DO-IO. In some languages, the structural

position of the indirect object is trackable by other diagnostics, such as the availability of clitic doubling.

(278) English Principle A

- a. Jo showed Lauri and Amy_i to each other's_i parents in the mirror. (DP binds XP)
- b. Jo showed pictures of each other_i to Lauri and Amy_i. (XP binds DP)
- c. Jo showed Lauri and Amy_i.DAT each other_i's parents in the mirror. (XP binds DP)
- d. *Jo showed each other_i's parents.DAT Lauri and Amy_i in the mirror. (*DP binds XP)

(283) *Japanese* Principle A (Miyagawa & Tsujioka, 2004, ex. 61)

- a. John-ga [Hanako-to Mary]-ni_i otagai_i-o syookaisita.
John-NOM [Hanako-and Mary]-DAT each.other-ACC introduced
'John introduced Hanako and Mary to each other.' (dat-acc, forwards binding)
- b. (?)John-ga [Hanako-to Mary]-o_i (paatii-de) otagai_i-ni syookaisita.
John-NOM [Hanako-and Mary]-ACC (party-at) each.other-DAT introduced
'John introduced Hanako and Mary to each other (at the party).' (acc-dat, forwards binding)
- c. John-ga [otagai_i-no sensei]-o (paati-de) [Hanako-to Mary]-ni_i
John-NOM [each.other-GEN teacher]-ACC (party-at) [Hanako-and Mary]-DAT
syookaisita.
introduced
'John introduced each other's teachers to Hanako and Mary (at the party).' (acc-dat, backwards binding)
- d. *John-ga [otagai_i-no sensei]-ni [Hanako-to Mary]-o_i syookaisita.
John-NOM [each.other-GEN teacher]-DAT [Hanako-and Mary]-ACC introduced
intended: 'John introduced Hanako and Mary to each other's teachers.' (dat-acc, *backwards binding) (p.c. Shigeru Miyagawa)

(294) Spanish Principle A (Demonte, 1995)

- a. El tratamiento psicoanalítico reintegró a María a sí-misma.
the therapy psychoanalytic gave-back to Mary.DO to herself.IO
'The psychoanalytic therapy helped Mary to be herself again.'
- b. El tratamiento psicoanalítico **le** devolvió a la estima de sí-misma a
the therapy psychoanalytic CL-DAT gave-back to the esteem of herself.DO to
María.
Mary.IO
'The psychoanalytic therapy helped Mary to be herself again.'

(287) Greek Principle A (Sabine Iatridou, p.c.)

- a. O Gianis edhikse tin Maria s-ton eafton tis s-ton kathrefti.
the Gianis.NOM showed the Maria.ACC to-the REFL.ACC GEN in-the mirror.ACC
'John showed Mary to herself in the mirror.'
- b. O Gianis edhikse ton eafton tis s-tin Maria s-ton kathrefti.
the Gianis.NOM showed the REFL.ACC GEN to-the Maria.ACC in-the mirror.ACC

‘John showed herself to Mary in the mirror.’

- c. O Gianis edhikse tis Marias ton eafton tis s-ton kathrefti.
 the Gianis.NOM showed the Maria.GEN the REFL.ACC GEN in-the mirror.ACC

‘John showed Mary.gen herself in the mirror.’

- d. *O Gianis edhikse tu eaftu tis tin Maria s-ton kathrefti.
 the Gianis.NOM showed the REFL.GEN GEN the Maria.ACC in-the mirror.ACC

intended: ‘John showed herself.gen Mary in the mirror.’ (speaker comment: “extreme word salad”)

We can also show the same results with Principles B and C. As Collins (2005) showed for passives, the *by*-phrase looks like it can bind a pronoun that linearly precedes it, as evidenced by the fact that embedding the binder in (343b) makes an otherwise ungrammatical sentence marginally acceptable. A similar move yields the same results for *to*-phrases/dative phrases and a preceding direct object in English (343d) and Japanese (344c)¹².

(343) Principle B

- a. *A book was given to him_i by John_i.
 b. ?A book was given to him_i by John_i’s mother.
 c. *Sue showed him_i to John_i in the mirror.
 d. ?Sue handed him_i to John_i’s mother. (context: John is a baby)
 e. *Bill handed her_i Mary_i’s son.

(344) *Japanese* Principle B (Miyagawa & Tsujioka, 2004, ex. (i,ii), fn. 23)

- a. Hanako-ga [Taroo_i-no syasin]-o kare_i-ni okuri-kaesita.
 Hanako-NOM [Taro_i-GEN photograph]-ACC he_i-DAT sent-back
 ‘Hanako returned Taro’s photograph to him.’ (acc-dat, forwards binding)
- b. *Hanako-ga kare_i-ni [Taroo_i-no syasin]-o okuri-kaesita.
 Hanako-NOM he_i-DAT [Taro_i-GEN photograph]-ACC sent-back
 intended: ‘Hanako returned Taro’s photograph to him.’ (dat-acc, *backwards binding)
- c. Hanako-ga kare-o_i [Taroo_i-no ie]-ni okuri-kaesita.
 Hanako-NOM he_i-ACC [Taro_i-GEN house]-DAT sent-back
 ‘Hanako returned him_i back to Taro’s_i house.’ (acc-dat, backwards binding) (p.c. Shigeru Miyagawa)

There are two remaining puzzles about binding that we have not addressed. The first is that (at least in some languages – not in Greek) embedding an anaphor makes a difference for binding judgments. While (345a) is robustly attested in the literature, (345b) is not.

(345) English Principle A wants embedded anaphors

¹²I believe that examples like (343d) have not been reported as acceptable traditionally, but the speakers that I have consulted can’t distinguish them from examples like (343b) (taken from Collins 2005). Moreover, they all agree that there is a significant contrast between (343d) and (343e). I therefore conclude that, though backwards binding is somewhat marginal for many people, the Principle B effect observed in (343) is real and meaningful.

- a. Jo showed pictures of each other_i to Lauri and Amy_i.
- b. ??/*Jo showed each other_i to Lauri and Amy_i in the mirror.

Collins (2005) and Bowers (2010) have observed that passives behave similarly with respect to unembedded anaphors.¹³ The anaphors in (346) look like they need to be embedded to be backwards bound by the *by*-phrase. Collins and Bowers disagree slightly in how they judge backwards binding of unembedded anaphors, however: Collins judges (346a,b) to be grammatical but very marginal, while Bowers judges (346c,d) to be ungrammatical.

(346) Unembedded anaphors and Principle A

- a. ??The magazines were sent to herself by Mary. (Collins, 2005, ex. 72)
- b. ??Books were sent to each other by the students. (Collins, 2005, ex. 72)
- c. *The books were given to myself by me. (Bowers, 2010)
- d. *Mary was shown himself by John. (Bowers, 2010)

(335) Embedded anaphors and Principle A

- a. ?The books were given to Jo and Marmie_i by each other_i's parents.
- b. ?The books were given by each other_i's parents to Jo and Marmie_i.
- c. The books were given by Jo and Marmie_i to each other_i's parents.
- d. ?The books were given to each other_i's parents by Jo and Marmie_i.

Bruening (2014) proposes that anaphors are subject to processing conditions, which might account for the embedding effects we observe in (346) vs. (335), etc., though future research is needed to verify whether a processing approach is appropriate. Essentially, his approach adopts two assumptions: 1) that processing is sensitive to linear order, and 2) that anaphors can only be coreferent with co-arguments of the same predicate *that have already been processed*. With these two assumptions, he accounts for the minimal pair in (347) as follows: the subject successfully binds the direct object anaphor in (347a) because the subject is processed before the anaphor and both are co-arguments of the same predicate. The indirect object fails to bind the direct object anaphor in (347b) because even though they are co-arguments of the same predicate, the indirect object is only processed *after* the anaphor. The anaphor must therefore take the subject as its only possible referent, in which case there is an agreement mismatch.

(347) (Bruening, 2014, ex. 134-135)

- a. The kung fu masters₁ sent each other₁ to me.

¹³In principle, coarguments of V m-command each other, so a low XP could bind into a DP specifier of VP even if it couldn't bind *the* specifier of VP (as is borne out in (xia)). Given this possibility, the embedding requirement in (346) could be seen as evidence that the relevant XP in each case is unambiguously low, contrary to what I have proposed. Two pieces of data crucially motivate my approach. The first is that the embedding effect is also observed in (xib,c). The second is that Principle B provides additional evidence that the relevant XPs can be high: embedding an R-expression inside a *to/by*-phrase rescues the sentences in (343). If the XP were low in these cases, there would still be a Principle C violation, contrary to fact.

(xi) Replicating Principle A in indirect object passives

- a. Lauri was given books about each other_i by Jo and Marmie_i.
- b. *Lauri was shown Jo and Marmie_i by each other_i.
- c. Lauri was shown Jo and Marmie_i by each other_i's illustrators.

- b. *I sent each other₁ to the kung fu masters₁.

Bruening’s proposal, as stated, is obviously too strong, because it would predict that embedding the direct object anaphor at all should prevent it from having a referent outside its own DP. This is because embedding the anaphor removes it as an argument of the matrix predicate, and instead makes it an argument *of an argument* of the matrix predicate. Bruening, borrowing Reinhart & Reuland (1993)’s terminology, calls these *exempt* anaphors and does not offer an explanation for their behavior.

- (348) I sent pictures of each other₁ to the kung fu masters₁. (unaccounted for by Bruening 2014)

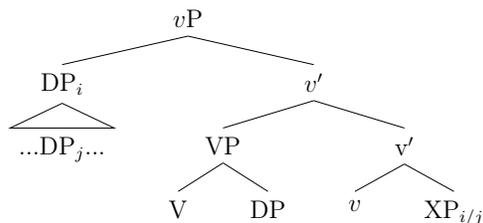
These anaphors do not seem exempt from binding principles, however, given that embedding the R-expression in (348) (so it cannot bind the preceding anaphor), as in (349) results in ungrammaticality.

- (349) *I sent pictures of each other₁ to the kung fu masters₁’ favorite student.

Only two slight amendments to Bruening’s account are needed to explain the embedding effect, however. First, we must allow Principle A to be sensitive to a broader notion of a domain rather than co-argument-hood (as in Chomsky 1981) in order for the indirect object to bind *into* the direct object in the first place.¹⁴ Second, the time at which the direct object is evaluated for Principle A must not be the same as the time at which the *contents* of the direct object are evaluated for Principle A. If the contents of the direct object were instead evaluated for Principle A *after* all of the matrix arguments had been processed, an anaphor inside the direct object would be able to find the indirect object as a referent, thus correctly predicting (348) to be grammatical. However, future experimental work is needed to verify whether processing is indeed sensitive to embedding in this way.

A second question that arises from these binding diagnostics pertains to the behavior of subjects. A DP specifier of *v*P asymmetrically c-commands everything in the clause and should therefore asymmetrically bind any argument in the verb phrase (because it m-commands everything and nothing c-commands it). Given that a high XP argument also m-commands a DP subject, however, a high XP should be able to bind some element *embedded* in the subject. As noted in Pesetsky (1995) (reporting observations from Akatsuka (McCawley) 1976; Giorgi 1984; Belletti & Rizzi 1988; Pesetsky 1987a), some subjects do exhibit backwards binding.

- (350) S asymmetrically c-commands IO: IO asymmetrically m-commands contents of S



- (351) Backwards binding in ditransitive unaccusatives

¹⁴Bruening already has to relax the co-argument-hood requirement to allow for binding in ECM and raising constructions, and across prepositions.

- a. These rumors about himself_i worry Gianni_i more than anything else.
 - b. Each other_i's names often elude [Beth and Lauri]_i.
- (352) Backwards binding in causatives
- a. Each other_i's remarks made [Beth and Lauri]_i happy.
 - b. Pictures of each other_i caused [Jo and Marmie]_i to start crying.
- (353) Backwards binding between S and IO
- a. Different sides of each other_i showed [Beth and Lauri]_i different contours.
 - b. ?Different sides of each other_i showed different contours to [Beth and Lauri]_i.

Backwards binding is not a characteristic of all subjects, however. Regular transitive subjects, for example, asymmetrically bind their objects.

- (354) a. *Different relatives of each other_i photographed [Beth and Lauri]_i.
- b. [Beth and Lauri]_i photographed different relatives of each other_i.

The contrasts between different subjects are explained if we treat the experiencers (*Gianni/Beth and Lauri*) in (351), the causees (*Beth and Lauri/Jo and Marmie*) in (352) and the indirect objects in (353) as high XPs, but we treat the direct objects in (354) as DP complements of V (an XP-friendly variant of Belletti & Rizzi 1988; Pesetsky 1995, as in Landau 2010 on experiencers). High XPs asymmetrically m-command an anaphoric element in the subject, while DP complements of V do not.

In sum, we have explored how binding principles A, B and C, when modified to take into account *m-command* rather than *c-command*, verify the proposed structures of ditransitives. Left unresolved is a well-motivated explanation for why anaphors sometimes need to be embedded to be bound. In addition, I have taken it for granted throughout this investigation that a DP inside a prepositional phrase can bind another DP if the *entire prepositional phrase* m-commands the other DP. The intuitive description of the phenomenon is that arguments of a verb, regardless of category, can bear indices and engage in binding relations. However, a technical explanation for this property of XP arguments in a Minimalist framework is elusive (see for example Pollard & Sag 1994 for discussion and a solution from HPSG).¹⁵

4.4.2 Scope ambiguities

Lastly, I also argued that scope ambiguities motivated the same conclusions about ditransitives as binding diagnostics, on the assumption that XP arguments of *v* take rigid high scope over arguments of VP (scope freezing effect). So far, I have not yet offered a theory of why this should be. Indeed, this result is surprising if we think that the scope of a quantifier depends on whether it QRs relative to other quantifiers. Given that passivization was proposed to be symmetric for ditransitives, we would expect the same to be true for other movement operations.

¹⁵Bruening (2014) proposes that we abandon c-command and m-command all-together and take up a different notion, namely phase-command. On his proposal, DPs inside PPs can bind elements that they neither c-command or m-command so long as they phase-command them, on the assumption that P is not a phase.

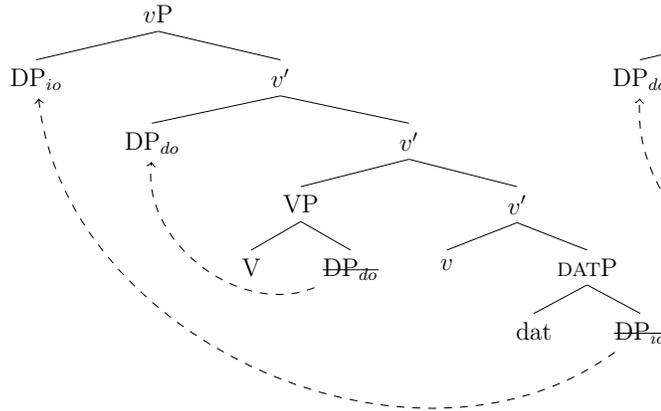
(xii) Phase-command: α phase-commands β iff every *phase* that dominates α dominates β

His approach, however, overgenerates Principle C violations in e.g. (343), so I will not explore the idea further.

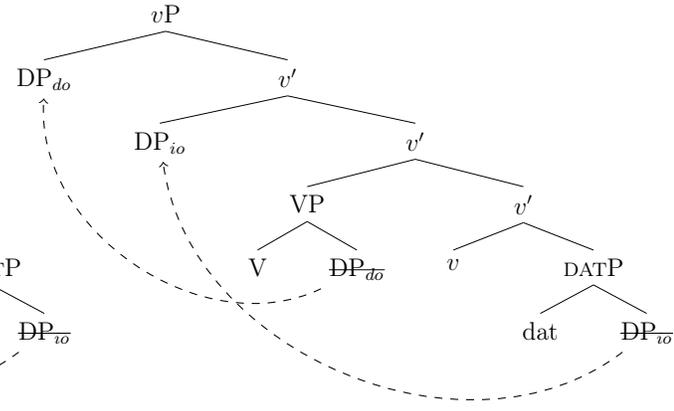
If neither object of a ditransitive blocks movement of the other, it is therefore not clear why one should obligatorily take scope over the other.

(355) Either argument of a double object construction can passivize: why does the IO take rigid scope over the DO if they both QR?

a. IO scopes over DO



b. DO scopes over IO



We will see in Chapter 5 that in many languages, wh-movement of high indirect objects can bleed movement operations involving the direct object. These two phenomena (scope freezing and wh-movement) taken together indicate the following generalization: *if* the indirect object moves, it does so before the direct object does (just as indirect objects are agreed with before direct objects are). In the case of wh-movement, I will argue that this effect is due to the following asymmetry between high indirect objects and direct objects: there is a stage of the derivation in which the indirect object is the *only* available goal for v 's \bar{A} -feature. By contrast, the direct object is merged later, and is therefore never the only candidate for movement at a given time. However, I will argue that the conditions enforcing this choice are different in the domain of wh-movement vs. QR. While wh-movement is sensitive to derivational economy conditions, QR is sensitive to Scope Economy (Fox, 1998).

4.5 Conclusion

Chapter 3 argued that the distribution of non-DP arguments should be limited to either of two positions: the complement of V or the complement of v . In this chapter, we investigated the predictions of the feature structures proposed in Chapter 3 for two kinds of alternations: dative and passive.

In ditransitive clauses, I argued that two of the three arguments are DPs while the other is a non-DP. Since UG presents two options for the position of non-DP arguments, I proposed that the dative alternation could be explained as a product of this structural ambiguity.

The position of the XP argument in ditransitives was also shown to have consequences for c-command relationships between arguments of the verb. When an XP argument is the complement of V , it is c-commanded by every other argument in the clause. When an XP argument is the complement of v , however, VP was shown to become a specifier, which removed any

c-command relationship between XP and arguments of V. It is the lack of c-command between “high” XPs and arguments of V that was proposed to account for symmetric passivization in languages that have it.

We also saw that the predicted profile of passives of ditransitives was sensitive to whether passivization was mediated by φ -agreement in a given language. Due to the locality of Agree, if v has a φ -probe, it must first probe its complement before it may reproject and probe its specifier (Béjar & Rezac, 2009). Thus, if v has an XP complement and a VP specifier, it must first attempt to agree with XP before it may probe into VP. If that φ -probe is case discriminating, however, I proposed that this order of operations results in a direct object passive, in which the indirect object has been obligatorily clitic doubled.

The goal of Chapter 5 is to combine the insights of Chapters 2, 3 and 4 in an investigation of wh-movement in passives of ditransitives. I will argue that making a high indirect object a wh-phrase in a passive leads to something similar to the “dative intervention effect” discussed in Section 4.3– the wh-indirect object must become the passive subject instead of the direct object. Thus, languages with otherwise symmetric passivization are predicted to have asymmetric passivization just in case the indirect object is a wh-phrase.

Holmberg et al. (2019) discuss a variety of languages that exhibit this pattern. While they analyze this effect as evidence for restrictions on movement, however, I propose that it is a reflex of a version of *Multitasking* (van Urk & Richards, 2015) – v prefers to check both [$\cdot D \cdot$] and [$\cdot wh \cdot$] at the same time when it can.

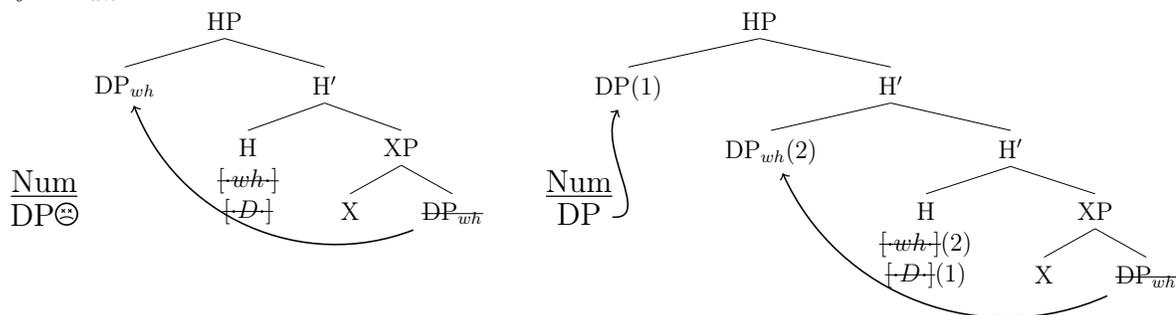
Chapter 5

Wh-moving indirect objects

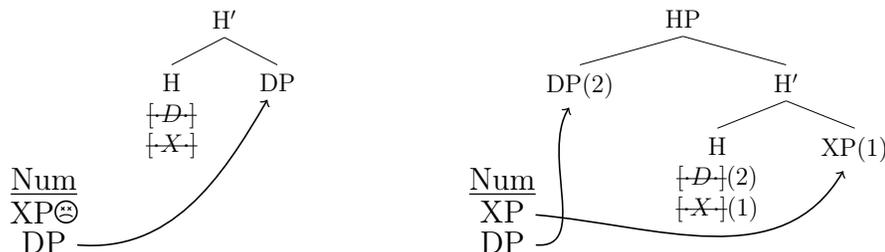
5.1 Introduction

Chapter 2 concentrated on the interaction between D and *wh* features on *v*, and Chapters 3 and 4 concentrated on the interaction between D and X features on V and *v*. In Chapter 5, we will complete the paradigm by investigating the interactions between D, X and *wh* features on *v*. I have shown that subset relations impose conditions on the order of Merge, which can be seen in two kinds of scenarios.

(356) If both DP and DP_{*wh*} want to merge with H', DP must merge first or it will be blocked by DP_{*wh*}.



(357) Since D is an instance of X, the same logic requires a non-DP to merge first.



(356) and (357) represent the two extrema in the space of possible conditions on Merge: DP_{*wh*} must merge *last* in (356) since it has the capacity to bleed every imaginable argument of *v*; a non-DP must merge *first* in (357) because it can be bled by any imaginable argument of *v*.

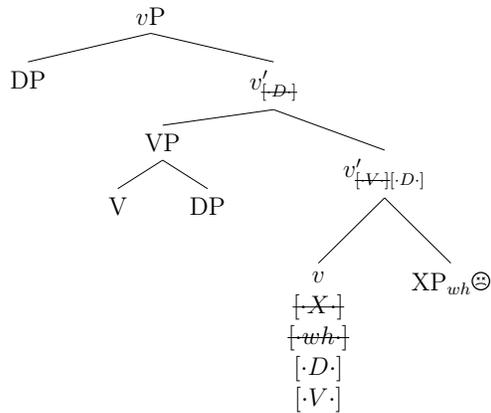
As we saw in Chapter 2, a DP that would typically be licensed by *v*'s D feature could instead be licensed by *v*'s *wh* feature if it was a *wh*-phrase. In certain Mayan languages, this had the

effect of merging the subject exceptionally *late*: object movement which would normally have blocked a transitive subject was permitted just in case the subject was a wh-phrase. Here, we will explore the possible derivations available to clauses in which *v* introduces a *non-DP* that is also a wh-phrase. The theory makes the following predictions: if the non-DP merges in its usual position (*v*'s complement), it should not be able to wh-move due to the PIC. The non-DP has the option to merge exceptionally late, however, and be licensed by its wh feature.

These predictions are illustrated in (358-360). If a non-DP argument of *v* is a wh-phrase, and it merges in its typical position (*v*'s complement, as in (358)), Feature Maximality traps it in that position; if XP_{wh} checks both X and wh-features in situ, it cannot move to Spec *v*P with no more Merge features to license it (Abels, 2003, cf.). Assuming the Weak PIC (108), the complement of a phase head is always inaccessible to wh-movement – only specifiers of phase heads are accessible – so a XP_{wh} complement of *v* cannot wh-move to Spec CP if it cannot move to Spec *v*P.

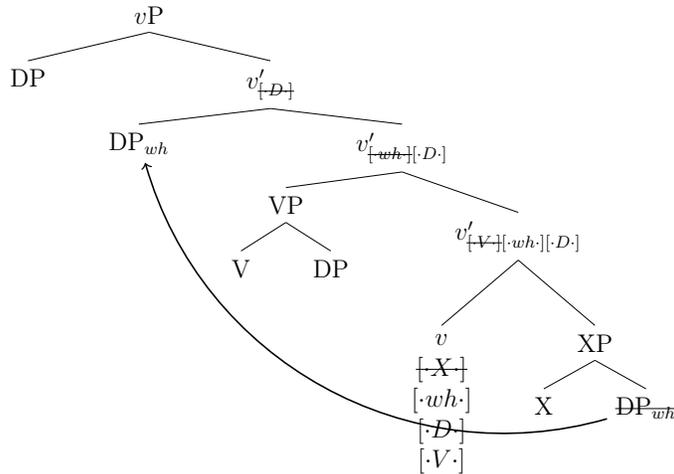
(108) Weak PIC/PIC2 (Chomsky, 2001): Given a structure $[_{ZP} Z . . . [_{XP} X [_{HP} \alpha [H YP]]]]$ where H and Z are phase heads, the domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

(358) High XPs cannot wh-move because they cannot get to the phase edge.

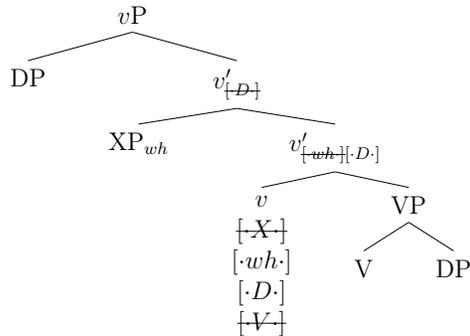


In order to wh-move a high XP, a language has two options: 1) the XP might *anti-pied-pipe* by permitting some element to subextract from it, or 2) the XP might merge later, i.e. as a specifier rather than a complement of *v*.

(359) X's complement may wh-move instead



(360) XP_{wh} -phrases may merge late

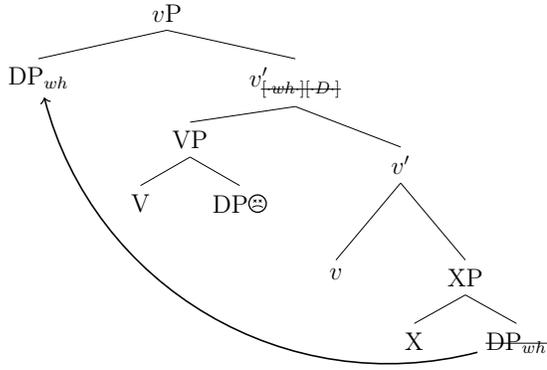


If a language makes use of a subextraction strategy for *wh*-moving high XPs, as in (359), the moving element might be a DP rather than an XP (e.g. if XP is a PP). If the clause is transitive, as we saw for object *wh*-questions in Chapter 2, *wh*-movement must therefore occur *after* the transitive subject has been merged, or else it would block the subject from ever merging. Tucking in should result in the relative order of specifiers shown in (359).

(99) **Generalized tucking in** (an extension of Richards 1997): Specifiers are projected in the order they are merged

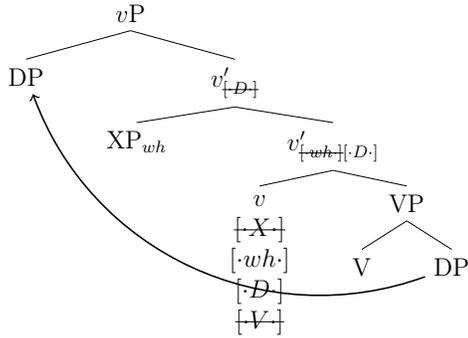
In a passive clause, *wh*-movement may occur first, given that there is no transitive subject to block. *Wh*-moving a DP in this context therefore has a mixed profile – it checks both $[D]$ and $[wh]$ on *v*, making the *wh*-moved DP the passive subject in the process. *Wh*-movement of an indirect object as a DP, as in (361), should therefore block the direct object from raising to subject position, having checked the D feature reserved for subjects. As a result, the subextraction strategy for high XP arguments should exhibit a Multitasking effect like that observed by van Urk & Richards (2015) in Dinka: \bar{A} -movement of one element blocks A-movement of another.

(361) *wh*-moving a DP blocks A-movement of another DP



If a language chooses to merge an XP later, as in (360), wh-movement of the entire XP is permitted, and the timing of XP-Merge relative to subject-introduction or A-movement is unspecified. XPs that are neither DPs nor wh-phrases do not check D features and can be licensed by either X or wh features, so they can neither block nor be blocked by DPs.

(362) XP_{wh} does not block or get blocked by A-movement of a DP



To summarize, the present framework makes the following two predictions regarding the profile of high XP wh-movement:

(363) Wh-movement of or from high XPs

- a. If a language permits a DP to subextract from X (as in (359)): a high wh-IO should block a DO passive
- b. If a language lacks a subextraction strategy, and must resort to (360): a high wh-IO should not block a DO passive

One way to test which XP wh-movement strategy is utilized in a given language/context is to diagnose whether the moved element is a DP vs. a non-DP. If it is a DP, it must have subextracted from its XP shell, while if it is a non-DP, it must have merged late as v 's specifier. Testing the predictions of this theory would therefore depend on whether we had any independent diagnostics for DP-hood vs. non-DP-hood in a given language. If we did, we would expect that if the indirect object wh-moves as a DP, the wh-movement/passivization interaction should be observed. If the indirect object wh-moves as a non-DP (henceforth XP for convenience), however, no such interaction should be observed. A language could have access to both strategies for wh-movement, the choice of which is again diagnosable by the category of the moved element.

I argue that the predictions in (363) are both attested and easily discernable from a language’s available passivization strategies. The central prediction of this approach is that a wh-moving indirect object can block a direct object passive, *only if the indirect object can raise to subject position in the first place*. Thus, any language that allows indirect objects to become the subject in a passive necessarily has access to a derivation in which wh-moving an indirect object should block a direct object passive, i.e. it should have the wh-movement/passivization interaction illustrated in (361). Languages *without* indirect object passives apparently never permit their indirect objects to raise to nominative, so we should not expect them to permit the indirect object to raise to subject position when it wh-moves either. If the direct object is the only argument that can ever become the passive subject, indirect object wh-movement should never affect it.

We will see that this prediction is borne out across a number of languages – languages with indirect object passives have the wh-movement/passivization interaction; languages without indirect object passives do not. Two preliminary examples are in (363). Norwegian has symmetrical passivization, but when the indirect object wh-moves, a direct object passive is blocked. Greek lacks indirect object passives, and wh-movement of the indirect object does not block a direct object passive.

(364) Norwegian: ✓IO-passive; *wh-IO + DO-passive

a. Jon ble gitt boka.

Jon was given the.book

‘John was given the book.’ (Haddican & Holmberg, 2015, 145)

b. *Hvem ble boka gitt?

who was the.book given

intended: ‘To whom was the book given?’ (Holmberg et al., 2019, p.680, ex.5d)

(365) Greek: *IO-passive; ✓wh-IO + DO-passive

a. *I Maria stalhike to grama.

the Maria.NOM sent.nonact.3s the letter.ACC

intended: ‘Mary was sent the letter.’ (Anagnostopoulou, 2003, ex. 10a)

b. Tinos dhothike to vivlio?

who.GEN gave.NACT.3SG the book.NOM

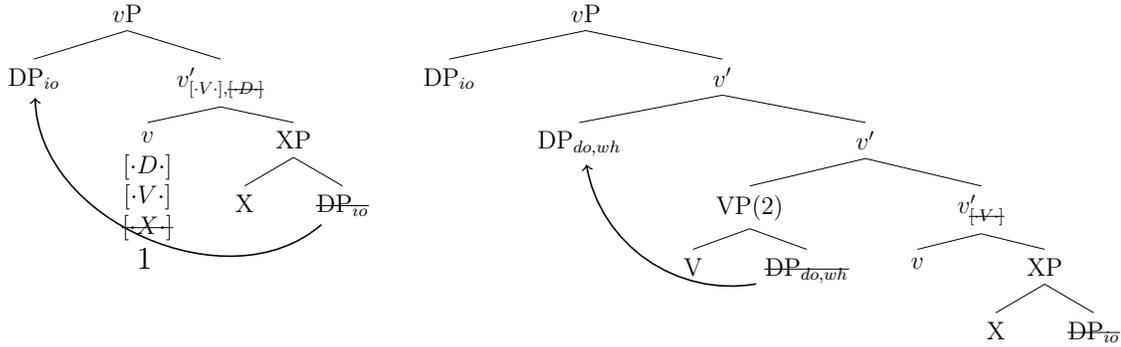
‘Who was the book given to?’ (Anagnostopoulou, 2003, ex. 308)

In this chapter, we will explore the interaction between indirect object wh-movement and passivization in a variety of languages and show that they fit the paradigm exhibited by Norwegian and Greek. We will take as a starting point the investigation reported by Holmberg et al. (2019). They argue that the combination of indirect object-wh-movement and direct object passivization is *universally* blocked, given that the Norwegian-like pattern is observed in many unrelated languages. Languages like Greek, however, pose a problem for such a claim, given that they do not display the Norwegian-type pattern. Thus, one of the achievements of this chapter is that it explains the wh-movement/passivization interaction in Norwegian as *one* option in the space of possible language behaviors, with the other predicted options both clearly defined and attested.

An important prediction of the present theory is that the reverse wh-movement/passivization interaction is never predicted to occur in language: wh-movement of a direct object should never

block an indirect object passive (if the direct object is born as a DP and the indirect object is born as an XP). This is because there is a timing asymmetry in the A-movement of direct vs. indirect objects. Indirect objects may raise *before* the VP containing the direct object has been merged, and are thus insensitive to later movements of the direct object. Direct objects, by contrast, are introduced *after* the indirect object, and are thus constrained by the derivational choices made by the indirect object.

(366) The DO-IO asymmetry: IO may raise before the VP containing DO is merged



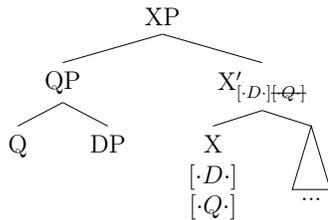
(367) Hvilken bok ble Jon gitt?
 which book was Jon given

‘Which book was Jon given?’

Norwegian DO_{wh}+IO-passive (Holmberg et al., 2019, p.680, ex.5b)

A note on wh-features: as discussed in Chapter 1, it is crucial for my account that a DP which is also a wh-phrase can check both D and wh-features. This assumption is, strictly speaking, incompatible with Cable (2010)’s QP-theory of pied-piping. On Cable’s theory, there is no such thing as a wh-moving DP. There are only wh-moving QPs which may take DP complements, as in (368). Adopting Cable’s structure should make it impossible for a wh-phrase to check a D feature.

(368) Cable (2010)’s QP can presumably only check a Q feature

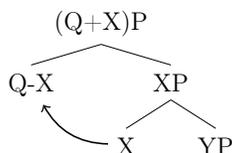


Cable proposes that Q indeed disrupts c-selection (as in (368)), but does not disrupt *s-selection*, so lexical verbs that s-select for an individual can still be satisfied by a QP that c-selects for a DP. As a result, a QP that merges as V’s complement can be interpreted as an “object” without checking a D feature. He proposes that some heads c-select their arguments, however, thus limiting the distribution of Q to contexts where Q’s sister is s- but not c-selected by the head that merges with QP. This proposal will not work on my theory, however, because it predicts that QPs in VP should block non-DP arguments by having to be licensed by X instead of D. In reality, making all of the DPs wh-phrases in a clause does not block other non-DPs.

