

Generalized Asymmetry
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Abstract: The paper argues for a Maximize Asymmetric Relations preference (MAR) as a general property of the language faculty based on a number of phenomena that are independent of word order. In addition to expanding the domain of asymmetry, a number of mechanisms and phenomena will be unified from this perspective, with their reason for existence traced back to MAR; they include the diachronic loss of specifiers, the LCA, the Phase Impenetrability Condition, the no-Spec-without-complement aspect of Bare Phrase Structure, the rarity of multiple Spec constructions (as with, e.g. multiple *wh*-fronting), and the *who left* effect (where subject *wh*-movement cannot proceed through SpecTP). MAR is also shown to favor approaches where movement is moving-element driven over those where movement is target-driven as well as Bare Phrase structure building over GB structure building, and to have consequences for the proper formulation of several mechanisms, including the Phase Impenetrability Condition, Case licensing, the EPP, and certain aspects of structure building.

Keywords: Bare Phrase Structure, diachronic change, LCA, Phase Impenetrability Condition, *wh*-movement

1. Introduction

There are many cases of asymmetric relations in language, many of which have been pointed out in Kayne's work (see e.g. Kayne 1994, 2010). Linear order is obviously asymmetric, but this is certainly not the only asymmetric relation. Kayne (2010) presents a more general case that our language faculty (FL) has the property of being asymmetric, though most of the cases he provides still concern word order (i.e. correlations between various syntactic phenomena and word order). Much of his argumentation concerns the lack of what we would expect to find if FL were symmetric in the domain of word order. Thus, he points out that there is no pair of languages x, y where y is the mirror image of x such that for any sentence of x , the corresponding sentence of y would be its mirror image in word order.

But there are also asymmetric relations outside of word order, which is what this paper will be concerned with. For one thing, the notion of the head of a phrase, more precisely, the unique head of a phrase, is inherently asymmetric: it says, informally, that one element in a phrase is more important than others. One can easily imagine FL, and the concept of structure, without the notion of the head of a phrase. In fact, we do not need imagination for that. Until the rise of the X-bar theory, the sentence was assumed to be S, with its immediate daughters being NP and VP—S simply did not have a head; we needed the X-bar theory to force headhood on it.¹

We find abstractly similar situations in semantics, with the lack of the counterpart of headhood from the X-bar theory approach to structural relations. Consider for example Heim and Kratzer's (1998) Predicate Modification rule:

(1) For any branching node α whose daughters are β and γ , if both β and γ are of type $\langle \sigma, t \rangle$, then $[[\alpha]] = [\lambda x \sigma. [[\beta]](x) \text{ and } [[\gamma]](x)]$, where σ is any type.

¹ There have also been post X-bar theory proposals for structures without a head, where it was assumed that such structures can be generated but cannot survive—with movement forced to destroy such symmetric (i.e. lacking a head) structures—see in this respect especially Moro (2000) (see also Ott 2012).

To informally illustrate the working of (1), in (2) *red* and *car* are β and γ from (1); they are both of type $\langle e,t \rangle$; the object we get by combining β and γ here, α from (1), is also of type $\langle e,t \rangle$.

(2) red car

The point of the above discussion is that the notion of the (unique) head of a phrase is inherently asymmetric (it is also a case of asymmetry outside of word order). It seems real, though one can certainly imagine structures without it. However, it does not seem to be the case that there are no symmetric relations in FL. In fact, even the notion of c-command, which Kayne (1994) uses to determine word order, which is by its very nature asymmetric, is not inherently asymmetric (as Kayne 1994 himself notes)—it is not the case that there cannot be two nodes/constituents such that they c-command each other. True, one can impose asymmetry on it by brute force (i.e. definitionally), which is what Kayne (1994) in fact does, but the point is that the notion itself is not inherently asymmetric.

In some cases, there has been a debate whether a particular mechanism is asymmetric or not although the debate was actually never framed in such a way, hence the relevance of the broader issue under consideration here for the mechanisms in question was never explicitly noted. Consider for example Case. Under the GB-style Case assignment implementation of Case licensing, as well as under the current Case valuation approach to it (see Chomsky 2000, 2001), Case licensing is asymmetric (informally, I do something to you, and you don't do that to me); under the early minimalist approach in terms of Case checking, it was in fact symmetric (informally, we do it to each other), which led to the so called Inverse Case Filter (see Bošković 1997, the term is due to Howard Lasnik), a requirement that traditional Case assigners check (i.e. assign) their Case.² Case licensing is then another example of an asymmetric relation outside of word order, but only under the Case-valuation/assignment view, not under the Case-checking view.

Without outright denying that symmetric relations can at all exist, but taking the kind of considerations that Kayne (and others; see also the above discussion) have brought up seriously, takes us to the position that FL favors asymmetric relations, i.e. it leads us to (3), where MAR is a preference principle (in a sense to be made clear below), and the domain where MAR holds is the computational system (informally syntax), including spell-out itself.³

(3) Maximize Asymmetric Relations (MAR)

This paper will argue for (3), based on phenomena independent of word order. Arguing for asymmetric relations is of course not new.⁴ What is new is the kind of phenomena that will be

² Under Case checking, there is no inherent difference between e.g. a verb and a nominal element regarding Case in a Case-licensing relation—they check Case against each other (for arguments against the Inverse Case Filter, which can also be interpreted as arguments for an asymmetric approach to Case, like Case valuation, see Bošković 2011a). Under the Case checking approach we would expect that two traditional Case assigners can check Case against each other—Bošković (2006) in fact reports a rather clear instance of that sort, where a verb and a preposition check Case against each other in Serbo-Croatian. However, if the Case checking approach were right, we would expect to find such cases all over the place; this, however, is the only example of that sort that I am aware of.

³ Assuming that the Predicate Modification rule applies in the semantics, it would not be relevant to MAR.

⁴ For a position similar to (3), see Di Sciullo (2015, 2017). ((3) is argued for on very different and broader grounds here though; furthermore, Di Sciullo actually does not treat MAR as a preference principle in the sense argued for in this paper; in this particular respect Di Sciullo's position is more similar to Moro 2000 than to the current work (it is in fact even stronger than Moro's approach in that for Di Sciullo, antisymmetry

looked at from this perspective in this paper; in fact, a number of superficially rather different phenomena, which come outside of the domain of word order, will be brought together under this perspective here (the discussion will also shed new light on some of these phenomena). It should be obvious that the position taken here, MAR, is weaker than Kayne's (2010) position that FL is fully asymmetric; however, the discussion here will apply to a broader domain, going considerably beyond issues regarding word order, which is what Kayne was concerned with. The discussion in the paper will thus expand the domain of asymmetry. As a result, I will also refer to (3) below as Generalized Asymmetry. However, given the nature of the paper, the discussion below will be to some extent speculative and programmatic—I will not be able to examine the relevant phenomena comprehensively but will only discuss the aspects of these phenomena that are relevant to our main concern, i.e. (3). I will also not concern myself here with the issue of what (3) could follow from, i.e. I will not attempt to trace back (3) to FL external factors. (What may be relevant here is that like linear order, both parsing and language production are in a sense asymmetric, in that they show a beginning vs end asymmetry, see Kayne 2010; for relevant discussion within a broader biolinguistic perspective, see Di Sciullo 2011).

In addition to providing a unifying perspective on a number of phenomena, we will see that MAR has additional consequences in that it favors certain approaches to particular theoretical mechanisms over their alternatives. In fact, we have already seen this with respect to Case licensing, where Case licensing reflects the spirit of MAR under the Case valuation approach, but not under the Case checking approach. (The notion of the head of a phrase also reflects the spirit of MAR.) Much of the discussion below will concern specifiers, which we will see are particularly relevant to MAR. I will thus start the discussion below by examining a rather interesting issue concerning specifiers in language change, noted by Dadan (2019), which will lead us to examine the nature of specifiers more broadly.

2. Specifiers diachronically and synchronically:

Diachronic change often involves loss of movement (see for example Roberts 1993, 2007, van Gelderen 2009, 2011). Dadan (2019) observes that this is in fact the general direction of diachronic change. Dadan gives a number of cases illustrating this; I will only give one illustration here. There are many examples of this kind of change regarding *wh*-dependencies, where Dadan makes a very interesting observation that the general direction of the diachronic change is from *wh*-movement to *wh*-in-situ, not the other way round. Thus, there is a loss of obligatory *wh*-movement from **Old Japanese to modern Japanese** (Ogawa 1976, Whitman 2001, Watanabe 2002, Kuroda 2007, Aldridge 2009, 2018), from **archaic to modern Chinese** (Aldridge 2010, 2011), from **Vedic Sanskrit to modern Indic languages** (Hale 1987, Fortson 2004), or from **Latin**, which was actually a multiple *wh*-fronting language (Spevak 2010, Danckaert 2012, Ledgeway 2012) **to modern Romance**, *wh*-in-situ being possible as an option in modern Romance⁵ but it wasn't possible at all in Latin (see Dadan 2019 and references therein). There is also an on-going change in **Navarro-Labourdin Basque** (Duguine and Irurtzun 2014). Dadan observes that what the loss of *wh*-movement leads to is the loss of a specifier. (Another case of this sort is the loss of V-2, which also involves movement to SpecCP, as in e.g. Old Romance (Wolfe 2018) and English (Roberts 1997); see Dadan's work for other cases, one of which is noted below (11) regarding the OV to VO word order change).

