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Generalized Asymmetry

Željko Bošković
University of Connecticut

Abstract: The paper argues for a Maximize Asymmetric Relations preference (MAR) as a general property of the language faculty. A number of mechanisms and phenomena are unified from this perspective, with their reason for existence traced back to MAR, in particular, the diachronic loss of specifiers, their avoidance in language acquisition, the LCA, the Phase Impenetrability Condition, the no-Spec-without-complement aspect of Bare Phrase Structure, the rarity of multiple Spec construction (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.
Keywords: Specifiers, Phase Impenetrability Condition, Bare Phrase Structure, diachronic change, wh-movement, LCA

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 clear asymmetric relations outside of word order too. 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 <σ, t>, then [[α]]=[λxσ. [[β]] (x) and [[γ]](x)], where σ is any type.

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

(2) red car

[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).

The point of the above discussion is that the notion of the (unique) head of a phrase is inherently asymmetric. 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 asymmetricity 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 never framed in such a way. 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]

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). Arguing for asymmetric relations is of course not new.[4] What is new is the kind of phenomena that will be looked at from this perspective in this paper; in fact, a number of superficially rather different phenomena 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 much broader domain, going considerably beyond issues regarding word order, which is what Kayne was concerned with. 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 a great extent speculative and programmatic—I will not discuss the relevant phenomena comprehensively but will touch only on 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).

[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) ((3) is argued for on very different and broader grounds here though; Di Sciullo's position is actually similar to Moro 2000).

Much of the discussion below will concern specifiers, which we will see are particularly relevant to MAR. I will start the discussion by examining a rather interesting issue concerning specifiers in language change, noted by Dadan (2019a, in press, in preparation), which will lead us to examine the nature of specifiers more broadly.

2. Specifiers diachronically and synchronically: why we don't like Specs

Diachronic change often involves loss of movement (see for example Roberts 1993, 2007, van Gelderen 2009, 2011). Dadan (2019a, in press, in preparation) 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-movement, where Dadan observes 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** (Reglero 2004), wh-in-situ being possible as an option in modern Romance but it wasn't possible at all in Latin (see Dadan 2019a, in preparation, and references therein). There is also an on-going change to this effect 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 a number of 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 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 kŭšta li prodade?
new-the house LI sold
'Did he sell the new house?'
b. Novata kŭšta 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 (2019a, in preparation) (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).[5]

(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
(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 (2019a, in press, in preparation) 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). 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.

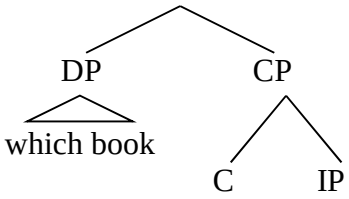
The head-complement relation involves merger of two elements that are not equal in their phrase structure status, one is a head and the other one is a phrase. This is not the case with the traditional Spec-head relation. In the Bare Phrase Structure system (Chomsky 1994), what we have in that case is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

[5] 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.

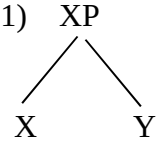
(10)



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.[6]

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 everything dominated by X precedes everything dominated by Y.[7] 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.[8] 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.[9]

(11)



[6] 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).

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

[8] 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).

[9] 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.

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.

It is worth noting here that there is a case 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 OV-to-VO word order change (see also Roberts 1997 and Dadan 2019a, in preparation). 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, Danckaert 2012, 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.

A question then arises why all specifiers don't get lost (see also Dadan 2019a, in preparation). 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…,[10] 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 (2019a, in press, in preparation), from this perspective, any case 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).

Dadan (2019a,b, in preparation) 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.[11] 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.[12]

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

[10] 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, see Richards 2010, 2016).

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

[12] 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.

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 (12), which is analyzed in terms of multiple specifiers of CP (see Koizumi 1994, Richards 2001).

(12) 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 (12) 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 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 is not a Spec there. 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), 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.[13] 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), their main concern being a problem that arises in Chomsky's (2013) labeling system with

[13] 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.

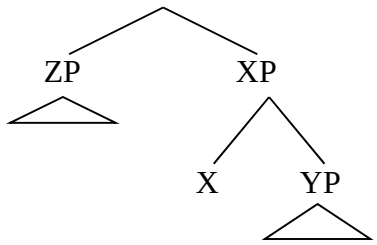
successive-cyclic movement, as in e.g. (13), where the structure cannot be labeled after *which book* merges in the position of t' (which involves merger of two phrases). To deal with this, Chomsky essentially stipulates that traces are invisible to labeling, so that the structure is labeled (as CP) after *which book* moves away.