(369) Who bet Sue.DAT how much that the world will end tomorrow?

To resolve this issue, I therefore propose that Q does *not* intervene for c-selection (and so something else must account for Cable’s restrictions on Q’s distribution). This can be achieved if we stipulate that Q projects its own features as well as those of its complement (maybe its sister’s head always incorporates with Q, as illustrated in (370)). Alternatively, we could adopt a percolation theory of pied piping, in which the wh-features of a nominal are projected with its D feature.

(370) QPs project Q+X, where XP is Q’s sister



I will continue to use the notation DP_{wh} to describe wh-phrases that are DPs, without taking a stand on whether this notation represents an incorporation process like that in (370) or a percolation account of pied piping. What is crucial for my approach is that both D and wh/Q features are accessible to the heads that select/host such phrases.

The structure of this chapter is as follows: Section 5.2 discusses the predictions and findings for wh-moving indirect objects in active clauses. Section 5.3 discusses the predictions and findings for wh-moving indirect objects in passive clauses. Section 5.4 discusses multiple wh-movement and QR in ditransitive clauses. Section 5.5 argues against Holmberg et al. (2019)’s extraction-restriction account of wh-movement/passive interactions observed in Section 5.3.

5.1.1 A note on projection and tucking in

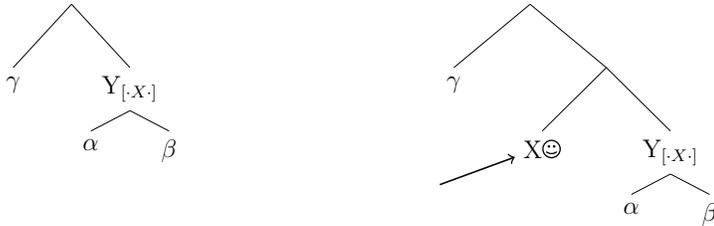
In Chapter 2, I argued that the order of specifiers is always determined by the order of Merge. In other words, all specifiers tuck in. In Chapter 3, I discussed how features project from heads to phrases in order to license cyclic Merge (which distinguishes complements from specifiers). Here I will clarify my assumptions about feature projection in the context of tucking in.

I have assumed that in order for Merge to take place, the merging element must become the sister of the feature that licenses it (217). Thus, in order for some element to tuck in under some other element, the feature licensing it must *not* have projected to the root.

(217) **Feature-driven Merge:** a constituent X may only merge with a constituent Y if Y bears an unsaturated feature $[\cdot X \cdot]$ such that the resulting structure makes $[\cdot X \cdot]$ sister to X.



(371) *Tucking in:* when some constituent X merges with some constituent Y that is not the root



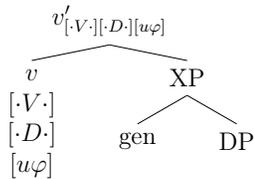
An asymmetry between heads and phrases is entailed by the proposal that specifiers tuck in. In order for there to be a complement-specifier distinction, features must project from heads to phrases (as in (217), or else everything would merge with the head, and progressively tuck in under its complement). In order for specifiers to tuck in, features must not necessarily project from phrases to the root (as in (371)). This distinction between heads and phrases is already captured by (218). Unsaturated features on a *head* project, but nothing is required of unsaturated features on a *phrase*. Once unsaturated features project from a head to a phrase, they become properties of the phrase, and thus need not project further.

(218) **Projection proposal:** unsaturated features on a head project (adapted from Adger 2003)

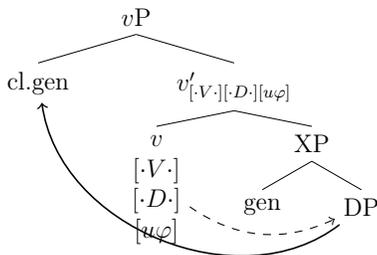
In Chapter 3, however, there was one scenario in which features on a *phrase* were also proposed to project, namely in order to satisfy an unsatisfied φ -probe. In Greek direct object passives of ditransitives, clitic doubling with a high indirect object was proposed to precede the time at which the direct object raises to subject position. Hence, direct object passives of double object constructions always required clitic doubling with the indirect object, not because of dative intervention, but because of the order of operations. (372) and (373) review the order of operations in a Greek double object passive, focusing on feature projection and tucking in.

(372) Greek double object passives:

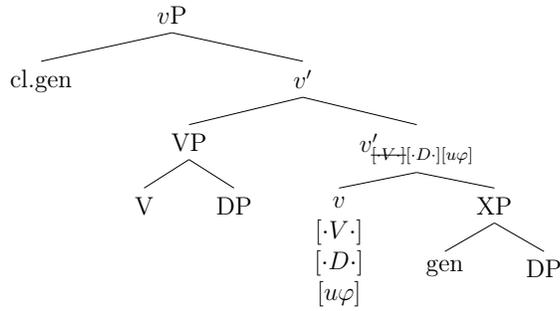
- a. Step 1: v merges with XP and projects $[\cdot V \cdot]$, $[\cdot D \cdot]$, and $[u\varphi]$.



- b. Step 2: Attempt to agree with and move the complement of X in order to check $[\cdot D \cdot]$ and $[u\varphi]$, which fails and produces a clitic instead. Features on a phrase need not project.



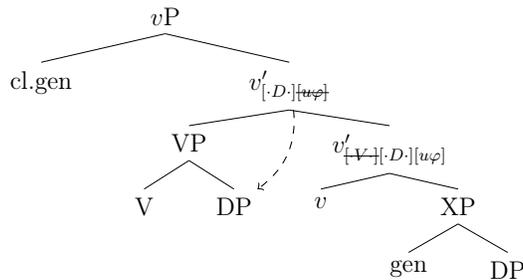
c. Step 3: Merge VP, which tucks in under the clitic.



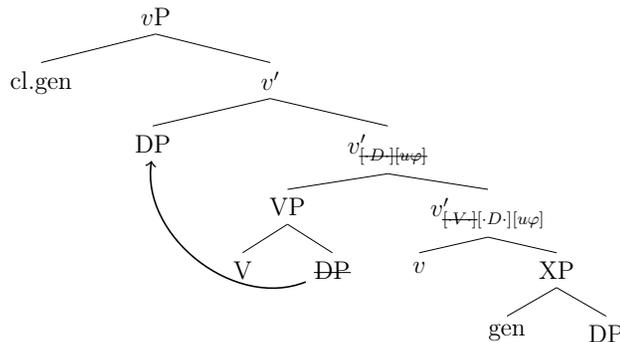
In principle, features on the lowest v' phrase do not need to project, because the projection principle does not enforce projection from phrases. However, if the φ -probe is *allowed* to project after having first attempted to probe its present domain (as in Béjar & Rezac 2009), it would be able to probe down into VP and target the object. Because agreement+movement of the indirect argument failed – inherent case-marked elements are inaccessible to Agree, and Greek doesn't permit preposition stranding – the φ -probe re-projects for a second chance at valuing its features. The DP object is therefore predicted to tuck-out of the VP specifier, merging with the node that hosts the projected $[\cdot D \cdot]$ and $[u\varphi]$ features.¹

(373) Feature projection from phrases allows a second chance to Agree

a. Step 4: v' projects $[\cdot D \cdot]$ and $[u\varphi]$, which probes into VP.



b. Step 5: Raise DP.



The fact that features *must* project from heads means that there is a complement-specifier distinction: the first thing to merge with the head is the only thing that can merge with that head; the head projects remaining unsaturated features to the phrase containing the head and its complement. The fact that features *may or may not* project from phrases allows for tucking

¹I assume that feature projection is wholesale – the φ -probe cannot project without pied-piping the D feature.

in if the features do not project, and cyclic Merge if they do. The only situation in which projection from a phrase is apparently *enforced* is if doing so creates new opportunities for Agree – otherwise, all specifiers tuck in. Movement from specifiers might therefore tuck in or out (as proposed by Richards 1997), depending on whether the features licensing Merge have projected multiple times.

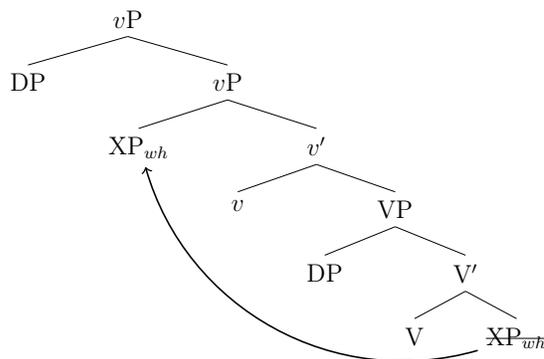
5.2 The wh-IO/active interaction

Before discussing the interaction between wh-movement and passivization, I want to first establish the predictions for indirect object wh-movement in *active* clauses. In Chapter 4, I argued that many languages’ ditransitives represent indirect objects as XPs, which is often evident from the presence of overt prepositions/case and more reliably evident from binding and scope tests. Chapter 3 provided two possible base positions for XPs that are *not* wh-phrases: Comp V and Comp *v*.

An XP that is also a wh-phrase may merge in either of those positions. Alternatively, it may merge later than usual, licensed by *v*’s wh feature rather than its X feature. Only two of these options permit the XP_{wh} to wh-move, however. If it merges as the complement of *v*, it is trapped – XP_{wh} cannot move from *v*’s complement to its edge (Abels, 2003, cf.). We will look at each possible derivation in turn and discuss the movement and pronunciation prospects for each XP position. What we expect is that languages which permit a DP to strand an X head should be able to wh-move indirect objects either as DPs or as XPs. Languages that lack an X-stranding mechanism should only be able to wh-move them as XPs.

XPs that are merged as the complement of V can wh-move normally. V does not have wh-features (i.e. it is not a phase), so XP_{wh}-phrases that merge with V must merge as V’s complement (they are only licensed by the X feature on V). They can then be attracted to the edge of *v*P by *v*’s wh feature, making them accessible to higher wh-probes. In languages like English and Greek, whose low XP indirect objects are pronounced as prepositional phrases (because low XPs are necessarily separated from the verb by the direct object), a wh-question corresponding to the derivation in (374) should be pronounced as in (375,376).

(374) Low XPs can wh-move



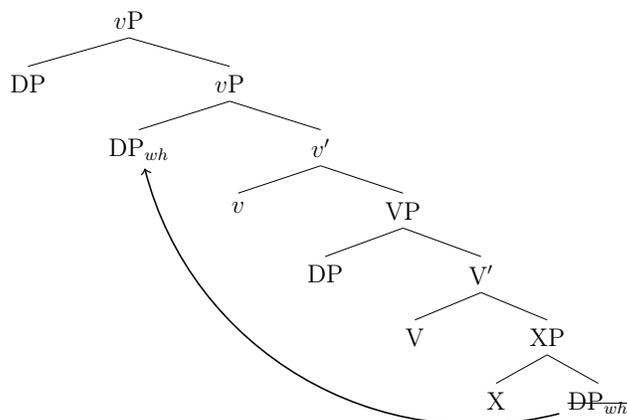
(375) To whom did Jo give a book?

(376) Se pion estile o Gianis to grama?
 to who.ACC sent.3SG the Gianis.NOM the letter.ACC
 ‘To whom did Gianis give the letter?’

Greek, Sabine Iatridou, p.c.

Since English is a preposition stranding language (Greek is not), a DP complement of X could also have wh-moved instead, stranding the preposition in situ. As a wh-moving DP, it must wh-move after the subject has been merged so it doesn't block the subject.

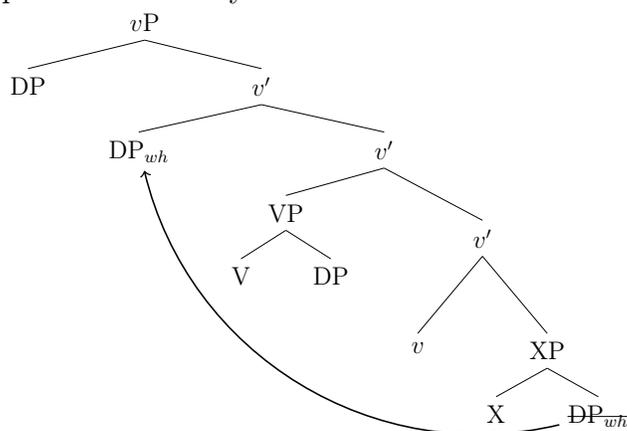
(377) XPs can also permit subextraction



(378) Who did Jo give a book to?

XPs that merge as *v*'s complement cannot wh-move for an Anti-locality-like reason (Abels, 2003, cf.): XP complements of *v* should check the feature that would license movement in situ. Assuming the complement of *v* is inaccessible to a wh-probe on C (due to phase impenetrability), XPs in this position are stuck. Nonetheless, even though the XP cannot move itself, the contents of XP are still available for extraction, given that they do not check any features on *v* in situ.

(359) High XPs cannot wh-move because they cannot get to the phase edge: only the complement of X may move.



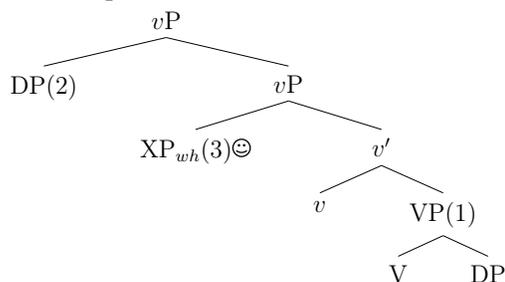
In English, the pronunciation of high XPs was argued in Chapter 4 to depend on word order, i.e. on whether VP is linearized to the right or to the left. In principle, we would therefore expect subextraction from a high XP to optionally strand either an overt preposition or a covert case marker depending on the linearization of VP. In reality, many speakers prefer to strand an overt preposition, for reasons that are unclear (see Appendix B.1). Speakers disagree about the acceptability of (379b).

- (379) Pronunciation of X should depend on base word order
- a. Who did Jo give a book to *t*?
 - b. %Who did Jo give *t* a book?

If a language were to block subextraction in (358) (as Greek does), perhaps because it lacks preposition stranding, wh-movement of or out of an XP complement of *v* should not be permitted.

There is a third possible base position of XP_{wh}-phrases, however. XP_{wh} can merge after VP has been merged as the complement of *v*, which checks [*V*] and [*X*]. The wh feature therefore licenses XP_{wh} in this context. Provided that the position of XP does not impact its interpretation, the option in (359) should be available in every language. However, the pronunciation of XP might vary depending on a language's inherent case licensing requirements. In English, we have only seen inherent case marked elements that are both complements of *v* and adjacent to the verb. In Greek, however, we have seen that genitive clitics are licensed as specifiers of *v*P, even when the XPs that they double are not adjacent to the verb. Indeed Greek permits wh-movement of genitive arguments, which is predicted to come about if Greek can pronounce XP specifiers of *v* as genitive. As we saw in (379b), English speakers prefer to either strand prepositions or pied pipe the entire PP, suggesting that XP specifiers of *v* are not pronounceable as covert dative phrases.

- (360) XPs can Merge later if they are wh-phrases; inherent case may or may not be licensed in that position



- (380) High XP wh-movement in English and Greek

- a. To whom did Maria send the letter?
- b. Pianu to estile i Maria to gramma?
Who.gen.masc cl.acc sent the Maria.nom the letter.acc

‘To whom did Maria send the letter?’

Greek (Sabine Iatridou, p.c.)

To summarize, a language that rules out subextraction of the form in (358) should only have two strategies for wh-moving indirect objects: 1) merge them low (Comp V) and wh-move through Spec *v*P, or 2) merge them high (Spec *v*P). What these two strategies have in common is that the moving phrase is an XP rather than a DP, which should be evident from its morphology.

A language that permits subextraction of the form in (358) should have an additional kind of wh-movement, in which a DP element within XP wh-moves instead. Two diagnostics for whether a language has access to a subextraction strategy for indirect object-wh-movement are 1) whether that language has indirect object passives, and/or 2) whether that language allows preposition-stranding in wh-movement. Both processes require the complement of X to strand

X as it moves. We should never find a language that uniformly blocks wh-movement of an indirect object altogether (both DP and XP versions) unless that language both lacks indirect object passives and is generally unable to wh-move non-DPs.²

(381) Predictions:

- a. If a language has subextraction, it should have both XP_{io} and DP_{io} wh-movement
- b. If a language lacks subextraction, it should only have XP_{io} wh-movement

Holmberg et al. (2019) survey the wh-movement and passivization profiles of a number of languages, focusing primarily on movement from the “double object construction”. As Chapter 4 established, what is known as the “double object construction” elsewhere translates to a subset of *high XP clauses* on my approach. Thus, the wh-movement paradigms that they discuss bear on the nature of derivations like (359) and (360) on my theory. We will now explore the profile of indirect object wh-movement in these and other languages in order to establish a baseline set of assumptions about them. The results of this investigation will be used to predict the profile of passivization in the context of indirect object wh-movement for each.

5.2.1 Symmetric languages

Holmberg et al. (2019) discuss a number of languages that are symmetric with respect to passivization and wh-movement: Norwegian, North-West British English, Zulu, Lubukusu, Xhosa (Visser, 1986), Swati (Woolford, 1995), Haya (Duranti & Byarushengo, 1977), Fuliiru (Van Otterloo, 2011), Sotho (Morolong & Hyman, 1977), and Tswana (Creissels, 2002). In some cases, symmetric wh-movement is demonstrated with relative clauses. I assume throughout that relativization is characterized by \bar{A} -movement to the edge of the relative clause, without taking a stand on whether the moving phrase is the head NP itself (as on a raising analysis) or something coindexed with it (as on an operator or matching analysis).

(382) Symmetric languages:

- a. Can passivize either the DO or the IO from the “double object construction”
- b. Can wh-move either the DO or the IO from the “double object construction”

(383) Norwegian symmetrical passive (Haddican & Holmberg, 2015, 145)

- a. Jon ble gitt boka.
Jon was given the.book
'Jon was given the book.'
- b. Boka ble gitt Jon.
the.book was given Jon
'The book was given to Jon.'

(384) Norwegian symmetrical wh-movement (Holmberg et al., 2019, p.678, ex.3)

²In principle, it is conceivable that a language could permit preposition stranding in A-movement but not in \bar{A} -movement, in which case a language with indirect object passives might block IO-wh-movement as a DP. I know of no languages with this preposition stranding profile, however. Moreover, many of the examples of indirect object movement covered in this chapter will involve mixed A- \bar{A} -movement, in which case the distinction between P-stranding in A vs. \bar{A} -movement might not dramatically change the predicted results.

Zulu has a kind of object agreement on the verb, which can cross-reference non-oblique nominals but not oblique ones (see Halpert 2012 p. 223-224 for discussion). Attempting to agree with an oblique requires the DP argument inside it to shed its preposition/case morphology. If we see object marking that cross-references an argument, that argument must therefore be a DP. Notice in (386) that the *wh*-moved indirect object has a corresponding object marker on the verb, which is only possible if it is a DP.

The status of this object marking is subject to some debate (see van der Wal 2015 for an overview). What is unique about it is that it never cross-references *in situ* or *A*-moved objects – notice in (385) that the passive subjects never control object agreement, unlike PPA in Romance. Rather, the object agreement is partly discourse driven in that it tracks arguments that either \bar{A} -move or right-dislocate from their *in situ* positions within *vP* to a *vP*-external position (or drop altogether). This movement/agreement correlation is shown in (388), where we observe that the verb agrees with whichever object has right-dislocated (and may be dropped). If neither one moves, there is no agreement. Following Iorio (2014) and van der Wal (2015), I will assume that there is a φ -probe controlling this agreement on *v*, but that it is more selective than the φ -probe in Romance – it only targets arguments with certain information structural properties (and therefore does not give rise to dative intervention effects in passives more generally).³

(388) *Zulu*: flexible object agreement (Zeller, 2011)

- a. U-John u-nik-a aba-ntwana i-mali.
1a-John 1SM-give-FV 2-children 9-money
'John is giving the children money.'
- b. U-John u-**ba**-nik-a i-mali (aba-ntwana).
1a-John 1SM-2OM-give-FV 9-money 2-children
'John is giving them money (the children).'
- c. U-John u-**yi**-nik-a aba-ntwana (i-mali).
1a-John 1SM-9OM-give-FV 2-children 9-money
'John is giving it to the children (the money).'

In sum, given that moving a DP object typically corresponds to agreement with it, the verb in an object relative is expected to show agreement with the relativized object, provided that the moving object is a DP and that it moves from within the scope of *v*. In (386) (repeated below), we see that the verb bears a morpheme cross-referencing the relativized benefactive argument (compare to the verb in (387), which does not agree with any of its *in situ* arguments). Thus, agreement and case morphology transparently track the DP-hood and base position of indirect objects in Zulu. These two pieces of evidence suggest that the derivation in (359) corresponds to the relative clause in (386a).

(386) *Zulu*: symmetrical relative (Adams, 2010, 116)

- a. Ng-ubani a-u-m-theng-el-a in-cwadi?
COP-1a.who RM-2SG.SM-**1OM**-buy-APPL-FV 9-book

³Scott (2020) discusses a typology of “composite” probing (van Urk, 2015) that is well-suited to capture this kind of discourse sensitivity in φ -agreement. On a composite-probing approach, the φ -probe in Zulu differs from that in Romance in having a component which targets \bar{A} -features as well as φ -features, and does not interact with elements that bear one but not the other feature.

of the verb phrase that contains a limited inventory of functional projections and c-selectional features, namely V and *v* bearing [*D*·], [*X*·], [*V*·], [*wh*·]. Processes such as agreement and incorporation may add morphology to a verb stem, without demanding additional projections in the syntax. I thus choose to attribute applicative morphology to one of those processes, rather than re-evaluate the basic ingredients required for clause-building.

To summarize, a language with indirect object passives is predicted to be able to wh-move indirect objects as either DPs or XPs. Some languages have more transparent diagnostics for DP-hood than others. Zulu provides evidence from case and agreement that helps to distinguish DPs from XPs. With these diagnostics, we observed that Zulu indeed may subextract indirect objects from a high XP position. Norwegian did not have such transparent morphology, given that inherent case is always covert. The null hypothesis is that an unmarked argument in Norwegian is indeed a DP, unless it is in situ. Section 5.3 will motivate this approach with evidence from passives.

5.2.2 Languages without IO-passives

By contrast, languages *without* indirect object passives or preposition stranding should only have access to *one* strategy for wh-moving high indirect objects. They must wh-move the entire XP, which is only possible if it merges late (as in (360)). So far, every language that I have found that lacks indirect object passives also has overt inherent case. The profile of wh-movement in these languages is like Greek; wh-indirect objects bear an overt case marker, and thus are likely XPs.⁴

(391) *German* (Verena Hehl, p.c.)

- a. *Er wurde das Buch geschenkt.
he.NOM was the.ACC book gifted
intended: ‘He was given the book.’
- b. Wem hat Maria ein Buch geschenkt?
who.DAT has Maria a.ACC book gifted
‘Who did Maria give a book to?’

(392) *Greek*

- a. *I Maria stalhike to grama.
the Maria.NOM sent.nonact.3s the letter.ACC
intended: ‘Mary was sent the letter.’ (Anagnostopoulou, 2003, ex. 10a)
- b. Pianu ?(to) estile i Maria to gramma?
Who.gen.masc cl.acc sent the Maria.nom the letter.acc
‘Who did Maria send the letter to?’ (Sabine Iatridou, p.c.)

(393) *Italian*

- a. *Maria è stata data un regalo.
Maria is been.FSG given.FSG a present

⁴Tamil indirect objects don’t wh-move overtly. As Sundaresan (2020) argues, however, Tamil wh-phrases still move covertly, on account of the lack of an intervention effect from the focus particle in (394). Also note that Tamil, like Greek, uses a different preposition/case marker for low XP indirect objects, *kittæ* instead of *ükkü*, showing that the indirect object in (394) is a high XP (see Sundaresan (2020) for discussion).

intended: ‘Maria was given a present.’ (Enrico Flor, p.c.)

- b. A chi dará un regalo Maria?
to who give.3SG.FUT a.MSG present Maria

‘Who will Maria give a present to?’ (Holmberg et al., 2019, p.702, ex.49a)

(394) *Tamil* (Sundaresan, 2020)

- a. *Sai pustagatt-æ kuḍḍukka-paṭṭ-aan.
Sai book-ACC give-PASS-3MSG

intended: ‘Sai was given the book.’ (Narayanan family, p.c.)

- b. Raman pustagatt-æ maṭṭum jaar-ūkkū kuḍḍ-tt-aan?
Raman.NOM book-ACC only.FOC who-DAT give-PST-3MSG

‘Whom did Raman give only the book?’

(395) *Turkish* (Öztürk family, p.c.)

- a. *Berk ekmeği verildi.
Berk.NOM bread.ACC give.PASS.PST

intended: ‘Berk was given the bread.’

- b. Kime Sevgi ekmeği verdi?
who.DAT Sevgi bread.ACC give.PST

‘Who did Sevgi give the bread to?’

Having looked at the DP/XP status of *wh*-moving indirect objects in languages with and without indirect object passives, we are now in a position to discuss indirect object *wh*-movement in passive contexts. We will see that all of the languages in which the indirect object can move as a DP (the languages with indirect object passives) block a direct object passive when a DP indirect object *wh*-moves. By contrast, all of the languages in which the indirect object can only move as an XP never block a direct object passive when the indirect object *wh*-moves.

5.3 The *wh*-IO/passive interaction

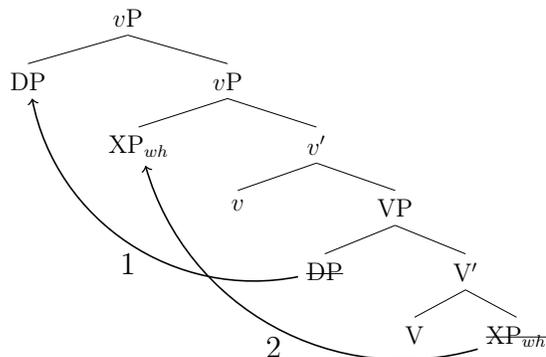
In active clauses, the discussion about indirect object *wh*-movement was mainly limited to the discussion of how to satisfy *v*’s X and *wh* features; *v*’s D feature was always checked by a transitive subject. In a passive clause, however, *v*’s D feature is not checked by external Merge, but is rather checked by movement of some DP to Spec *v*P. Whether a *wh*-moving element is also a DP therefore determines whether *wh*-movement and passivization should interact.

Chapter 4 established the predicted profiles of passives of ditransitives. Here, we will revisit passives in the context of *wh*-movement and show when and whether one operation should bleed another. What we find is that low XPs never interact with passivization because clauses with low XPs unambiguously promote a *c*-commanding DP object. High XPs, however, introduce a potential symmetry in passivization, which I argue may be broken by giving the complement of X a *wh*-feature.

Starting with the low XP variant of a ditransitive (396), because the DP object *c*-commands the XP indirect object, the DP object is the most local possible goal for any operation at *v*P (it is the closest element that bears a non-empty subset of *v*’s features). I propose that the DP

object therefore raises to Spec *vP*, and thus becomes the passive subject, before the XP (or its complement) may be operated on.⁵ Thus, even if the XP (or its DP complement) wh-moves, it only does so *after* the passive subject has merged in Spec *vP*. Passivization and wh-movement are therefore never predicted to interact in such a scenario.

(396) Low XPs unambiguously promote DP in the passive, wh-move after passivization.



- (397) a. To whom was a book given?
 b. Who was a book given to?

The present theory therefore makes the following strong prediction: every language with direct object passives and with a low XP variant of the dative alternation should be able to wh-move the low XP in a direct object passive. Though they do not offer data verifying this claim, Holmberg et al. (2019) imply throughout their investigation that wh-movement from the “prepositional dative construction” does not interact with the passive, as is evident in the English examples in (397), the Norwegian examples in (398), and the Greek examples in (399).

(398) *Norwegian* low-XP passives and wh-movement (Johannes Norheim, p.c.)

- a. Til hvem ble boka gitt?
 to who was book.the given

⁵In (396), I proposed that because the DP argument of V c-commands XP, it must necessarily become the passive subject before XP or its contents may wh-move. Technically, when XP is the wh-moving element, it is not so crucial for the theory to decide on an order of movement because each operation checks a non-overlapping set of features. However, if a DP within XP were instead the wh-moving element, as in (397b), we need the theory to block a derivation in which the contents of X could wh-move and become the passive subject before the direct object does (or else **Who was given a book to?* should be good). Longenbaugh (2019) actually provides a theory of locality that is well suited to remain agnostic about the order of merge when XP_{wh} moves in (396) but not when a DP_{wh} complement of X wh-moves instead. He proposes that the structural conditions on operations like *Merge DP* and *Merge wh* are sensitive to whether the merged element is c-commanded by any other element bearing the requisite feature.

- (i) Conditions on Merge (Longenbaugh, 2019, p.159): apply Merge-X at H iff
- There is some YP with feature X present in the lexicon/workspace, but not in the syntactic structure containing H, or
 - There is some YP with feature X such that H c-commands YP and there is no ZP c-commanded by H that both asymmetrically c-commands YP and bears the feature X.

If a DP_{wh} complement of X were to wh-move first in (396), it would have to check $[-D\cdot]$ as well as $[-wh\cdot]$ due to Feature Maximality. The structural condition on *Merge DP* is not met however, given that another DP c-commands XP. As a result, the DP specifier of VP must move first, followed by wh-movement.

‘To whom was the book given?’

- b. Hvem ble boka gitt til?
 who was book.the given to

‘Who was the book given to?’

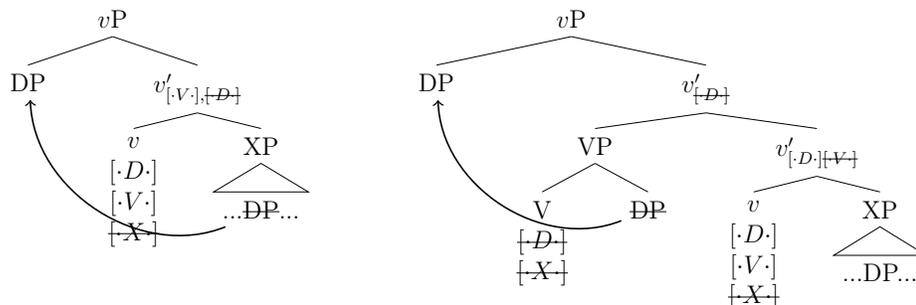
(399) *Greek low-XP passives and wh-movement* (Sabine Iatridou, p.c.)

- a. Se pion dhothike to vivlio?
 to who.ACC gave.NACT.3SG the book.NOM

‘To whom was the book given?’

The high XP variant of the dative alternation, however, does not unambiguously promote one argument over another in a passive. The DP complement of V and the DP complement of X are both accessible to check v 's D feature and neither one is “more local” than the other. Once v has selected an XP complement, it has the option to either check its D feature next by raising the indirect object to subject position, or to check its V feature first by merging the VP that contains the direct object. If it chooses to raise the indirect object first, the result is an indirect object passive. If it chooses to merge VP first, the result may be a direct object passive.

(400) Symmetric raising comes about due to ambiguity in the order of DP/VP-Merge

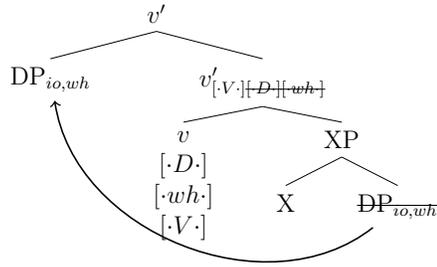


As discussed in Section 5.2, XP wh-movement should be ruled out in (400). If XP bears wh-features, it will check v 's wh-feature in situ and never get to the phase edge. It is thus inaccessible for wh-movement. The *DP complement* of X, however, is accessible for wh-movement. If the DP complement of X is a wh-phrase, v has a slightly different decision to make in (400). It now has to decide whether to first move DP_{wh} , which checks both $[\cdot D \cdot]$ and $[\cdot wh \cdot]$, or to first merge VP, which only checks $[\cdot V \cdot]$. I propose a version of van Urk & Richards (2015)'s *Multitasking* condition, which requires v to do the operation first which checks more features. As a result, v must passivize/wh-move the indirect object before merging VP.

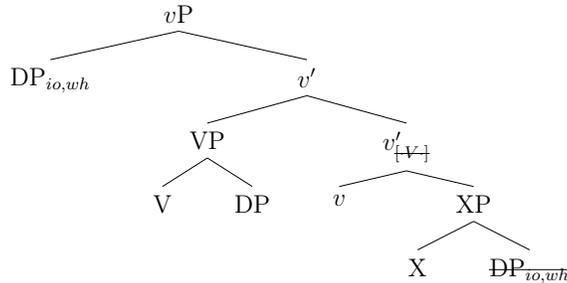
(401) *Multitasking* (revised from van Urk & Richards 2015):

At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A.

(402) a. Step 1: Merge XP complement. Step 2: wh-move indirect object



b. Step 3: Merge VP (tucks in).



(403) Who was given a book?

To summarize, if a language wants to wh-move an indirect object, which has been introduced as an XP complement of v , it must do so by subextracting a DP from that XP. In a passive clause, wh-moving that DP precedes the time at which the verb phrase containing the direct object has been introduced. Thus, wh-moving an indirect object in such a configuration necessarily makes the indirect object the passive subject, which bleeds the possibility of making the direct object the passive subject.

Importantly, Multitasking needs to be constrained so that object wh-movement does not bleed transitivity in active clauses. Given the choice between wh-moving a DP object (checks D and wh) and merging a transitive subject (only checks D), v must be able to merge the subject first, or else every object wh-question would have to be passive. In other words, Multitasking cannot lead to a derivation in which external Merge is bled altogether. It can only *delay* external Merge in a derivation like (402), by making another operation seem more urgent. The revision in (404) makes it so that Multitasking never blocks a transitive subject in an object wh-question, but still leads to early wh-movement in a passive clause like (402).⁶

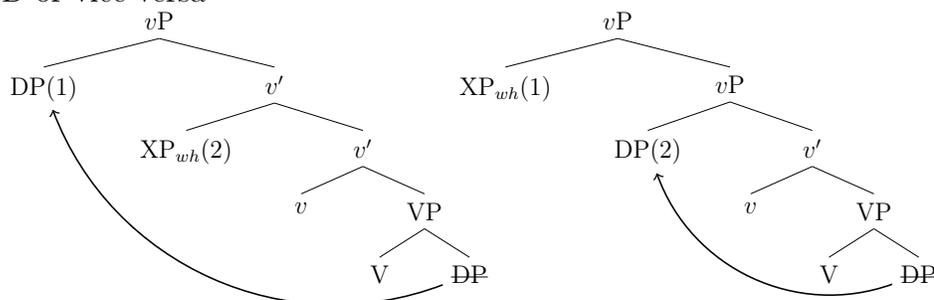
(404) *Multitasking* constrained (revised from van Urk & Richards 2015):

At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing B would check a proper subset of the features checked by A.