There is another way to lose a Spec, without the loss of movement itself. Bošković (2001) observes different behavior of the Q/focus marker *li* in Serbo-Croatian (SC) and Bulgarian, which

holds at each step of the derivation). Still, Di Sciullo 2015 is certainly an important predecessor of this work).

⁵ With the exception of Romanian, a Bulgarian-style multiple *wh*-fronting language which moves all *wh*-phrases to interrogative SpecCP (see Rudin 1988).

can be captured if the Q/focus marker *li* has lost its ability to support a specifier in SC. In particular, Q/focus marker *li* in SC cannot host unambiguously phrasal elements (4a-b) or license sluicing (4c), which requires a Spec-head relation (see Lobeck 1990 and Saito and Murasugi 1990). On the other hand, both of these are possible in Bulgarian (5).

- (4) a. *Novu kuću li prodaje?
 new house LI sells?
 ‘Is he selling the new house?’
 b. Novu li kuću prodaje?
 c. *Novu li kuću prodaje-?

- (5) a. Novata kúšta li prodade?
 new-the house LI sold
 ‘Did he sell the new house?’
 b. Novata kúšta li ~~prodade~~?

(Bošković 2001)

What is going on here is that movement to *li*, which is an enclitic hence it needs something in front of it to support it prosodically, still must take place in SC, but it takes place through head-adjunction to *li*, hence the one-word restriction on the host of *li* and *li*'s inability to license sluicing, which is licensed through a Spec-head agreement relation (see Lobeck 1990 and Saito and Murasugi 1990). In Bulgarian, both phrasal elements in front of *li* and sluicing are possible, indicating that the two indeed go hand-in-hand. SC *li* has thus lost the ability to take a specifier. (In fact, this usage of *li* is archaic in SC—it appears that the first step in the loss of the construction in question is in fact the loss of the Spec).

Another way of losing specifiers is to reanalyze them as heads. This is especially prolific in the domain of complementizers, where phrases in SpecCP get reanalyzed as complementizer heads. Here are some illustrations noted by Dadan (2019) (there are many cases of this sort, spec-to-a-head change is in fact quite common even outside of the domain of complementizers, see especially van Gelderen 2004).⁶

(6) **Georgian**: interrogative *wh*-phrase *ray* 'what' > complementizer *raytamca* (Harris and Campbell 1995; this process is in fact quite frequent crosslinguistically); **Russian** *čto* 'what (instr)' and **Bulgarian** 'than how much' (*ot-kolko-to?*) > *čem* 'than'/'*otkolkoto* 'than' (comparison complementizer; Willis 2007); **English** *how* > subordinating complementizer head (Huddleston and Pullum 2002) (also many Slavic languages, e.g. **Polish**, **Slovak** *jak*, and **Breton** *penaos*); **German** complementizer *dass* from relative pronouns in SpecCP (Axel-Tober 2017; also common in e.g. Slavic, Meyer 2017; and Greek, Roberts and Roussou 2003); **French** *par ce que* 'by this that' > *parce que* 'because' (van Gelderen 2004); **Early Germanic** *hwæt* reanalyzed as a C-head in exclamatives (Walkden 2014).

Another case of this is the emergence of agreeing complementizers from pronouns in Welsh, e.g. complementizer *mi* derives from a 1SG subject pronoun, and the particle *fe* from a masculine 3SG subject pronoun (see Willis 2007). The former is illustrated by (7). What facilitated this change was pronoun doubling, as in (8), where a pronoun occurs both in its base position and in the left periphery of the clause—the latter then got reanalyzed as an agreeing complementizer, as in (7).

- (7) Mi welais I ‘r gêm
 PRT see.PAST.1SG I the game

⁶ Wang (2019) argues that there is an intermediate stage in the Spec-to-a-head change, where the relevant element is base-generated adjoined to another head, before it projects a phrase on its own.

(8) Mi arhosais (,) fi
 1SG.IND wait.PAST.1SG 1SG.IND
 ‘I waited, me.’

(Willis 2007: 459)

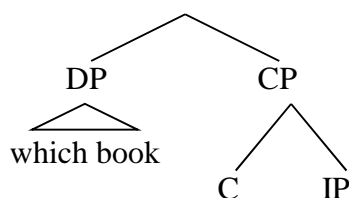
So what we see in all these cases is the loss of a Spec. Dadan (2019) deduces this from the labeling framework of Chomsky (2013), arguing that the way structure building works there favors head-complement relations over traditional Spec-head relations, which require an additional step to label the object in question (agreement or movement; for another labeling-based approach that applies to the Spec-to-head reanalysis in particular, see van Gelderen 2015).⁷ I will, however, pursue here an alternative, broader way of explaining the preference for the loss of specifiers, which in fact will not appeal to the notion of *specifier* per se but will provide a more general explanation that will establish a connection with other phenomena that all this otherwise cannot be related to (some were in fact already mentioned in section 1 regarding the notion of the head of a phrase and a particular approach to Case licensing).

The head-complement relation involves merger of two elements that are not equal in their phrase structure status, one is a head and the other one is a phrase. This is not the case with the traditional Spec-head relation. In the Bare Phrase Structure system (Chomsky 1994), what we have in that case is the merger of two phrases, at the point of the merger itself. Consider (9).

(9) Which book did John buy?

The relevant step of the derivation before wh-movement takes place first involves merger of C, a head, and IP, a phrase, which yields a phrase, CP. The wh-phrase then merges with this object.

(10)



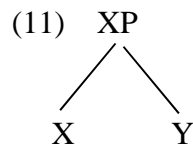
What we then have with wh-movement is a merger of two phrases, *which book* and the CP in (10). This in fact holds quite generally: traditional Specs involve a merger of two phrases in the Bare Phrase Structure system. The suggestion, discussed in the introduction, is that syntax quite generally prefers asymmetric relations (cf. (3)), this is why it prefers head-complement over Spec-head relations: the former involves an asymmetric merger, i.e. it involves merger of a head and a phrase; the latter involves a symmetric merger, i.e. it involves merger of two phrases. This is then the reason why the diachronic change in the case at hand (i.e. wh-dependency) involves the loss of wh-movement, not its gain. By eliminating a Spec, the former eliminates a case of a phrase-phrase merger. On the other hand, the latter would involve creation of a Spec, hence gain of a Spec, which would mean an additional phrase-phrase merger.⁸

There is an immediate connection here with another proposal, namely Kayne’s (1994) antisymmetry of syntax, which is the proposal that word order is essentially read off asymmetric c-command relations, where, roughly, if X asymmetrically c-commands Y, X precedes Y, and

⁷ But see footnote 26 for an issue that arises with the labeling framework regarding MAR.

⁸ It should be noted that Kayne (2010) simply bans merger of two phrases: “The merger of two phrases is unavailable” (see also Narita 2012). This illustrates the general difference between Kayne (2010) and the position taken here, discussed in section 1, where FL is taken to prefer asymmetric relations (this point will be made even more clearly below).

everything dominated by X precedes everything dominated by Y.⁹ In Chomsky’s (1995) reinterpretation, this proposal led to elimination of word order from the syntax—syntax is all about structural relations like dominance and c-command, word order is then imposed in PF due to the nature of the PF interface, which interacts with our articulatory-perceptual system, which by its very nature requires word order. In particular, word order is imposed by linearization of structural relations, where asymmetric c-command plays a crucial role. At any rate, the LCA rules out all symmetric structures (symmetric in a sense to be made more precise below). Under Chomsky’s version of the LCA, they can be created but they have to be eliminated before spell-out.¹⁰ Thus, in the Bare Phrase Structure system, a non-branching element is both a head and a phrase. If such an element is merged as a traditional complement, as in (11), we get a structure that is too symmetric: a problem which is resolved by moving Y in (11) (so that Y does not have to be linearized in the original position, given that it is not pronounced in that position). In a sense, then, the movement here is driven by MAR.¹¹



Both the diachronic tendency to lose specifiers and Kayne’s LCA can then be looked at as the preference for asymmetric relations, and therefore unified from that perspective.

There is in fact a case, noted briefly above, where the two are quite clearly brought together. Kiparsky (1996) observes that the OV-to-VO word order change is way more common than the VO-to-OV word order change (see Biberauer and Roberts 2006, Roberts 1997, 2007, and Dadan 2019). From the perspective of Kayne (1994), the OV word order is derived from the VO word order, with object movement (see for example Zwart 1997, who analyzes it in terms of object shift; regarding the change itself, see Kiparsky 1996, Roberts 1997, 2007, Danckaert 2012, Dadan 2019, among others). The OV-to-VO change then in fact involves a loss of movement and results in the loss of a Spec. The relationship between the OV and VO word order is then the same as the relationship between wh-fronting and wh-in-situ, with the same direction of diachronic change.

Also relevant here are several cases of diachronic change noted in Di Sciullo (2011) (see also Di Sciullo, Nicolis, and Somesfalean 2020), of the form depicted in (12)-(13), where the situation in which αP either precedes or follows head X leads to a diachronic change where αP only follows head X. One case of this sort concerns genitive theme complements of nouns in Greek: in Classical Greek, they could either precede or follow the head noun, while in Modern Greek they must follow the head noun (see Alexiadou 2002).

(12) a. αP X

b. X αP

(13) X αP

⁹ This leads to a universal Spec-head-complement base order; any departures from this order then must result from movement.