(13) Which book$_i$ do you think [$_{CP}$ t'$_i$ that John bought t$_i$]

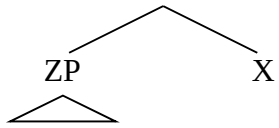
What Takita, Goto, and Shibata's proposal regarding spell-out does here is change the syntactic object {C(*that*), TP} into a single head C(*that*) (after the IP is sent to spell-out). The label of the syntactic object that corresponds to the embedded clause of (13) at the point when *which book* is 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).

At any rate, more abstractly, what Takita, Goto, and Shibata (2016) argue is that when spell-out applies to (14) (where XP is a phase), it essentially changes (14) to (15). 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 (14) is (15) (Chomsky 2008 in fact also suggests that the PIC effect arises because what is spelled out is eliminated).[14] What matters for us is that this changes the phrase-phrase merger from (14) into a head-phrase merger in (15).

(14)



(15)



The above discussion 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. The above amounts to a deduction of the PIC—it is seen as a mechanism for maximizing asymmetry of syntax.[15]

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

[14] See Narita (2011, 2012) for discussion of how the information that X was merged with YP is encoded and accessed in the interface interpretations under this approach.

[15] In principle, one could have phases/PIC without multiple spell-out. It appears that the above deduction requires multiple spell-out, which could then be interpreted as an argument for multiple spell-out. However, the argument can be re-stated without multiple spell-out, where the PIC determines what is accessible from outside of a phase without sending structure to spell-out during the derivation. The intuitive idea behind the Takita, Goto, and Shibata (2016) proposal is simple (and does not really depend on multiple spell-out): if something is not accessible it is really not there (hence it is ignored in (15)).

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).

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. The 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 for example Chomsky 2000, 2001, Bošković 2014, Epstein and Seely 2002, and Müller 2010).

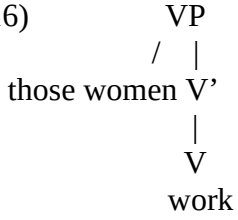
The above approach to the PIC also has a bearing on the proper formulation of the PIC. Following the original multiple-spell out proposal by Uriagereka (1999), Bošković (2015) argues for an approach to the PIC where both the Spec and the complement of phase XP are accessible from the outside (though 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 and the avoidance of Specs in language acquisition, which were noted in Dadan (2019a, in press), 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.

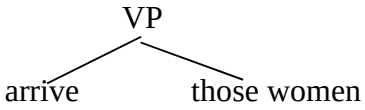
4. Bare Phrase Structure

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.

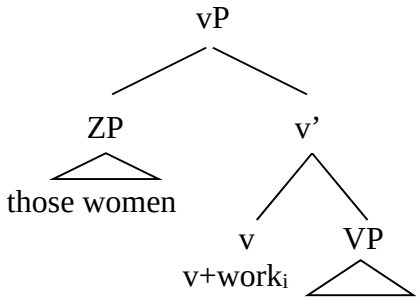
Chomsky (1995) proposes a relational definition of Specs and complements where the first element merged with a head is a complement, everything else is a Spec. This in itself favors complements over Specs (capturing the MAR intuition); in fact, there cannot be a Spec unless there is a complement. GB structure building was not like that, it was perfectly fine to have a Spec without a complement, as in (16) (under the Predicate Internal Subject hypothesis).

(16)


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 (17), where VP is used for ease of exposition; the same holds for the bar-level in (18)). 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.

(17)


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).

(18)


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 (19)-(20) (where only the traditional VP structure is presented).

(19) [kissed Mary]
(20) [Mary give a book]

A single internal argument can be merged as a complement, as in (19); this is not possible with the second internal argument in (20), where creation of a specifier is then forced by semantic reasons (the creation of the Spec in (20) 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, their avoidance in language acquisition, the LCA, the PIC, and the no-Spec-without-complement aspect of Bare Phrase Structure.

5. A final speculation

This section is speculative and open ended in nature. Its goal is to note one particular consequence of the above discussion 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

The main point of the above discussion is very simple: we don't like Specs. What is behind the dislike of specifiers is the general preference for asymmetric relations. Above, we have seen that there is a tendency to lose specifiers diachronically or change their status derivationally due to the preference for asymmetric relations. In light of the above discussion, 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 10). 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 (21), focusing on one intermediate step, namely, movement to the intermediate SpecCP.

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

When *which book* moves to merge to the position indicated by t in (21) 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 specifier 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.[16] 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 (2016). 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. 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 cases of this sort 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 for example, 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).