⁶Food for thought: if Multitasking were not constrained (as in (404)), the result would likely be something like the Austronesian voice system. Any wh-moving DP argument would necessarily check v 's D-feature, because doing so checks more features than merging a non-wh DP would. If the wh-moving DP is the canonical subject, the clause might look transitive. If the wh-moving DP is not the canonical subject, that argument should be promoted to subject position instead of the subject because it checks two features to the transitive subject's one feature. The canonical transitive subject must therefore be introduced elsewhere/how and the clause should look as though it has passivized/promoted-to-subject the wh-moving DP.

A third possibility for indirect object wh-movement, as discussed in Section 5.2, is for an XP_{wh} to merge later than usual. Since XP now has a wh-feature, nothing prevents it from merging before or after a direct object has raised. The choice of when to merge XP_{wh} only has consequences for the relative order of specifiers of v .

- (405) Later-merged XP -wh-phrases are unordered wrt DO-passivization: v may check $wh < D$ or vice versa



As discussed in Section 5.2, only languages that permit indirect object passivization are predicted to be able to raise a wh-indirect object to Spec vP as a DP. Thus the derivation in (402), which blocks a direct object passive, should only be observed in languages that otherwise have indirect object passives. Holmberg et al. (2019) in fact show that such an interaction between indirect object movement and passivization is observed in a wide variety of languages which have symmetric passivization. Thus, their findings partially verify the predictions of this theory: symmetric languages have indirect object passives, and should thus have the wh-movement/passivization interaction in (402). We will look at their data now, and show that the ungrammatical examples result from an attempt to do a derivation like (402) while also raising the *direct* object to Spec vP , which is ruled out because only one argument can be the passive subject in a single clause.

5.3.1 Symmetric languages

Holmberg et al. (2019) argue that in a number of languages which are symmetric for passivization and wh-movement, a particular asymmetry arises when passivization and wh-movement are combined: wh-movement of an indirect object combined with passivization of the direct object is ruled out. The reverse combination, however, is allowed: wh-movement of a *direct* object is compatible with passivization of an *indirect* object. Though they only report data from Norwegian, North-West British English, Zulu, and Lubukusu, they claim that the same pattern is found in Xhosa (Visser, 1986), Swati (Woolford, 1995), Haya (Duranti & Byarushengo, 1977), Fuliiru (Van Otterloo, 2011), Sotho (Morolong & Hyman, 1977), and Tswana (Creissels, 2002).⁷

- (406) *Norwegian* wh-movement from the passive (Holmberg et al., 2019, p.680, ex.5)

- a. Hvilken bok ble Jon gitt?
 which book was Jon given
 ‘Which book was Jon given?’

⁷Not all of these references actually contain the example sentences showing the wh-movement/passivization interaction. This section contains all of the example sentences I could find there.

- b. *Hvem ble boka gitt?
 who was the.book given
 intended: ‘Who was the book given to?’
- (407) *North-West English* wh-movement from the passive (Holmberg et al., 2019, p.681, ex.9, citing Neil Myler, p.c.)
- a. Which book was John given/sent/handed?
 b. *Who was the book given/sent/handed (by Mary)?
- (408) *Zulu*: wh-movement from the passive (Zeller, 2011)
- a. I-nyama u-mama a-yi-phek-el-w-a-yo i-mnandi.
 9-meat 1a-mother REL.1SM-9OM-cook-APPL-PASS-FV-RS 9SM-tasty
 ‘The meat that Mother is being cooked is tasty.’
- b. *U-mama i-nyama e-m-phek-el-w-a-yo u-kathele.
 1a-mother 9-meat REL.9SM-1OM-cook-APPL-PASS-FV-RS 1SM-tired.
 intended: ‘Mother, for whom the meat is being cooked is tired.’
- (409) *Lubukusu*: wh-movement from the passive (Holmberg et al., 2019, p.683, ex.16, citing Justine Sikuku, p.c.)
- a. chi-khaafu ni-cho baa-sooreri ba-a-eeb-w-a
 10-cows REL-10 2-boys 2SM-PST-give-PASS-FV
 ‘the cows that the boys were given’
- b. *baa-sooreri ni-bo chi-khaafu cha-a-eeb-w-a
 2-boys REL-2 10-cows 10SM-PST-give-PASS-FV
 ‘the boys who the cows were given to’

The analysis just outlined successfully derives the ungrammaticality of (406b-409b) on the following assumption: that these examples necessarily correspond to the derivation in (402), followed by an attempt to raise the direct object to Spec *v*P illicitly. In other words, the relativized/wh-moved indirect objects in (406b-409b) should be analyzable as DPs, which have wh-moved from an XP complement of *v*. Thus, we should want to find independent evidence that the moved elements are in fact DPs, and that changing them into an XP obviates the restriction.

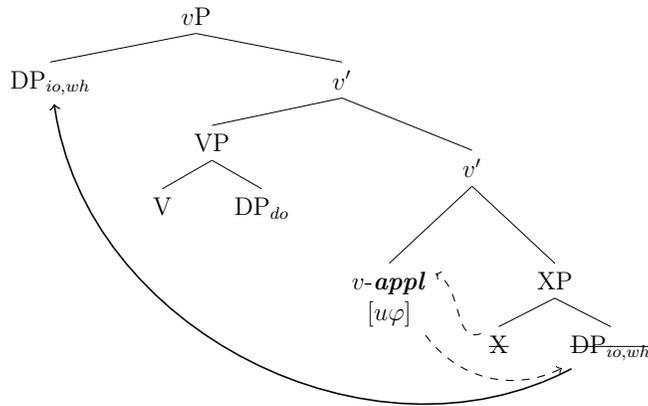
Given the lack of overt prepositions or case marking, the null hypothesis is that the wh-moving elements are indeed DPs (which is what Holmberg et al. 2019 assume). I additionally argue that we can show this in other ways as well. First, we saw English and Norwegian examples (397,398), in which adding an overt preposition to the wh-moving indirect object makes a direct object passive grammatical. We also have agreement and case diagnostics in Zulu that motivate my treatment of the of the indirect object in (408b) as a DP that has moved from a high XP position.

First, recall that Zulu is like Norwegian in having a prepositional ditransitive construction that alternates with an applicative construction. The benefactive argument that is licensed by applicative morphology in (408) may alternatively be licensed by the preposition/case-marker *kwa* in (387). I analyzed applicative variants of the dative alternation as high XP structures, where X has incorporated onto *v*. I analyzed prepositional variants of the dative alternation as low XP structures.

- (387) u-Sipho u-zo-pheka ukudla kwa-zingane.
 AUG-1Sipho 1S-FUT-cook AUG.15food KWA-10child
 ‘Sipho will cook food for the children.’ (Halpert, 2012, p.212, ex.277)

We saw that object agreement on the verb stem could only cross reference DP arguments that move from within the scope of v to some vP -external position. In the ungrammatical (408b), observe that the verb both bears applicative morphology and agrees with the relativized indirect object. Thus, the indirect object must be a DP, which has subextracted from a high XP complement of v . It thus checks the D feature on v , which is correctly predicted to block the passivized direct object in (408b), accounting for its ungrammaticality. Moreover, we saw that Zulu XP-relativization requires resumption. The lack of resumption in (408b) is an additional piece of evidence that the relativized indirect object is a DP.⁸

- (410) Zulu high indirect object wh-movement blocks direct object passive



A complete investigation would look at all of the other languages in Holmberg et al. (2019)’s list for similar morphosyntactic evidence that the moving indirect objects are indeed DPs that originate from a high XP position. Unfortunately, I was not able to find the example sentences illustrating the wh-movement/passivization effect in all of them. Moreover, not all of these languages have verbal morphology that is as transparent as Zulu’s. The Lubukusu examples given in (409) lack agreement and applicative morphology, for example, so the morphology on the moved argument is our only clue as to its origin.

⁸It is worth noting that moving/agreeing with the indirect object is generally incompatible with a direct object passive in Zulu, as seen in (ib) – the restriction in (408b) is not just evident in wh-movement. This pattern in (i) is unsurprising, given that agreement with the indirect object was shown to precede passivization with the direct object in Greek. Agreement with the indirect object should cause it to raise, blocking the direct object from becoming the passive subject.

- (ii) Agreement/passivization mismatch in Zulu ditransitives (Zeller, 2011, ex.35)
- a. U-mama u-(ya-yi)-phek-el-w-a (i-nyama).
 AUG-1a.mother SM1-DIS-OM9-cook-APPL-PASS-FV AUG-9.meat
 lit. ‘Mother is it being cooked for (the meat).’
- b. I-nyama i-(*ya-m)-phek-el-w-a (u-mama).
 AUG-9.meat SM9-DIS-OM1-cook-APPL-PASS-FV AUG-1a.mother
 intended: ‘Meat is being cooked for her (mother).’

However, grammars for at least some of the languages discussed by Holmberg et al. (2019) illustrate some tests for DP-hood that show the same result. First, Sotho looks similar to Zulu with respect to object agreement and applicative morphology. The Sotho verb in (411b) agrees with the relativized element and has applicative morphology, diagnosing the derivation in (402), which correctly accounts for (411b)'s ungrammaticality.⁹

- (411) *Sotho is like Zulu*: left dislocation+passive (Morolong & Hyman, 1977, ex. 9, p. 208)
- a. Lijó ngoaná ó-li-phhetsoe.
 food child SM-OM-PASS-cook.APPL
 'Food, the child was cooked.'
 - b. *Ngoaná lijó lí-mo-phéhetsoe.
 child food SM-OM-PASS-cook.APPL
 intended: 'The child, the food was cooked for.'

Similarly, Haya benefactive arguments show a morphological alternation that diagnoses DP vs. XP wh-movement. Wh-benefactive arguments lack overt X-marking in active clauses. However, they suddenly have X-marking in the context of a direct object passive (412).

- (412) *Haya* (Bennett, 1977, ex.33,35, p. 177-8)
- a. A-ka-gi-shál-il' ówa?
 SM-PST-it-cut-APPL who
 'Who did he cut it for?'
 - b. A-ka-shal-il-w' ényama n'-ówa?
 SM-PST-cut-APPL-PASS meat ?-who
 'Who was the meat cut for?'

As (413) shows, non-wh benefactives have no overt X-marking, but instead only co-occur with applicative morphology on the verb. In other words, it appears that benefactive constructions in Haya always look like the Zulu high XP variant of the dative alternation.

- (413) *Haya* benefactives do not alternate (Duranti & Byarushengo, 1977, ex.64, p.58)
- a. *Omukázy' a-ka-cumb-il' ébitooke n'-ómwáán'.
 woman SM-PST-cook bananas P-child
 intended: 'The woman cooked bananas for the child.' (my interpretation of their prose)
 - b. Omukázy' a-ka-cumb-il' ómwáán' ébitooke.
 woman SM-PST-cook-APPL child bananas
 'The woman cooked the child bananas.'

Wh-benefactives in active clauses predictably lack overt X-marking because transitive subjects can merge early enough not to get blocked by a wh-IO regardless of whether it moves as a DP or a PP. The wh-indirect object in (412a) therefore presumably merges in its usual position as a high XP complement of *v*, which feeds X-incorporation onto *v*, and either stays in situ or covertly moves as a DP that strands X.

⁹Examples (411) show the wh-movement/passivization interaction for left-dislocated elements in Sotho, but the same facts obtain in relative clauses, see Morolong & Hyman (1977), example 10.

Only when the indirect object is a wh-phrase in the context of a *direct* object passive do we see a prefix appear on the indirect object. The prefix used on the benefactive argument in (412b) is otherwise observable in the prepositional variant of instrumental constructions (414a).

(414) *Haya* instrumentals alternate (Duranti & Byarushengo, 1977, ex.27,45, p.58)

- a. Kat' á-ka-shál' ényama n'-ómúhyo.
Kato SM-PST-cut meat with-knife
'Kato cut the meat with a/the knife.'
- b. Kat' á-ka-sház' ényam' ómúhyo/ómuhy' ényama.
Kato SM-PST-cut.INSTR meat knife/knife meat
'Kato cut the meat with a/the knife.'

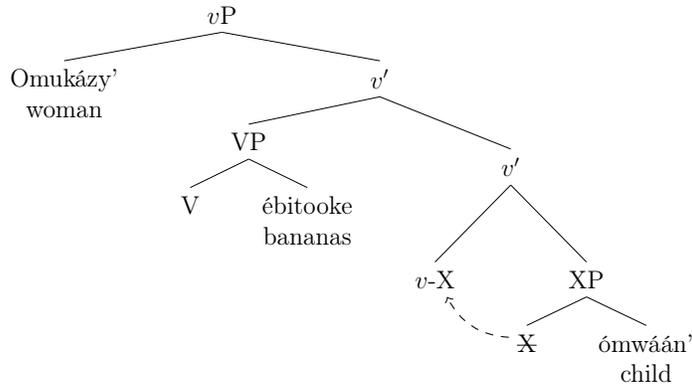
Though Bennett (1977) does not provide the negative evidence, the prose surrounding example (412b) indicates that the preposition is obligatory in (412b), which is exceptional compared to the typical morphology on benefactives. On my account, its presence in (412b) is expected, however (provided that covert movement obeys the same principles as overt movement in *Haya*). In order for the direct object passive to be allowed in (412b), the benefactive argument cannot move as a DP from its normal position. It must instead merge late as an XP specifier of *v* (402). No longer *v*'s sister, the X head cannot incorporate onto the verb, and must be pronounced with its DP sister.

Still puzzling, however, is the presence of applicative morphology on the verb in (412b), which should only be possible if some X head incorporates onto *v*. A possible explanation for the presence of applicative morphology in (412b) is that this example corresponds to a doubling structure: there is an in situ XP complement of *v* that is coindexed with the moving indirect object. Some motivation for this move is as follows.

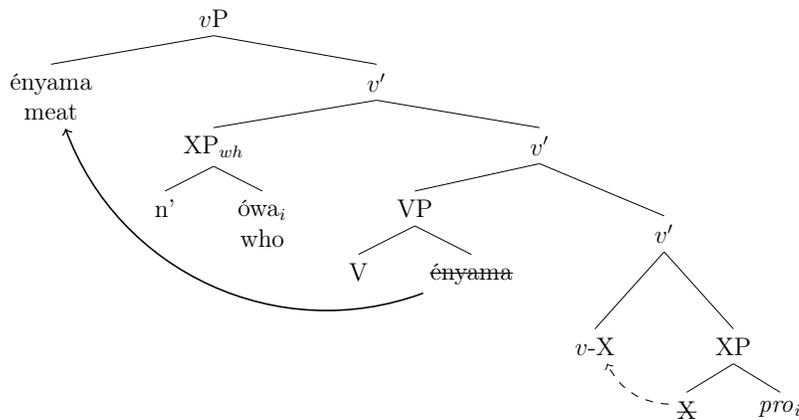
Some property of *Haya* must account for the fact that benefactive arguments aren't licensed in just any position, but are only selected as high XPs. Suppose that property is an l-selectional requirement on *v*. In order for some argument to be interpreted as benefactive, it would either have to *be v*'s complement (i.e. as the l-selected element), or be coindexed with some element that is *v*'s complement that can be interpreted as benefactive. An XP complement of *v* cannot wh-move, so if we see a wh-moving XP that is interpreted as benefactive, it must be coreferent with some phrase that is l-selected by *v*. Hence, we expect both the moving phrase and the *v* head to bear morphology indicating the presence of an XP. The moving phrase has an overt preposition, and the *v* head has applicative morphology.¹⁰

(415) Benefactives don't alternate: only have high XP variant with obligatory incorporation (413b)

¹⁰Claire Halpert, p.c., informs me that Zulu verbs often have applicative morphology that "doubles" prepositional indirect objects. It therefore seems that high XP incorporation may not be the only source of applicative morphology. Whatever allows applicative morphemes to double PPs in Zulu may offer an alternative account for the applicative morphology in *Haya* (412b) that doubles the PP benefactive.



(416) Benefactive XPs may be late merged, if they are coreferent with an XP that satisfies v 's l-selectional requirements (412b)



To summarize, symmetric languages allow indirect objects to become the passive subject in non-wh-movement contexts. Making the indirect object a wh-phrase should not prevent it from becoming a passive subject. Thus, it should be possible to find cases where a DP-indirect object wh-moves and blocks another DP from becoming the passive subject. This is indeed what we find, at least in the languages reported by Holmberg et al. (2019). Additionally, we never see the reverse phenomenon; direct object wh-movement never bleeds an indirect object passive because of a timing asymmetry: there is a stage in the derivation in which the indirect object may raise before the direct object has been introduced. By contrast, direct object raising always follows the introduction of an indirect object.

We now turn to languages that lack indirect object passives, and thus presumably lack the derivation in (402). Indirect object wh-movement in such languages should never interact with passivization.

5.3.2 Languages without IO-passives

The source of the wh-movement/passivization interaction observed in Section 5.3.1 was proposed to be the fact that those languages allow indirect object DPs to raise from their XP shells to check a $[\cdot D \cdot]$ feature on v . If the indirect object checks v 's $[\cdot D \cdot]$ feature, the direct object cannot. What we saw was that wh-indirect objects moved to Spec vP early enough to check its $[\cdot D \cdot]$ feature, thus making the wh-indirect object the passive subject as it wh-moved. As a

result, wh-moving an indirect object in a passive clause blocks the direct object from becoming the passive subject.

We know that symmetric languages should exhibit this wh-movement/passivization interaction because they otherwise have indirect object passives – a prerequisite for blocking the direct object from raising was the ability to make the indirect object the passive subject (via subextraction from XP) in the first place. This theory therefore makes another strong prediction, which is that languages without indirect object passives should not permit their indirect objects to become passive subjects whether or not they are wh-phrases. They should therefore never have the wh-movement/passivization interaction that we observe in symmetric languages.

An informal investigation of some languages without indirect object passives confirms this prediction. Anagnostopoulou (2003) shows that Greek both lacks indirect object passives and lacks a restriction on passivization when an indirect object (high or low) wh-moves. Sundaresan (2020) shows the same result for Tamil and German. My own fieldwork confirms that the same is true for Turkish and Spanish.

Interesting to note is that all of the languages in this sample have overt inherent case. In Greek, we saw that inherent case was licensed by adjacency with the verb, whether or not sisterhood with *v* was established. We thus expect inherent case-marked indirect objects to be licensed either as complements or as specifiers to *v* in Greek. Indeed, genitive indirect objects may wh-move, which is only possible if they move from Spec *v*P, not from its complement. Tamil, German and Turkish show the same profile. Notice in (417-420) that wh-moving indirect objects fail to block direct object passives in each case (the (a) examples show the direct object passive as a baseline, while the (b) examples show a direct object passive with a wh-moving indirect object).

(417) *Greek*

- a. To vivlio tis charistike (tis Marias).
the book.NOM cl.GEN award.NACT the Maria.GEN
'The book was awarded to Mary.' (Anagnostopoulou, 2003, ex. 33)
- b. Tinos dhothike to vivlio?
who.GEN gave.NACT.3SG the book.NOM
'Who was the book given to?' (Anagnostopoulou, 2003, ex.308)

(418) *Tamil* (Sundaresan, 2020)

- a. Andæ pustagam Sai-kkū kuḍūkka-paṭṭ-adū.
that book.NOM Sai-DAT give-PASS-3NSG
'That book was given to Sai.'
- b. Andæ pustagam jaar-ūkkū kuḍūkka-paṭṭ-adū?
that book.NOM who-DAT give-PASS-3NSG
'Who was that book given to?'

(419) *German* (Sundaresan, 2020)

- a. Der Kuchen wurde ihm gegeben.
the.NOM cake was.PASS him.DAT given.PTCP
'The cake was given to him.'

- b. Wem wurde der Kuchen gegeben?
 who.DAT was.PASS the.NOM cake given.PTCP
 ‘Who was the cake given to?’

(420) *Turkish* (Öztürk family, p.c.)

- a. Ekmek Berke verildi.
 bread.NOM Berk.DAT give.PASS.PST
 ‘The bread was given to Berk.’
- b. Kime ekmek verildi?
 who.DAT bread.NOM give.PASS.PST
 ‘Who was the bread given to?’

Greek, Tamil, German, and Turkish all have in common that their XP indirect objects look like inherent case marked nominals. There are also languages without indirect object passives whose indirect objects look more like prepositional phrases. Some of the Romance languages, e.g. Spanish and Italian, use a marker that doubles as a preposition elsewhere: *a*. As expected, Spanish and Italian indirect objects behave like XPs when they wh-move, and do not disrupt the passive.

(421) *Spanish*

- a. Una casa le fue vendida a María.
 a house cl.DAT was sold to Maria
 ‘A house was sold to Maria.’ (Montalbetti, 1999, ex. 133)
- b. A quién le fue vendida una casa?
 to whom cl.DAT was sold a house
 ‘To whom was a house sold?’ (Johannes Norheim, p.c.)

(422) *Italian* (adapted from Holmberg et al. 2019, verified with Enrico Flor and Giovanni Roversi, p.c.)

- a. Questi libri sono stati dati a Maria.
 these.MPL books are been.MPL given.MPL to Maria
 ‘These books were given to Maria.’
- b. A chi è stato dato questo libro?
 to who is been.MSG given.MSG this.MSG book
 ‘To whom was this book given?’

We saw in Chapter 4 that the Spanish dative alternation has no word order alternation; the indirect object always follows the direct object. However, the presence or absence of clitic doubling and its effects on binding showed us that Spanish still has a *structural* alternation: the indirect object can be low or high. Standard Italian does not have clitic doubling, and binding evidence shows that the indirect object is always low in (423). It is therefore not clear whether Italian has the high XP structure that feeds indirect object passivization in the first place. For more on Italian, see Appendix B.2.

(423) Binding in Italian double object constructions (Holmberg et al., 2019, ex.53)

- a. L'ispezione ha mostrato ogni imperfezione_i al suo_i responsabile.
 the.inspection has shown each imperfection to.the its responsible
 'The inspection showed each imperfection to the person responsible.'
- b. *L'ispezione ha mostrato le sue_i imperfezioni a ogni
 the.inspection has shown the.PL POSS.3SG.FPL imperfection to each
 professore_i.
 teacher
 intended: 'The inspection showed each teacher his/her own imperfections.'

To summarize, we find that the inherent case marked indirect objects in Greek, Tamil, German, and Turkish, and the prepositional indirect objects in Spanish and Italian all move as XPs. They cannot raise to subject position in the passive, nor do they block a passive when they wh-move through the edge of *v*P.

Thus far, I have shown that a number of languages with indirect object passives have a wh-movement/passivization interaction, while a number of languages without indirect object passives lack a wh-movement/passivization interaction. I proposed that the reason these two properties correlate (having IO passives and having a wh/passive interaction) is because the wh-movement/passivization interaction results only if the moving indirect object is a *DP* rather than an XP. If a language otherwise permits indirect objects to raise to nominative, they necessarily have a way to wh-move indirect objects as DPs through Spec *v*P as well.

In fact, the morphology on the indirect object transparently tracks its movement prospects in every language that we have seen. Morphologically bare indirect objects that move behave like DPs in that they can A-move in passives and block other DPs when they wh-move. Overtly case-marked/prepositional indirect objects always behave like XPs, which cannot raise to subject position or interact with DPs in wh-movement. Thus, to the extent that we ever need to posit *covert* XPs, we only need to do so in the following context: when a morphology-less indirect object is in situ, i.e. adjacent to the ditransitive verb that introduced it.

- (424) The distribution of covert XPs
- a. Meg gave **Jo**_{XP} a book.
 - b. **Jo**_{DP} was given a book.
 - c. %**Who**_{DP} did Meg give a book?

A note on clitics

An interesting property of Greek and Spanish is that the wh-moved indirect object may be clitic doubled (425), even though it is not generated within the scope of *v*. In Chapter 4, I followed Béjar & Rezac (2003); Preminger (2014) in assuming that clitic doubling arises from attempted (but not successful) agreement with an inherent case-marked argument, followed by movement of a clitic to a position with an unchecked [*D*] feature. I also posited a φ -probe on *v* (analogous to the one in Romance) that was responsible for clitic doubling in situ indirect objects.

- (425) *Greek* with genitive clitic doubling (Sabine Iatridou, p.c.)
- a. Pianu **tu** estile i Maria to gramma.
 Who.gen.masc cl.gen sent the Maria.nom the letter.acc

‘Who did Maria send the letter to?’

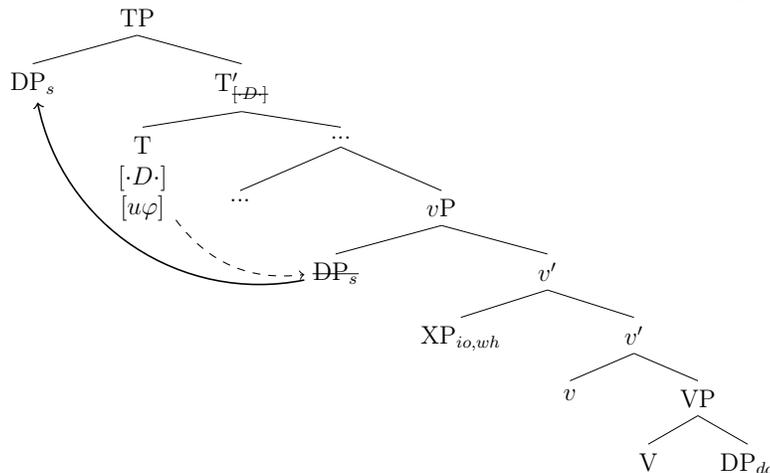
- b. Pianu **tu** dhothike to vivlio?
 who.GEN cl.gen gave.NACT.3SG the book.NOM
 ‘Who was the book given to?’

Though clitic doubling with the indirect object was argued to come about via attempted agreement with *v* (e.g. to explain the profile of Greek passives), it was not a necessary component of the theory for *v* to be the *only* probe that could clitic double an argument. Thus, clitic doubling with an indirect object need not arise from attempted agreement with *v* specifically, but rather may be induced by any φ -probe with an unchecked $[\cdot D \cdot]$ feature that encounters an inherent case-marked XP.

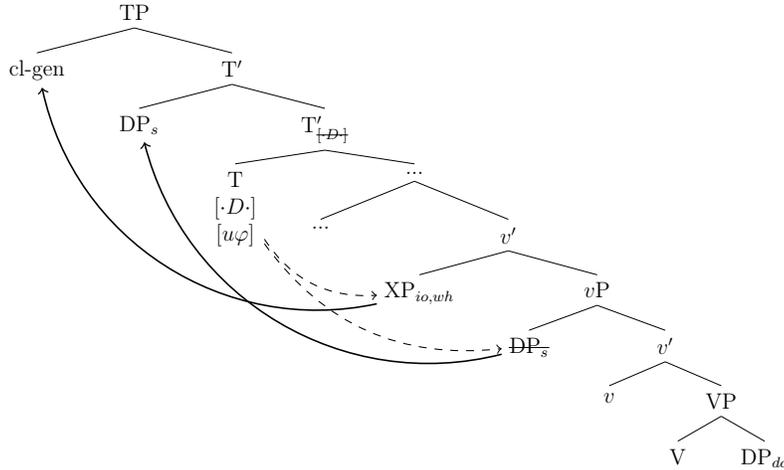
A wh-XP specifier of *v*P could thus be clitic doubled by a probe above the *v*P. Given that Greek has subject agreement, it must have such a φ -probe above the base position of the subject. Following Alexiadou & Anagnostopoulou (1998), I assume that this probe corresponds to an EPP position with a D feature as well (though as a null-subject language, the D feature need not be checked by raising a DP). When we see clitic doubling in (425), I therefore propose that it is because the probe that normally targets the subject first tries to agree with the XP indirect object, but fails and produces a clitic instead. The XP in (425) must therefore c-command the DP subject, or else the subject would check the $[\cdot D \cdot]$ feature before clitic doubling of XP could ever take place.

- (426) Clitic doubling via the subject probe: sensitive to the relative position of $XP_{io,wh}$ and DP_s

- a. Subject c-commands indirect object: no clitic doubling, only subject movement



- b. Indirect object c-commands subject: clitic doubling followed by subject movement



Since XP_{wh} does not check a D feature, and can be licensed by a wh feature, its time of Merge is unspecified relative to that of the DP subject. Thus, both configurations in (426) are afforded by the system, which accounts for the optionality of clitic doubling in (425).¹¹

5.3.3 Apparent counterexamples

As Holmberg et al. (2019) point out, there are also some symmetric languages, e.g. Kinyarwanda and Luganda, that do not exhibit the wh -movement/passivization interaction.¹² In (427a,428b), we see an indirect object that appears to wh -move as a DP, despite the fact that the clause is a direct object passive. This is surprising on the present account, because indirect object DPs are predicted to passivize as they wh -move. In order for (427a,428b) to be good, the direct object would have to be raising to Spec vP despite the fact that the indirect object already did so.

(427) *Kinyarwanda* no passive/ wh -movement effect (Holmberg et al. (2019), ex. 64 reporting from Jean Paul Ngoboka, p.c.)

- a. Abáana améézá a-záa-gur-ir-w-a (barasiinziiriye).
2.children 6.tables 6SM-FUT-buy-APPL-PASS-FV
'The children for whom the tables will be bought (are sleeping now).'
- b. Améézá abáana ba-záa-gur-ir-w-a (azaagera ku ishuúri ejó).
6.tables 2.children 2SM-FUT-buy-APPL-PASS-FV

¹¹One might wonder why I haven't assumed that the probe on v simply re-projects and targets its XP specifier in (425), which would presumably also result in a genitive clitic. In other words, does the probe on T have to be the probe that clitic doubles in (425)? Recall that in order for the φ -probe on v to re-project, it must first have attempted to agree with something in its scope, namely the direct object. If this takes place before the subject has merged, the object must therefore move and check the D feature, which would block clitic doubling with XP. If the subject merges before v agrees with the object, the D feature is again checked before v ever probes the indirect object. The only situation in which XP might be a specifier of vP and be clitic doubled is therefore if it is doubled by a probe that can reach it before probing either the object or the subject, or else the D feature that licenses the clitic would be checked too early.

¹²Apparently the Liverpool dialect of English also lacks the wh -movement/passivization interaction (Holmberg et al. (2019) fn. 6, citing Alison Biggs, p.c.). However, they suggest that the Liverpool dialect permits covert X-material in more places than other varieties of English, so the morphology may not be such a reliable indicator as to whether Liverpool English is a genuine counterexample.

- ‘The tables that the children will be bought (will arrive at the school tomorrow)’
- (428) *Luganda* no passive/wh-movement effect (Holmberg et al. (2019), ex. 65)
- a. N-jagala engoye abaana z-e ba-a-gul-ir-w-a.
 1SG.SM-want 10.clothes 2.children 10-REL 2SM-PST-buy-APPL-PASS-FV
 ‘I want the clothes that the children were bought.’
- b. N-jagala abaana engoye b-e z-a-gul-ir-w-a.
 1SG.SM-want 2.children 10.clothes 2-REL 10SM-PST-buy-APPL-PASS-FV
 ‘I want the children that the clothes were bought for.’

In fact, I argue that multiple passivization is indeed what is happening in (427a,428b). One of the parametric differences between Kinyarwanda/Luganda and the other Bantu languages under discussion is that Kinyarwanda/Luganda allow 1) multiple object markers, and 2) causative and applicative stacking.

- (429) *Zulu* only one object marker (Zeller, 2012, 220)
- a. *U-John u-**ba-zi**-nik-ile.
 1a-John 1SM-2OM-9OM-give-PFV
- b. *U-John u-**zi-ba**-nik-ile.
 1a-John 1SM-9OM-2OM-give-PFV
 intended: ‘John gave them them.’
- (430) *Kinyarwanda* multiple object markers, causative morphemes, and applicative morphemes
- a. Umugoré
 1.woman
 a-ra-na-ha-ki-zi-ba-ku-n-someesheesherereza.
 1SM-DJ-also-16OM-7OM-10OM-2OM-2SG.OM-1SG.OM-read.CAUSE.CAUSE.APPL.APPL
 ‘The woman is also making us read it(book) with them(glasses) to you for me there(at the house).’ (Beaudoin-Lietz et al., 2004, 183)

Several analyses treat facts like (430) (and others) as evidence that there is something special about either the Kinyarwanda verb phrase or its applicative morpheme. For example, McGinnis & Gerdts (2004) propose that the Kinyarwanda applicative morpheme (specifically the one introducing benefactives) licenses more specifiers than other languages’ applicative morphology. Similarly, Zeller (2006) has argued that the Kinyarwanda verb phrase has an extra EPP feature that other languages lack. These features are necessary to explain, among other things, the fact that passivization in Kinyarwanda is three-ways symmetric when a benefactive argument is added to an inherently ditransitive clause: either the theme, embedded indirect object, or the benefactive argument may raise to subject position (for discussion, see Kimenyi 1976, p.59).

If indeed a second DP specifier of *vP* is licensed in Kinyarwanda for some reason, raising one argument to that position should not necessarily block another one, which would account for the grammaticality of (427a).¹³

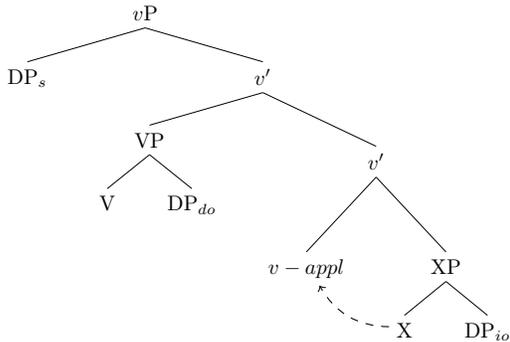
¹³Another way to account for the “extra EPP-positions” and the possibility of multiple applicatives is to treat the applicative morpheme as ambiguous between XP-incorporation in a mono-clausal structure (i) and a

5.4 Superiority and QR

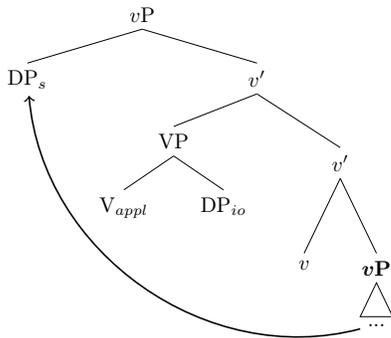
So far, we have looked at active and passive ditransitives, in which a single argument wh-moves. What we saw was that there is nothing special about direct object wh-movement from active or passive clauses: direct objects wh-move after a subject has been merged in active clauses, and may wh-move whether or not an indirect object has raised in passive clauses. DP indirect objects (from high XP structures) similarly wh-move after a subject has been merged in active

separate lexical verb which recursively selects for a *vP*, much like the English causative verb *make* (ii). Since I have not proposed a *v* feature – only V, D, and X – *vP* would have to be selected as an XP argument in the bi-clausal applicative construction. The embedded *vP*'s subject raises to become the subject of matrix *vP*.

- (i) Monoclausal applicative structure



- (ii) Bi-clausal applicative structure: if $XP=vP \rightarrow vP$ recursion



In (i), the normal passivization/wh-movement interaction is predicted: a wh-moving indirect object should block a direct object from raising to Spec *vP*. In (ii), however, the reverse should be true: if the direct object in the embedded *vP* raises, and is a wh-phrase, it will wh-move/passivize in the *matrix vP* before the VP introducing the benefactive argument has been merged. Thus the reverse interaction is expected – a wh-moving direct object should block an indirect object passive (but not vice versa). The fact that the applicative morpheme is ambiguous between an incorporated X head in (i) and a lexical verb in (ii) means that each example in (427) has at least one convergent derivation associated with it. (i) permits the direct object to wh-move while the indirect object passivizes but not the reverse; (ii) permits the indirect object to wh-move while the direct object passivizes but not the reverse.