¹⁰ Kayne actually argues that the LCA holds throughout syntax, which means that symmetric structures could not even be created (note, however, that Kayne does not assume Bare Phrase Structure).

¹¹ As noted in fn 1, Moro (2000) and Ott (2012) argue that XP and YP can also be base-generated as sisters (with neither of them projecting). In that case one of them has to move away for the same reason movement has to take place in (11), namely because the base-generated structure in question is too symmetrical.

From the current perspective (and parallel to the discussion of the OV-VO variation above), (12) would be interpreted as involving optional movement of α P (in particular, the movement would take place in (12a), but not (12b) (see also Alexiadou 2002), with the movement getting lost in the stage depicted in (13). In fact, as discussed in section 3, this may be what is happening with wh-movement in Modern Romance: while Latin was an obligatory wh-fronting language (so in stage (12a) regarding wh-movement), Modern Romance languages have optional wh-movement (see below for a formal implementation of this change), abstractly showing the stage depicted in (12a-b) in this respect. As discussed in section 3 (see Dadan 2019), there are reasons to believe that Modern Romance languages are on their way to becoming wh-in-situ languages: this would then also represent a change from (12) to (13).¹²

A question then arises why all specifiers don't get lost (see also Dadan 2019). That would essentially lead to the loss of movement, so the question is actually broader: why do we have movement in the first place. The issue obviously cannot be answered in this paper; I will not go deeper into it apart from adopting Chomsky's (2000:120-121) position that this has to do with "externally imposed legibility conditions", i.e. it is due to "conditions imposed by the external systems". What this means is that the reason for it is essentially functional, or more broadly non-syntactic: to be able to express notions that go beyond the basic argument structure (which is what we would have without specifiers): more complex semantic notions involving issues like scope/scopal ambiguities, pragmatic notions concerning things like topic/focus interpretation, specificity...,¹³ in fact even argument structure that goes beyond a simple predicate with one internal argument requires a specifier (see section 4). At any rate, as noted by Dadan (2019), from this perspective, cases of for example gaining specifiers would be expected to be non-syntax-driven, i.e. interface-driven and/or attributed to extra-syntactic factors, e.g. prosody or pragmatics/semantics (the reader is referred to Dadan's work for a more detailed discussion).¹⁴

¹² It should be noted that Di Sciullo (2011) also argues that asymmetry plays a role in diachrony, though she uses asymmetry in this respect in a very different sense from the one used here. For Di Sciullo, it is a matter of eliminating choice, where two possible word orders are reduced to one of these two word orders—this is what Di Sciullo refers to as asymmetry in diachronic change. This particular sense of asymmetry would not extend to many relevant cases of the loss of specifiers (some traditional grammaticalization cases (cf. (6)) do not even involve a change in word order, cf. also the case of *li* in (4)-(5)). It is also not concerned with the issue of which of the two word orders survives.

¹³ Chomsky (2000) in fact associates these notions with specifiers. Some of these may have led to the development of formal requirements (which would then force movement, as discussed below; note that non-syntactic factors could ultimately be behind crosslinguistic differences in this domain, e.g. it is possible that what is behind the different syntactic behavior of wh-phrases in Bulgarian and Japanese is that they are subject to different interpretation). There could actually also be prosodic reasons for movement, e.g. to support an enclitic head like *li* in (5a) (for a much broader proposal along these lines where prosodic factors motivate movement, see Richards 2010, 2016). The notion of a canonical order may also be relevant here. E.g., shift from OV to VO may be less likely to happen if SOV is the canonical order in the language, which means that it would be used in a discourse-neutral way to answer a question like 'What happened?' (it is important to note here that canonical word order does not entail lack of movement, as discussed extensively in Kayne 2010: to mention just one case, following Dryer (1992) Kayne (2010) notes that there are languages where S-O-Neg-V is the canonical word order (the order would have to involve movement even if Kayne's 1994 approach is not adopted).

¹⁴ In this respect, the change from a *pro*-drop to a non-*pro*-drop language that occurred in e.g. French (see Adams 1987) is potentially relevant. Romance-style *pro*-drop is licensed by rich verbal morphology, what is relevant here is that there was a change in the richness of verbal morphology, which led to a problem with the licensing conditions on *pro*. Now, while the exact analysis of traditional *pro*-drop is certainly controversial (see Roberts and Holmberg 2010 for an overview) a number of authors (e.g. Borer 1986, Alexiadou and Anagnostopoulou 1998, Barbosa 1995) have argued that traditional *pro*-drop does not actually involve an argument in a specifier; rather, verbal morphology itself is the argument. Under this

Dadan (2019) argues that a pattern similar to the diachronic tendency to lose specifiers is also found in language acquisition. More precisely, he argues that many cases of errors in child language acquisition actually arise due to the avoidance of Specs. In other words, the diachronic tendency to lose Specs is reflected in language acquisition as a tendency to analyze structures in a way which would avoid Specs.¹⁵ This is not at all surprising under the approach to the issue under consideration discussed above. It seems plausible that children are poor in those extra semantic/pragmatic notions which require (hence justify) specifiers, hence the MAR strategy is even more strongly at work in child language.¹⁶

A number of other issues may also be relevant here. Consider the semantics of multiple wh-questions. While this is certainly a hotly debated issue, a number of authors have argued that the most transparent and simplest syntax-semantics mapping in this domain is provided by multiple wh-fronting languages (see e.g. Pesetsky 1987), where all wh-phrases front overtly, as in Bulgarian (14), which is analyzed in terms of multiple specifiers of CP (see Koizumi 1994, Richards 2001).

(14) Kogo kakvo e pital?
 whom what is asked
 ‘Who did he ask what?’

Given this, one might expect the multiple wh-fronting strategy to be quite common. However, very few languages actually employ it (see Bošković 2012 for a list). This may not be surprising in light of the discussion above: the dispreference for specifiers is particularly relevant here, since constructions like (14) involve multiple specifiers of CP.

In fact, the issue in question seems to be quite general. In Chomsky’s (1994) bare phrase structure, there is nothing special about multiple Spec constructions, in fact one would expect them to be quite common. Curiously, an obvious point has never been made in this respect before: such cases are in fact quite rare crosslinguistically. From the current perspective, all this may be due to the general dispreference for specifiers: recall that creation of a traditional specifier involves merger of two phrases: with multiple specifiers, creation of each specifier involves merger of two phrases: multiple Spec constructions are thus particularly offensive to the preference for asymmetric relations. As discussed above, there is pragmatic/semantic/prosodic pressure not to lose all specifiers; this pressure is weaker regarding multiple Spec constructions since in many cases creation of a single Spec suffices to express the relevant pragmatic/semantic notions (or at least decreases the need for another Spec), or do the relevant prosodic job (support an enclitic).

3. On the Phase-Impenetrability Condition

All of this may also help us gain a new perspective on the Phase-Impenetrability Condition (PIC), in fact deduce it from generalized asymmetry. Under the standard approach to phases/phase-based locality effects, the Spec of a phase is accessible for movement outside of the phase; the complement of a phase is not (this is what is referred to as the PIC). In other words, in a phase-based derivation, Spec of phase XP is in a different locality domain from the rest of XP. This can

analysis, losing *pro*-drop actually involves a gain of a specifier, but in a manner that is fully consistent with MAR. In fact, under this analysis of *pro*-drop, the loss of *pro*-drop in French can be taken as a confirmation of the status of MAR as a preference principle (see sections 1 and 4).

¹⁵ On the relationship between language acquisition and language change, see Lightfoot (1979), van Gelderen (2011), Roberts (2007), among others.

¹⁶ It may be worth noting here that Uriagereka (2012) argues that all Specs are islands. If this is correct (the issue is controversial—thus, there is a controversy regarding whether extraction is possible out of subjects in SpecvP—Uriagereka argues, contra Takahashi 1994 and Stepanov 2001, that it isn’t), it is possible that the avoid-the-Spec strategy results in islandhood: Spec-creation creates a dispreferred configuration from which extraction is not possible.

actually be looked at as a way of resolving the Spec conundrum discussed above: Spec is separated from the rest of the structure into a different locality domain, reducing the problem that Specs raise for the asymmetric nature of syntax if such burden is actually computed domain by domain, as is natural in the derivation by phase.

The above suggestion implies that when the PIC pushes a Spec into another domain, it is not really a Spec in the new domain, which essentially means that the exact same full structure is not present in the new domain, so that when the relevant element is pushed into another domain, it has a different status. In other words, the PIC separates a Spec so that it is not in a Spec configuration any more. Interestingly, a number of authors have independently made proposals that accomplish exactly that, in particular, Epstein (2007, 2009), Chomsky (2008), Goto (2013), Narita (2011, 2012), and Takita, Goto, and Shibata (2016). Consider the last work. Under standard assumptions, spell-out occurs at the phasal level, with the phasal complement being what undergoes spell-out.¹⁷ Takita, Goto, and Shibata suggest that spell-out essentially removes the phasal complement, changing the syntactic object {X, YP} into a single head X. They present a number of arguments for this view (for relevant discussion, see also Goto 2013, Narita 2011, 2012, Epstein 2007, 2009), one of their concerns being a problem that arises in Chomsky's (2013) labeling system with successive-cyclic movement, as in e.g. (15), where the structure cannot be labeled after *which book* merges in the position of t' (which involves merger of two phrases), due to the lack of agreement/feature-sharing between the relevant elements. To deal with this, Chomsky essentially stipulates that traces are invisible to labeling, so that the structure is labeled (as CP) after *which book* moves away.