[16] 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-put. Successive-cyclic movement then must target phasal edges.

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.[17]

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 2015 and references therein).

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

Questions like (22) 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 (22) does not remain in SpecIP. Very briefly, if we take (23a-b) to indicate that *the hell* can only modify wh-phrases in SpecCP, (23c) provides evidence that *who* in (22) does not stay in SpecIP (see Ginzburg and Sag 2000; Pesetsky and Torrego 2001). Furthermore, *everyone* can take scope over the subject in (25) but not in (24). This is unexpected if the subject in (24) 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 examples like (26) cannot be located in SpecIP (see Agbayani 2000). (23)-(26) thus provide evidence that *who* does not stay in SpecIP in (22).

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 and Kaqchikel).

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.

(27) Who_i was arrested all t_i in Duke Street?
(28) *They_i were arrested all t_i last night.
(29) 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 (29); such Q-float is also possible in (27). Still, just like standard English, WUE disallows (28). (28) indicates that a subject in SpecIP cannot float a quantifier in the postverbal position in passives. This rules out the derivation where *who* in (27) moves to SpecCP via SpecIP. If that were the case, the quantifier in (27) would be floated under movement to SpecIP, which (28) shows is not possible. (This also rules out the derivation where *who* in (27) stays in SpecIP). These data then provide

[17] 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.

evidence that *who* does not even pass through SpecIP in (22), 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).[18] 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 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).[19]

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.

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[18] I 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.

[19] 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.

5.2. More on the EPP

In this section I will briefly address the EPP effect in light of the above discussion. (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 (22) (see e.g. Bošković 2007, Epstein and Seely 2006, Chomsky 2013). We have seen that SpecIP is never filled in (22); 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 (22). 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 here): it undergoes the shortest movement possible to achieve this. In (22), *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 Bošković's approach to the EPP effect), hence such movement is then not allowed, given the above discussion.[20] As pointed out by Messick (2015), 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 (22) resolves the issue in question, so that there is no need for movement to SpecIP, i.e. to create SpecIP. [21]

Even putting aside the issue that (22) 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.[22] In Bošković (2007), movement in general is in fact never driven by an

[20] Since we are dealing here with a matrix question, Infl would actually move to C; however, such movement would not take place if (22) is embedded under a verb like *ask*, since inversion does not take place in indirect questions.

[21] Chomsky (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.

[22] There are also approaches that allow both, see Lasnik (1995) and Zyman (2018).

inadequacy of the target, but by an inadequacy of the moving element.[23] Consider for example successive-cyclic movement. The crucial ingredients of Bošković's account of successive-cyclic movement are that there is no feature-checking/agreement in the intermediate positions of successive-cyclic movement (thus, there is no feature-checking between the wh-phrase and the complementizer *that* in the embedded clause of (21); the movement to the embedded SpecCP actually has nothing to do with the complementizer *that*) and that for each step of successive-cyclic movement, in fact *any* movement, it is something about the base position of the movement that drives it,[24] in a sense that something would go wrong in the base position of the movement if it does not take place–there is nothing about the final target, or anything in the higher structure, that motivates it in this sense (thus, if the wh-phrase does not move from the embedded SpecCP in (21), a problem will arise in exactly this part of the structure; nothing would go wrong anywhere else). Note that all these are also the crucial ingredients of Chomsky's (2013) treatment of successive-cyclic wh-movement.

An alternative to the moving element driven movement is a system like Chomsky (2000, 2001). In Chomsky (2000, 2001), X and Y undergo an Agree relation in (30), with X probing Y to value its unvalued F feature. X may or not have the EPP property, which is simply a formal requirement to have a Spec.[25] If it has it, the Agree relation is followed by movement of Y to SpecXP.

(30) X Y
unF val F
(EPP-I need a Spec)

Now, consider the nature of movement driven by a property of the target vs movement driven by a property of the moving element. In the former, movement is driven directly by a formal requirement to create a Spec. This is not the case with the latter: it is not the case that a moving element has a direct requirement to be a Spec. True, satisfying the relevant requirement will force movement, which will end up creating a Spec—but this is so only indirectly, there is no direct requirement to create a Spec.

For the sake of concreteness, consider in this respect successive-cyclic movement in (31), which for ease of exposition shows only one step of successive-cyclic movement. Under a moving element driven approach like Bošković (2007), *which book* moves to the edge of the embedded clause to escape being sent to spell-out, movement is not driven by a property of the target head, *that*. On the other hand, consider a purely target-driven approach like Chomsky (2000, 2001): there, *that* is optionally given the property I-need-a-Spec to drive movement to the Spec of *that* (with the further proviso that *that* can be given the I-need-a-Spec property only when this is needed to make successive-cyclic movement possible, a clear instance of look ahead).