One might worry that the morpheme order in (427) is rigidly V-APPL-PASS, despite the fact that they are potentially proposed to correspond to two different logical relationships between the passive and the applicative morphemes. If morpheme order were Mirror Principle obeying, we might expect (427b) to have V-APPL-PASS order (passive of an applicative) but (427a) to have V-PASS-APPL order (applicative of a passive). If we think, however, that the passive morpheme is introduced by a Voice head above the *vP*, then we expect V-APPL-PASS order to arise in both cases. Moreover, Kinyarwanda is a rigid CARP-obeying language (see Banerjee 2019 for discussion), so morpheme order could never be V-PASS-APPL anyway.

clauses. In passive clauses, however, they wh-move before the VP containing the direct object has been merged, and thus become the passive subject as they wh-move.

Thus, wh-movement and passivization are separately predicted to be symmetrical from a high XP structure (either direct or indirect object may move). However, if the clause is passive, and one of the arguments is a wh-phrase, an asymmetry arises: a wh-indirect object blocks a direct object passive, but not vice versa. In this section, I want to focus on a different, but related asymmetry that we observed in Chapter 4. High XPs were shown to take obligatory high scope over other internal arguments in *active* clauses. A similar claim has been made for overt wh-movement as well, though the judgments are less robust – high XPs show superiority effects in multiple wh-questions.

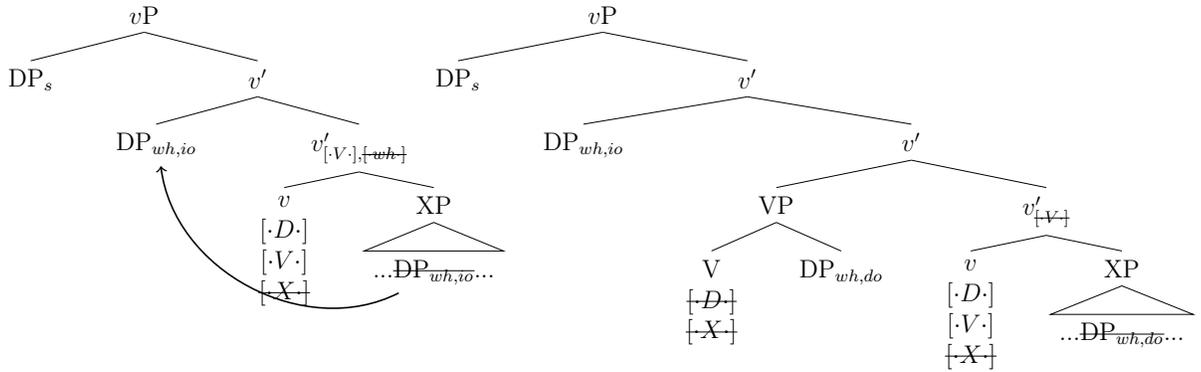
- (431) High XPs take high scope; low XPs take low scope
- a. I gave a doll [_{XP}to each child]. *XP is ambiguous: a > each; each > a*
 - b. I gave [_{XP}a child] each doll. *XP is high: a > each; *each > a*
- (432) Analogous superiority effects
- a. %Who did Jo give what? (Barss & Lasnik, 1986)
 - b. *What did Jo give who? (Barss & Lasnik, 1986)

Bruening (2001) analyzes (431b) as a superiority effect akin to (432b). On his analysis, the base position of the indirect object in (431b) and (432) c-commands the base position of the direct object, which means that the indirect object wh-moves/QRs first. Subsequent movements tuck in, making it impossible for the direct object to ever take scope over or move overtly instead of the indirect object.

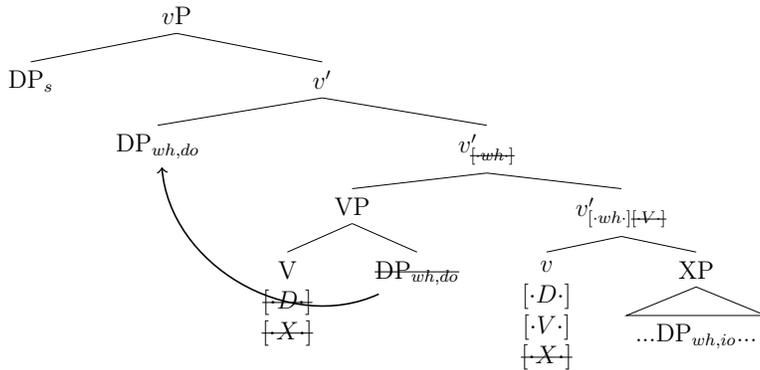
Crucial to Bruening’s analysis, however, is an underlying c-command relationship between the direct and indirect objects in (431b), a claim that I have not adopted. On my view, neither object of a ditransitive c-commands the other in a high XP structure. Thus, either one is able to passivize to the exclusion of the other.

We would therefore expect that if both the direct and indirect objects were wh-phrases (as in (432)), the same symmetry we saw in the passive should arise in active multiple wh-questions: either argument can wh-move to the exclusion of the other, since neither c-commands the other. Assuming that QR is also \bar{A} -movement, we would therefore expect the same symmetry in QR. (433) shows that this symmetry is predicted because the order of wh-movement is unspecified relative to VP-merge. Nonetheless, the facts in (431,432) lead us to a different conclusion: the indirect object apparently moves instead of the direct object when both are \bar{A} -phrases.

- (433) Multiple wh-movement incorrectly predicted to look symmetric, analogous to passivization: there is ambiguity in the order of VP-merge/wh-movement
- a. wh-move first, VP tucks in: indirect object wh-moves in a multiple question (borne out in (432a))



- b. VP-merge first, then wh-move: direct object may wh-move in a multiple question (ruled out in (432b))

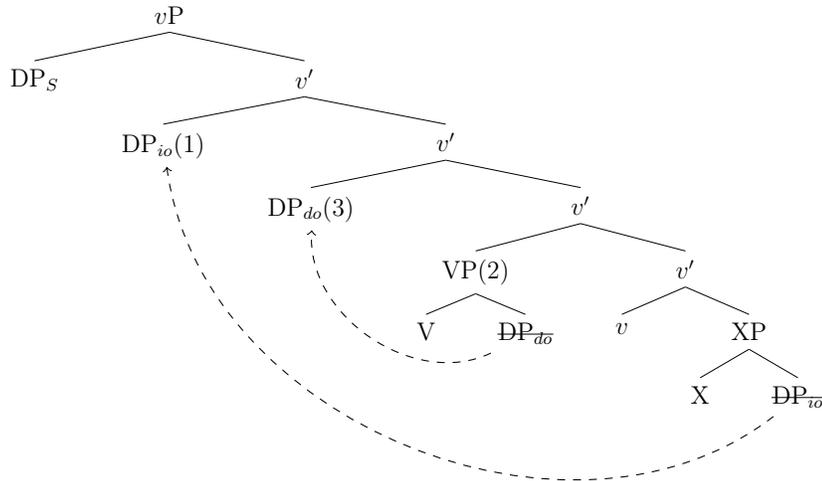


Of course, multiple questions may have other properties which distinguish them from passives: in passives, the phrase that does not become the surface subject is typically assumed to be left in situ – it does not covertly A-move. In multiple questions, however, the wh-phrase that surfaces in situ has been argued by Huang (1982); Lasnik & Saito (1984); Richards (1997), among others, to wh-move as well – covertly in a language like English, but overtly in a language like Bulgarian. In the case of QR, both quantificational phrases have to move independently for type reasons, though both do so covertly.

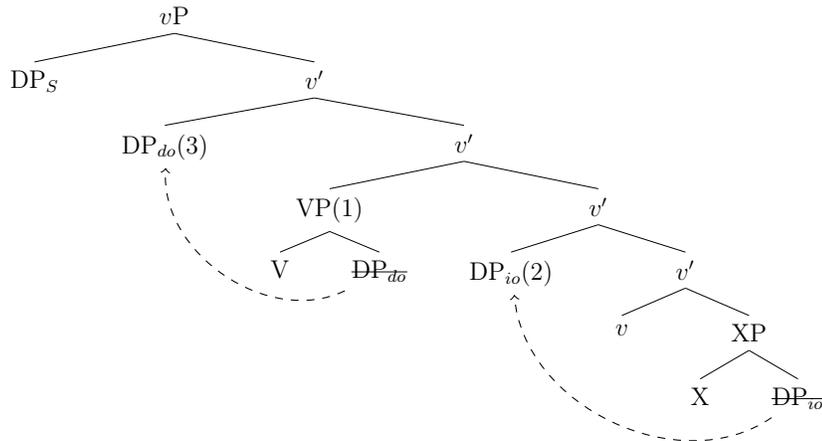
The puzzle of (433) is therefore reformulated as the puzzle in (434): why is it that when *both* the direct and indirect objects wh-move/QR, they do so in such a way as to make the *indirect* object take high scope/move overtly? Or, adopting Richards' and Bruening's assumptions about superiority effects driven by tucking in, why does the indirect object apparently move first, ending up as the outer specifier of *vP*, despite there being no underlying c-command relationship between the two objects?

(434) Multiple wh-movement/QR predicted to be symmetrical

- a. move indirect object first: indirect object is outer specifier (borne out in (432a))



b. merge VP first: direct object is outer specifier (ruled out in (432b))



Put plainly, the conundrum is as follows: symmetric passivization indicates that there is no underlying c-command relationship between the two internal arguments of a ditransitive. Superiority effects in wh-movement, however, indicate the opposite. How do we reconcile the diverging behaviors of A and \bar{A} -movement? Do we take superiority as key evidence for underlying c-command or symmetric passivization as key evidence for no underlying c-command? I have proposed that we view passivization as key evidence for a lack of c-command, which means that something else must account for superiority effects in wh-movement and QR.

While it is tempting to unify the superiority-like behaviors of wh-movement and QR under a common principle, they differ in an important respect: wh-movement can bleed passivization, but QR cannot. Notice that a quantificational indirect object does not block a direct object passive in (435), which suggests that QR does not follow the timing/feature-checking logic of wh-movement (or else it should force the indirect object to passivize instead).¹⁴

¹⁴I have been assuming that wh-movement, overt and covert alike (as we saw for Tamil and Haya), is driven by \bar{A} -features. By contrast, (435) seems to be telling us that QR is not driven by the same kind of syntactic feature, and therefore cannot bleed A-movement, for example.

- (435) Noe ble gitt alle.
 something was given everyone
 ‘Something was given to everyone.’ (Johannes Norheim, p.c.)

I therefore propose that an economy condition along the lines of Fox (1998) may account for scope rigidity in (431b), instead of superiority. Moving the indirect object from the complement of *v* to a position that only *c*-commands itself (as in (434b)) is semantically vacuous. By contrast, moving the indirect object to a position that also *c*-commands the VP predicate (which contains another quantifier) is not vacuous. Thus, we might expect the derivation to prefer (434a), where QR has semantic consequences, over (434b), where it does not. The order of Merge is in principle irrelevant from the perspective of the derivation, but the resulting structure corresponding to each order of Merge has interpretational consequences that matter.

- (436) Scope Economy (Fox, 1998): Scope Shifting Operations (SSOs) can’t be semantically vacuous.

Returning to multiple *wh*-movement, we have two options for explaining the superiority effects in (432): 1) find/create a grammatical principle that would rule out derivation (434b), or 2) find some reason for why the derivation in (434b) can’t be pronounced as the *wh*-question in (432b). I can think of no principled reason for why the derivation in (434b) should be ruled out. I therefore propose that (434b) *is* allowed by the system, but it just can’t be pronounced as (432b).

Chapter 4 argued that word order has effects on pronunciation: DO-IO word order corresponded to the “prepositional dative” pronunciation, while IO-DO word order corresponded to the “double object” pronunciation, even though both could be high XP structures. Assuming the pronunciation of a clause is sensitive to the base word order of the direct and indirect objects, we would expect (434a), where IO outscopes DO, to be pronounced as the “double object” version of the dative alternation. By contrast, (434b), where DO outscopes IO, should be pronounced as the “prepositional dative” version of the dative alternation. Thus, superiority effects in ditransitives need not be treated as evidence for an underlying *c*-command relationship between the direct and indirect objects. Instead, the relative order of specifiers has consequences for pronunciation, much like it does when both arguments are in situ. In Chapter 6, I will propose that the pronounced position of the verb in high XP structures is Voice, in which case only indirect objects that can reconstruct to a position adjacent to Voice can be inherent case licensed (which is established in (434a) but not (434b)).¹⁵

In sum, we have seen four phenomena in which there is some reason to suspect that the indirect object moves/agrees earlier than the contents of VP, and thus ends up structurally more prominent due to tucking in: dative intervention effects in e.g. Greek, *wh*-movement/passivization interactions in e.g. Norwegian, superiority effects in *wh*-movement, and scope rigidity.

- (437) IO-clitic doubling precedes DO-passivization
 a. To vivlio ?*(tis) charistike (tis Marias).
 the book.NOM cl.GEN award.NACT the Maria.GEN

¹⁵Assuming the transitive subject raises to Spec TP before either argument *wh*-moves to Spec CP, there will be a point in the derivation where the highest *wh*-phrase is adjacent to Voice and can become case licensed before moving.

- ‘The book was awarded to Mary.’ (Anagnostopoulou, 2003, ex. 33)
- (364) IO-wh-movement precedes DO-passivization
- a. *Hvem ble boka gitt?
 who was the.book given
 intended: ‘To whom was the book given?’ Norwegian (Holmberg et al., 2019, p.680, ex.5d)
- (431) IO QRs above VP
- a. I gave [_{XP}a child] each doll. *XP is high: a > each; *each > a*
- (432) Dative wh-IOs need to be the higher wh-specifier of *v*P
- a. *What did Jo give who? (Barss & Lasnik, 1986)

I proposed that four different factors are responsible for each of these phenomena. In the case of clitic doubling, it was the locality of Agree that required *v* to first clitic double the indirect object before re-projecting the features that would attract the direct object. In the case of wh-movement/passivization interactions, I argued that a derivational economy condition called *Multitasking* preferred to wh-move the indirect object first. To explain scope rigidity, I invoked Fox (1998)’s Scope Economy condition in (436). For superiority effects in wh-movement, I proposed that the base order of specifiers has consequences for case licensing.

Given the similar results in (437), (364), (431), and (432), it would be conceptually desirable to find a common explanation that accounts for all of them. However, I have argued that doing so is tricky due to the unique profile of QR compared to wh-movement.¹⁶

Given the unique profile of QR, if a general principle unifies (437), (364), (431), and (432), it probably cannot refer to the feature checking/timing logic that I have been using to derive examples like (437) and (364) without failing to explain (431). The fact that *Multitasking* and the locality of Agree were so successful in the domain of (437) and (364) therefore makes me suspect that they should not be united under a common explanation with (431).

To summarize, I have offered a grammatical explanation for dative intervention effects in e.g. Greek and the wh-movement/passivization interaction in the languages of Section 5.3.1: indirect objects agree/wh-move before the VP is merged in passive clauses. I have offered a semantic account from Fox (1998) for scope rigidity in ditransitive clauses: indirect objects need to QR to a position above VP in order to satisfy Scope Economy. Lastly, I have proposed that “superiority effects” in ditransitive multiple questions have been mislabeled: the indirect object does not have to overtly wh-move in a multiple question built from a high XP structure. If it does, the result is pronounced as the “double object construction” because the relative order of arguments in *v*P is IO-DO. If it does not, the result is pronounced as the “prepositional dative construction” because the relative order of arguments in *v*P is DO-IO. Thus, (432d) is ungrammatical simply because that order of specifiers results in overt pronunciation of the prepositional phrase.

¹⁶Multitasking actually might account for the clitic doubling effects on direct object passives in addition to the wh-movement/passive interaction. Instead of appealing to a separate notion of locality in agreement, we could appeal to *Multitasking*: the reason a φ -probe clitic doubles the IO before re-projecting its features could be that doing so might lead to D and φ -checking, while merging a VP first would only check a V feature. The fact that clitics don’t actually cause D features to delete, however, might be a challenge to this view.

5.5 Against an extraction-restriction account

On my account, the inability to wh-move an indirect object in a direct object passive in some languages does not reflect any constraints on movement. It just so happens that wh-moving an indirect object DP in a clause with no transitive subject often makes the wh-IO the passive subject. Unless a language can have multiple passive subjects in the same clause, an indirect object passive should block a direct object passive. Hence, wh-moving an indirect object in a passive clause blocks a direct object passive, because the indirect object raises first.

By contrast, Holmberg et al. (2019) propose to explain the wh-movement/passivization interaction by invoking constraints on wh-movement. They firstly assume that passivization precedes wh-movement. With this assumption, the ungrammaticality of (438a) is interpreted as evidence for a restriction on moving the indirect object from a clause in which the direct object has passivized. To explain this restriction, they propose a modified theory of phase impenetrability combined with a theory of contextually determined phase-hood. Together, these assumptions treat the observed restriction in (438a) as evidence for a problem with the derivation in (438b).

(438) a. *DP_{io,wh} DP_{do} verb-PASS.

b. Holmberg et al. (2019): Can't wh-move an indirect object passed a passivized direct object

$$[_{CP} DP_{io,wh} [_{TP} T \dots [_{ApplP} DP_{do} [_{ApplP} \overline{DP}_{io,wh} [_{VP} V\text{-pass} \overline{DP}_{do}]]]]$$

↑
X

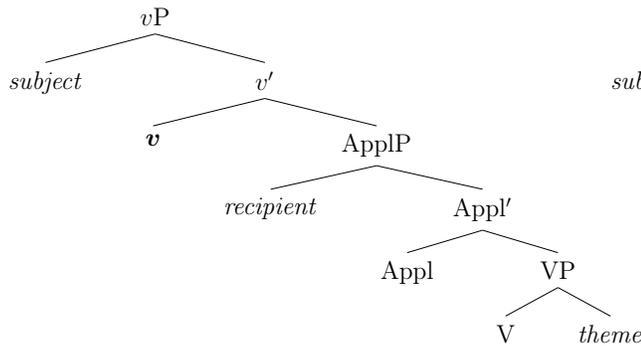
Their theory therefore makes a strong prediction: *any* language with a double object construction that can passivize the direct object should show the restriction in (438a). If the derivation in (438b) is supposed to be universally ruled out across languages, the ungrammaticality of (438a) should be widely detectable. Holmberg et al. argue that the restriction is universal, given that the ungrammaticality of (438a) is observed in a number of languages which are otherwise maximally permissive with respect to passivization and wh-movement.

As Sundaresan (2020) shows, their prediction that every language with direct object passives of double object structures should block indirect object wh-movement from them is not empirically supported. Section 5.3.2 discussed a sample of languages that have direct object passives of double object structures, but lack the wh-movement restriction on indirect objects in those contexts (e.g. Greek, Tamil, German, Turkish, Italian). What these languages have in common, as I discussed, is that they all lack *indirect* object passives, a fact which explains their behavior on my account, but which is irrelevant on Holmberg et al.'s account. I will discuss Holmberg et al.'s proposal now and show why the languages in Section 5.3.2 are a problem for their theory, and discuss other conceptual issues with their approach.

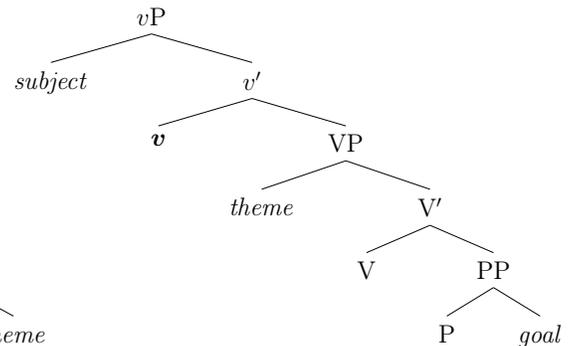
The ingredients of their theory are in (439) and (440). First they adopt the structures in (440) as the two kinds of ditransitive clauses available to languages, labelling (440a) the “double object construction” and (440b) the “prepositional dative construction”. Second, they assume a stronger version of the Weak PIC, in which only the highest specifier of a phase head is accessible to wh-movement. Lastly, they assume that different heads may be phases in active vs. passive contexts; the highest argument introducer assumes phase status in each case. As a result, *v* is proposed to be a phase head in active clauses, because it introduces the transitive subject, while Appl/V is proposed to be a phase head in passive clauses, depending on the ditransitive construction under consideration.

- (439) a. Weak PIC/PIC2 (Chomsky, 2001): Given a structure $[_{ZP} Z \dots [_{XP} X [_{HP} \alpha [H YP]]]]$ where H and Z are phase heads, the domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.
- i. Revision (Aldridge, 2004, 2008; Bošković, 2016): The edge of a phase is the outermost specifier of the phase head.
- b. Flexible phase theory (Holmberg et al. (2019) example 30, p. 690, based on Bošković 2015, 617): α is the head of a phase Ph making up a thematic domain if and only if α is the highest head introducing an argument in Ph.
- (440) The two active ditransitive structures, phase head is *v* (in bold)

a. “Double object construction”

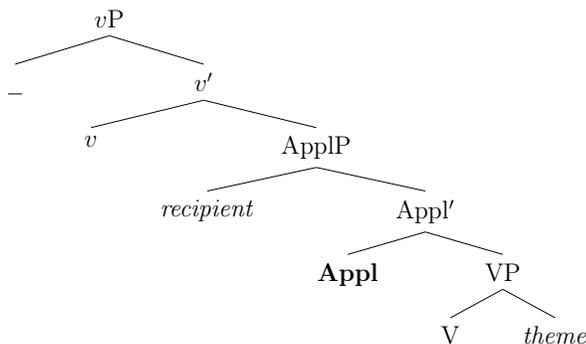


b. “Prepositional dative construction”

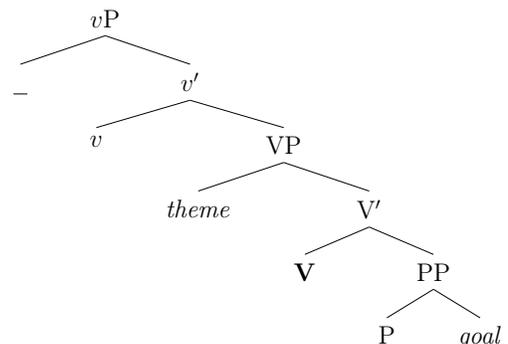


- (441) The two passive ditransitive structures, phase head is *Appl/V* (in bold)

a. “Double object construction”

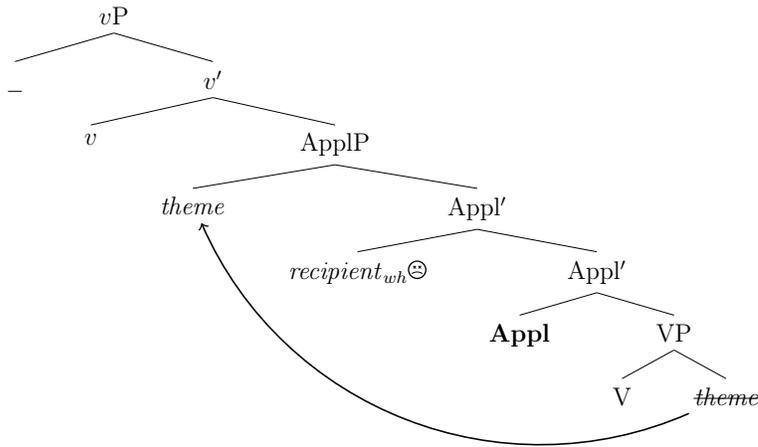


b. “Prepositional dative construction”



Finally, they propose that direct object passives in the double object construction are derived by raising the direct object past the indirect object to the edge of ApplP. A direct object passive in a double object construction thus makes the recipient an inner specifier of the ApplP phase, which is inaccessible to wh-movement. The proposed restriction on indirect object wh-movement from a direct object passive is analogous to Coon et al. (2014)’s proposed restriction on subject wh-movement in Mayan transitive clauses, following Aldridge (2004)’s approach to related facts in Austronesian. Importantly, they propose that an Anti-locality constraint keeps the recipient stuck as the inner specifier: it cannot raise past the theme to create a new, outer specifier of ApplP.

- (442) Direct object passive of a double object construction: blocks wh-movement of the recipient



This approach faces two main empirical challenges. The first is that all of the languages in Section 5.3.2 have direct object passives of double object constructions, which on their theory should look like (442). And yet, all of those languages permit wh-movement of the recipient across the theme, violating their version of the PIC. The second empirical challenge pertains to the behavior of wh-movement from “prepositional dative constructions”.

We saw in Section 5.3 that making the wh-moving indirect object an overt XP in English, Norwegian, and Haya removed the constraint on direct object passivization. According to Holmberg et al. (2019)’s discussion, prepositional indirect objects should appear in the “prepositional dative construction”.

- (443) PP-IOs can wh-move in the passive

(397) **To** whom was the book given?

(398) **Til** hvem ble boka gitt?
to who was book.the given

‘To whom was the book given?’

Norwegian

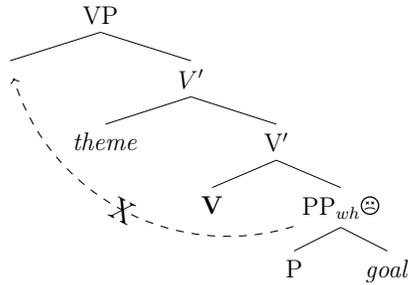
(412) A-ka-shal-il-w’ ényama n’-ówa?
SM-PST-cut-APPL-PASS meat ?-who

‘Who was the meat cut for?’

Haya

In the passive of a “prepositional dative”, V must be the phase head given that it introduces the theme, and no higher head introduces any arguments. However, if this is true, the prepositional phrase must move to the edge of V in order to wh-move. Doing so, however, would violate Anti-locality: no feature can license movement from the complement of some head to edge of that same head (Abels, 2003). Thus, direct object passives should block PP-indirect object wh-movement as well, contrary to fact.

- (444) Pied-piping faces an Anti-locality problem



As always, there may be ways to reconcile these facts with Holmberg et al.’s theory. For instance, they could argue that the counterexamples in Section 5.3.2 are all underlyingly prepositional dative constructions rather than double object constructions, despite appearances. They could additionally propose that there is more covert structure in the verb phrase than we thought, which would ameliorate the Anti-locality problem in (444). They might alternatively dispense with Abels’ version of Anti-locality (though prose elsewhere in their manuscript indicates that his Anti-locality formulation is one of their core assumptions).

At this point, I would therefore like to take a step back and evaluate the conceptual merits of their approach compared to mine. I propose that the strength of my approach is that it capitalizes on the properties of languages we can see. Whether a language has indirect object passives is easy to diagnose. Whether a moving phrase has overt case morphology/prepositions attached to it is transparently observable. The theory predicts that a *wh*-moving indirect object that looks like a DP should become the subject if there is no transitive subject, if the language typically permits it to become a subject in the first place.

A child trying to figure out whether their language has a *wh*-movement/passivization interaction therefore only needs to know two facts about their language: 1) whether it has indirect object passives, and 2) what DPs look like, in order to generalize to *wh*-movement in passives. I proposed two kinds of covert structure and theory internal properties thereof: a phasal *v* head, and an XP shell in double object constructions, which may appear overtly on the DP it attaches to, overtly on the verb it is adjacent to, or covertly if it is both adjacent to and the sister of *v*.

On Holmberg et al.’s theory, by contrast, it is not clear what linguistic cues a child would need to be sensitive to in order to learn whether their language has a *wh*-movement/passivization interaction. As we saw, their theory predicted that any language with a direct object passive like (442) should bar recipient *wh*-movement. However, we saw that this prediction is, at best, not easy to verify, and at worst, simply false. A child therefore apparently cannot determine whether their language has a *wh*-movement/passivization interaction just by looking at whether their language has direct object passives. They would also need to know about the existence and properties of additional covert structure that distinguish e.g. Norwegian from Greek.

One way for Holmberg et al. to distinguish Norwegian and Greek could be to assume that the phasal status of ApplP in a certain context is not universal, but rather varies parametrically from language to language (they suggest something to this effect to account for Kinyarwanda/Luganda). In that sense, what a child would need to learn to know whether they are speaking Greek vs. Norwegian is that in Norwegian, ApplP is a phase in passives, while in Greek, it is not. Whether a language/construction has an ApplP is not always diagnosable from a given language’s morphosyntax, however, and determining whether that ApplP is a phase in a certain context is only possible with indirect evidence. What *surface* cues would distinguish

Norwegian from Greek in this respect are unclear.

Their theory also depends on the amendment to phase theory in (439a), which I argued against in Chapter 2. In addition to the arguments I provided there, the original version of the Weak PIC has a conceptual advantage over the amended version, in that the domain of accessible material is coherent: everything that is not H’s complement counts as accessible to operations at ZP (445). By contrast, the amended version must appeal to an additional notion *phase edge* to characterize what material is accessible for operations at ZP (446).

(439a) Weak PIC/PIC2 (Chomsky, 2001): Given a structure $[_{ZP} Z \dots [_{XP} X [_{HP} \alpha [H YP]]]]$ where H and Z are phase heads, the domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations.

(i) Revision (Aldridge, 2004, 2008; Bošković, 2016): The edge of a phase is the outermost specifier of the phase head.

(445) Weak PIC: original form

$$[_{ZP} \mathbf{Z} \dots [_{HP} XP \underbrace{[_{H'} YP [_{H'} \mathbf{H} \quad GP \dots]}_{\text{accessible}} \quad]_{\text{inaccessible}}]]]]$$

(446) Weak PIC: amended form

$$[_{ZP} \mathbf{Z} \dots [_{HP} XP \underbrace{[_{H'} YP [_{H'} \mathbf{H} \quad GP \dots]}_{\text{inaccessible}} \quad]_{\text{accessible}}]]]]$$

I conclude that the logic of extraction restrictions is not well-equipped to explain either Mayan subject extraction or the wh-movement/passivization interaction observed in ditransitive clauses. In both cases, extraction restriction accounts of wh-movement/voice interactions face an undergeneration problem: they rule out wh-movement in too many configurations/languages compared to what we actually find. A theory that undergenerates is difficult to rescue – while it is easy to add constraints to a system, it is less easy to remove them. I have proposed that by simply removing some of these constraints, i.e. by adopting the original version of the Weak PIC rather than its modified version, an explicit theory of c-selection already explains many of these apparent “restrictions” on movement. All that is required from us is a good understanding of what does and does not count as a DP vs. a wh-phrase vs. a non-DP in a language. Knowing the category of a constituent greatly constrains its distribution in ways that lead to an understanding of its movement prospects and morphosyntactic effects.

5.6 Conclusion

In this chapter, we combined the insights of Chapters 2, 3 and 4 to explain the interactions between wh-movement, passivization, and the dative alternation in a variety of languages. Chapter 2 motivated a set of assumptions about the timing of wh-Merge. Chapters 3 and 4 motivated a set of basic clause structures and transformations corresponding to the dative and passive alternations. Chapter 5 showed that wh-movement from a passive of a ditransitive is sometimes predicted to result in a unique passivization/wh-movement interaction: wh-moving an indirect object in a language with indirect object passives may have the effect of promoting it to subject position, if the wh-phrase is a DP and there is no transitive subject.

We saw that in a number of languages with indirect object passives, attempting to wh-move the indirect object as a DP from a high XP structure indeed blocked the direct object from

raising. By contrast, languages without indirect objects passives only permitted indirect objects to wh-move as XPs, which, by definition, do not become passive subjects.

The wh-movement/passivization interaction observed in Section 5.3 is reminiscent of several indirect object/direct object interactions we have observed throughout Chapters 4 and 5: dative intervention, scope rigidity, and superiority effects. Though a unified explanation for the apparent IO-DO asymmetry in all of these contexts was elusive, it was possible to find independent explanations for each for each phenomenon. As a result, I only argued for *one* fundamental asymmetry between direct and high indirect objects: the indirect object is introduced into the derivation before the direct object is, and is accessible to subsequent Agree/Merge operations within *v*P before the VP containing the direct object has been merged. While the indirect object in principle need not Merge/Agree just because it can, if anything independently requires it to do so, the indirect object may bleed later operations involving the direct object.

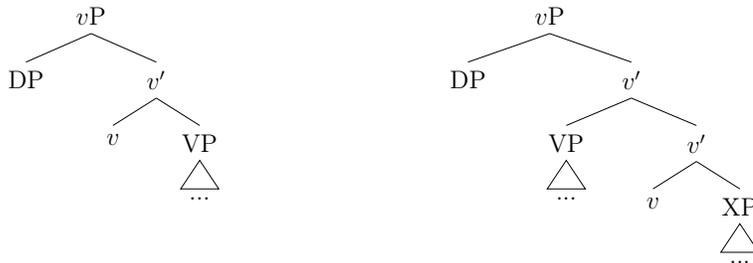
Chapter 6

Interpreting and pronouncing syntactic structures

6.1 Introduction

I have motivated a theory of *c*-selection and a set of features/functional projections in the verbal domain that, taken together, produce some familiar and some unfamiliar syntactic structures. The familiar structures all have one thing in common: VP is merged as *v*'s complement. By contrast, the unfamiliar structures make VP a specifier of *v*; if *v* introduces an XP (i.e. non-DP) argument, that XP must merge first as *v*'s complement before VP is merged.

(447) VP can be either a complement or a specifier of *v*



A second point of departure pertains to my treatment of the thematic hierarchy. While I assumed DPs to have relatively fixed positions in the verbal domain (“subject”-like theta roles are assigned to DP arguments of *v*, while “object”-like theta roles are assigned to DP arguments of V), I proposed that XPs in principle have a more flexible distribution. Arguments within XP were proposed to receive their thematic roles XP-internally (either because XP is a separate clause or a prepositional phrase). The position of XP might therefore matter insofar as compositional rules are concerned (so not every XP in every kind of selectional relationship to the verb is flexible), but as far as thematic roles are concerned, the same XP argument could be generated “higher” or “lower” than the direct object with no consequences for its thematic interpretation.

The flexibility of XPs was especially clear in my treatment of the dative alternation and the passive: the prepositional phrases in (448) and (449) were proposed to be structurally ambiguous, accounting for flexibility in binding. The complement of *to/by* presumably receives the same thematic role in both of the (a) and (b) examples, despite the fact that the PPs in the

(a) vs. (b) examples correspond to two different structural positions. In (448a), for example, the theme of the ditransitive (i.e. direct object) is structurally higher (in the binding sense) than the recipient/goal (i.e. indirect object). In (448b), the reverse is true.