(15) Which book_i do you think [_{CP} t'_i that John bought t_i]

What Takita, Goto, and Shibata's proposal regarding spell-out does here is change the syntactic object {C(*that*), TP} into a single head C(*that*) (after the IP is sent to spell-out). The label of the syntactic object that corresponds to the embedded clause of (15) at the point when *which book* is present in that part of the structure can then be determined straightforwardly even before the wh-phrase moves away given that this syntactic object now consists of a head (C) and a phrase (the wh-phrase), eliminating the need for labeling through traces (i.e. the assumption that traces are invisible for labeling, which Takita, Goto, and Shibata 2016 show is problematic; note that the head-phrase configuration can be labeled in Chomsky 2013, with the head providing the label).

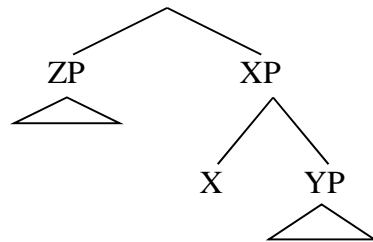
The most obvious argument for the proposal in question, however, concerns the standard assumption that only the edge of a phase is accessible from outside of the phase. The reason why this is the case is then rather straightforward: only the edge is actually there. To see this more clearly, what Takita, Goto, and Shibata (2016) argue is that when spell-out applies to (16) (where XP is a phase), it essentially changes (16) to (17). The other authors cited above make similar proposals. Thus, Narita (2011, 2012) argues that spell-out removes a constituent from the derivational workspace so that what remains after spell-out applies to (16) is (17) (Chomsky 2008 in fact also suggests that the PIC effect arises because what is spelled out is eliminated).¹⁸ The idea

¹⁷ Bošković (2016b) argues that what undergoes spell-out is actually a full phase, with successive-cyclic movement targeting the phrase right above the phase. The discussion in the text can be easily adapted to that approach.

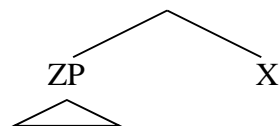
¹⁸See Narita (2011, 2012) for discussion of how the information that X was merged with YP is encoded and accessed in the interfaces under this approach (Narita argues the information that YP has undergone Merge with X in (16), including the relevant c-command relations, are also transferred, which is important in the recombination of separately transferred bits of structures (see Boeckx and Grohmann 2007), e.g. for the purpose of linearization. The alternative is to treat linearization in the relevant respect like Chomsky (2013) treats labeling, which is rather natural given that Chomsky (2013) treats labeling just like linearization in

behind the proposals in question is thus rather simple and appealing: if something is not accessible it is really not there (in fact, more generally, this is the best and simplest way of dealing with the kind of effect where something (YP in this case) behaves as if it is not there—it really is not there). What matters for us is that this changes the phrase-phrase merger from (16) into a head-phrase merger in (17).

(16)



(17)



The above discussion (i.e. MAR), then, gives us a new perspective on the PIC. A Spec involves a symmetrical, phrase-phrase merger. The PIC in effect reintroduces asymmetry into the merger (compare (16) and (17)). The above then amounts to a deduction of the PIC—it is seen as a mechanism for maximizing asymmetry of syntax.¹⁹

that labels are needed only at the interfaces hence merger of syntactic objects proceeds without labeling. Chomsky argues that labeling is done at the phasal level, for the whole phase, prior to transfer. (Under the Takita et al analysis, if at this point labeling fails due to the lack of feature-sharing, it can reapply after the relevant transfer operation, which is in fact what Chomsky 2013 also assumes.) Given the conceptual similarity between linearization and labeling, it seems natural to assume that the same would hold for linearization. The effect of this is that the c-command relations relevant to linearization would be read off at the derivational point in (16) (note that the issue of linearization matters only if we are dealing here with the final landing site of ZP and if XP is phase; it does not arise e.g. with successive-cyclic movement). There are other rather interesting options here, but exploring them in detail would take us beyond the scope of this paper. E.g., Kayne (2010) suggests linear order is determined by probe-goal relations, where the probe-goal search shares the directionality of parsing and production, hence the probe precedes the goal (a head then precedes the complement since it probes the complement (this is generalized over selector-selectee dependencies) or an element within the complement). What is of interest here is that in Bošković's (2007) system, discussed in section 5.2, all movement is moving-element driven, with the moving element serving as a probe from its final landing site (the moving element has a uK feature which forces it to move to serve as a probe). What this means is that if what we see in (16)-(17) is the final landing site of ZP (which is the only relevant case since otherwise ZP would not be pronounced in this position, making linearization irrelevant), ZP will function as a probe in Bošković' system, which means that under Kayne's (2010) assumption regarding probe-goal relations, ZP would precede XP in (16) (in fact, nothing would change in (17)). Another assumption from Kayne (2010) opens up another possibility. Kayne suggests that if a head H merges with two complements, they must be on the opposite side of H. Given the bottom-up derivation, (16) first determines that X must precede YP. ZP then must be on the opposite side of X even in (17). Another possibility is made available by a proposal from Narita (2011), the gist of which is that in $\{\alpha, \beta\}$, if there is a lower copy of α within β , α precedes β . There are thus a number of very interesting options here. However, teasing them apart, which would require their precise formalization, would take us beyond the limits of this paper, hence I leave this potentially rather rewarding endeavor for future research.

¹⁹As observed by Takita et al (2016), under their proposal labeling considerations cannot be the driving force behind successive-cyclic movement as in Chomsky (2013) (Chomsky's analysis in this respect was based on the stipulation that traces are ignored for labeling, which, as noted above, is now eliminable).

There is a similarity between the diachronic loss of specifiers and the PIC that should be noted: while the two are superficially very different, like the former, the PIC also leads to the loss of a specifier, i.e. undoing of a phrase-phrase merger situation. One could in fact look at the PIC as a derivational manifestation of the diachronic pressure to lose specifiers.

A question, however, arises in this respect whether the avoidance to create a specifier can be the motivation for the loss of wh-movement if the relevant specifiers are anyway reanalyzed during transfer/spell-out. Two issues are relevant in this respect. It is not clear that wh-movement in all languages targets SpecCP, i.e. a phasal edge (see in this respect section 5). In fact, in some of the cases where wh-movement got lost, it appears that the landing site of obligatory wh-fronting was actually lower than SpecCP (i.e. it did not target a phase edge, which means that the relevant Spec would not have been PIC-reanalyzed), see in this respect Aldridge (2018), who argues that wh-movement in Old Japanese targeted SpecIP²⁰ (see also Watanabe 2002 and Aldridge 2009, as well as Aldridge 2010, 2018 regarding Archaic Chinese). Second, even in the cases where wh-movement does create a Spec of a phase (i.e. where it lands in SpecCP), in the case of a derivational loss of a specifier that is accomplished through the PIC, the specifier is still first created. With the loss of wh-movement, the specifier is never created. This means that the loss of wh-movement is a stronger way of satisfying MAR than the PIC; the avoidance to create a specifier can then still be the motivation for the loss of wh-movement in spite of the role of the PIC described above.

At any rate, it does seem to be the case that languages vary in the landing site of wh-movement (see here section 5).²¹ If this is indeed true, and if in some cases wh-movement does target a phasal edge while in others it does not, we may expect that the latter would be more likely to be lost given that the PIC would relieve the Spec pressure to some extent in the former case. While the prediction still remains to be verified, it should be noted that some of the cases where wh-movement got lost indeed seem to have involved wh-movement of the latter kind. Thus, Aldridge (2009, 2010, 2018) argues that this was the case in Archaic Chinese and Old Japanese. While it is impossible to go into a detailed discussion of the position of wh-phrases in Archaic Chinese and Old Japanese here (and it is difficult to be conclusive in the relevant respect given that we can only rely on historical records), the position of the wh-phrases in (18) (wh-fronting was obligatory in Archaic Chinese) rather clearly indicates that the landing site of the wh-fronting is lower than in English, which is exactly what Aldridge argues.²²

They also observe that labeling anyway cannot be taken to be the driving force of movement in general, e.g. no labeling problem arises in the base position of the direct object in *Mary_i, John likes t_i*. Takita et al (2016) adopt Bošković's (2007) proposal, discussed in section 5.2, that movement is driven by an uninterpretable feature (uK) of the moving element, which applies both to the initial step of movement and successive-cyclic movement (one could, however, try to incorporate this into the labeling system under Bošković's in press assumption that a uK blocks labeling—a moving element would then always have a uK, which would block labeling (with feature-sharing eliminating the uK)).

²⁰ She argues that SpecIP in this case becomes a wh/focus position through C-T inheritance.

²¹ To mention just one case, while in many languages with focal particles wh-phrases move in front of the focal particle, which means to the Spec of the particle, Yuan (2017) shows that in Kikuyu they move to the complement of the focal particle (as a result of which they follow it; see also Tuller 1992 for relevant crosslinguistic variation within Chadic languages).

²² See Aldridge's work for explicit arguments that this is indeed the case, in Archaic Chinese as well as Old Japanese. Regarding the latter, while wh-phrases had to be fronted in Old Japanese, they were very often not clause initial (note that Aldridge shows that it is not the case that only topics could precede fronted wh-phrases in Old Japanese). This is very different from Latin, to be discussed below, where wh-phrases are typically clause initial (see the data in Brown, Joseph, and Wallace 2009, Danckaert 2012, Davin and Stephens 2006, Ledgeway 2012, Spevak 2010).