(448) PP indirect objects are structurally ambiguous

a. Jo showed Lauri and Amy_i to each other's_i parents in the mirror. (PP=V's complement)

b. Jo showed pictures of each other_i to Lauri and Amy_i. (PP=*v*'s complement)

(449) *by*-phrases are structurally ambiguous

a. ?The books were given to Jo and Marmie_i by each others_i's parents. (*by*-phrase=V's complement)

b. ?The books were given to each other_i's parents by Jo and Marmie_i. (*by*-phrase=*v*'s complement)

Thus, to the extent that my syntactic structures reflect a thematic hierarchy, it a) is a very underspecified one, and b) only applies to DP arguments of V and *v*. DPs that are selected by *v* are structurally higher than everything else. Whatever theta roles are associated with DP specifiers of *v* are therefore structurally more prominent than theta roles associated with arguments of V and X. Some aspect of the grammar presumably encodes this asymmetry between DP specifiers of *v* and everything else, and regularly assigns transitive subjects agent/causer roles. By contrast, DPs selected by V are potentially unordered relative to XP arguments, because XPs may be arguments of V or *v* with no consequences for their interpretation. Thus, the grammar presumably should not rank the theta roles of internal arguments relative to each other, but merely assigns transitive objects patients/theme roles. The description in (450) contains the kind of hierarchy we would need to describe the syntactic structures in Chapter 3.

(450) A very underspecified thematic hierarchy (adapted from David Pesetsky's 24.902 class notes, 2013)

a. An Agent or Causer of a predicate P is never a DP argument of V.

b. A Patient or Theme of a predicate P is always a DP argument of V.

In sum, the present theory is incompatible with a universal thematic hierarchy that compares themes to recipients/goals, for example (or even agents to recipients/goals), because (448a,b)/(449a,b) express contradictory structural relationships between the two. This approach therefore invites a natural distinction between the introduction of "core" (DP) vs. "non-core" (XP) arguments. Both need to be *v*P-internal to be counted as participants in the same eventuality, but only DPs have a fixed distribution relative to V and *v* (i.e. only DPs are directly interpreted by V and *v*). XPs introduce event participants that are interpreted conjunctively, as in a Neo-Davidsonian framework.

This chapter aims to address these two controversial claims in the context of the syntax-semantics and syntax-morphology interfaces. I will first discuss thematic role assignment and the thematic hierarchy (or lack thereof), and adopt the compositional system described by Kratzer (1996) to account for the interpretation of XPs. After discussing the syntax-semantics interface, I will discuss the implications of VP-specifier-hood for the syntax-morphology interface.

6.2 Syntax-semantics

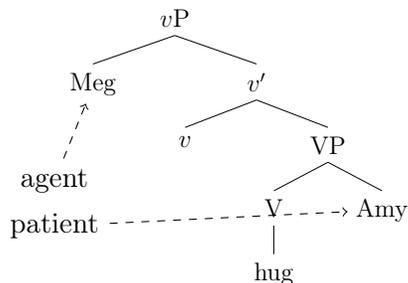
I assume that there is a module of the grammar, called the lexicon, which acts as a repository of all of the idiosyncratic aspects of language that need to be memorized (Chomsky, 1965; Sciullo & Williams, 1987). In the lexicon, we can find verbs and prepositions, for example, which may have a semantic requirement for an argument. In other words, we might find verbs such as *devour*, which s-selects for a *devouree*, and verbs like *rain*, which s-selects for nothing.

One of the major challenges for theories of argument structure predicated on this view of the lexicon is that the interpretation assigned to arguments is often predictable from their syntactic positions, despite the fact that they are interpreted as arguments of an idiosyncratic set of lexical items. Here, I will review some common approaches to the interpretation of arguments in the context of my claim that only *some* arguments have a predictable interpretation on account of their syntactic position.

Two common approaches to the interpretation of verbs and their arguments (that share this view of the lexicon) include alignment approaches (e.g. UTAH) vs. compositional approaches (or more accurately – decompositional approaches). On the former approach, a mapping algorithm/linking rule assigns thematic roles to arguments based on their relative position, which may be interpreted by the syntax-semantics interface. For example, the *vP* in (452) might be interpreted as in (453) because the algorithm assigns the DP complement of *V* *patient* and the DP specifier of *v* *agent*, based on their positions relative to each other and the verbal heads that selected them. The verb in (453) identifies the agent and patient as participants in a *hugging* event. For concreteness, I adopt a Neo-Davidsonian logical form throughout, following Castañeda (1967); Parsons (1990); Schein (1993); Lohndal (2014).

(451) UTAH (Baker, 1988, 1997): Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

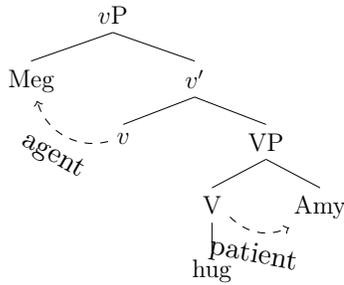
(452) Transitive clause: UTAH



(453) $\llbracket \text{hug} \rrbracket (Amy)(Meg) \approx \exists e. \text{agent}(Meg, e) \wedge \text{patient}(Amy, e) \wedge \text{hug}(e)$

On the (de)compositional approach, the DP arguments in (454) are not assigned thematic roles by a mapping algorithm, but are rather interpreted as agents/patients/etc. depending on the meanings of the heads that selected them. On many versions of this approach, the aspects of a verb's meaning that are responsible for interpreting e.g. agents vs. patients are split across different morphemes: *V* does not s-select for an agent, but only selects for internal arguments, e.g. patients/themes/etc. Verbs come to have external arguments because they are selected by *v*, which assigns its specifier *agent*: the meaning of *v* is proposed to be something like $\lambda x_e. \lambda e. x$ is an agent of *e*.

(454) Transitive clause: (de)compositional



(455) $\llbracket \text{hug} \rrbracket(Amy) \approx \exists e. \text{patient}(Amy, e) \wedge \text{hug}(e)$

(456) $\llbracket v \rrbracket(\llbracket \text{hug} \rrbracket(Amy))(Meg) \approx \exists e. \text{agent}(Meg, e) \wedge \text{patient}(Amy, e) \wedge \text{hug}(e)$

Both of these approaches have in common some notion of a theta hierarchy: theta roles associated with canonical subjects are mapped to positions that are structurally higher than theta roles associated with canonical objects. On an alignment approach, the regularity in structural difference between e.g. agents and patients is due to a principle of the grammar, which ranks agents as higher on a theta hierarchy than patients. The mapping rules must obey this hierarchy when assigning thematic roles to different arguments: structurally less prominent arguments get assigned theta roles that are lower on the hierarchy (see e.g. 457). On the compositional approach, by contrast, the theta hierarchy is represented as a functional hierarchy: the agent-assigning head selects the non-agent-assigning head, which entails a structural difference between arguments of each head.

(457) Relativized UTAH (Belletti & Rizzi, 1988): “... syntactic configurations projected from a given θ -grid should reflect the hierarchy, so that for every pair of θ -roles in the grid, the higher role in the hierarchy is projected to a higher structural position ...”

Considering only the interpretation of subjects and objects, the structures that I have proposed are compatible with either of these approaches. My picture of the verb phrase likewise needs to distinguish DP arguments of v as “external arguments” and DP arguments of V as “internal arguments”, which need to be interpreted as (e.g.) agents vs. patients respectively. Whether this is achieved through a mapping algorithm or compositionally is besides the central goal of the present theory, which is to predict the distribution of arguments in different syntactic contexts.

Where my approach diverges from both of these approaches pertains to the treatment of arguments that are *not* canonical subjects or objects. On my approach, any argument that is not a DP argument of V or of v is an XP, which is a self-contained unit. On my view, XPs do not get a theta role from V or v , and they may often be optionally c-selected by either V or v . Given their potential for structural ambiguity, a linking rule would not necessarily provide a unique mapping from an XP to the theta grid. For example, the indirect object in (448,449) and the *by*-phrase in (449) may either be an argument of V or an argument of v , accounting for their flexible binding behavior. Nonetheless, the same thematic interpretation is assigned to the indirect objects in (448,449) and the *by*-phrases in (449).

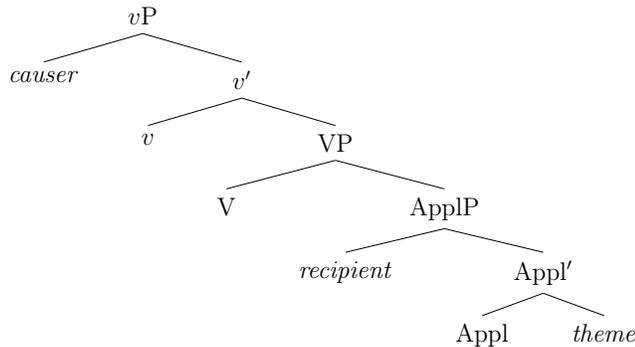
(448) PP indirect objects are structurally ambiguous

- a. Jo showed Lauri and Amy_{*i*} to each other’s_{*s_i*} parents in the mirror. (PP= V ’s complement)

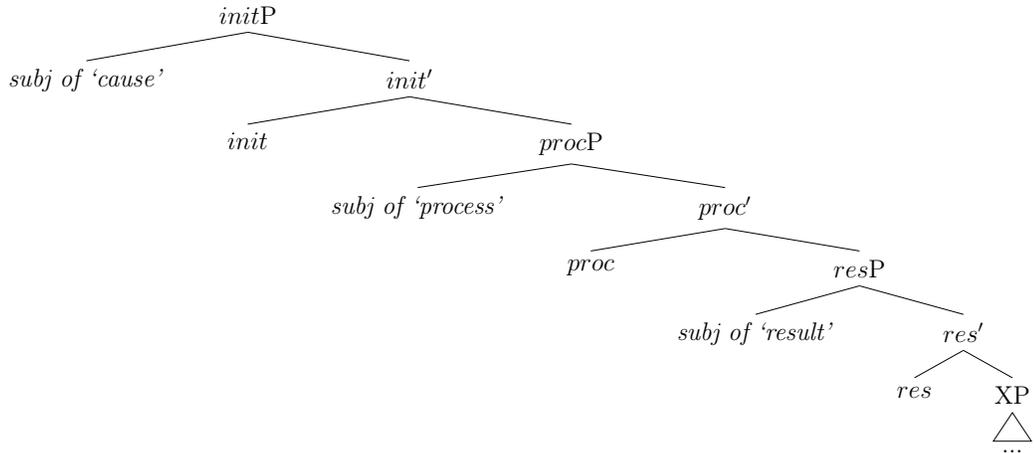
- b. Jo showed pictures of each other_i to Lauri and Amy_i. (PP=*v*'s complement)
- (449) *by*-phrases are structurally ambiguous
- a. ?The books were given to Jo and Marmie_i by each others_i's parents. (*by*-phrase=*V*'s complement)
 - b. ?The books were given to each other_i's parents by Jo and Marmie_i. (*by*-phrase=*v*'s complement)

My treatment of binding in (448) and (449) as an effect of structural ambiguity is a departure from much of the literature, which assumes that the theta hierarchy is specified to rank each of the three arguments in (448) and (449) relative to each other. On an alignment approach, the more specified theta hierarchy is simply a more specified principle of the grammar, one that ranks agents, recipients, themes, goals, etc. relative to each other. On the (de)compositional approach, the more detailed theta hierarchy is realized as a more detailed functional hierarchy: functional projections responsible for interpreting agents, recipients, themes, goals, etc. are proposed to obey selectional requirements resulting in some configurations but not others, with the end result mirroring the theta hierarchy.

- (458) More articulated UTAH (Baker, 1997)
- a. An agent is the specifier of the higher VP of a Larsonian structure. (*vP* in my trees)
 - b. A theme is the specifier of the lower VP.
 - c. A goal, path or location is the complement of the lower VP.
- (459) (De)compositional approach: theta hierarchy = functional hierarchy
- a. Pykkänen (2008): *v*, ApplP, and VP are selected serially, entailing a relative ranking between them



- b. Ramchand (2008): different functional projections but similar idea

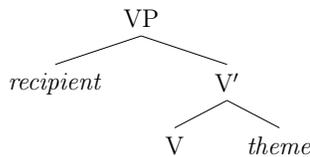


The binding facts in (448) and (449) present a straightforward counterexample to the claim that e.g. themes and recipients are ranked relative to each other, unless we adopt either of two proposals, both of which have been proposed in some form in the context of the dative alternation. On one approach, we might relate the two structural positions via movement (cf. Larson 1988; Baker 1997). On the other approach, we might assume that the theta hierarchy is more articulated than we thought (cf. Oehrle 1976; Pesetsky 1995).

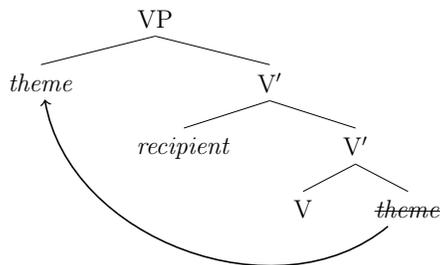
Suppose that the grammar contained a universal ranking between recipients and themes (either as a separate principle or as a functional hierarchy as in (459)): recipient > theme, where > means *structurally higher* in some relevant sense. The binding profile in e.g. (448b) would come for free on such a proposal, because the recipient binds the theme, indicating that it is structurally higher than the theme. The puzzle is thus how to account for e.g. (448a), where the theme binds the recipient.

On the movement approach, we might assume that the theme raises above the recipient to derive the word order in (448a,b), creating a new antecedent for binding. Thus the underlying structural relationship between the theme and recipient obeys the thematic hierarchy, but movement derives a different surface structure. Whether the theme is interpreted in its derived vs. base generated position determines its ability to bind the recipient and vice versa.

(460) “Base” structure: recipient > theme

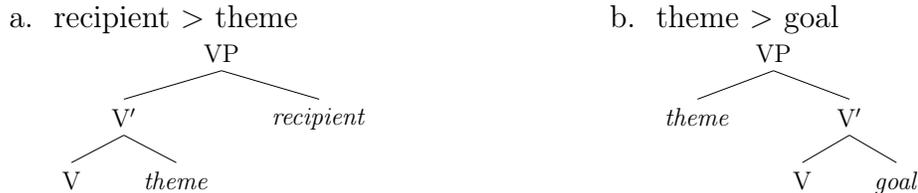


(461) “Derived” structure: theme > recipient



Alternatively, there could be no movement of the form in (461). Instead, we might propose that the PP in (448a) has a different thematic role than the PP in (448b), one that stands in a different relationship to themes according to the thematic hierarchy (despite the fact that we see the same preposition in both cases). We could label the PP in (448a) as “goal” and the PP in (448b) as “recipient”, and update the thematic hierarchy to: recipient > theme > goal.

(462) Two “base” structures:



The theory would be simpler if we could do without construction specific movement rules or more detailed stipulated hierarchies. The existence of facts like (448) and (449) therefore raises the question: is the theta hierarchy really as fine-grained as (458) and (459) suggest? If not, the structural flexibility of XP arguments would simply be expected. Recipients could be generated above or below themes, with the observed consequences for binding.

The granularity of the thematic hierarchy and its correspondence with syntactic structure is a matter of extensive debate (see especially Baker 1997, Levin & Rappaport Hovav 2005, p.133, and Ramchand 2008 for discussion of some of these challenges). In addition, Pylkkänen (2008) has argued that the functional hierarchy in (459a) is subject to cross-linguistic variation: the position of projections that introduce indirect objects, for example, may vary from language to language and construction to construction. Thus, even if we can agree on the granularity of the theta/functional hierarchy, its universality is questionable.

Conceptually, the function of the theta hierarchy is presumably to make the thematic roles of arguments predictable from their distribution. If one can distinguish the subject vs. the object just by looking at their structural positions, we don’t need other linguistic cues telling us how each argument should be interpreted. Whatever aspect of grammar enables us to predict an argument’s meaning from its position is therefore only useful if the thematic role of an argument is otherwise unclear. If there *were* other linguistic cues that could indicate an argument’s thematic role, employing them would obviate the need for an argument to have a fixed structural position, given that its interpretation could be gleaned without reference to its structural position.

Arguments that come with functional structure indicating their thematic role thus presumably do not need a separate linking rule or projection to interpret them, because their housing already does that transparently. In that sense, we would expect prepositional phrases such as the *to*-phrase in (448) and the *by*-phrase in (449), for example, to have a flexible distribution, because any rule that interprets them according to their position would contain redundant information – knowing what *by* and *to* mean and the contexts in which they are used is enough to discern what kind of arguments they introduce. They don’t *also* need to have a fixed position in the clause.

My approach to verb phrase structure and alternations is a reflection of this intuition, that XPs and DPs, though both potentially c-selected by a verb, do not have the same distribution or requirements. DPs, as core arguments of the verb, are always licensed, and are interpreted

differently depending on which head c-selects them. XPs, as non-core arguments of the verb, are only licensed if they merge first in their selecting phrase, and are not necessarily interpreted differently depending on which head c-selects them.

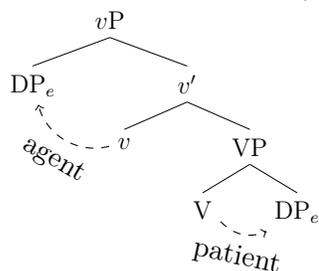
In sum, the only semblance of a thematic/functional hierarchy present so far on my approach is the presence of a $[\cdot V \cdot]$ feature on v , and the existence of both $[\cdot D \cdot]$ and $[\cdot X \cdot]$ features on V and v . Given that vP selects VP and not vice versa, arguments of vP are structurally more prominent than arguments of VP . Since X is a less specified feature than D , XPs must be complements in their selecting phrases while DPs may be specifiers. As a result, DP specifiers of vP c-command everything, while DP arguments of V might or might not c-command an XP argument. Thus, if there is a theta hierarchy, whatever thematic role(s) corresponds to specifiers of vP should be highest on it, with the other thematic roles unordered relative to each other.

Taking this picture of the verb phrase for granted, a number of questions arise, such as 1) how do arguments of v and V get their theta roles, 2) why do they get those theta roles as opposed to other ones, and 3) how do XP arguments get interpreted as arguments of the verb, despite not receiving their theta roles from the verb?

I propose to adopt the compositional semantics proposed by Kratzer (1996) to answer questions (1) and (3). I will largely defer answering question (2) to future research, given that it is a matter of extensive debate.

Kratzer proposes a decompositional view of the verbal domain, in which external arguments are not, strictly speaking, arguments of the verb root. They are introduced by a higher functional projection (which I have called v , though she calls it *Voice*), whose meaning assigns an agentive/causing thematic role to whichever argument it composes with. The fact that v selects for V (and not vice versa) results in agents/causers being structurally higher than arguments of the verb root.

(463) DPs are interpreted by their selecting functional projection: v assigns agent/causing roles, V assigns theme/patient roles



Section 6.2.1 presents the details of Kratzer's compositional semantics and shows some examples of how it interprets the structures I have proposed.

6.2.1 Argument introducers and compositional rules

Essentially, I have proposed that XPs are not necessarily thematic arguments of the head that c-selected them. For example, V can c-select for a prepositional phrase, despite the fact that V does not assign the contents of that phrase a thematic role. We therefore need a compositional semantics that allows V to compose with both DPs and non-DPs, while assigning a thematic role only to DPs. Moreover, because non-DPs are always merged before DPs in their selecting

phrase, the meanings of heads combined with these compositional rules need to be able to interpret non-DPs *before* DPs. A decompositional approach to the verb meaning provides a natural approach for interpreting non-DPs.¹

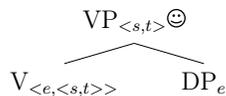
I take as a starting point the assumption that argument introducing heads are of semantic type $\langle e, \langle s, t \rangle \rangle$. Following Kratzer's conventions, I use s as the type of events, e as the type of individuals, and t as the type of truth-values. I abstract away from intensionality throughout this discussion. In prose, argument introducers are functions that map individuals to events. I additionally assume that verb roots, derivational morphemes, and prepositions may all be argument introducers. An n -place predicate (where $n = \#$ of event participants) is thus built by successively conjoining n 2-place functions, where each argument introducer is a 2-place function (takes an individual and an event and returns a truth-value).

(464) $\llbracket \text{Argument introducer} \rrbracket = \lambda x_e \lambda e_s . x \text{ is a } \langle \textit{insert kind of participant here} \rangle \text{ of } e$

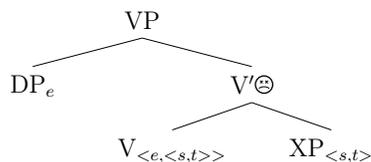
(465) V, v , and P/appl/etc. can introduce arguments

Due to their semantic type, argument introducers may compose with DPs via functional application, yielding a predicate of events. By contrast, argument introducers may not compose with predicates of events via functional application, because they require an individual first. Thus, if our only compositional tool is functional application, the VP in (466) should be interpretable but the VP in (467) should not be: V can only compose with DPs, which are individuals, not e.g. prepositional XPs, which are predicates of events.

(466) V can interpret a DP complement via functional application



(467) V cannot interpret an XP complement via functional application



As noted by Kratzer (1996), a similar problem arises for v . If v takes a VP complement, but is also responsible for introducing the subject (and is therefore of type $\langle e, \langle s, t \rangle \rangle$), it cannot interpret its VP complement via functional application. Kratzer therefore proposes a new compositional rule, called *Event Identification* (468), which enables heads like V and v to compose with XPs (and each other) before interpreting DP arguments.

(468) Event Identification (EI) (Kratzer, 1996, ex.23)

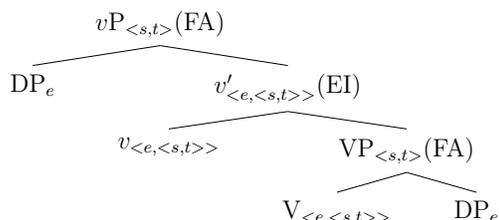
$$f_{\langle e, \langle s, t \rangle \rangle} \text{EI} g_{\langle s, t \rangle} \rightarrow h_{\langle e, \langle s, t \rangle \rangle} = \lambda x_e \lambda e_s [f(x)(e) \wedge g(e)]$$

When an argument introducing head encounters a predicate of events, event identification allows predicate modification to bypass the outer argument of the argument introducer, as if

¹I will largely put aside clausal and adjectival arguments for simplicity. Note, however, that the present framework places a natural constraint on the order in which clausal arguments and nominal arguments may be interpreted. Since clausal arguments are XPs, they are interpreted first in their selecting phrase.

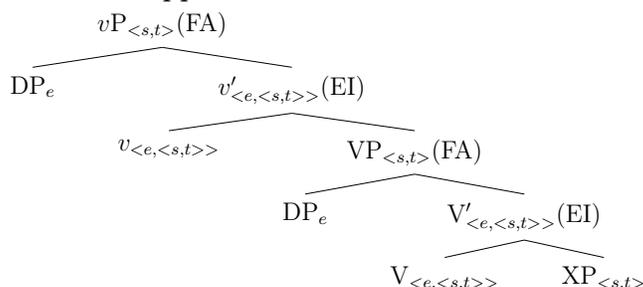
the argument introducer had first interpreted its type e argument before composing with the predicate of events. Essentially, event identification enables arguments of different heads to be interpreted as participants in the same event by treating each of them as a modifier of some event. As a result, the theme argument of V and the agentive argument of v are interpreted as participants in the same event in (469), despite being selected by different heads.

- (469) Transitive clauses: V - DP_e interpreted by functional application, v - VP interpreted by event identification, DP - v' interpreted by functional application



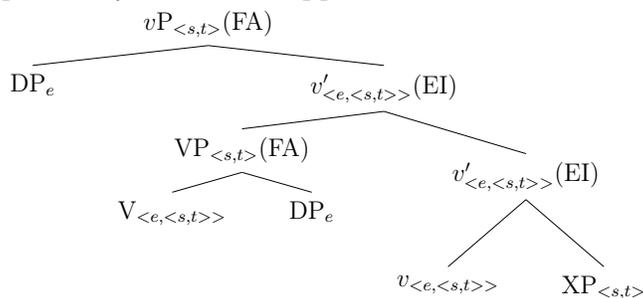
The same logic enables V to compose with a non- DP before interpreting a DP specifier. A low XP ditransitive structure like (470) therefore involves two steps of event identification and two steps of functional application.

- (470) Ditransitive clauses: V - XP interpreted by event identification, DP - V' interpreted by functional application, v - VP interpreted by event identification, DP - v' interpreted by functional application



High XP ditransitives are likewise interpretable by these two compositional rules. In this case, v goes through two rounds of event identification before interpreting the subject via functional application (471).

- (471) High XP ditransitive clause: V - DP_e interpreted by functional application; v - XP interpreted by event identification; v' - VP interpreted by event identification; DP - v' interpreted by functional application



In sum, there are two compositional rules, which separately allow argument introducers to combine with arguments as well as projections of other argument introducers.

(472) Interpreting v Ps:

- a. Argument introducers compose with DPs via functional application
- b. Argument introducers compose with projections of other argument introducers via event identification

Merely splitting up argument introducing responsibilities across different heads and offering a selectional relationship between them does not explain why certain thematic roles are associated with subjects while others are associated with objects. In other words, nothing about the system so far ensures that the subject of (473) will be interpreted as a *hugger*, with the object interpreted as a *huggee*.

(473) Meg hugged Amy.

We could imagine an argument introducer of category V that means $\lambda x_e.\lambda e.x$ is an agent of $e \wedge e$ is a hugging event. Such a V would interpret *Amy* as a *hugger*, despite the fact that *Amy* is syntactically an internal argument. Similarly, we could imagine an argument introducer of category v that means $\lambda x_e.\lambda e.x$ is an patient of e . Such a v would interpret *Meg* as a *huggee*, despite the fact that *Meg* is syntactically an external argument.

The theory must therefore appeal to some additional principle to ensure that arguments of V are necessarily interpreted as objects while arguments of v are interpreted as subjects. There is a vast literature on the nature and assignment of thematic roles, which debates whether this independent principle is encoded in the syntax, the lexicon, or in some other property of our cognition. I will not offer a concrete proposal that bears on this discussion. Instead I will simply adopt the convention of treating internal argument theta roles as properties of DP arguments of V and external argument theta roles as properties of DP arguments of v . A brute force way to include this convention in the theory is to stipulate that none of the verbal roots assign their arguments *agent*, and likewise that none of the argument introducers of category v assign their arguments *patient* (this is the bluntest way of interpreting Kratzer 1996's move to relegate agent-assignment to v , as a matter of definition). A pared back mapping principle linking DP arguments of V to patients/themes and DP arguments of v to agents/patients would also have worked.

With this compositional setup as a backdrop, we are now in a position to posit meanings for some V , v , and X heads and see the results. The list in (474) is not meant to be comprehensive. In general, V is responsible for introducing objects, v is responsible for introducing subjects, and prepositions (and other morphemes, e.g. *appl*, *dative*) can introduce any kind of argument. The meanings proposed in (474) should be taken as a starting point with which to test the compositional system, rather than a serious proposal regarding their exact meanings.

(474) Some argument introducers and their categories

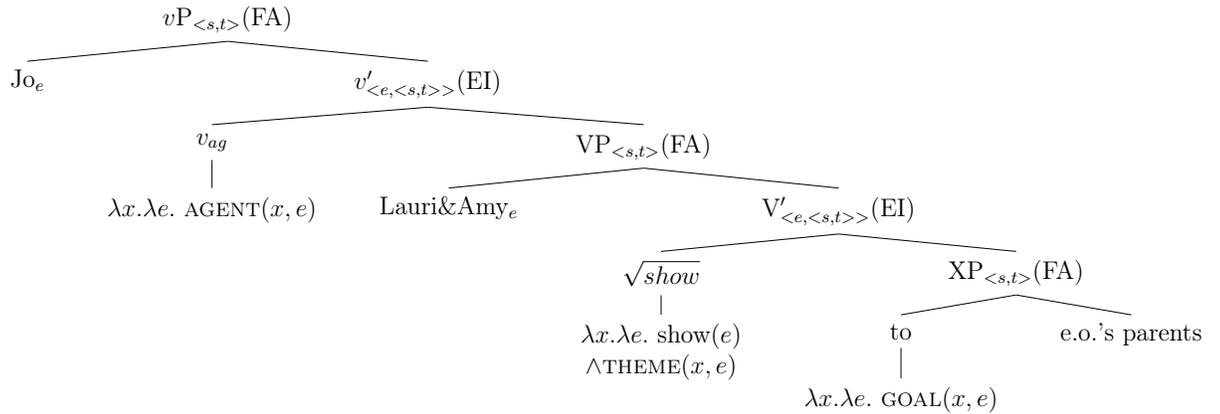
- a. $\llbracket \sqrt{hug} \rrbracket = \lambda x.\lambda e. \text{hug}(e) \wedge \text{PATIENT}(x, e)$ V
- b. $\llbracket \sqrt{give} \rrbracket = \lambda x.\lambda e. \text{give}(e) \wedge \text{THEME}(x, e)$ V
- c. $\llbracket v_{ag} \rrbracket = \lambda x.\lambda e. \text{AGENT/CAUSER}(x, e)$ v
- d. $\llbracket v_{-ag} \rrbracket = \lambda e.\exists x. \text{AGENT/CAUSER}(x, e)$ v

- e. $\llbracket for \rrbracket = \lambda x. \lambda e. \text{BENEFICIARY}(x, e)$ P
- f. $\llbracket appl/DAT \rrbracket = \lambda x. \lambda e. \text{BENEFICIARY}/\text{RECIPIENT}(x, e)$ P/K
- g. $\llbracket by \rrbracket = \lambda x. \lambda e. \text{AGENT}/\text{CAUSER}(x, e)$ P
- h. $\llbracket to \rrbracket = \lambda x. \lambda e. \text{RECIPIENT}/\text{GOAL}(x, e)$ P

Returning to (448) and (449), expanded in (475) and (476), the structural ambiguity but regularity in interpretation of *to*-phrases and *by*-phrases is straightforwardly predicted. The only difference is that the agent in (475) is represented as a DP specifier of *v*P, while the agent in (476) is represented as a structurally ambiguous *by*-phrase. The *v* head must therefore represent a different lexical item in each case, one that introduces an agent in (475), and one that does not in (476). As a non-argument introducer in (476), *v* composes with XPs via predicate modification rather than event identification.²

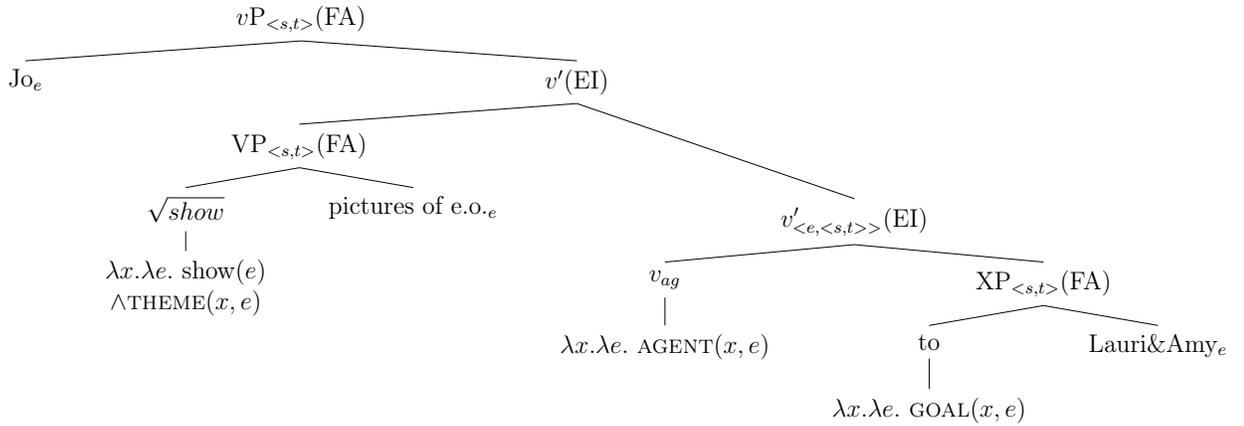
(475) PP indirect objects are structurally ambiguous

- a. Jo showed Lauri and Amy_{*i*} to each other's_{*i*} parents in the mirror. (PP=*V*'s complement)



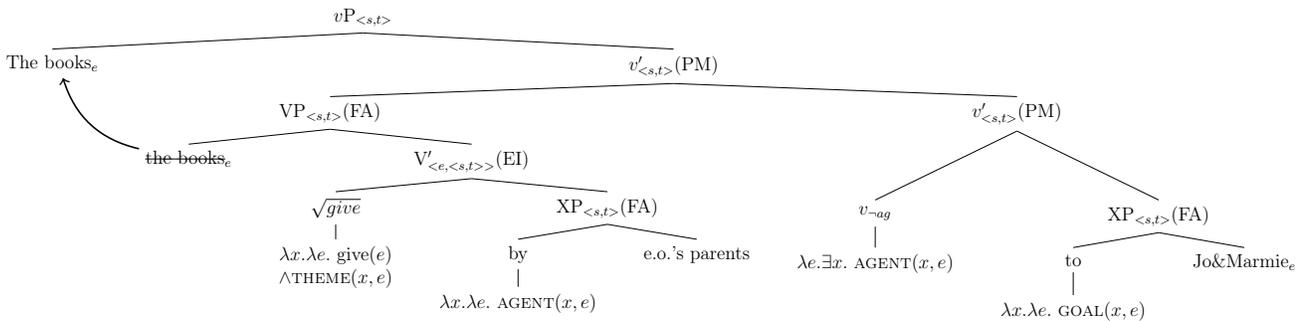
- b. Jo showed pictures of each other_{*i*} to Lauri and Amy_{*i*}. (PP=*v*'s complement)

²We might wonder whether we need a *v* projection selecting VP at all in a passive, given that it doesn't introduce the subject in (476). Given that something apparently licenses the second XP, however, I assume there is still a *v*P projection above VP in passives, but that it doesn't have the same meaning as the one we find in active transitive clauses. Thus, I follow (Marantz, 1997; Legate, 2003; Sauerland, 2003; Deal, 2009, a.o.) in assuming that there is always some *v* projection above VP, even in passives/unaccusatives, where it doesn't necessarily have a consequence for interpretation. Though I only included two possible denotations for *v* in (474), there are presumably other intransitive/causative/etc. "flavors" of *v* as well that might be chosen for a variety of contexts (see e.g. Folli & Harley 2005).

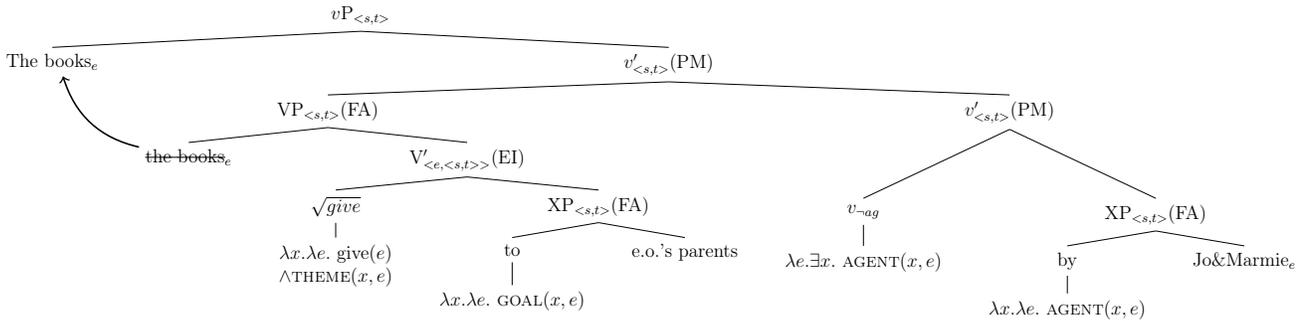


(476) *by*-phrases are structurally ambiguous

- a. ?The books were given to Jo and Marmie_i by each others_i's parents. (*by*-phrase=V's complement)



- b. ?The books were given to each other_i's parents by Jo and Marmie_i. (*by*-phrase=*v*'s complement)



There are some well-known puzzles related to this kind of approach to interpreting verbs and arguments. The first is that not all DP subjects are assigned *agent* (nor are complements of *by* always assigned *agent*) (477,478). Subjects can have a variety of interpretations, making it difficult to pinpoint the exact lexical entries for e.g. *v_{ag}* and *by*. Even more mysteriously, the theta role assigned to the subject of an active clause seems to be identical to that of its corresponding *by*-phrase, despite the fact that they are apparently interpreted by distinct lexical items (Lasnik, 1988).