- (18) a. Gong **shei** yu xiang t_i?
 you who want appoint
 ‘Who do you want to appoint?’
 b. Wo jiang **hei** qiu t_i?
 I will what ask.for
 ‘What will I ask for?’ (Archaic Chinese, Aldridge 2010:10)

Also relevant is Romance. As noted above, Latin was an obligatory wh-fronting language. Modern Romance languages, on the other hand, allow the wh-in-situ option (Latin did not allow it at all), in fact quite productively. As noted by Dadan (2019), the option is actually on the rise in terms of the frequency of occurrence. Thus, Coveney (1995) explicitly argues that this is the case for French. In fact, although French has more than one overt movement strategy, Coveney (1995) has found that the wh-in-situ option is employed in nearly 40% of questions in the speech of Parisian middle class (see also Lopes-Rossi 1996 for Brazilian Portuguese). The wh-in-situ option is even more prevalent in child speech (in fact, even older children, who have fully mastered the wh-option, use wh-in-situ more frequently than wh-movement, and crucially more frequently than their parents, using it even in the contexts where wh-in-situ is not allowed in adult French, see Zuckerman 2001, Oiry 2011). Based on all this, Dadan (2019) argues that we are witnessing here a change in progress, with French being in the process of becoming a wh-in-situ language. What is important for us is that Ledgeway (2012) suggests that there was a change in the landing site of wh-fronting from Latin to Modern Romance; in particular, the landing site of wh-fronting in Latin was the highest clausal projection (see also Danckaert 2012), which is not the case in Modern Romance, where Ledgeway (2012) assumes that wh-fronting lands in Rizzi’s (1997) FocP. What this means is that in Latin, wh-fronting targeted a phasal projection, which is not the case in Modern Romance.^{23 24} In fact, Danckaert (2012: 245-250) suggests that Latin was a multiple wh-fronting language of Bulgarian type, with fronted wh-phrases clustering together in a superiority-obeying manner clause initially. In the literature on multiple wh-fronting, this is generally taken as a diagnostic of wh-fronting to the highest clausal projection (see e.g. Rudin 1988, Bošković 2002, Richards 2001). This means that there was a change in the landing site of wh-fronting, from a phasal to a non-phasal projection, before the development of wh-in-situ in Romance.

At any rate, while it is impossible to be conclusive in this respect, there is thus some suggestive evidence (especially from (Archaic) Chinese and (Old) Japanese) that wh-fronting is more likely to be lost if it targets a non-phasal projection, which could be captured under the

²³ Adopting Rizzi’s (1997) split CP structure (developed mostly on the basis of Italian), where ForceP, not FocP, is the highest clausal projection, to Chomsky’s (2000, 2001) phasal system or the contextual, the highest-phrase-in-the-clause-is-a-phase system (e.g. Bošković 2014, 2015, Wurmbrand 2013), FocP would not be a phasal projection in either of these two approaches to phases. (In fact, I am not aware of any approach to phases where that would be the case.) Note that more generally, Ledgeway (2012) suggests that Latin did not have split (or fully split) CP, which modern Romance languages do have (for independent evidence that there is crosslinguistic variation in this respect, see e.g. Bošković 2016a, Erlewine 2016; note that Rizzi 1997 himself suggests that CP is not always split, in fact even within a single language, and that the works assuming split CP for particular languages argue that there can be variation in the landing site of wh-movement across languages even within split CP, see for example Haegeman 2000 and Roberts 2004).

²⁴ Note also that in Spanish (which is also developing wh-in-situ), a traditional complementizer can in fact precede a fronted wh-phrase (see e.g. Uriagereka 1988, Rizzi 2001, Villa-García 2015), which confirms that the wh-fronting here does not target the highest clausal projection (see also Bošković 2002, Reglero 2007, Reglero and Ticio 2013, Figueiredo Silva and Grolla 2016, among others, for arguments that wh-in-situ in modern Romance languages is true wh-in-situ; it should not be analyzed as involving wh-movement that is followed by remnant fronting).

suggestion made in this section since the PIC would relieve the Spec pressure at least to some extent with phasal Specs, as discussed above.²⁵

Another point is worth noting here. One of the tenets of the minimalist program is that language (i.e. Universal Grammar) is characterized by optimal, computationally efficient design. Phases and multiple spell-out are taken to contribute to the efficient design, i.e. they are efficient design mechanisms. Early research within the generative paradigm has already noticed that syntactic dependencies can span only a limited amount of structure. In the current theory, the locality of syntactic dependencies is treated in terms of phases, the goal being to have an optimal and efficient computational system. The phase theory, combined with multiple spell-out, accomplishes this by limiting the number of syntactic objects/the amount of syntactic structure that the derivation is working on, where this is achieved by transferring parts of syntactic structure to the interfaces during the derivation, the transferred parts not being accessible for further syntactic operations (see Uriagereka 1999). Phases determine the transfer points, the PIC playing a crucial role here.

Phases and multiple spell-out not only limit the amount of structure that the derivation is working on, but they also maximize the MAR effect by eliminating Specs (by changing their status, as discussed above). From this perspective, the more phasal points we have, the better (for both concerns under consideration). There are a number of different approaches to phases; I will leave it to the reader to compare them from the perspective of these concerns (see e.g. Chomsky 2000, 2001, Bošković 2014, Epstein and Seely 2002, and Müller 2010).

The above approach to the PIC also has a bearing on the proper formulation of the PIC. Following the original multiple-spell out proposal by Uriagereka (1999), Bošković (2015) argues for an approach to the PIC where both the Spec and the complement of phase XP are accessible from the outside (though nothing that is dominated by these elements is). This conception of the PIC would not follow from the maximize-asymmetry-approach to the PIC: complements do not raise a problem for the asymmetry of syntax; furthermore, this approach does not sever the Spec from the rest of the structure, by placing it in a different domain. As a result, if the maximize-asymmetry approach to the PIC is on the right track, the conception of the PIC where only the Spec is accessible from the outside is to be preferred.

The above discussion has thus unified the diachronic tendency to lose Specs, the avoidance of Specs in language acquisition, the LCA, and the PIC: all of these are there because of the asymmetric nature of syntax. Superficially, we are dealing with very different mechanisms but abstractly they all have something in common, namely MAR. The diachronic loss of specifiers (which is essentially reflected in language acquisition), the LCA, and the PIC are all different strategies for dealing with a symmetric merger situation: with the first one, one of the relevant elements is lost, with the second one, movement of one of the elements is forced, and the third one changes the status of one of the relevant elements—crucially, they all target and change a symmetric merger situation. We have also seen that that bringing the PIC into the diachronic loss of specifiers makes a prediction that non-phasal specifiers may be more likely to get lost than phasal specifiers. The current discussion also has consequences for the PIC and phases: it favors

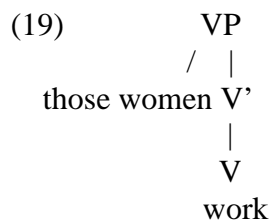
²⁵ All this may also be expected to have a reflex in language acquisition, an issue which will have to be left for future research. Another issue is potentially relevant here. Rizzi (1997) suggests that even in languages where *wh*-movement targets FocP, a non-phasal projection as discussed above, *wh*-movement in relative clauses still targets the highest phrase in split CP (his ForceP), which is a phasal projection. Interestingly, it appears that *wh*-movement is harder to lose in relative clauses; thus, modern Romance languages still require it in relative clauses; in fact, even Chinese still has *wh*-movement in relative clauses (see e.g. Huang 1982). This could be another case where a phasal Spec is more resistant to a loss than a non-phasal Spec, though obviously a much more careful investigation, which I leave for future research, is needed before this conclusion can be endorsed.

one particular approach to the PIC and favors approaches to phases that maximize phasal points. (Recall that MAR also favors a particular way of implementing Case licensing.)

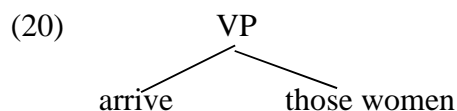
4. Bare Phrase Structure

In this section I will discuss basic structure building from the perspective of MAR. We have seen in section 1 that the notion of the head of a phrase itself reflects the spirit of MAR. In this section we will see that the MAR perspective also provides an argument for Chomsky's (1995) conception of Bare Phrase Structure (BPS), which also favors it over GB-style structure building. (Recall also that the MAR perspective explains the rarity of multiple Spec constructions, which BPS otherwise freely allows.)

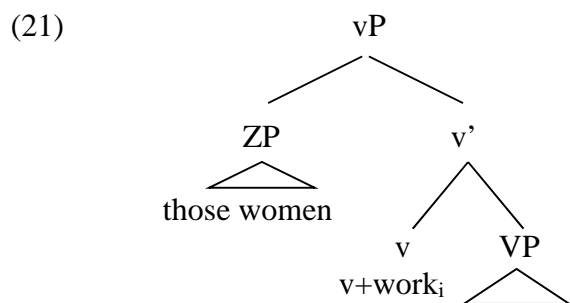
Chomsky (1995) proposes a relational definition of Specs and complements where the first element merged with a head is a complement, everything else is a Spec. This in itself favors complements over Specs (capturing the MAR intuition); in fact, there cannot be a Spec unless there is a complement. GB structure building was not like that, it was perfectly fine to have a Spec without a complement, as in (19) (under the Predicate Internal Subject hypothesis).



This is not possible in BPS. Attempting something of this sort would only give us a structure that is appropriate for an ergative verb, where the sole argument is base-generated as an object, i.e. a complement (see (20), where VP is used for ease of exposition; the same holds for the bar-level in (21)). The reason for this is simple: there cannot be a Spec unless there is a complement in BPS, which, as noted above, captures the MAR intuition by favoring complements.



In fact, this is what gave rise to vP: if the external argument is going to be a Spec, the head that introduces it must take a complement, otherwise it could not take a Spec (vP is then there essentially due to MAR concerns).



The intuition behind all of this is that Specs are created when there is no more space within a phrase, they are sort of last resort in structure building: first comes the complement, whose merger into the structure is asymmetric; if needed, we then get a Spec. The "last resort" character of Specs (they are there only when there is no more space within a phrase) was not present in the GB

structure building, which does not favor complements over Specs; hence, to the extent that it is real, MAR can be taken to favor BPS.

To complete the discussion of base argument structure building, compare simple transitive and ditransitive constructions in (22)-(23) (where only the traditional VP structure is presented).

(22) [kissed Mary]

(23) [Mary give a book]

A single internal argument can be merged as a complement, as in (22); this is not possible with the second internal argument in (23), where creation of a specifier is then forced by semantic reasons (the creation of the Spec in (23) then does not violate the MAR preference). As noted above, under standard assumptions, external arguments are Specs, but in that case the creation of a Spec is also unavoidable, given that the relevant head, *v*, also needs to take a complement.

A number of things then get unified from the MAR perspective: the diachronic loss of Specs and their avoidance in language acquisition, noted by Dadan 2019, the LCA, the Phase Impenetrability Condition, and the no-Spec-without-complement aspect of Bare Phrase Structure (regarding structure building, the latter is in fact brought together with the notion of the head of a phrase and the rarity of multiple-Spec constructions).²⁶ We have seen that the Bare Phrase Structure system is in fact characterized by an avoid-a-Spec-if-you-can property, which is exactly the spirit of MAR, in fact MAR as a preference principle, as argued here.

5. On intermediate movement effects

This section is somewhat speculative and open ended in nature. Its goal is to note one particular consequence of the above discussion, i.e. MAR, which due to the scope of this work and space limitations (as well as the controversial nature of the issues under discussion) cannot be discussed in any real detail here.

5. 1. Intermediate steps of movement

²⁶ It is worth noting that there is an aspect of Chomsky's (2013) labeling framework that goes against the spirit of MAR. We have seen in section 1 that the notion of the head of a phrase in fact expresses MAR—it is inherently asymmetric in that it makes one element in a phrase, or one element in any merger, more important than the other(s). While in BPS all structure building is asymmetric in that one element in a merger always projects (labeling the resulting structure, thus functioning as the head of the resulting structure) this is not the case in Chomsky (2013). E.g., in (i), when *Mary* and TP merge what labels the resulting structure in Chomsky (2013) is prominent features they share, namely ϕ -features. The two elements thus contribute equally to the structure building here. Similarly, the merger of *what* and the CP in (ii) (*I wonder what she bought*) is labeled by the shared feature, Q, with the two elements again contributing equally to structure building. This is all in contrast to the BPS system, where only one element projects in each merger, labeling the resulting structure.

(i) [$\langle \phi, \phi \rangle$ [_{DP} Mary] [_{TP} left]]

(ii) ... [$\langle Q, Q \rangle$ [_{DP} what] [_{CP} she bought]]

The structures in (i) and (ii) raise questions, e.g., there is the issue of how $\langle \phi, \phi \rangle$ in (i) is interpreted in the semantics (note that Chomsky 2013 actually argues that the semantics, not syntax, needs labels. The same issue may arise with object shift, since when object shift takes place, the resulting structure would presumably be also labeled as $\langle \phi, \phi \rangle$). Putting these issues aside (it is worth noting here that the works in the labeling framework often adopt traditional labels like TP and CP for (i)/(ii) for ease of exposition, though the issue is whether this is really just for expository reasons), the point made here is that the BPS structure building is more in line with MAR than structure building in the labeling framework, so MAR can actually be taken to favor the BPS system over both GB structure building and the labeling-framework structure building, though for different reasons.

Above, we have seen that there is a deep dislike for specifiers. What is behind it is the general preference for asymmetric relations. In light of the above discussion, where we have seen that there is a tendency to lose specifiers diachronically and change their status derivationally due to the preference for asymmetric relations, we would not expect to have free, superfluous specifiers. As noted above, the existence of Specs is related to the broader question why we have movement in the first place (Chomsky's 2000 answer is that this is due to the needs of the external systems); most of the time they are used to express various semantic and pragmatic notions (see also fn 13). There can also be prosodic reasons for them, e.g. to support an enclitic head. But there are other considerations too. Consider successive-cyclic movement, in particular, consider (24), focusing on one intermediate step, namely, movement to the intermediate SpecCP.

(24) Which book do you think [*t* that John bought]?

When *which book* moves to merge to the position indicated by *t* in (24) we get a merger of two phrases. In this case, there are no non-syntactic reasons of the kind discussed above that would motivate creating the dispreferred phrase-phrase merger. The reason why the spec in question is created is syntactic, namely due to syntactic locality. Since CP is a phase, *which book* would not be able to move out of the CP without moving through its edge.²⁷ The Maximize Asymmetric Relations (MAR) is a preference principle, it says that such relations should be maximized as much as possible—here it is simply not possible. Under this approach, we would then expect successive-cyclic movement to occur only when it is really necessary, namely, when it is forced by the PIC, which means that successive-cyclic movement should proceed only through phasal edges. In other words, there should be no free successive-cyclic movement. For arguments that this is indeed the case, the reader is referred to Kang (2014). The position will not be defended here, the issue is too controversial and involves a number of constructions—anything even remotely approaching a conclusive discussion of the issue would go way beyond the scope of this paper, whose goal regarding this particular issue is simply to point out one consequence of MAR and, additionally, to discuss a case (referred to below as the *who left* effect) that was not considered before from this perspective. Regarding arguments for potential free successive-cyclic movement in the literature, such arguments should either be reanalyzed in a way that does not involve successive-cyclic movement, as is done for a number of such cases in Epstein and Seely (2002, 2006), or there should be more phasal boundaries than is standardly assumed so that the movements in question actually target phasal edges (in this respect, see e.g., the claim from Bošković (2014, 2015) and Wurmbrand (2013) that the highest clausal projection is a phase, which means that even IPs that are not dominated by CP, as in the case of raising and ECM infinitives, are phases; note also that under Bošković's 2014 approach to phases, on which all lexical heads project phasal domains, even passive and ergative verbs, as well as nouns, prepositions, and adjectives, project phasal domains). At any rate, given that intermediate movements involve creation of specifiers, given the above discussion we would expect that there would be no superfluous intermediate movement steps.²⁸

This may also help us address the *who left* effect (and more generally, Bošković's 2008b claim that feature-checking movement cannot feed another feature-checking movement)—local subject questions of this sort in fact provide a rather dramatic illustration of the ban on superfluous intermediate steps, which goes beyond phasal considerations. Consider the following paradigm (for discussion of the paradigm see Bošković 2016a, Messick in press and references therein).

²⁷ Given that what is sent to spell-out is no longer accessible to syntactic computation, a moving element needs to move to the phasal edge, and out of the phasal complement before the complement is sent to spell-out. Successive-cyclic movement then must target phasal edges.

²⁸ Superfluous here should be taken rather broadly. In fact, the discussion we are about to get into indicates that 'superfluous' should not be only defined in terms of phases.

- (25) Who left?
 (26) a. *Who bought what the hell?
 b. What the hell did John buy?
 c. Who the hell bought that house?
 (27) Who loves everyone? (who>everyone; *everyone>who)
 (28) Someone loves everyone. (someone >everyone; everyone>someone)
 (29) Someone bought a car. Who?

Questions like (25) are sometimes assumed not to involve wh-movement at all (see e.g. Carstens, Hornstein, and Seely 2016, Chomsky 1986). There is, however, evidence that the wh-phrase in (25) does not remain in SpecIP. Very briefly, if we take (26a-b) to indicate that *the hell* can only modify wh-phrases in SpecCP, (26c) provides evidence that *who* in (25) does not stay in SpecIP (see Ginzburg and Sag 2000; Pesetsky and Torrego 2001). Furthermore, *everyone* can take scope over the subject in (28) but not in (27). This is unexpected if the subject in (27) could stay in SpecIP (see Mizuguchi 2014). Finally, if sluicing involves wh-movement followed by IP deletion, as is standardly assumed, the wh-phrase in (29) cannot be located in SpecIP (see Agbayani 2000, Messick in press; the latter also shows that (29) is not a case of pseudosluicing, i.e. ellipsis of an underlying cleft). (26)-(29) thus provide evidence that *who* does not stay in SpecIP in (25).

Furthermore, in a number of languages that allow both the SV and the VS order, where in the latter the subject does not move to SpecIP, the two orders are associated with different subject-agreement morphology. What we get in *who left* in such languages is the morphology associated with the VS order (e.g. in some dialects of Italian). This indicates not only that the subject in subject questions does not remain in SpecIP, but that wh-movement to SpecCP cannot even proceed through SpecIP, otherwise we would get the morphology associated with the SV word order. The same point can be made regarding languages where the usual subject agreement morphology that is associated with subjects being in SpecIP has to be dropped in *who left* (e.g. Kinande, Kaqchikel).