(477) Different kinds of subjects

- a. **Jo** ate a pie. (*Jo*=agent)
 b. **The sun** melted the ice. (*The sun*=causer)

- c. **Meg** received a card. (*Meg*=recipient)
- (478) Different kinds of *by*-phrases
- a. A pie was eaten **by Jo**. (*Jo*=agent)
 - b. The ice was melted **by the sun**. (*The sun*=causer)
 - c. A card was received **by Meg**. (*Meg*=recipient)

Similarly, the interpretation of applied/case marked arguments is also flexible and sometimes restricted in interesting ways. The same indirect object in (479a-c) can be alternately a recipient, benefactive, or ruled out depending on the verb.

- (479) Covert XPs can have different interpretations
- a. Sue gave me a book. (*me*=recipient)
 - b. Sue built me a house. (*me*=benefactive)
 - c. *Sue held me a bag. (*me* can't be either recipient or benefactive)

On account of (477), (478) and (479), many researchers suspect that thematic role assignment as fine grained as in (474) is not fundamentally a part of the lexicon. In other words, it is unlikely that the actual lexical entries corresponding to *by* or v_{ag} contain reference to the specific notion *agent*. It is likewise unlikely that dative specifically references either *recipient* or *benefactive*. If they did, we would need three different subject introducing *v* heads, one for each of (477a-c), three different versions of *by* corresponding to (478a-c), and at least two different versions of dative corresponding to (479a-b).

The problems in (477), (478) and (479) are thus three fold: 1) how does a single morpheme come to be associated with multiple meanings? (i.e. how does *by* license three different theta roles in (478a-c)?), and 2) how do multiple morphemes come to have the same meaning? (i.e. why do v_{ag} and *by* assign the same theta roles in the same contexts?), and 3) how do verbs express the kind of pickiness in (479c) pertaining to what non-core arguments they may cooccur with?

To answer question (1), the meanings of *by* and v_{ag} , for example, must somehow be sensitive to what kinds of theta roles are possible for a given argument in the context of a given verb root, and adjust accordingly. More specifically, *by* has to know in (478c) that the only kind of external argument its complement can be is a *receiver*, and v_{ag} needs to have the same kind of knowledge.

Many researchers have discussed the need to distinguish the role of extra-linguistic, real-world knowledge from the role of semantic composition that reads off structure in the inferences available to different utterances (see especially discussion from Ramchand 2008 on Pustejovsky 1991). It is possible that this apparent sensitivity on the part of argument introducers, about what kinds of interpretations are available to their arguments given different verbal contexts, falls into the former class of interpretational effects. Following this thought, though some knowledge of which argument is the *verb-er* and which argument is the *verb-ee* is indicated by syntactic structure and the choice of morphology, the precise thematic role for external arguments of verbs in (477) and (478) might be a reflex of our extra-linguistic knowledge of what *eating/melting/receiving* events may involve. The actual lexical entries for *by* and v_{ag} might therefore be quite coarse, as in (480) (cf. Dowty 1990's *proto-agent/patient* roles).

- (480) Coarse meanings for v_{ag}/by

- a. $\llbracket v_{ag} \rrbracket = \lambda x.\lambda e. -ER(x, e)$ *v*
 b. $\llbracket by \rrbracket = \lambda x.\lambda e. -ER(x, e)$ P

Thus, the subjects of (477) and the *by*-phrases in (478) might be interpreted in a literal sense as *eater/melter/receiver*, with our extra linguistic knowledge providing the understanding that an animate eater is an agent, an inanimate melter is a causer, and an animate receiver is a recipient.

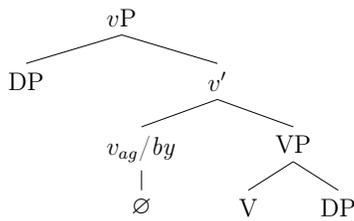
If this is right, we must now confront question (2): why do we have two separate morphemes, *v_{ag}* and *by*, that have identical meanings? The only difference between them is syntactic: one is of category *v* and thus *c*-selects *V* as well as *X*, while the other appears to be of category *P*, which distributes as an *XP*. Moreover, these two morphemes are in complementary distribution – we never see clauses with two agents, each introduced by a different head.

(481) *Jo ate/was eaten the cake by Meg. (to mean *Jo and Meg ate the cake*)

It is possible that *v_{ag}* and *by* simply *are* one and the same morpheme (and hence are both the same category), which may take different allomorphs in different contexts (inspired by Collins (2005), who argues that *by* is a kind of Voice head). On this view, *v_{ag}/by* would be a *v* head, which can *c*-select for *VPs/XPs/DPs* and also be *c*-selected by *V/v* as an *XP*. Whenever *v_{ag}/by* appears in an active clause (i.e. whenever it acts as a selector of a *VP* and takes a *DP* specifier), a contextual allomorphy rule chooses its null allomorph. Whenever *v_{ag}/by* takes a *DP* complement, and is itself selected by *V/v* (as in the passive), it takes its *by* allomorph. A constraint on redundant thematic role assignment should prevent two instances of *v_{ag}/by* from ever appearing in the same clause.³ In sum, the fact that *V* and *v* each have an unspecified selectional feature [*·X·*] makes possible an inverse selectional relationship between a *V* and a *vP* so long as there aren't two agent-assigning heads in the same clause.

(482) *v_{ag}/by* can be a selector or a selectee of verb phrases

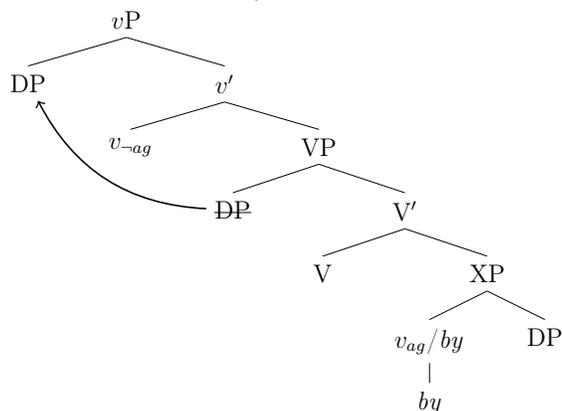
- a. Active clauses: *v_{ag}/by* selects for *VP*, pronounced as \emptyset



³Patrick Elliott, p.c., suggests that redundant thematic role assignment could be prevented by an even simpler amendment to the system, namely to adopt Parsons (1990), who treats theta roles as functions from events to their participants. On this view, the external argument of *eat* would not be interpreted as *an* eater, but *the* eater. Only one individual can be mapped to a single event participant – if *v_{ag}* and *by* were to co-occur and take distinct *DP* arguments, the result would be contradictory because *-er* maps each event to a unique individual.

- (i) $\llbracket v_{ag} \rrbracket = \lambda x.\lambda e. -ER(e) = x$

- b. Passive clauses: v_{ag}/by licensed by $[·X·]$ on V or v , pronounced as by



In effect, this compositional system is beginning to look quite close to the one proposed by Wood & Marantz (2017). On their approach, the same small set of functional projections and features can combine in different ways according to conditions on syntax. Each structure may be interpreted and pronounced similarly or differently according to contextual allomorphy and allophony rules. Thus, multiple syntactic structures may correspond to the same meaning (as in Bruening 2010; Myler 2014, cf.), just as the active and passive trees respectively in (482) interpret their arguments in the same way. My approach differs from theirs in the details of how c-selection works and whether ‘argument introducer-hood’ is a property of lexical items pre-derivation or is assigned in the course of the derivation. In spirit, however, this overall approach affords argument introducing elements flexibility in their position, so long as they obey the principles of Merge and result in an interpretable structure.

Lastly, there are many properties of verbal argument structure that I have not addressed. One of these properties relates to the pickiness of *hold* regarding the form of its non-core arguments. Recall that *hold* can take a benefactive argument, but not one that is realized in a covert dative shell. By contrast, other verbs like *build* can take a benefactive argument realized with a covert dative shell. Nothing that I have said so far indicates that a verb should be picky about what kinds of XP arguments it takes – XPs are always licensed syntactically and are interpreted separately.

(479c) *Sue held me a bag. (cf. *Sue held a bag for me*)

Pylkkänen (2008) has shown that *hold* is not unique in its pickiness in (479c). All unergative and stative verbs in English pattern like *hold*. By contrast, many other languages’ unergative and stative verbs can interpret benefactive arguments with dative or applicative morphology, and don’t need to represent their benefactive arguments as PPs.

(483) Benefactive arguments with unergatives (Pylkkänen, 2008, p.20-21)

a. *English*

*I ran him.

b. *Japanese*

*Taroo-ga Hanako-ni hasit-ta.

Taro-NOM Hanako-DAT run-PST

‘intended: Taro ran for Hanako.’

- c. *Korean*
 *Mary-ka John-hanthey talli-ess-ta.
 Mary-NOM John-DAT run-PST-PLAIN
 ‘intended: Mary ran to/from John.’
- d. *Luganda*
 Mukasa ya-tambu-le-dde Katonga.
 Mukasa 3SG.PST-walk-APPL-PST Katonga
 ‘Mukasa walked for Katonga.’
- e. *Venda*
 Ndi-do-shum-el-a musadzi.
 1SG-FUT-work-APPL-FV lady
 ‘I will work for the lady.’
- f. *Albanian*
 I vrapova.
 him.DAT.CL ran.1SG.
 ‘I ran for him.’

(484) Benefactive arguments with static verbs (Pylkkänen, 2008, p.20-21)

- a. *English*
 *I held him the bag.
- b. *Japanese*
 *Taroo-ga Hanako-ni kanojo-no kaban-o mot-ta.
 Taro-NOM Hanako-DAT she-GEN bag-ACC hold-PST
 ‘intended: Taro held Hanako her bag.’
- c. *Korean*
 *John-i Mary-hanthey kabang-ul cap-ass-ta.
 John-NOM Mary-DAT bag-ACC hold-PST-PLAIN
 ‘intended: John held Mary her bag.’
- d. *Luganda*
 Katonga ya-kwaant-i-dde Mukasa ensawo.
 Katonga 3SG.PST-hold-APPL-PST Mukasa bag
 ‘Katonga held the bag for Mukasa.’
- e. *Venda*
 Nd-o-far-el-a Mukasa khali.
 1SG-PST-hold-APPL-FV Mukasa pot
 ‘I held the pot for Mukasa.’
- f. *Albanian*
 Agimi i mban Drites canten time.
 Agim.NOM CL holds Drita.DAT bag.ACC my.
 ‘Agim holds my bag for Drita.’

Pylkkänen (2008) argues that this difference between English/Japanese and Luganda/Albanian can be sourced to the meaning of dative/appl in each language. While English dative case has properties of so-called “low applicatives”, which carry a *transfer of possession* interpretation, Luganda/Albanian dative/appl have properties of so-called “high applicatives”, whose meaning is flexible enough to include instrumental, benefactive, and malefactive interpretations as well. Thus, English dative cannot mean what *for* can, but Albanian dative can. *Hold*, being a stative verb, is incompatible with an argument that can only participate in a transfer of possession, but is compatible with a genuine benefactive argument.

Integrating her findings into my approach has the following result: the positions of XPs are determined by their category, regardless of their meanings, so there is nothing structurally different about the dative arguments in English/Japanese compared to the dative/applicative arguments in Albanian/Luganda. Their ability to appear in the context of a certain verb phrase, however, is limited by their meanings as well as their syntax.

To summarize, I have argued that there are essentially two ways to be an argument of a verb. The first is to be a DP argument of a verbal head. Those arguments are canonical “core” arguments of the verbs, i.e. subjects and objects. The second strategy is to be an argument of some non-DP phrase, which is c-selected by a verbal head. These arguments may be either “core” or “non-core”, depending on the meaning of X and the other argument introducing heads. Because the XP category is non-specific, XPs may be a variety of different kinds of constituents with different kinds of relationships to the main clause. Some may be clausal arguments, some may be indirect objects, some may be l-selected phrases such as the PP complement of *depend*, etc. Unless an XP is s- or l-selected by a specific verbal head, it may be c-selected in either of two positions, and thus should be structurally ambiguous.

L-selected XPs

I have argued that any XP that can compose with a verbal head via event identification has an in principle flexible distribution. Such an XP can be c-selected in either of two positions, and it can compose with the verb in either of those two positions. However, not every XP argument composes with verbs via event identification. Some arguments, e.g. DPs, compose with verbal heads via functional application, and some non-DP arguments presumably do as well. Some verbs might s-select for a propositional argument, for example, in which case an embedded clause would compose with the verb that selected it via functional application. Thus, not all non-DPs are predicted to have a flexible distribution; it depends on their semantic type and those of the present verbal heads.

Not every XP argument falls neatly into this picture, however. There are XP arguments, which appear to get their thematic interpretation from the verb (and thus should have a fixed position), but are not obviously s-selected by the verb. I suggested that such XP arguments are *l-selected* by verbs, as in (485). In (485a), for example, the complement of *on* does not receive a location interpretation but instead gets a theme-like interpretation, contrary to the meaning of *on*. Moreover, the verb *rely* does not s-select for a location argument, so there is no reason to suspect that an *onP* should be in the clause at all. Nonetheless, an *onP* is the only possible object of *rely*, and presumably gets its theme-like interpretation from the verb.

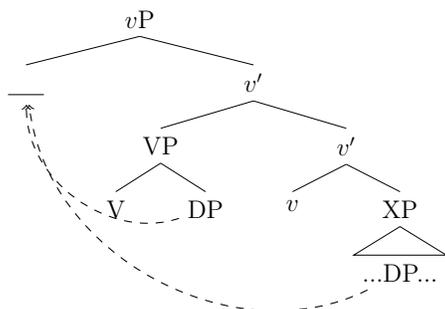
(485) L-selection for particular vocabulary items

- a. Sue relies **on**/***to**/***of**/***for** the bus.

- b. Sue bristled **at**/***to**/***of**/***for** Sally's insult.

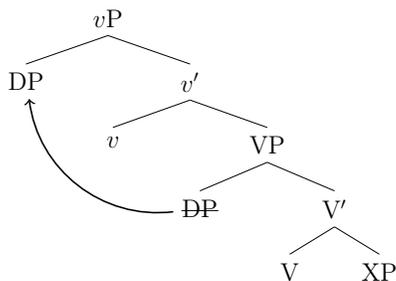
Chapter 3 also looked at other cases in which PP arguments were proposed to have a fixed position though not obviously being s-selected, though I did not specify that they were l-selected. For example, 1DP/1XP clauses whose DP arguments originated in VP were proposed to split into two verb classes: those with an alternation and those without. Those verbs that alternate (486) presumably have access to a structure where XP is an argument of *v*. Since the DP complement of X and the DP complement of V do not c-command each other in such a case, either one can become the subject. The verbs that do not alternate (487) were argued to only have access to a structure where XP is an argument of V, in which case the DP argument of V is the only argument that can become the subject.⁴

- (486) Alternating 1DP-1XP verbs: XP can be high



- a. Three famous actors starred in that film.
- b. There starred in that film three famous actors.
- c. That film starred three famous actors.
- d. Dust accumulated on the table. (Perlmutter & Postal, 1984)
- e. There accumulated dust on the table.
- f. The table accumulated dust.

- (487) Non-alternating 1DP-1XP verbs: XP must be low



- a. Such books appeal to Jo.
- b. There appealed to Jo only three books.

⁴Binding suggests that the high XPs in the alternating verbs are flexible like recipients and *by*-phrases (Norvin Richards, p.c.). The XP can be bound by a DP argument, meaning that these clauses are structurally ambiguous in the same way that ditransitives are, as is presumably expected for ditransitive unaccusatives.

- (ii) There starred in each other's films several famous actors.

- c. *Jo appeals such books (to).
- d. Amy's future matters to Beth.
- e. There mattered to Beth nothing more than Amy's future.
- f. *Beth matters Amy's future (to).

The non-alternating verbs in (487) share the puzzling properties of l-selection in (485): *appeal* and *matter* don't s-select for recipients/goals, and yet have *toP* arguments that obligatorily merge as V's complement. Meanwhile, the XP arguments of *star* and *accumulate* behave like normal PPs in that they are interpreted as location arguments and have a flexible distribution.

What makes verbs like *rely/appeal* special is that they appear to be interpreted with their prepositional complements non-compositionally – the meaning of *rely on the bus* cannot be gleaned from conjoining the interpretations of *rely* and *on the bus*. I therefore propose to treat cases of l-selection as we do expressions like *unruly* and *in cahoots*. On this view, it is the non-compositionality of (485) and (487) that gives l-selected XP arguments such a specific distribution and interpretation.

The expression *rely* (just as the expression *ruly/cahoots*) may or may not have an interpretation on its own. When *rely* merges with a location expression headed by *on*, however, the phrase that dominates them both acquires a special interpretation. Only arguments which are sufficiently local to the root may induce idiomatic interpretations (Marantz, 1984). The very limited distribution of l-selected XPs is thus proposed to be a product of their idiom-like status.⁵

6.2.2 Reflecting on our miniature functional hierarchy

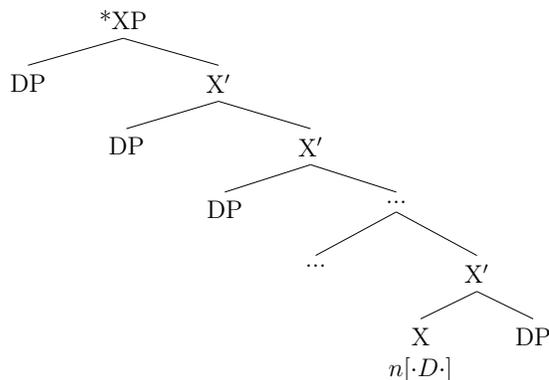
There is a conceptual puzzle that I have not yet addressed, namely what is so special about *v*? If every preposition is an argument introducer, just as *v* is, why is *v* endowed with the unique ability to c-select for both VPs and other XPs? In other words, why does our functional hierarchy single out the *v*-VP relationship with an explicit [*V*] feature on *v* but leave the position of non-DP/VPs unspecified? On an alternative view of the verbal domain with a more detailed functional hierarchy (cf. Pykkänen 2008; Ramchand 2008), several argument introducers each have a privileged position in the clausal spine, making none more privileged or distinctive than the others.

The present theory therefore contains a stipulated categorial distinction among argument introducers that is unaccounted for: *v* vs. V vs. P, where *v* c-selects for VPs, DPs and XPs, V c-selects for DPs and XPs, but P only c-selects for DPs. Despite this stipulation, I argue that the present theory is conceptually simpler than alternatives with a more detailed functional hierarchy.

⁵As Merchant (2019) argues, it may not actually be locality with the *root* that is required for successful l-selection, but rather locality with the category that combines with the root. In other words, it is locality with V that is required for the complement of *rely* rather than locality with the acategorial root $\sqrt{\textit{rely}}$ itself (as indicated by the structure proposed for (487)). I don't think this distinction is terribly important for my purposes – the point is that *on the bus* would not receive the same interpretation if it were instead *v*'s complement instead of V's complement. In the case of *rely*, however, it could actually be argued that the root is doing the selecting instead of V, given that its nominalization also requires an *onP*: *reliance on the bus*. On a view in which the root l-selects, however, the fact that *on* is not adjacent to the root in *reliance on the bus* poses a bracketing paradox along the lines of Pesetsky 1985.

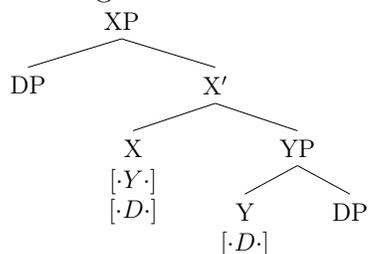
Some aspects of the categorial distinctions I have made are logical consequences of Feature Maximality: i.e. the notion that a head can only c-select for one constituent of a particular category rather than multiple. If a single head could introduce multiple DPs (with e.g. multiple [*D*] features), there would be no need for multiple argument introducing heads in the first place. We could imagine verbs with an unconstrained number of DP arguments, all of which were base generated within the same projection.

(488) Feature Maximality blocks $n > 1$ DPs in a single phrase



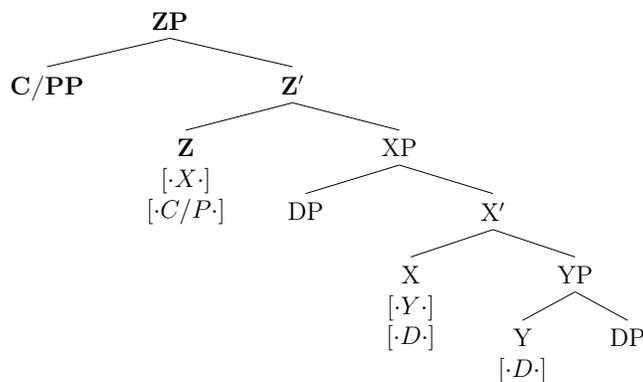
The fact that only one DP is licensed per maximal projection means we need at least two DP-selecting heads to build a transitive clause. One of those heads also needs to have a second feature in addition to its D feature in order to be able to merge both with a DP argument and with the other projection. Thus, the minimum requirement for building a transitive clause is that we have two functional projections, both of which select for DPs and one of which selects for the other.

(489) 2DP clauses require two projections with D features, and an extra feature for clause building



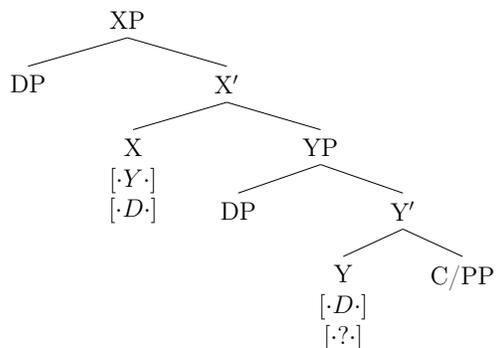
If the features in (489) were the only features on these heads, then we would not be able to build clauses with any other (selected) constituents besides those two DPs without adding new functional projections to the clausal spine. Clausal and prepositional arguments, for example, would entail a new functional projection with at least two features: a feature to license the clausal/prepositional argument and a feature to adjoin that projection to the main clause.

(490) A third argument would entail an extra projection with two c-selectional features



Chapter 3 offered arguments that there is no c-selective feature that specifically introduces clausal or prepositional arguments. The addition of an entire functional projection, whose sole function is to c-select for clauses or prepositions therefore seems suspicious. A much simpler transformation on the tree in (489) would have been to endow YP with an additional feature (so it has the same number of features as XP) that can be checked by clausal and prepositional arguments, as in (491).

(491) Giving YP an extra feature licenses 2DPs + a clausal/prepositional argument



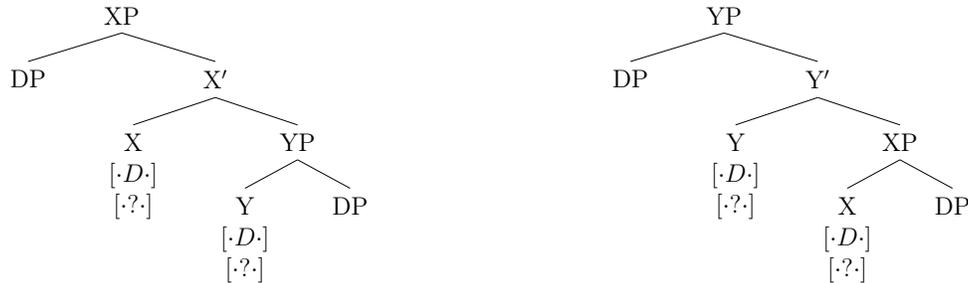
Having two functional projections, each of which can host a DP plus something else, is therefore the minimum requirement for having a transitive clause with an additional selected phrase such as a PP or CP. While the number of features on these two heads stems from a logical property of the system, the specification of those features is only partly entailed by the system. We could imagine either of two possible specifications for X and Y's second c-selective features: specific or non-specific. If these features are specific, then X can only select for a YP to check its non-DP feature – it couldn't have merged with a ZP. If these features are non-specific, then X can in principle merge with anything – its complement did not have to be Y.

Chapter 3 argued that the feature on Y that licenses CP/PP arguments is non-specific, i.e. that it can be checked by anything. This move allowed c-selection to be a property of categories rather than specific lexical items, capitalizing on the observation that the set of possible verb phrases is far smaller than the set of lexical verbs. Thus Y could host any kind of complement in order to satisfy the variable demands of different lexical items.

The simplest possible system would likely minimize the number of distinct kinds of syntactic objects. It would therefore be desirable to reduce the two projections XP and YP to one and the same kind of functional head. Given that Y was argued to have a D feature and unspecified feature, this simplest possible theory would also endow X with a D feature and an unspecified

feature. On this theory, XP and YP could come in any order in any clause because each could use its unspecified feature to host the other.

- (492) a. X selects for Y with its unspecified feature b. Y selects for X with its unspecified feature

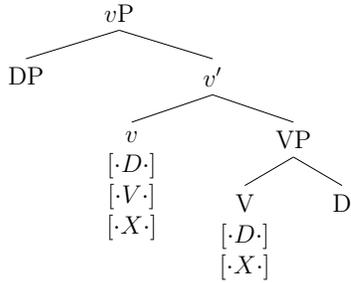


Empirically, however, we find a different picture. Active transitive clauses regularly make agent-like DPs the argument of the higher projection, suggesting that *something* must distinguish the two structures in (492) (i.e. something must tell you which lexical item corresponds to which terminal node such that the higher argument is always the argument of the agent-assigning head, etc.). I proposed to make this distinction categorial, in the sense that the two projections have different feature bundles, and refer to different lists of vocabulary items and encyclopedia entries in the lexicon. This choice led to a small functional hierarchy, in which one phrase selects the other and not vice versa.

Chapter 3 also showed that there are clauses which sometimes select for 2XPs (double XP verbs, passives of ditransitives, *bet* verbs). I argued that the existence of such clauses offered an additional argument for the categorial distinction between the two argument introducing heads in (492): the higher head (XP in (492a)) was argued to have a *superset* of the lower one's (i.e. YP's) features, because X has all of the features that Y has, but can also c-select for Y.

To unpack the argument more, recall that the motivation for an unspecified feature on Y was that there was no reason to posit a separate functional projection, whose sole purpose was to introduce prepositional or clausal arguments. By the same logic, clauses with multiple prepositional or clausal arguments should likewise not have such a functional projection, whose sole function is to introduce CP/PPs. We must therefore assume that at least two projections in the clausal spine are like Y in being able to host DP and non-DP arguments. The need for a third feature on one of those heads is then entailed by the possibility of multiple non-DPs in a clause – if both X and Y host a non-DP argument, one must have an additional feature to select for the other. Relabeling X as *v* and Y as V returns the picture of the verb phrase I proposed in Chapter 3.

- (493) The two functional projections in a transitive clause need to be different categories, and host non-DP arguments too



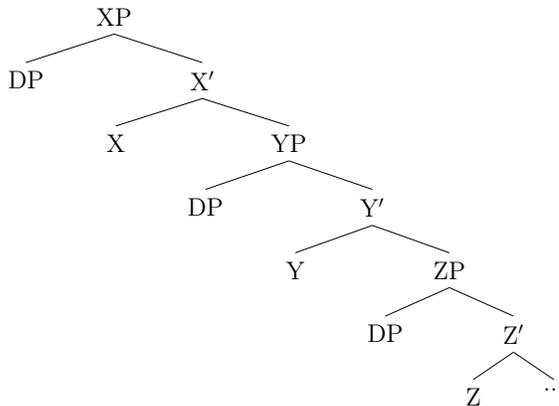
In sum, the two necessary functional projections for a transitive clause are enough to host every configuration of arguments observed in natural language, provided that each be able to host DPs and non-DPs, and one can host the other. In other words, language needs at least two argument introducers to come in some order to have the kinds of clauses that we see. Nothing about the system says *which* argument introducers need to correspond to those two functional projections, however. We see that subjects of transitive clauses typically receive agent-like theta roles, so we must suppose that the agent-introducing head is the privileged argument introducer that gets to be of category *v*. We could have imagined an alternative universe, however, in which the agent-introducer was a preposition and the recipient introducer got to be a *v* head. A language in that universe would have a different thematic hierarchy.

There are two related reasons why the present functional hierarchy is conceptually simpler than other, more articulated ones. The first is that the current functional hierarchy can be described by c-selection without enriching the space of syntactic categories. The second is that it requires fewer features overall.

The functional hierarchy that I have proposed can be reduced to the existence of a [*V·*] feature on *v*. *V* is a category that represents the set of verb roots in the lexicon. Thus *v* selecting VP is a straightforward instance of c-selection – one head bears a feature that specifies the category of its sister.

If we had a more articulated functional hierarchy, we would need to state some selectional relationship between the heads above *V* as well. In a three-part verb phrase, for example, one head needs to select for *V* and another needs to select for the head that selects for *V*. In other words, if (494) is a hypothetical functional hierarchy, *X* would need to select for *YP* and *Y* would need to select for *ZP*.

(494) A hypothetical three-part functional hierarchy

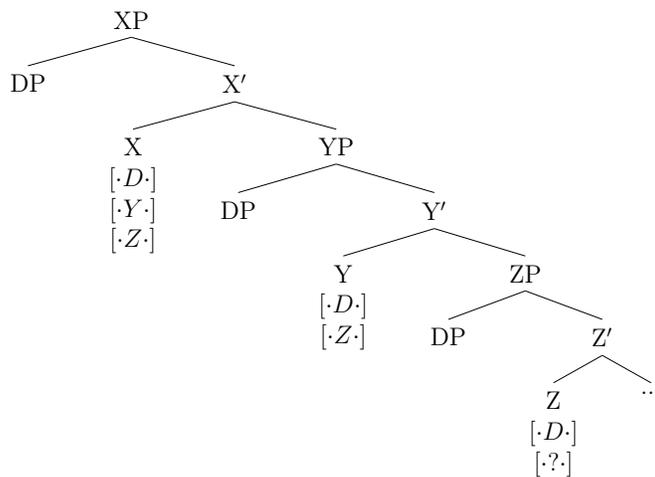


If all of these heads are argument introducers, however, none of them should s-select any of the others, but should compose via event identification. Therefore, nothing about the meanings

of these heads enforces a hierarchy between them. Likewise, if X *l-selected* for YP, then YP would presumably have to be a part of every clause in which there was an XP. Given that not every verb phrase has three arguments, it seems unlikely that every verb phrase realizes the full functional hierarchy.

The only mechanism with which we might describe the hierarchy in (494) is therefore c-selection, but that entails having more categories and features that Merge can refer to. An unspecified feature on X would never enforce YP as its complement, so X must bear a Y feature. Since not every clause contains a YP, X presumably also bears a Z feature so it can take a ZP complement in the absence of YP. Where before we only needed two distinct feature bundles to build a ditransitive clause, we now need three distinct syntactic categories to represent the hierarchy in (494).

(495) A three-part functional hierarchy entails three distinct verbal categories



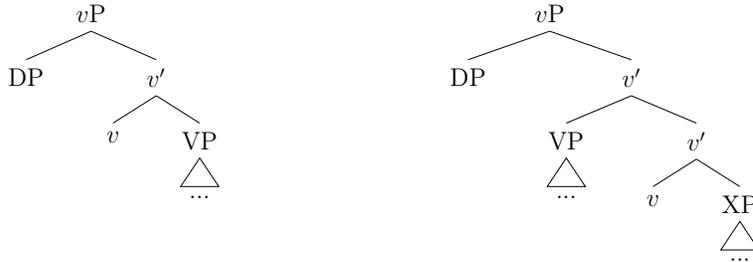
Every functional projection above the most embedded one whose position in the clausal spine is *enforced* by some specific feature therefore adds two features to the system: one on the head that selects it, and one that enables it to select for the next one. By having only a bipartite functional hierarchy, I have therefore maximally reduced the number of overall features we need, as well as the categorial distinctions we need to describe verb phrases with up to four arguments.

6.3 Morphology

This section aims to address two puzzles related to the formation and pronunciation of what we hear as the “verb” that are invited by my treatment of the verbal domain. I adopt the standard assumption that what we hear as the “verb” in (448) is actually a morphologically complex phrase, consisting of a root (V) followed by several affixes (-v-infl). Abstracting away from inflectional morphology, the first puzzle raised by this approach is that the formation of part of the verbal complex, namely V-v, is apparently unaffected by whether VP is merged as a complement or a specifier of *v* (496).

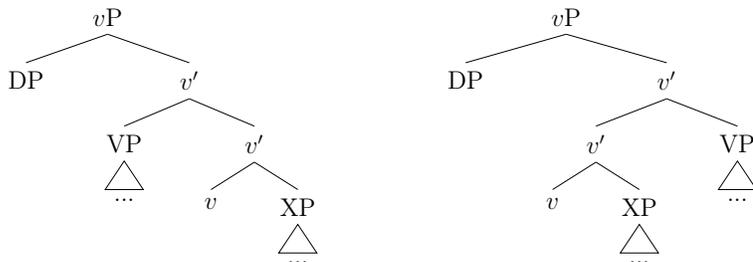
(448) a. Jo showed Lauri and Amy_i to each other’s_i parents in the mirror. (PP=V’s complement)

- b. Jo showed pictures of each other_i to Lauri and Amy_i. (PP=*v*'s complement)
- (496) VP can be either a complement or a specifier of *v* with no consequences for verb pronunciation



The second puzzle has to do with the linear position of the pronounced “verb” in clauses where VP is a specifier, and can thus be pronounced either on the left or on the right of *v*. Despite the flexible order between VP and *v*, the verb always appears to be pronounced in a fixed position in each language relative to arguments.

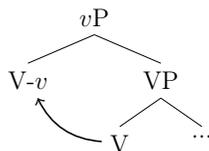
- (497) A VP-specifier’s linear position does not affect the verb’s pronounced position, only the relative order of internal arguments



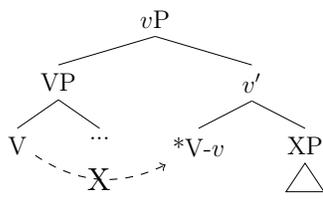
- (498) DO-IO vs. IO-DO word order: V is fixed
- Elmer **gave** [a fake present] [to Bugs].
 - Elmer **gave** [Bugs.DAT] [a fake present].

To address these puzzles, I first adopt a head-movement view of word formation, in which the phrase V-*v* is formed by moving V to *v* (either in the syntax or the post-syntax) to form a complex head (499). I assume that V can move to *v* to form a V-*v* complex if VP is *v*'s complement but not its specifier (Baker, 1988).