Consider also British English *do*-ellipsis, where *do* co-occurs with a modal. It has been noted that A-movement out of a *do*-ellipsis site is allowed, while A'-movement is not, as shown by (30) (Baltin 2007, Haddican 2007, Bošković 2014, den Dikken and Griffiths 2018, Messick in press, among others).

- (30) a. John might seem to enjoy that, and Pete_i might (do) ~~seem t_i to enjoy that~~ too.
 b. I know who_i John will kiss and who Pete will (*do) ~~kiss t_i~~

Importantly, such ellipsis is also disallowed with subject questions (see den Dikken and Griffiths 2018, Messick 2019): if wh-movement in subject questions were to proceed via SpecIP, (31B) would involve only A-movement out of *do*-ellipsis, just like (30a), hence would be expected to pattern with (30a) rather than (30b).

- (31) A: Sue wouldn't kiss Peter last night
 B: Well, who_i would (*do) ~~t_i kiss him~~ (den Dikken and Griffiths 2018)

Another, new, argument to this effect concerns the well-known fact (see for example Bresnan 1971, Selkirk 1972, Kaisse 1983) that auxiliary contraction is not possible when the auxiliary is followed by a wh-trace (in work in preparation I show that this holds when the auxiliary and the wh-trace are located in the same phase).

- (32) a. I know where_i John is t_i (tonight).
 b. *I know where_i John's t_i (tonight).

The fact that auxiliary contraction is allowed in (33) then indicates that wh-movement in (33) does not proceed via SpecIP, leaving a wh-trace in that position.²⁹

(33) Who's leaving tonight?

The following West Ulster English (WUE) data, noted by McCloskey (2000), provide a rather strong confirmation that local subject questions do not involve wh-movement via SpecIP.

(34) Who_i was arrested all t_i in Duke Street?

(35) *They_i were arrested all t_i last night.

(36) What_i did he say all t_i that he wanted?

In contrast to Standard English, WUE allows Q-float under wh-movement, as shown by (36); such Q-float is also possible in (34). Still, just like standard English, WUE disallows (35). (35) indicates that a subject in SpecIP cannot float a quantifier in the postverbal position in passives. This rules out the derivation where *who* in (34) moves to SpecCP via SpecIP. If that were the case, the quantifier in (34) would be floated under movement to SpecIP, which (35) shows is not possible. (This also rules out the derivation where *who* in (34) stays in SpecIP). These data then provide evidence that *who* does not even pass through SpecIP in (25), which is in fact what McCloskey (2000) concludes. How come?

Rizzi (2006) argues that SpecIP is actually a criterial position (like e.g. Spec of +whC, SpecFocP...); movement to this position (i.e. being in this position) leads to a certain interpretation (the same has been argued for object shift, see for example Diesing 1996).³⁰ Under this approach, non-syntactic reasons are then (at least partially) behind creation of SpecIP, which would in essence mean that this movement is not taking place for a strictly formal reason. But this non-formal, interpretation-related reason, which fits well with the above discussion regarding why we have movement, could apply only if the element actually stays (and is interpreted) in that position; if the element has to move away for other reasons, this non-syntactic reason would not apply. Given that IP that is dominated by CP is not a phase, phases/PIC would also not require movement to that position. Given that intermediate movements take place only when forced by phase/PIC reasons, then movement to SpecCP would not even proceed via SpecIP, which captures the *who left* effect. The reason why there is no movement through SpecIP in *who left* is then the same as the reason why specifiers are lost diachronically, and in fact, more abstractly, it is the same reason as the one behind the LCA and the PIC: MAR, or the general asymmetric nature of language, which disfavors Specs.

There is actually a more general freezing effect associated with criterial positions in Rizzi's sense: as discussed in Rizzi (2006), once XP moves to a criterial position, it gets frozen there—movement from a criterial to a criterial position is not possible. Bošković (2008b) generalizes this

²⁹It is occasionally suggested that subject questions exceptionally do not involve inversion due to the lack of *do*-support. The conclusion is erroneous: *do*-support is a last resort mechanism that takes place to support a stranded tense affix when a phonologically realized element intervenes between the affix and the verb (an account that goes back to Chomsky 1957, see also Lasnik 1995b, Halle and Marantz 1993, Bobaljik 1995, among many others). There is no phonologically realized intervener in *Who walked* (cf. *Who C+T(ed) walk*), just as in *Mary walked* (cf. *Mary T(ed) walk*), and in contrast to *What did Mary buy* (cf. *What C+T(ed) Mary buy*). Only the last case then triggers *do*-support.

³⁰I refer the reader to Rizzi (2006) for discussion of the Subject Criterion, i.e. the interpretation that is associated with the position in question (including the status of traditional expletives under this approach, though see Moro 1997 for a semantically-contentful-element approach to expletives). Rizzi in fact explicitly considers the traditional EPP to be a manifestation of the Subject Criterion, comparing it in this respect to the situation found with e.g. TopP and FocP.

effect in terms of feature checking, where a feature-checking movement cannot feed another feature-checking movement. It should, however, be noted that the above discussion most naturally fits with Chomsky's (2008) position regarding movement to criterial positions: Chomsky (2008) suggests that such movement is not formally (i.e. feature-checking) driven, what licenses movement to positions like SpecTopP, SpecFocP..., i.e. what in effect then licenses Spec creation in such cases, is getting a certain interpretation, which fits well with the above discussion regarding "licensing" of specifiers. The more general criterial freezing effect can then be captured as discussed above: if α simply moves through a criterial position X on its way to a higher criterial position, the interpretation associated with it would be lost, since α would not be interpreted in that (X) position (any kind of forced reconstruction would raise the same problem regarding the higher criterial position).³¹

In conclusion, given that intermediate movements involve Spec creation, given MAR, we would expect that there would be no superfluous intermediate movement steps. The *who left* effect represents a rather dramatic confirmation of the ban on superfluous intermediate steps. Given that intermediate movement (to SpecIP here) is banned even in this case, it appears that the null hypothesis should indeed be that intermediate movements take place only through phasal edges (i.e. when they are forced by phases/PIC), which raises a number of interesting issues that were noted in the beginning of this section.

5.2. More on the EPP and MAR

In this section I will briefly address the EPP effect in light of the above discussion, i.e. from the perspective of MAR. (I will not be able to provide a comprehensive discussion of the effect, I will merely point out the relevance of the above discussion for it. Furthermore, since I will not be concerned here with the question of whether the traditional IP should be split (and how it should be treated), I will interchangeably use the terms I(nfl) and T(ense) for the head associated with the EPP effect, depending on what the accounts discussed below assume in this respect. No deeper significance should be attached to this.)

There are two broad approaches to the traditional EPP effect that I will be concerned with here: (a) movement to SpecIP is driven by an inadequacy of the target (I), which requires a Spec; (b) the movement is triggered by a problem in the structure prior to the movement to SpecIP, i.e. a problem which arises when *who* is located in its base-generated position (SpecvP in (25) (see e.g. Bošković 2007, Epstein and Seely 2006, Chomsky 2013). We have seen that SpecIP is never filled in (25); this provides evidence against (a), i.e. against an approach to the traditional EPP effect that would simply require creation of SpecIP for formal reasons—that position is simply not created in (25). On the other hand, such constructions can be captured under approaches along the lines of (b), where the traditional EPP effect is tied to the moving element itself, since such approaches do not per se require SpecIP to be filled. Thus, there are Case-driven approaches to the traditional EPP effect; for example, in Bošković (2007) the Case requirement is formulated in such a way that a nominative DP simply needs to c-command Infl for its Case to be licensed (i.e. the DP must be a probe here³²): it undergoes the shortest movement possible to achieve this. In (25),

³¹ Additional assumptions are needed if the movements in question are treated in terms of feature checking since a feature can be checked on the way to a higher position. Bošković (2008a), who gives such an analysis, in fact adopts an additional assumption, in terms of Chomsky's (2000, 2001) Activation Condition, where movement of α to a criterial position deactivates α for further movement. As discussed below, another issue arises under the formally-driven movement approach if movement to e.g. SpecTopP is taken to be driven by a requirement for Top to have a Spec. Given MAR, it would be strange to have a formal requirement that would be directly in conflict with MAR in this manner, as discussed in more detail below.

³² For independent evidence for this approach to Case, see Villa-García (2015), Stjepanović (2011), Saito (2016), Aldridge (2018), Dadan (in press), among others. Particularly strong are the arguments given by

who independently needs to move to SpecCP: since in this position *who* also c-commands Infl, there is then no need to move to SpecIP at all (under this approach to the EPP effect), hence such movement is then not allowed, given the above discussion.³³ As pointed out by Messick (in press), the same actually holds under Chomsky's (2013) labeling approach to the EPP effect, which is abstractly similar to Bošković's: it is something about the base-generated position of the subject that forces its movement—as in Bošković (2007), in Chomsky (2013) there is no requirement to create SpecIP. The independently required movement of the subject to SpecCP in (25) resolves the issue in question, so that there is no need for movement to SpecIP, i.e. to create SpecIP.³⁴

Even putting aside the issue that (25) raises for the traditional EPP approach, which requires filled SpecIP, there is a more serious conceptual issue here, raised by MAR. Given MAR, which disfavors Specs, it would be rather strange to have a condition which requires a Spec, which is exactly what the traditional EPP is.

The issue is in fact more general, it goes beyond the traditional EPP—it concerns the more general question of whether movement is driven by a property of the moving element or by a property of the target.³⁵ In Bošković (2007), movement in general is in fact never driven by an inadequacy of the target, but by an inadequacy of the moving element.³⁶ Consider for example successive-cyclic movement. The crucial ingredients of Bošković's account of successive-cyclic

Villa-García, who gives examples where a DP that is base-generated in the left periphery does not get default case but it gets its case from lower down. Since the relevant functional head does not c-command the DP at any point of the derivation, Villa-García concludes that it must be the case that the DP probes down to be Case-licensed, as in Bošković's (2007) approach.

³³Since we are dealing here with a matrix question, Infl would actually move to C; however, such movement would not take place if (25) is embedded under a verb like *ask*, since inversion does not take place in indirect questions.

³⁴Chomsky (2015) proposes a different labeling account of the EPP, where SpecTP always needs to be there (hence the account still faces the *who left* effect problem) though there is no explicit requirement to this effect. What is interesting about this account is that it actually ties the EPP effect to the head-complement relation: the gist of the account is that a problem arises when T merges with its complement—this is why another merger with the object created by the T-complement merger is needed. In other words, the relevant movement takes place for a reason related to the head-complement merger (something goes wrong with that merger). I will discuss this account in more detail below.

³⁵There are also approaches that allow both, see Lasnik (1995a) and Zyman (2018). See also Nunes (2014, 2019) for an approach that combines Bošković (2007) and Chomsky (2000) in a way that would still allow us to maintain the conclusions reached below; in particular, Nunes argues that in some cases the property driving movement (an uninterpretable feature (uK) for Bošković) originates on the phase head but is passed on to the moving element, so that it is still a uK of the moving element that drives the movement.

³⁶Bošković (2007, 2011b) discusses cases which are argued to provide support for the base rather than the target driven movement, like quantifier raising. (There is nothing about the target of QR that would require it, i.e. nothing would go wrong with the target of QR if QR does not take place; it is the moving element that needs it.)

As briefly noted in section 3, languages with obligatory wh-fronting, i.e. languages that must move at least one wh-phrase, actually differ regarding the exact landing site of wh-fronting (see e.g. Aldridge 2010, 2018, Bošković 2002, Horvath 1995, Roberts 2004 (within split CP), Tuller 1992, Yuan 2017, among others). It seems that this variation in the landing site of wh-fronting is easier to accommodate in an approach where the driving force of wh-fronting is in the wh-phrases themselves, than in an approach where the driving force is in the target head. In fact, there are languages that appear to simply require all wh-phrases to move where they quite clearly do not all move to the same position even within a single language (see Bošković 2002 and references therein), which seems to indicate that they are uninterpretable in situ (and crucially not simply interpretable in a single unique position), which fits better with moving-element rather than target-driven systems (see also Watanabe 2002 for a case where the uK of the moving wh-phrase is morphologically realized, with the loss of this morphological realization leading to the loss of wh-fronting).

bluntly, to require specifiers, in fact all over the place, as in Chomsky's 2000, 2001 target-driven system, would be rather strange in a system which really dislikes Specs).

In this respect, it is worth noting here Chomsky's (2015) approach to the traditional EPP, briefly noted in fn 34, where the traditional EPP effect is tied to an inadequacy of the target but is stated differently, without an explicit requirement to take a Spec. In fact, as noted in fn 34, the account actually ties the traditional EPP effect to the head-complement relation: In Chomsky's (2013, 2015) labeling system, when a head and a phrase merge the head projects, labeling the resulting object. However, Chomsky (2015) suggests that T is too weak to label itself (this is a departure from Chomsky 2013), this is why another merger with the object that is created by the T-complement merger is needed. In this account, there is actually no requirement to have a Spec (i.e. for T to have a Spec). The movement in question in fact takes place for a reason related to the head-complement merger, because something goes wrong with that merger. In other words, we appear to have here target-driven movement that is dissociated from a direct Spec requirement. However, it turns out that even this approach is actually in a rather direct conflict with the spirit of MAR. What MAR actually disprefers is a merger of two phrases. Consider now the relevant structure with respect to T. At the relevant point of the derivation, T already has a complement, which means that we have a phrase. Similarly to Chomsky's (2000, 2001) target-driven, I-need-a-Spec approach to movement in general, what we then have here in Chomsky's (2015) target-requirement approach to the traditional EPP, where T does not explicitly require a Spec, is a phrase which at this point of the derivation directly requires another merger—in other words, we have a direct requirement for a phrase-phrase merger.

The upshot of the above discussion is that target-driven approaches to movement generally rely on requirements that are in a direct conflict with MAR. This is not the case with moving-element driven approaches (or approaches that do not require a formal reason for movement). There, there is either no conflict, or only an indirect conflict, hence these approaches conform better with the spirit of MAR. The traditional EPP requirement to have SpecIP is in most direct conflict with MAR. In fact, we have seen above a rather serious empirical problem with the traditional EPP, a context where SpecIP is quite clearly not there, which we have suggested in fact arises due to MAR-related reasons. This is not to say that EPP effects do not exist at all—the point of the above discussion is that an approach that deduces EPP effects in a way that avoids a direct conflict with MAR would be preferable both conceptually (because of MAR) and empirically (to give us a shot at capturing the *who left* effect, i.e. the lack of SpecIP in such constructions).³⁹

At any rate, in addition to having consequences for the broader issues regarding the driving force of movement (and EPP effects), the discussion in this section has unified the *who left* effect with other phenomena and mechanisms that were previously unified from the MAR perspective.

6. Conclusion

Kayne's (1994) seminal work has established the importance of asymmetric relations in the domain of word order. This paper has expanded the domain of asymmetry with a number of phenomena that are independent of word order, making a case for a Maximize Asymmetric Relations preference (MAR) as a general property of the language faculty by showing that a number of phenomena, which are independent of word order, can be brought together under this perspective (and thus unified with Kayne's original word-order related concern, i.e. the LCA).

³⁹ Needless to say, a number of issues were left open above; the goal of the above discussion was not to provide a comprehensive account of traditional EPP effects (or comprehensively compare the existing accounts) but simply to note a consequence of MAR in this respect and to point out some of the ingredients that the eventual account should have (there is really no existing account that captures everything related to EPP effects—the above discussion has only scratched the surface when it comes to the full complexity of the relevant paradigm).

These include the diachronic loss of specifiers, the avoidance of specifiers in language acquisition, the Phase Impenetrability Condition, the rarity of multiple Spec constructions (cf. e.g. the rarity of the multiple *wh*-fronting strategy), the no-Spec-without-complement aspect of Bare Phrase Structure (which, under asymmetry, is unified with the notion of the head of a phrase), and the *who left* effect (where movement to SpecCP cannot proceed via SpecIP). What is behind all this is the Maximize Asymmetric Relations (MAR) preference, one consequence of which is that it favors complements over specifiers, since specifiers enter the structure through a symmetric phrase-phrase merger, which is in conflict with MAR. This aspect of MAR provides a unified perspective on superficially very different mechanisms. Thus, the diachronic loss of specifiers, noted by Dadan (2019), the LCA, and the Phase Impenetrability Condition are all different strategies for dealing with a symmetric merger situation: with the first one, one of the relevant elements is lost, with the second one, movement of one of the elements is forced, and the third one changes the status of one of the relevant elements by making part of the structure inaccessible. They thus all resolve symmetric merger situations. The PIC can in fact be looked at as a derivational (hence synchronic) manifestation of the diachronic (and acquisitional) loss of specifiers: since the PIC changes the status of a specifier derivationally, both the diachronic loss of phrasal movement and the PIC involve a loss of Specs.⁴⁰ Furthermore, we have seen that bringing the PIC into the diachronic loss of specifiers makes a prediction that non-phasal specifiers would be more likely to get lost than phasal specifiers.

MAR also has a number of theoretical consequences, in that it favors certain mechanisms and theoretical concepts over their alternatives. Thus, MAR has relevance for the more general issue of whether movement is target- or moving-element driven. MAR favors the latter approaches (or approaches where movement is not formally driven) over the former approaches, which are generally based on requirements that are in a direct conflict with MAR (this in fact holds for the traditional EPP requirement). FL apparently really does not like Specs. Given this, it would be strange to have a pervasive requirement (in fact all over the place) to take a Spec, as in Chomsky's (2000, 2001) target-driven system.

MAR also has consequences for structure building. The notion of the head of a phrase (or any merger situation), which is inherently asymmetric, rather directly reflects the spirit of MAR. MAR also favors complements over specifiers because, in contrast to the latter, the former enter the structure through an asymmetric (head-phrase) merger. As a result, MAR favors BPS structure building over GB structure building (for the latter reason) as well as over the labeling framework (for the former reason). MAR also favors asymmetric approaches to Case-licensing (e.g. the Case-valuation approach over the Case-checking approach). Regarding phases, it favors one particular approach to the Phase Impenetrability Condition as well as approaches to phases that maximize phasal points.

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⁴⁰ In this respect, note that successive-cyclic movement in a sense also involves a derivational loss of a Spec, due to its moving away aspect.

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