- (499) V-*v* formed by head movement

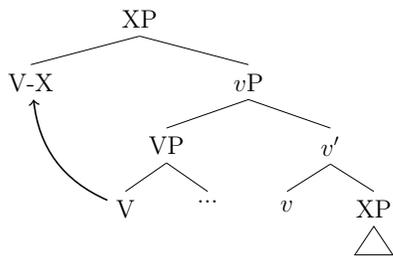


- (500) V-*v* blocked if VP is *v*'s specifier



However, I propose that the problem with (500) is *not* that V attempted to move out of a specifier, but rather that it tried to move to a non-c-commanding position. I propose that if V instead were to form a verbal complex with some head above *v*P, it would have no problem moving from the specifier of *v*P to the head of that higher projection.

(501) V-X permitted if *v*P is a complement of X and VP is *v*'s specifier

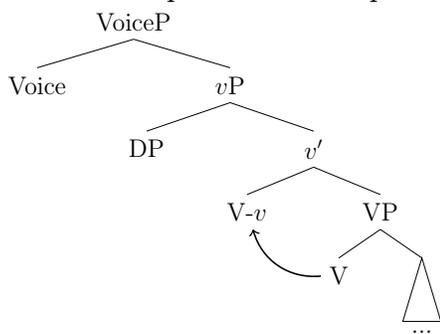


In sum, I propose that head movement is like phrasal movement in that it can cross both complement and specifier boundaries (see Section 4.3.2 for discussion on the CED). However, head movement is *unlike* phrasal movement in that it cannot tuck-in. With that in mind, I advance the following solution to the puzzle of V-*v* formation and pronunciation when VP is a specifier: I propose that there is a dedicated Voice projection (proposed to be the locus of the active/passive distinction) above the *v*P (Collins, 2005; Merchant, 2013) where the verb can be pronounced *if it cannot move to v*.

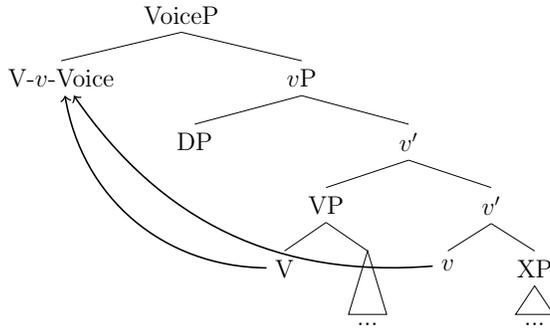
As a result, there are two ways for the verbal complex to be formed, depending on the configuration of VP relative to *v*. If VP is *v*'s complement, V can move to *v* to form the V-*v* complex, so neither one moves to Voice. If VP is *v*'s specifier, however, V cannot head move to *v* – both V and *v* must move separately to Voice to form the V-*v* complex. In effect, the verb is pronounced lower in clauses without a high XP than in clauses with one.

(502) Two ways to form a verbal complex

a. VP is a complement: roll-up head movement from V to *v*



b. VP is a specifier: V and *v* each move separately to Voice



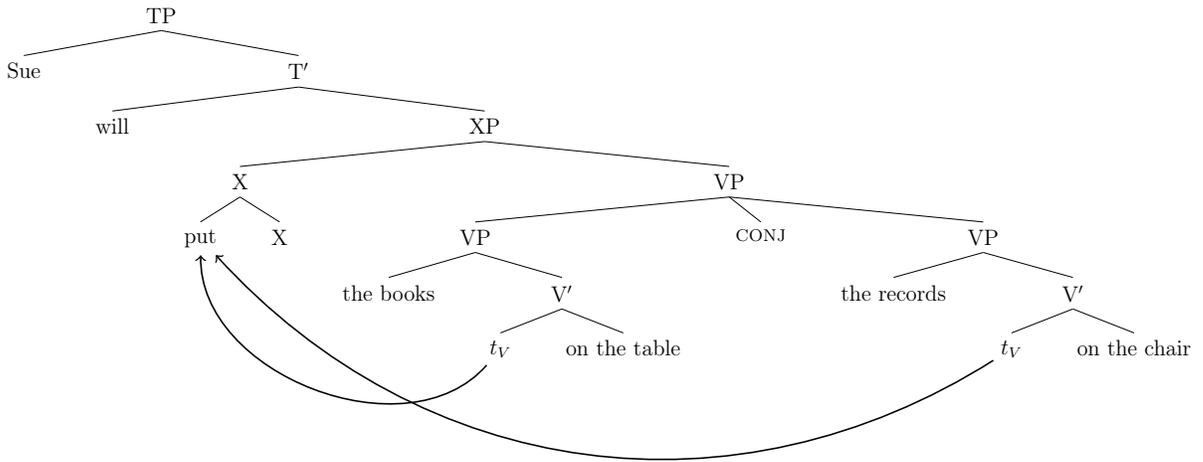
Sections 6.3.1 and 6.3.2 clarify and motivate these two claims with evidence from ATB head movement, active/passive mismatches in ellipsis, and word order in the dative alternation.

6.3.1 VP-specifiers and head movement

As discussed by Bowers (1993); Bailyn (1995) and Gribanova (2013), verbs can move across the board (ATB) out of coordinated VPs. Bowers argued that ATB head movement in English motivated the existence of some projection above VP (which he called PredP), to which verbs move in English. I argue that ATB head movement additionally leads us to another conclusion – that head movement can escape specifiers.

ATB head movement in English is shown in (503) for main verbs and (504) for auxiliary verbs. In (503), we see an example of VP coordination in which the verb has moved out of both conjuncts to a pre-coordinated-VP position. The presence of the auxiliary verb indicates that the landing position of the verb is below T (as expected for English, which only permits Aux-to-T movement, not V-to-T movement). In (504), we see the same possibility for auxiliary verbs – TP coordination in yes-no questions permits the auxiliary to ATB move to C out of both conjuncts. Bowers draws a flat structure for coordinated phrases, as in (503).

(503) Sue will put the books on the table and the records on the chair. (Bowers, 1993, p.603, ex.17)



(504) Auxiliaries moving ATB to C (Bowers, 1993, p.603, ex.18)

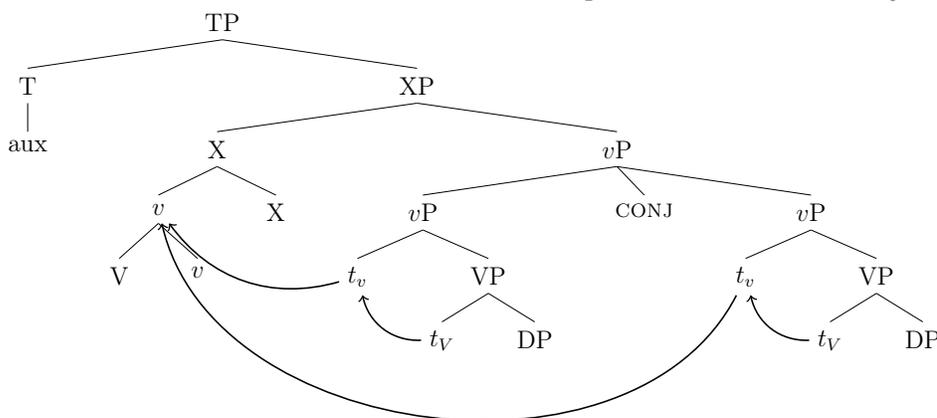
- a. Will John order fish and Mary choose steak, as usual?
- b. Did John read the book and Mary listen to the record, or vice versa?
- c. Is Mary eating steak and John gorging on veggies, as usual?

In (505), we see a Russian example of ATB head movement analogous to (503) – verbs can move ATB out of conjoined verb phrases to some position below the auxiliary verb *budet*. Gribanova (2013) suggests that (505) is actually an example of *vP* rather than VP coordination, in which case the Russian verb apparently ATB moves to some position above *v* but below the auxiliary. Gribanova also draws a flat structure for the coordinated *vPs* (as in (506)).

- (505) Petja budet priglalašat' Mašu v muzej segodnja, a Dinu v kino zavtra.
 Petja.NOM will.3SG invite.INF Maša.ACC in museum today CONJ Dina.ACC in movie tomorrow

‘Peter will invite Masha to the museum today, and Dina to a movie tomorrow.’ (Gribanova, 2013, p.96, ex.8)

- (506) Russian has ATB head movement to some position above the conjoined *vPs*



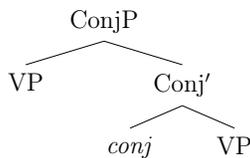
As argued by Bowers (1993) and Bailyn (1995), examples (503-505) cannot be analyzed as cases of gapping – they must be genuine instances of ATB head movement. Bowers shows that gapping is typically ruled out when each conjunct has more than 2 constituents (507). By contrast, VP coordination is not picky about the number of constituents in each conjunct (508). Bailyn replicates this contrast for Russian in (509) compared to (505).

- (507) Gapping restricts the number of constituents in a conjunct (Bowers, 1993, p.604, ex. 20)
- a. *Mary put the books on the table and Sue \emptyset the records on the chair.
 - b. *John persuaded Mary to leave and Bill \emptyset Sue to stay.
 - c. *Mary considers John a fool and Sue \emptyset Bill a wimp.
 - d. *Sue read the book yesterday and Harry \emptyset the article today.
 - e. *Harry bought a book at 6:00 in Harvard Square, and Fred \emptyset at 9:15 in Brooklyn.
 - f. *On Thursday Harry bought a book from Bill, and on Friday Fred \emptyset from Ralph.

- (508) VP coordination permits more than two constituents in each conjunct (Bowers, 1993, p.604, ex. 21)
- I wrote a letter to Mary in the morning and a note to Max during the afternoon.
 - I wrote nothing to Mary in the morning and hardly anything to Max in the afternoon.
 - John gave the books to Mary at Christmas and the records to Sue on New Year's Eve.
 - Sue learned Latin in school this year and French from her mother the year before.
- (509) *Russian*: gapping restricts number of constituents inside each conjunct (Bailyn, 1995, fn. 17)
- *Maria položila knigi na stol i Nataša Ø gazety na stul.
 Maria put books.ACC on table and Nataša ša papers.ACC on chair
 intended: 'Maria put the books on the table and Natasha the newspapers on the chair.'
 - *Maria našla Sašu p'janym i Nataša Borisa trezvym.
 Maria found Saša.ACC drunk.INST and Nataša Boris.ACC sober.INST
 intended: 'Maria found Sasha drunk and Natasha Boris sober.'

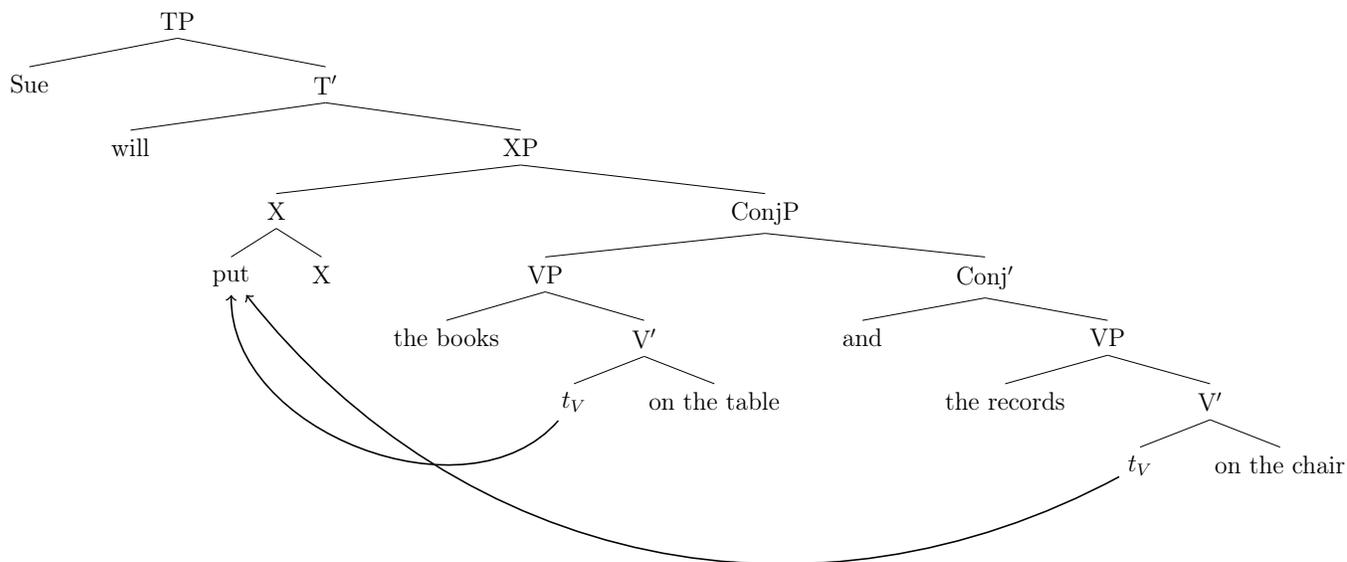
Assuming that (503-505) demonstrate true ATB head movement, it must be possible for heads to move out of both conjuncts in e.g. (503) and (505). On the flat structures given by Bowers and Gribanova, it is possible (though not completely obvious) to make the case that both conjuncts act as the complement of the X head to which the verbs move. However, there are good reasons to suspect that coordination does not have a flat structure as in (503), but rather a normal binary branching structure as in (510) (Johannessen, 1993, 1998; Kayne, 1994; Radford, 1993, a.o. see Progovac 1998 for a comprehensive review). On such a view, at least one of the conjuncts has to be a specifier, in which case head movement must be able to escape specifiers.⁶

- (510) Binary branching VP coordination (Johannessen, 1993, 1998; Kayne, 1994; Radford, 1993, a.o.)



- (511) ATB head movement from a binary branching coordinate structure

⁶On this view, head movement from the second conjunct would incidentally also have to violate the head movement constraint by skipping the conjunction head en route to its landing position. According to Harizanov & Gribanova (2019), ATB head movement therefore patterns like regular internal Merge, rather than a unique word-formation mechanism, in that it can skip heads and cross specifier boundaries. See Harizanov & Gribanova (2019) for discussion.



A binary branching structure for coordination is motivated by constituency tests (amongst other diagnostics – see Progovac 1998). The structure in (510) predicts an asymmetry between the first and second conjuncts: the first conjunct cannot form a constituent with *and* to the exclusion of the second conjunct; the second conjunct may form a constituent with *and* to the exclusion of the first conjunct. This prediction is well known to be borne out, as shown in (512-514), which is difficult to explain on the flat structure, but straightforward on the binary branching structure.

(512) Intonation breaks (Ross, 1967)

- a. John left. And he didn't even say goodbye.
- b. *John left and. He didn't even say goodbye.

(513) Conjunct extraposition with *and* (Collins, 1988a,b; Munn, 1993)

- a. John read a book yesterday, and the newspaper.
- b. *John read the newspaper yesterday, the book and.

(514) Etc. replaces the last conjunct+*and* (Zoerner, 1995)

- a. I bought jam, bread, etc.
- b. *I bought jam, bread, and etc.
- c. *I bought jam, etc. bread.

I therefore conclude that in order for ATB head movement to exist, it must be possible for heads to move out of specifiers just as they move from complements.⁷ Section 6.3.2 argues that verbs must move to a position above *vP* when *VP* is a specifier, namely to *Voice*.

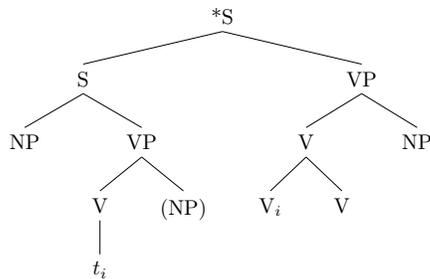
⁷The present picture of head movement is compatible with Baker (1988), though he expresses conditions on head movement in different terms. Baker proposes that heads cannot incorporate from a specifier onto the head that introduced the specifier (iii), because heads do not govern their specifiers. However, he offers a treatment of certain control clauses in which *VP* fronting enables an embedded verb to incorporate onto the matrix verb. On his view, head movement is successful because the matrix verb governs the *VP* specifier of *CP*. As a result, his view is much like mine – head movement can escape specifiers, but head movement cannot tuck in.

6.3.2 Pronouncing the “verb”

In Chapter 4, I motivated a view of the dative alternation in which ditransitive clauses have two kinds of ambiguity: structural and linear. The XP argument in a ditransitive may be either the complement of V or the complement of *v* (structural ambiguity), and in the latter case, VP may be linearized to the right or to the left of *v*' (word order flexibility). What is unsurprising about the dative alternation, on my view, is that the relative order of direct and indirect objects is variable within many languages' ditransitives. Heavy specifiers need not be pronounced on the left in many languages, so arguments of V may have a flexible order relative to arguments of *v* (as shown in (515b)).

- (515) Two ditransitive structures
 a. XP is low: DP must linearly precede XP

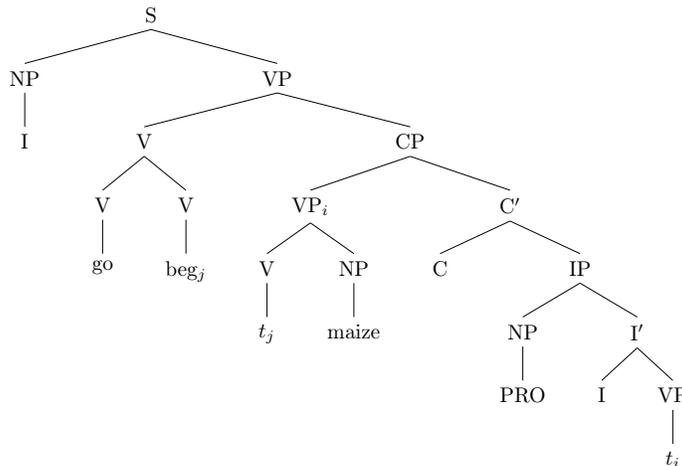
(iii) Baker (1988):159's banned incorporation configuration

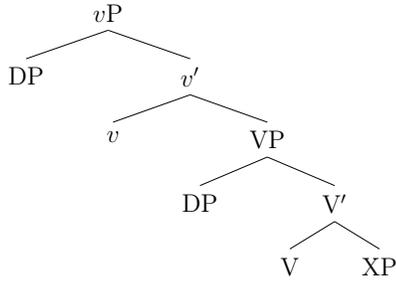


- (iv) Ndi-**ka-pemp**-a pamanga.
 1SS-**go-beg**-ASP maize
 'I am going to beg maize.'

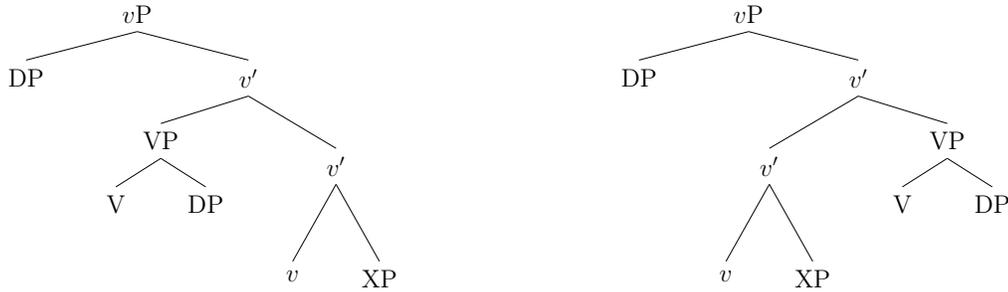
Chichewa; Watkins (1937)

(v) Baker (1988):204's structure for (iv)





b. XP is high: DP-XP order depends on position of VP



While the position of arguments relative to each other may be flexible in many languages' ditransitives, the position of the *verb* relative to both arguments is usually fixed. In English, for example, the verb always precedes both arguments, regardless of their relative word order. In Japanese, a head final language, the verb always *follows* both arguments, regardless of their relative word order. Thus, while the relative order of arguments is determined transparently by structure, the position of the verb apparently is not. The verb would have to be pronounced in V in (516/517a) but in *v* in (516/517b) in order for the linear position of the verb to be read off of the structures in (518) and (519).

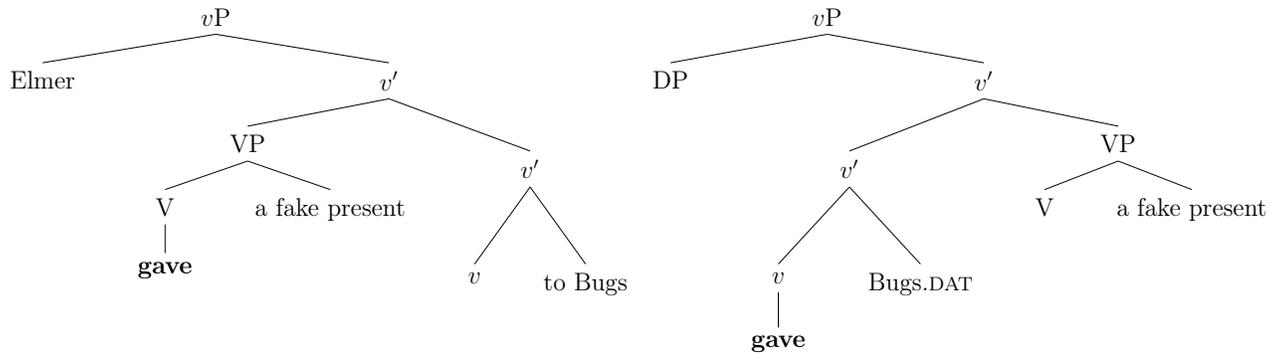
(516) *English*

- a. Elmer **gave** [a fake present] [to Bugs].
- b. Elmer **gave** [Bugs.dat] [a fake present].

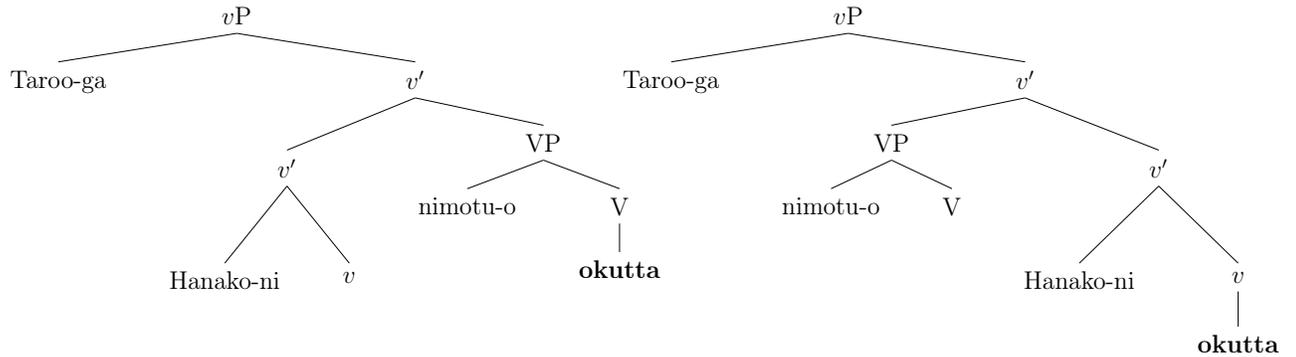
(517) *Japanese* (Miyagawa & Tsujioka, 2004, ex. 10)

- a. Taroo-ga [Hanako-ni] [nimotu-o] **okutta**.
Taro.NOM Hanako.DAT package.ACC sent
'Taro sent Hanako a package.'
- b. Taroo-ga [nimotu-o] [Hanako-ni] **okutta**.
Taro.NOM package.ACC Hanako.DAT sent
'Taro sent Hanako a package.'

(518) English (head initial) high XP structures with variable word order

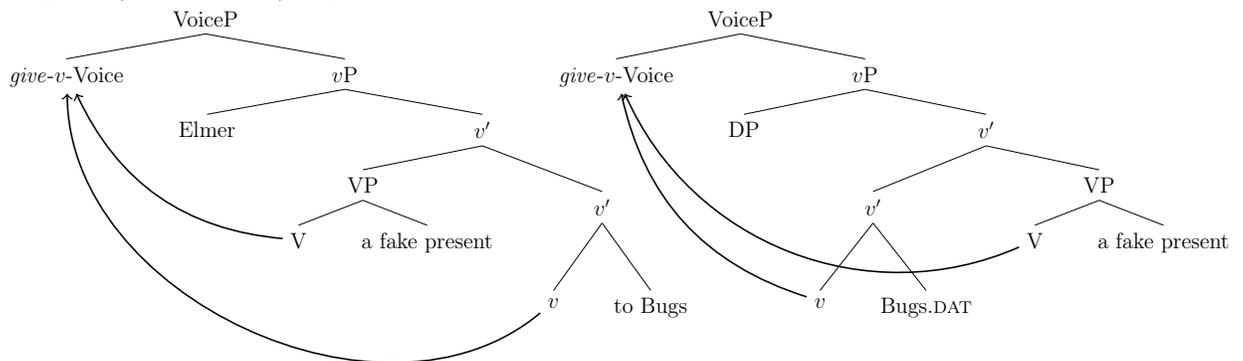


(519) Japanese (head final) high XP structures with variable word order

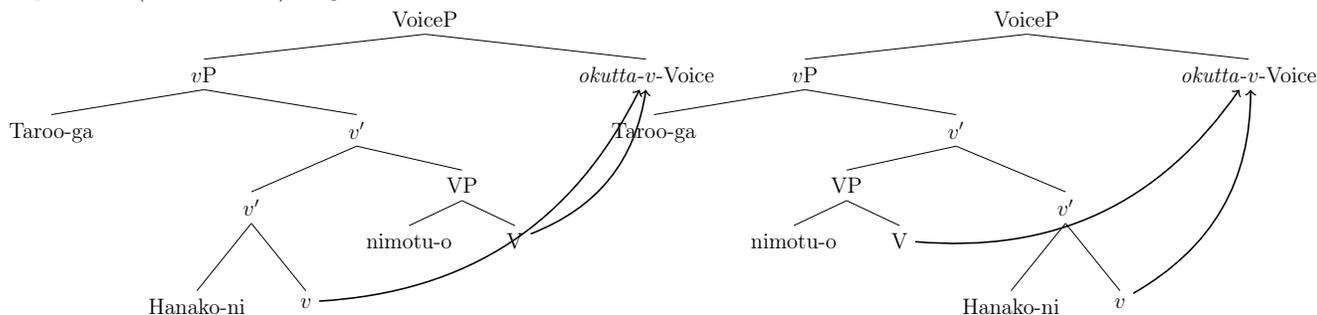


Unless the pronounced position of the verb is allowed to vary in the dative alternation (i.e. V in one variant but *v* in the other), in order for the verb to have a fixed position in the English and Japanese dative alternation, there needs to be some position above *v*P but below the derived subject position to which the verb moves. In Chapter 2, I adopted the clause structure proposed by Collins (2005) and Merchant (2013), in which a Voice head controlling the active/passive distinction is projected above *v*P. This Voice head was proposed to be the locus of subject agreement in the Mayan languages. I now propose that it is also the position in which the verb is pronounced in English (and potentially Japanese) ditransitives. Hence, the position of the verb is fixed in both languages, while the relative positions of the internal arguments are not.

(520) English (head initial) high XP structures with head movement to Voice



(521) Japanese (head final) high XP structures with head movement to Voice



Merchant argues in favor of a) a dedicated Voice projection, and b) its placement *above* the base position of the subject based on evidence from active-passive mismatches in VP ellipsis. He shows that the size of an elided constituent affects whether its value for Voice must match that of its antecedent. When the elided constituent is a VP (522), it is possible to find examples where the antecedent is active but the elided portion is passive and vice versa. When the elided constituent is a TP (523), however, no such mismatches are permitted.

(522) Voice-mismatches in VP-ellipsis

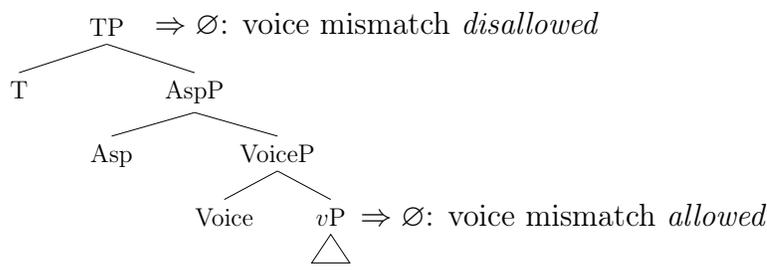
- a. The janitor must remove the trash whenever it is apparent that it should be <removed>. (active antecedent, passive ellipsis)
- b. The system can be used by anyone who wants to <use it>. (passive antecedent, active ellipsis)

(523) No Voice-mismatches in sluicing

- a. *Jo was murdered, but we don't know who. (passive antecedent, active ellipsis)
- b. *Someone murdered Joe, but we don't know who by. (active antecedent, passive ellipsis)

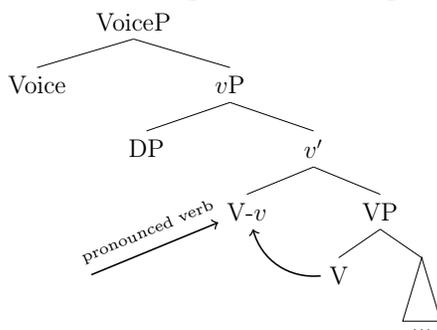
Merchant argues that the facts in (522) and (523) motivate the clause structure from Collins (2005) in (524). He proposes that the active/passive distinction that is relevant to the identity condition on ellipsis is stored in a Voice projection above the *vP*. Elided material c-commanded by Voice therefore takes as an antecedent material that is also c-commanded by Voice, and does not include Voice itself. As a result, VP ellipsis (or more accurately *vP* ellipsis) is insensitive to the voice on the clause containing the elided constituent, and that of the antecedent clause, because the elided portion has no Voice value. By contrast, sluicing (TP ellipsis) elides a constituent that contains the Voice head. If the elided constituent has a Voice head with a different value than that of its antecedent, the identity condition on ellipsis is not met, and the result is ungrammatical.

(524) Voice mismatches permitted if something smaller than VoiceP is elided, but not if something larger is elided



Having motivated the existence of a Voice head above vP , is it reasonable to suppose that the verb is typically pronounced there? In general, it is *not* likely that the verb is pronounced in Voice (in English), or else the verb would not be elided with its vP in (522). I therefore conclude that in the kinds of monotransitive clauses we see in (522), in which VP is presumably the complement of v , the verb must be pronounced vP -internally.

(525) VP is v 's complement: verb pronounced vP -internally, deleted in vP ellipsis



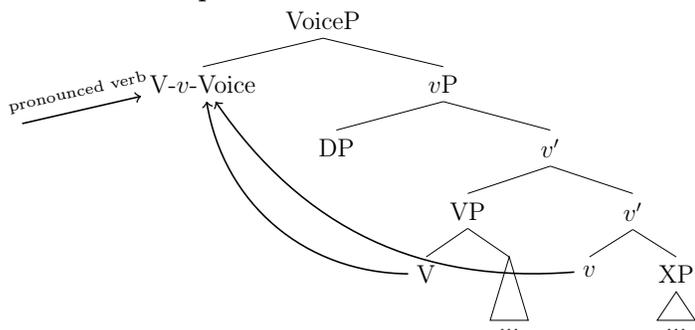
In ditransitive clauses where VP is *not* a complement of v , however, I have shown that the verb cannot have a consistent pronunciation location, nor can V and v form a morphological unit in vP . I have therefore proposed that in this *specific* situation, V and v must move to Voice. The proposal that verbs *must* move to Voice in clauses where VP is a specifier (but not otherwise) therefore makes the following prediction: any clause with a VP specifier (e.g. high XP ditransitives and 2XP clauses) in which some constituent containing the verb has been elided should not permit a Voice mismatch. If the verb is pronounced in Voice, an elided constituent containing the verb must also contain Voice. Hence, “ vP ”-ellipsis in double object constructions is predicted to pattern like sluicing rather than vP ellipsis in rejecting a Voice mismatch.

Looking closely at all of Merchant’s examples of active/passive mismatches under ellipsis, there is a striking gap – none of his examples are of double object constructions. Attempting to formulate my own minimal pairs with (522) reveals that Voice mismatches in ellipsis with double object clauses are quite bad. This result is expected if the position of the pronounced verb is different in double object constructions compared to monotransitive clauses.

(526) Voice mismatches in double object constructions not permitted

- a. ??/*The janitor must give the animals food whenever it is apparent that they should be <given food>.
- b. ??/*The system can be given your personal information by anyone who wants to <give it your personal information>.

- (527) Voice mismatches in double XP clauses not permitted
- a. ??/*The janitor should rely on the superintendent to call in a plumber whenever it is clear that his manager can't be <relied upon to call in a plumber>.
 - b. ??/*The system can be relied upon to store personal information by anyone who has to <rely on it to store personal information>.
- (528) VP is *v*'s specifier: V and *v* each move separately to Voice; VoiceP ellipsis does not tolerate active-passive mismatches



In sum, it appears that formation of a V-*v* complex is a requirement for pronunciation of the verb. If VP is *v*'s complement, the verb can be pronounced in *v* after V head moves to *v*. If VP is *v*'s specifier, however, V cannot move to *v*. In order for them to form a morphological unit, V and *v* must each move separately to Voice.⁸ If the verb is pronounced in Voice, eliding it entails eliding a VoiceP. Therefore, double object structures are correctly predicted not to tolerate Voice mismatches in ellipsis, because such structures contain a VP specifier of *v*, in which case the verb must be pronounced in Voice.

6.4 Conclusion

One of the main goals of this dissertation was to identify syntactic arguments for an underlying set of conditions on verb phrase formation. The interactions between syntactic processes such as passivization, wh-movement, and agreement motivated a picture of the verb phrase with a bipartite functional hierarchy, i.e. a functional hierarchy with only two verbal heads, which contain rules for combining these verbal heads with DPs, non-DPs, and each other.

In this chapter, I showed that this picture of the verb phrase, though different from proposals with more articulated verb phrase structures, is compatible with existing assumptions about the syntax-semantics and syntax-morphology interfaces. In particular, I argued that non-DPs that are not s- or l-selected are interpreted via event identification, and therefore have a flexible distribution. I also proposed that the pronounced position of the verb was sensitive to whether it could head-move to *v* to form the V-*v* complex. When VP is *v*'s complement, I proposed that V could move to *v* straightforwardly. When VP was *v*'s specifier, however, both V and *v* needed to move to a higher position to form a complex phrase, namely Voice.

⁸It is not clear whether there are conditions on the internal structure of the V-*v*-Voice complex. For example, if *v* moves to Voice before V does, we might expect the internal structure of the complex head to be [V-[*v*-Voice]]. Whether anything enforces a particular order of head movement, or whether any of the possible complex head structures are ruled out by output constraints is a topic for future research.

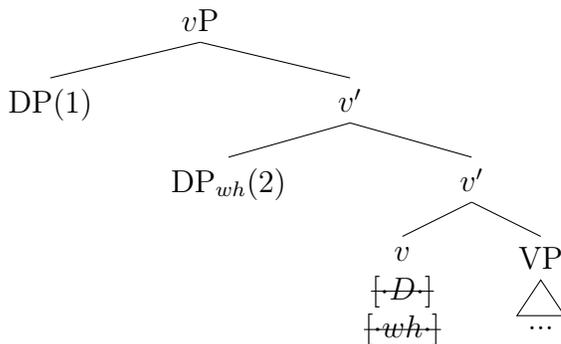
Chapter 7

Conclusion

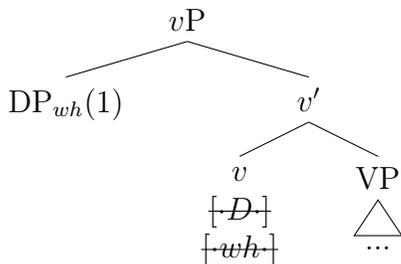
In this thesis, I have investigated some of the consequences of treating Spec v P as both an argument position and a target for successive cyclic wh-movement. I proposed, following Longenbaugh (2019), that these two functions of v could be represented as Merge features specified for DPs ($[\cdot D \cdot]$) and wh-phrases ($[\cdot wh \cdot]$) respectively. Considering only those two features predicted a small typology of possible v Ps in wh- and non-wh-contexts.

In clauses with no wh-movement, only a DP should be merged in Spec v P, which I proposed becomes the surface subject. In clauses in which a DP undergoes wh-movement, however, v can host either one or two specifiers depending on whether the surface subject is also the wh-phrase. I proposed conditions on feature checking and specifier ordering that yielded the following options for wh-moving a DP: either the wh-phrase is not the surface subject (option 1) and v hosts two specifiers, or the wh-phrase is the surface subject (option 2) and v hosts only one specifier.

- (13) Option 1: v hosts two specifiers, a non-wh-DP and a wh-DP



- (14) Option 2: v hosts one specifier, a wh-DP



I further proposed that the structures in (13) and (14) are in principle agnostic about

what kind of Merge created each specifier. In other words, I posited no constraints on Merge that would require, for example, (13) to come about only if the wh-phrase arrived in Spec *v*P via *movement* – both internal and external Merge can create the specifiers that check each of *v*'s requirements for DPs/wh-phrases, provided that the result is both pronounceable and interpretable.

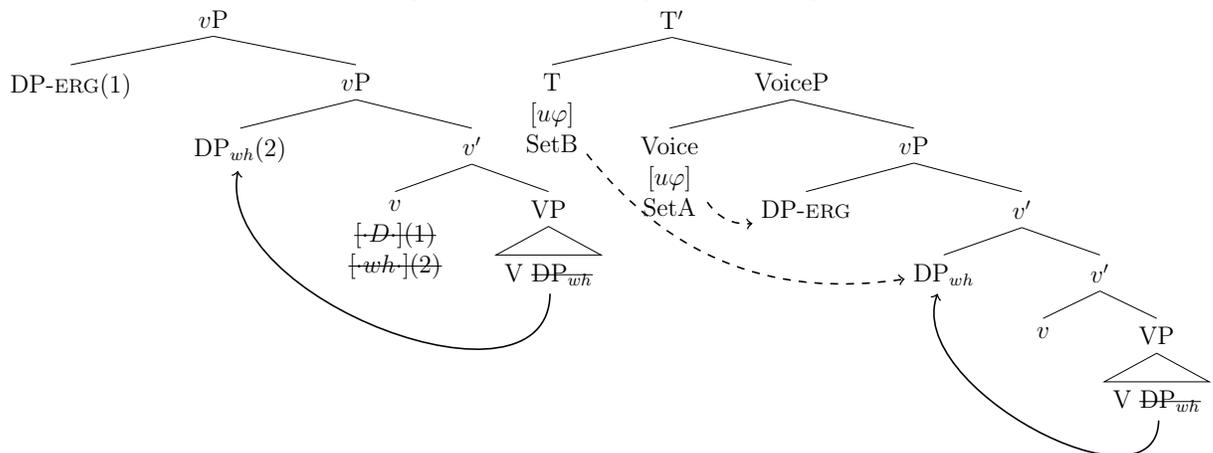
One of the goals of the thesis was to explore if any other aspects of the theory determine which argument may be the surface subject in a given context, which should tell us whether both (13) and (14) are viable derivations for a wh-question in that context. Importantly, wh-movement, A-movement, and external Merge were all argued to apply under the same conditions, with no intrinsic ordering between them, meaning that the conditions governing what argument is the surface subject in a non-wh-context may be different than those in a wh-context – the number of specifiers licensed by *v* is potentially different in each case, and the number of features checked in a given Merge step is potentially different in each case.

I proposed that the order of Merge is affected by subset relations between feature bundles, with the following results: in order for a wh-question to look like (13), *v*'s [*D*] feature needs to be checked by a non-wh-phrase *before* *v*'s [*wh*] is checked by a wh-DP. Otherwise, if a wh-DP merges first, it will check both features and result in (14).

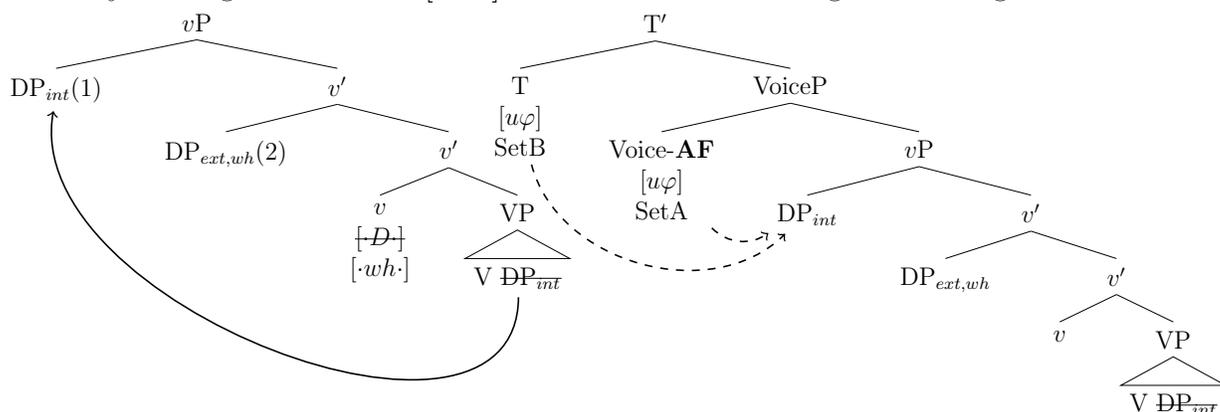
If a wh-DP is *externally* merged in Spec *v*P, since Merge and Move are unordered, both (13) and (14) are possible: the derivation can check [*D*] first by moving a non-wh-DP and check [*wh*] second by merging a wh-DP (resulting in (13)), or it can check both at the same time by first merging the wh-DP (resulting in (14)). Since transitive subjects are always externally merged in Spec *v*P, UG therefore provides two ways to construct *v*P when a transitive subject wh-moves.

I proposed that the choice between each option was parametric across languages: English transitive subject questions utilize derivation (14) while certain Mayan languages choose (13). As a result, certain Mayan languages' transitive subject questions look morphosyntactically as though the logical object is the surface subject. The fact that the relative order of specifiers is different for transitive subject vs. transitive object wh-questions predicts a different agreement alignment in each context.

(529) Transitive object wh-questions: transitive subject merges first, checking [*D*], transitive object wh-moves second → regular transitive agreement alignment



- (530) Transitive subject wh-questions: transitive object moves first and checks $[\cdot D \cdot]$, transitive subject merges and checks $[\cdot wh \cdot]$ second \rightarrow intransitive agreement alignment = AF

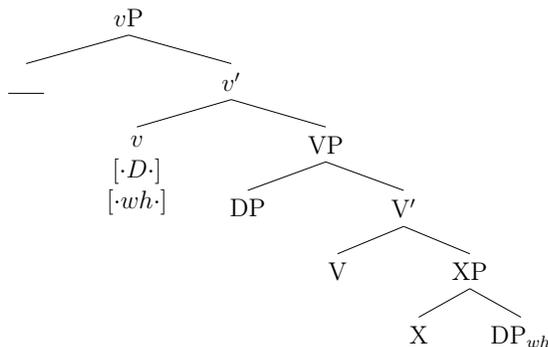


- (76) *Anti-redundancy*: two adjacent φ -probes that cross-reference the same argument X must delete the lower instance of X's features.

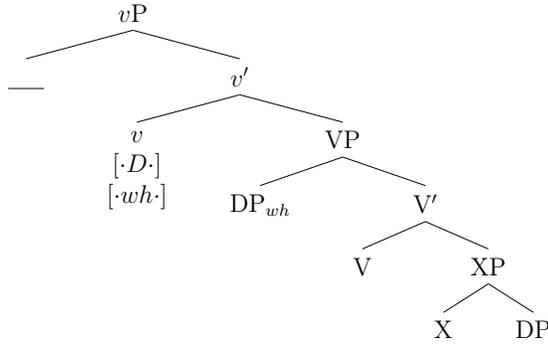
If a wh-DP is *internally* merged in Spec *vP*, whether both (13) and (14) are possible depends on whether other potential DP specifiers would be internally vs. externally merged. If another DP specifier needs to be externally merged, only (13) is permitted, in which external merge precedes wh-movement (as in the object wh-question in (529)).

If another DP specifier would have to be internally merged, locality considerations may determine which of (13) vs. (14) are possible. For example, I assumed that a structure like (531a) would have to feed derivation (13), while a structure like (531b) would have to feed derivation (14). The goal of Chapter 3 was to develop the feature logic in the context of verb phrase construction more generally, so we can predict the typology of structures that feed derivations (13) and (14).

- (531) a. DP c-commands $DP_{wh} \rightarrow$ derivation (13)

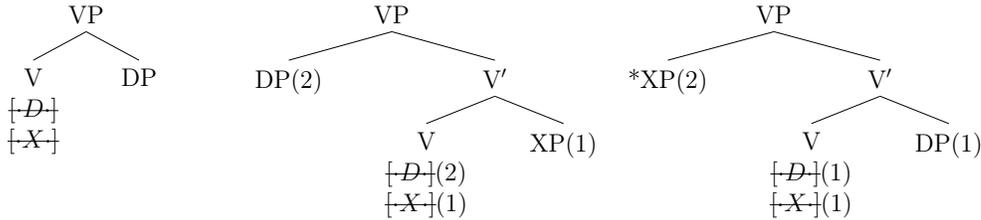


- b. DP_{wh} c-commands DP \rightarrow derivation (14)

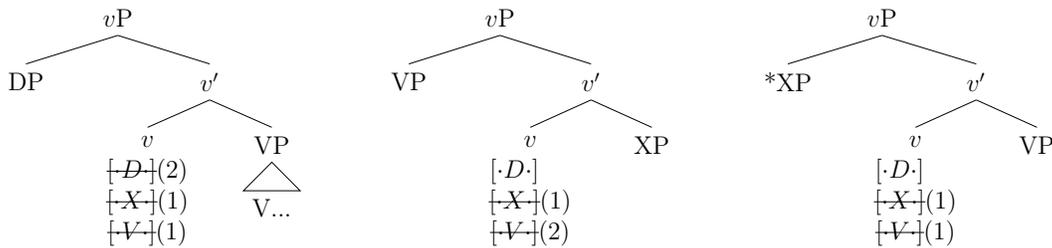


In Chapter 3, I concentrated on the distribution of DP and non-DP arguments in verb phrases without *wh*-movement, arguing that non-DP arguments are complements in their selecting phrases. This is because non-DP arguments were proposed to be introduced by the feature $[\cdot X \cdot]$, which is unspecified for category. Since non-DP arguments can only check a subset of the features that DPs and VPs can check (DPs can check both $[\cdot D \cdot]$ and $[\cdot X \cdot]$; VPs can check both $[\cdot V \cdot]$ and $[\cdot X \cdot]$), non-DP arguments must merge with their selecting head (V/v) first, before anything else merges with that selecting head, and hence are necessarily complements of either V or v . Moreover, I argued that “non-core” arguments such as indirect objects are often represented as non-DPs, and are thus often complements in their selecting phrases.

(48) *The non-DP first theorem*: if V selects for a non-DP, the non-DP must be merged first.

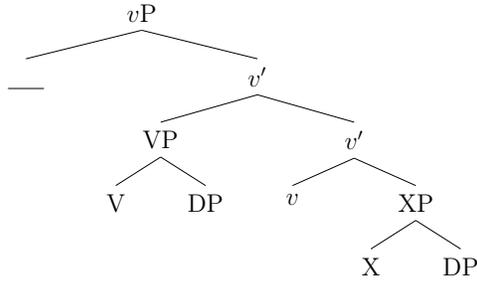


(185) *vPs*: an XP (non-DP, non-VP) is only licensed if it merges first \rightarrow makes VP a specifier.



When V merges with a non-DP argument, and v does not, no unusual looking structures are predicted. However, when v merges with a non-DP argument, it is predicted to do so *before* v merges with VP. The result is the structure in (532), in which the arguments of V and the complement of v do not c-command each other.

(532) The unconventional *vP* structure: VP is a specifier



The predicted structure in (532) is particularly interesting given the assumption that locality constrains movement. Assuming relativized minimality (Rizzi, 1990), the structure in (532) predicts A-movement to Spec *v*P from either VP or XP to be allowed, since the contents of each do not c-command each other. The predicted symmetry in A-movement in structures like (532) is observed in many languages’ (e.g. Norwegian) passives of ditransitives, as evidenced by the fact that either internal argument may raise to subject position in (56). Chapters 4 and 5 investigated how agreement and wh-movement interact with structures like (532).

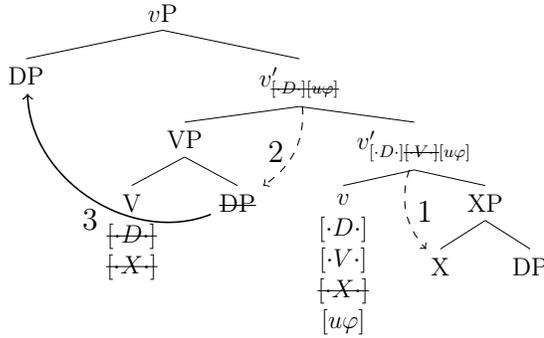
(56) *Norwegian symmetric passives* (Haddican & Holmberg, 2015, ex. 145)

- a. Boka ble gitt Jon.
the.book was given Jon
‘The book was given to Jon.’
- b. Jon ble gitt boka.
Jon was given the.book
‘Jon was given the book.’

Although c-command does not offer a metric by which to measure how close each DP in (532) is to Spec *v*P, there is still a structural asymmetry between them: XP is a complement and VP is a specifier of *v*. The complement-specifier distinction ensures that there is a stage in the derivation in which the contents of X are accessible to operations at *v*’ before VP has been merged. I proposed that the complement-specifier distinction becomes important in two contexts: 1) when *v* has a φ -probe, and 2) when X’s complement wh-moves.

I adopted a version of Béjar & Rezac (2009)’s proposal that φ -probes always search their complements for a φ -goal before they can search their specifiers. Couched in the feature projection logic outlined in Chapter 3, this proposal has the following consequence: if *v* has a φ -probe, it must search the domain of *v*’s complement before any of *v*’s features can project to a position from which to search any specifiers. In a structure like (322), which was proposed to correspond to a double object construction, the complement-specifier distinction enforces agreement with the complement XP before anything in the domain of VP can check any of *v*’s features. The locality of Agree was thus proposed to account for dative intervention effects in Greek passives of ditransitives (a version of Anagnostopoulou 2003, updated with the framework assumptions outlined in this thesis) – the direct object argument of V cannot raise to subject position until the indirect object has been targeted for agreement (which results in clitic doubling instead of agreement+movement due to case discrimination, along the lines of Béjar & Rezac 2003; Preminger 2009, 2014).

(322) Languages that have a φ -probe on *v*: [$\cdot D \cdot$] and [$u\varphi$] stay low until [$u\varphi$] has attempted to agree with XP



- (58) To vivlio ?*(**tis**) charistike (tis Marias).
 the book.NOM cl.GEN award.NACT the Maria.GEN

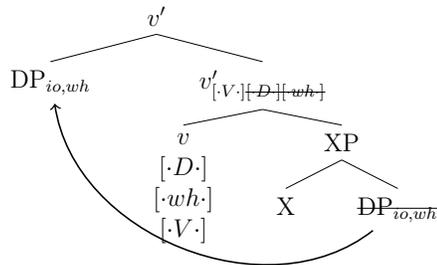
‘The book was awarded to Mary.’ (*Greek*: Anagnostopoulou 2003, ex. 33)

In languages that lack a φ -probe on v , raising from either VP or XP to Spec v P should be permitted, as was observed in Norwegian. However, I proposed that if the complement of X is a wh-phrase, the complement-specifier distinction can again introduce an asymmetry. When the complement of X is just a DP, and not a wh-phrase, it can only ever check one feature on v . Since VP can also only check one feature on v , moving the complement of X and merging VP with v' are two possible, unordered operations controlled by the most embedded v' node – neither operation bleeds or feeds the other, and neither one checks more features than the other. However, when the complement of X is both a DP and a wh-phrase, moving it to Spec v P can now check *two* features on v , while merging VP can only check one. In this case, I proposed a version of van Urk & Richards (2015)’s Multitasking condition, which enforces early wh-movement in this context. As the complement of X wh-moves, it also checks v ’s $[\cdot D\cdot]$, becoming the surface subject of the clause.

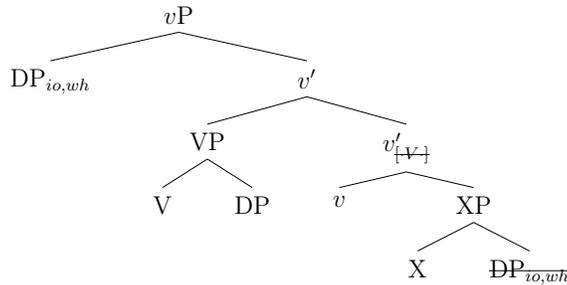
- (404) *Multitasking* constrained (revised from van Urk & Richards 2015):

At every step in a derivation, if two operations A and B are possible, and A checks more features than B, the grammar prefers A, *unless* doing B would check a proper subset of the features checked by A.

- (402) a. Step 1: Merge XP complement. Step 2: wh-move indirect object



- b. Step 3: Merge VP (tucks in).



(403) Who was given a book?

The Multitasking effect was proposed to explain the DOMA (Holmberg et al., 2019). In many languages with otherwise symmetric passives, an asymmetry arises when the indirect object *wh*-moves in a passive of a double object construction – only the indirect object can be the passive subject, not the direct object. On my approach, this is because indirect objects *wh*-move too early for the direct object to become the surface subject.

(2) *Norwegian asymmetric passives when IO is a wh-phrase* (Holmberg et al., 2019, p.680)

- a. *Hvem ble boka gitt?
 who was the.book given
 intended: ‘To whom was the book given?’
- b. Hvem ble gitt boka?
 who was given the.book
 ‘Who was given the book?’

Lastly, I suggested that some non-DP arguments have a flexible distribution, which is what accounts for the variable binding behavior of *to*-phrases and *by*-phrases in passives of ditransitives, and also accounts for certain properties of the dative alternation. Since there are two heads that might *c*-select for a non-DP argument, *V* and *v*, any non-DP argument could in principle be merged in either Comp *V* or Comp *v*, provided that the result is interpretable. I discussed how the syntax of DP and non-DP arguments, and in particular the flexible position of certain non-DP arguments, poses no problem for the semantic tools available to us. I argued that non-DPs’ syntactic positions may be predictable from their semantic types in the usual way – those that must be interpreted via FA must merge in a position whose sister *s*-selects them, those that must be interpreted via EI may merge anywhere in the *v*P. Hence, the fact that some non-DP arguments appear to participate in “alternations” while others do not should be predictable according to their semantic type. Those that are interpreted by EI have two syntactic positions available to them, each of which may lead to different word orders/morphosyntax. Those that are interpreted by FA have only one syntactic position available to them.

The view that some non-DP arguments have a flexible syntactic position argues against theories with a more articulated functional or thematic hierarchy. I argued that the thematic roles associated with indirect objects, for example, may be associated with syntactic positions both higher and lower than canonical direct object roles, which is incompatible with a view in which those thematic roles are independently ranked relative to direct objects, or introduced by a head with a fixed position in the clausal spine.

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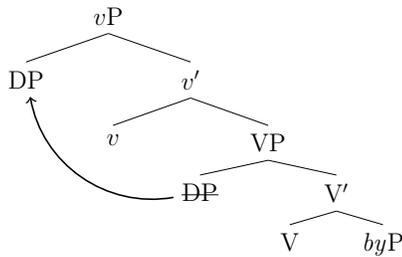
Appendix A

Chapter 4: Additional thoughts

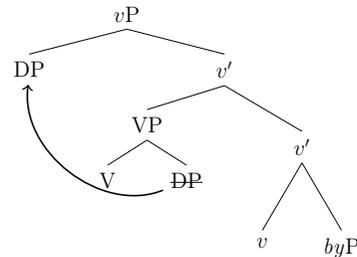
A.1 Raising from *by*-phrases

(533) Two ways to build a passive of a monotransitive

a. *by*-phrase is low

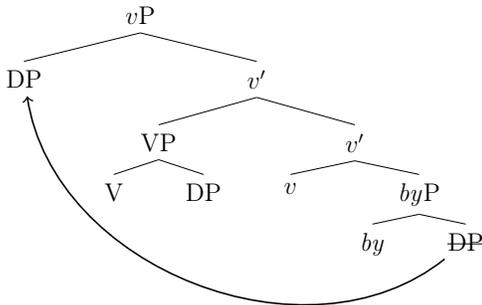


b. *by*-phrase is high



As observed in Section 3.4, only one of these structures unambiguously promotes the transitive object, namely the one in (533a). In (533b), both arguments are potential candidates for satisfying *v*'s *Merge DP* feature (as we saw for verbs like *star/puzzle/etc.*).

(534) A high *by*-phrase would optionally license A-movement of the transitive subject (though doing so would likely cause *by* to delete, as observed for *star/puzzle/delight/accumulate/etc.*)



Of course, the passive would not be a very robust strategy for demoting transitive subjects if the derivation in Figure 534 were allowed in English. However, the predicted existence of this derivation raises interesting questions about the possible origins of subjects cross-linguistically. We could imagine a language that always introduces its transitive subjects via a *by*-phrase and

then has to decide whether to raise the complement of *by* or some other element to subject position, with each choice leading to different morphosyntactic consequences. Languages that mark their transitive subjects with inherent ergative case might be candidates for such an analysis, though I leave investigation of that possibility to future research.

A.2 Constituency tests

Binding is not the only available structural diagnostic. In principle, we should be able to use constituency tests as well to determine the relative position of arguments in ditransitives. As is well known, constituency tests don't always yield consistent results, however. We will see that evidence from fragment answers, coordination, pro-form substitution, and clefting don't exactly converge on whether the two internal arguments of a ditransitive can form a constituent (for additional discussion, see Larson 1988; Jackendoff 1990; Pesetsky 1995).

(535) Fragment answers

- a. What did Elmer give, and to whom?
 - i. A: a fake present to Bugs.
- b. Elmer gave which student which book?
 - i. A: ?Bugs a copy of Syntactic Structures.

(536) Coordination

- a. Elmer gave the book to Bugs and the record to Tweetie.
- b. Elmer gave Bugs the book and Tweetie the record.

(537) Pro-form substitution

- a. *Tweetie handed a stinkbomb to Elmer as a joke, and the prank was so successful that he handed one again.
- b. *Tweetie handed Elmer a stinkbomb as a joke, and the prank was so successful that she handed one again.

(538) Clefting

- a. ??/*A fake present to Bugs is what Elmer gave.
- b. *Bugs a fake present is what Elmer gave.

As we can see, none of these tests clearly advocate for a common constituent structure associated with either DO-IO or IO-DO word order. Some tests (fragment answers and coordination) seem to suggest that the two internal arguments form a constituent regardless of word order, while other tests (pro-form substitution and clefting) seem to suggest the opposite. In Chapter 6, I argue that the verb is always pronounced in a position that c-commands the base position of both internal arguments. From that perspective, the theory predicts that it should always be possible to find a constituent that contains the two arguments and no other pronounced material (as indicated by fragment answers and coordination). The results of the pro-form and clefting tests are thus puzzling on the present approach, but perhaps reflect conditions on what sorts of structures are substitutable via a pro-form, or what sorts of constituents may be clefted.

The same issue arises when attempting to diagnose the constituency of two non-DP arguments, as in (258) and (539). Coordination supports a view in which the two arguments form

a constituent, but clefting does not (pro-form substitution and fragment answers aren't easily applicable).

(258) 1DP, 2XPs

- a. Elmer relied on Tom for support.
- b. Elmer counted on Tom to help him catch Bugs.
- c. Bugs heard from Jerry that Elmer had set a trap.

(539) Passives of ditransitives

- a. A book was given to Lauri by Jo.
- b. A book was given by Jo to Lauri.

(540) Coordination

- a. Elmer relied on Tom for support and on Jerry for information.
- b. *Alice in Wonderland* was recommended to Bugs by Tweetie and to Roadrunner by Jerry.

(541) Clefting

- a. *On Tom for support is how/what/where Elmer relied.
- b. *To Lauri by Jo is where a book was given.

Appendix B

Chapter 5: Apparent counterexamples

B.1 English and Chicheŵa

We have seen two ways to wh-move an indirect object from a high XP construction. Whether such wh-movement may be characterized as DP-movement or is limited to XP-movement is proposed to be a point of variation across languages. Importantly, if a high indirect object can subextract from its XP shell in the passive, I can think of no reason why it shouldn't be able to do the same in wh-movement.

We saw that English poses some difficulty to this claim, given that speakers vary in the acceptability of (379). (379) is showing us that, while indirect objects can strand an *overt* preposition when they wh-move, for some reason they cannot strand a covert case marker for every speaker.

(379) %Who did Jo give *t* a book?

I do not know why some English speakers reject (379). A fact that might be relevant is that inherent case has all but vanished from English. Interpreting a stranded covert case marker that is adjacent to another nominal might not be straightforward. One could imagine that when the direct object is adjacent to the verb, there is a strong garden path that leads one to expect the DP-XP variant of the dative alternation, in which case the trace of the indirect object should follow the direct object, and have an overt preposition.

Another counterexample to the claim that indirect objects should be able to wh-move as DPs if they can A-move as DPs is the behavior of Chicheŵa benefactives. Chicheŵa is reported to be like English in two respects, a) having indirect but not direct object passives, b) not permitting benefactive arguments to relativize.

(542) *Chicheŵa* asymmetric passives

- a. Makoswe a-na-sem-er-a mbewa mitondo.
rats SP-PST-carve-APPL-ASP mice mortars

'The rats carved some mortars for the mice.' (Baker, 1988, p.307, ex.4)

- b. Mbewa z-ina-sem-er-edw-a mitondo (ndi makoswe).
mice SP-PST-carve-APPL-PASS-ASP mortars (by rats)

'The mice were carved mortars by the rats.' (Baker, 1988, p.307, ex.4)

- c. Mbidzi zi-na-perek-er-a nkhandwe msampha.
zebra SP-PST-hand-APPL-ASP fox trap
'The zebra handed the fox the trap.' (Baker, 1988, p.386, ex.50)
- d. *Msampha i-na-perek-er-edw-a nkhandwe.
trap SP-PST-hand-APPL-PASS-ASP fox
intended: 'The trap was handed to the fox.' (Baker, 1988, p.386, ex.51)

While high XPs all seem to be passivizable, they don't all wh-move. Instrumental arguments may be relativized in (543) but benefactives apparently may not in (544).

(543) *Chicheŵa* instrumentals can relativize (Rill, 2011, p.41)

- a. Uwu ndi mpeni u-mene ndi-ku-ganiz-a kuti Mavuto
this is knife REL 1SG.SM-PRS-think-FV COMP 1.Mavuto
a-na-umb-ir-a mitsuko.
1SM-PST-mold-APPL-FV 3.waterpot
'This is the knife which I think Mavuto molded the waterpots with.'

(544) *Chicheŵa* benefactives are more restricted (Baker, 1988, 355)

- a. *Iyi ndi-yo mfumu i-mene ndi-ku-ganiz-a kuti Mavuto
1.PROXDEM COP-1 1.chief 1-REL 1SG.SM-PRS-think-FV COMP 1.Mavuto
a-na-umb-ir-a mtsuko.
1SM-PST-mold-APPL-FV 3.waterpot
intended: 'This is the chief whom I think Mavuto molded the waterpot for.'
- b. Uwu ndi-wo mtsuko u-mene ndi-ku-ganiz-a kuti Mavuto
3.DEM COP-3 3.waterpot 3-REL 1SG.SM-PRS-think-FV COMP 1.Mavuto
a-na-umb-ir-a mfumu.
1SM-PST-mold-APPL-FV 1.chief
'This is the waterpot which I think Mavuto molded for the chief.'

As discussed by (Baker, 1988, p.293), the relativization asymmetry in *Chicheŵa* is somewhat more complicated than (543) and (544) show. The asymmetry only arises when the verb does *not* agree with the relativized indirect object, or if the movement is long distance. Adding object agreement or removing a layer of embedding allows the indirect object to relativize (545).

(545) Breaking the asymmetry with agreement and less embedding

- a. Iyi ndi-yo mfumu i-mene ndi-na-nen-a kuti Mavuto
1.PROXDEM COP-1 1.chief 1-REL 1SG.SM-PST-say-ASP COMP 1.Mavuto
a-na-i-umb-ir-a mtsuko.
1SM-PST-**Oagr**-mold-APPL-ASP 3.waterpot
'This is the chief whom I think Mavuto molded the waterpot for.' (Baker, 1988, p.293, ex.152)
- b. ?Iyi ndi-yo mfumu i-mene Mavuto a-na-umb-ir-a mtsuko.
1.PROXDEM COP-1 1.chief 1-REL 1.Mavuto 1SM-PST-mold-APPL-FV 3.waterpot
'This is the chief which Mavuto molded the waterpot for.' (Baker, 1988, p.293, ex.153)

It is not clear to me what accounts for these restrictions on benefactive relativization in contrast to instrumental relativization. To be consistent with my proposal, these effects should be sourced to morphosyntactic properties of these constructions, rather than a wholesale ban on indirect object movement as DPs. To investigate this possibility, we would need to know more about the interactions between agreement and cross-clausal phenomena in Chicheŵa, and understand what factors give rise to asymmetric passivization as well.

B.2 Italian

Despite binding evidence indicating a single structural description for Italian ditransitives, Holmberg et al. (2019) propose that Italian has two kinds of ditransitive structures, one of which is the “double object construction” and the other of which is the “prepositional dative construction” (both of which place the direct object structurally higher than the indirect object, to account for binding). They propose that the lack of a wh-movement/passivization interaction in (422) is misleading, and that Italian “double object constructions” really do exhibit an interaction if we work hard enough to control the examples. They use the animacy of the subject to distinguish the two constructions from each other (following Oehrle 1976): inanimate subjects correspond to the “double object construction” while animate subjects ambiguously correspond to either the “double object construction” or the “prepositional dative construction” (546).

(546) Inanimate subject → “double object construction”

- a. The book gave me an idea.
- b. *The book gave an idea to me.

In Italian, a direct object passive is possible irrespective of the animacy of the *by*-phrase (547), indicating that a passive of a “double object construction” is possible. Wh-movement of an indirect object is likewise insensitive to the animacy of the subject (548).

(547) *Italian* DO-passives (Holmberg et al., 2019, ex.48)

- a. Questi libri sono stati dati a Maria dal professore.
these.MPL books are been.MPL given.MPL to Maria by.the teacher
‘These books were given to Maria by the teacher.’
- b. Queste idee sono state date a Maria da questo libro.
these.FPL ideas are been.FPL given.FPL to Maria by this book
‘These ideas were given to Maria by this book.’

(548) *Italian* IO-wh-movement (Holmberg et al., 2019, ex.49)

- a. A chi darà un regalo Maria?
to who give.3SG.FUT a.MSG present Maria
‘Who will Maria give a present to?’
- b. A chi ha insegnato qualcosa di importante la prima relazione?
to who has taught something of important the first relationship
‘Who has his/her first relationship taught something important to?’

Holmberg et al. (2019) argue that combining passive and wh-movement, however, *is* sensitive to the animacy of the *by*-phrase. It is somewhat difficult to show this, given that adding an overt *by*-phrase to either of the examples in (549) degrades the sentences substantially (for some reason). In order to see a stronger contrast, they try topicalizing the passivized argument, which apparently improves the sentence when the *by*-phrase is animate but not when it is inanimate.

(549) *Italian*: DO-passive in IO-wh-movement sensitive to the presence of a *by*-phrase (Holmberg et al., 2019, p.703)

- a. *A chi è stato insegnato qualcosa di importante dalla sua prima relazione?
 to who is been.MSG taught.MSG something of important by.the POSS.3SG first relationship
 intended: ‘To whom was something important taught by his/her first relationship?’
- b. ??A chi è stato dato questo libro dal professore?
 to who is been.MSG given.MSG this.MSG book by.the teacher
 intended: ‘To whom was this book given by the teacher?’

(550) *Italian*: animacy effects observable in topicalized versions (Holmberg et al., 2019, p.703)

- a. *Alcune idee, a chi saranno date da questo libro?
 some.FPL ideas.FPL to who be.3PL.FUT given.FPL by this book
 intended: ‘Some ideas, to whom were given by this book?’
- b. Questo libro, a chi è stato dato dal professore?
 this.MSG book to who is been.MSG given.MSG by.the teacher
 ‘This book, to whom was given by the teacher?’

They conclude that it is possible to wh-move an indirect object in a passive, *only* if the *by*-phrase has an animate argument. Thus, they argue that the Italian “double object construction” shows the passivization/wh-movement interaction observed in the symmetric languages as well, despite the fact that Italian lacks indirect object passives.

While I have no account for the ungrammaticality of (550a), their conclusion that the animacy of the *by*-phrase leads to its ungrammaticality is not supported by the intuitions of speakers that I have consulted. I have verified with two speakers (Enrico Flor and Giovanni Roversi) that removing the *by*-phrase makes (550a) good, *even* in a context where it is clear that the teacher is inanimate.¹ For example, (551) could be uttered at the end of a TV show about dating to invite speculation about who learned from their relationships. I confirmed that the covert *by*-phrase is understood to be *dalla sua prima relazione*, and the example is good.

(551) A chi è stato insegnato qualcosa di importante?
 to who is been.MSG taught.MSG something of important
 ‘To whom was something important taught?’ (understood teacher = their first relationship; Enrico Flor, Giovanni Roversi, p.c.)

While the contrast in (550) is certainly puzzling, the meanings of arguments are known to occasionally affect processes that we otherwise view as productive, and our analyses of such

¹Holmberg et al’s speakers also confirm that removing the *by*-phrase improves the sentences in (549), though it is not clear whether the contexts are controlled to account for the understood agent/causer.

facts need not posit structural ambiguity. I therefore propose that something else accounts for the contrast (550), though I leave investigation of that independent factor to future research. Thus, I conclude that (550) is not evidence that Italian “double object constructions” show the passivization/wh-movement interaction observed in the symmetric languages of Section 5.3.1.²

²What we are seeing in Italian might be related to the behavior of benefactive arguments in Haya. If inanimate subjects in Italian place additional, l-selectional demands on ditransitives, those additional demands might only be met if the moving indirect object is e.g. doubled, or traceable to a position that is sensitive to adjacency with certain other elements. Perhaps an overt *by*-phrase disrupts those conditions in a way that is only detectible if it is inanimate.