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

[23] Bošković (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's the moving element that needs it.)

[24] The base position here does not refer to the base-generated position of the moving element, but the tail of any movement step.

[25] The requirement is more general than the traditional EPP—it is applicable to all heads, not just Infl. It is basically the counterpart of the strength property of Chomsky's (1993) system.

It should be obvious from the above that the moving element driven system conforms better with the spirit of MAR than the target-driven system, which relies on a requirement to have a Spec, in a direct conflict with MAR (if a head which takes a complement, and the relevant head always does in the BPS system (see section 4)), has an EPP requirement, the requirement directly forces merger with a phrase, i.e. a phrase-phrase merger). In other words, it would be strange to have a formal requirement that would be directly in conflict with MAR in this manner.

In this respect, it is worth noting here Chomsky's (2015) approach to the traditional EPP, briefly noted in fn 21, 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 21, 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).[26]

A number of things then get unified from the MAR perspective: the *who left* effect, the diachronic loss of Specs, the avoidance of Specs in language acquisition, the LCA, the PIC, and the no-Spec-without-complement aspect of Bare Phrase Structure.

6. Conclusion

This paper has brought together a number of phenomena under the perspective of Generalized Asymmetry, i.e. the preference for asymmetric relations. FL apparently does not like Specs; what is behind this is the Maximize Asymmetric Relations (MAR) preference—in contrast to

[26] 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 the traditional EPP effects but simply 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).

complements, Specs enter the structure through a symmetric phrase-phrase merger, which is in conflict with MAR. As a result, Specs are often lost in diachronic change and avoided during language acquisition (see Dadan in press, in preparation). The loss of Specs is not only manifested diachronically and acquisitionally but synhronically as well, through the PIC, which changes the status of a Spec derivationally. From this perspective, both the diachronic loss of phrasal movement and the PIC involve a loss of Specs.[27] The general dislike of Specs is also manifested through the rarity of multiple Spec constructions (cf. e.g. the rarity of the multiple wh-fronting strategy), the primacy of complements over Specs in the Bare Phrase Structure structure building (where, in contrast to GB structure building, there cannot be a Spec unless there is a complement), and the lack of free successive-cyclic/intermediate movement, a rather dramatic case of which is instantiated through subject questions like *who left*, where we have seen that movement to SpecCP cannot proceed through SpecIP. All of this indicates that there is a preference not to have Specs.

I have argued that the issue here is actually more general: there is a preference against a symmetric merger situation. The preference provides a unified perspective on superficially very different mechanisms. Thus, the diachronic loss of specifiers, 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 by making part of the structure inaccessible. They thus all resolve symmetric merger situations.

At any rate, we have seen that a number of issues and mechanisms can be brought together under the MAR perspective: the diachronic loss of Specs, the avoidance of Specs in language acquisition, the LCA, the PIC, the rarity of multiple Spec constructions, the no-Spec-without-complement aspect of Bare Phrase Structure, and the *who left* effect. MAR also 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). MAR also favors Bare Phrase structure building over GB structure building.

References

Agbayani, Brian. 2000. Wh-subjects in English and the vacuous movement hypothesis. *Linguistic Inquiry* 31:703-713.

Aldridge, Edith. 2009. Short *wh*-movement in Old Japanese. *Japanese/Korean Linguistics* 17:549-563.

Aldridge, Edith. 2010. Clause internal *wh*-movement in Archaic Chinese. *Journal of East Asian Linguistics* 19:1-36.

Aldridge, Edith. 2011. Neg-to-Q: Historical development of one clause-final particle in Chinese. *The Linguistic Review* 28.4: 411-447.

Aldridge, Edith. 2018. C-T inheritance and the left periphery in Old Japanese. *Glossa* 3: 26. 1-22.

Axel-Tober, Katrin. 2017. The development of the declarative complementizers in German. *Language* 93(2): e39-e65.

Bošković, Željko. 1997. *The syntax of nonfinite complementation: An economy approach*. Cambridge, MA: MIT Press.

Bošković, Željko. 2001. *On the nature of the syntax-phonology interface: Cliticization and related phenomena.* Amsterdam: Elsevier Science.

Bošković, Željko. 2006. Case checking vs Case assignment and the Case of adverbial NPs. *Linguistic Inquiry* 37, 522-533.

[27] 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.

Bošković, Željko. 2007. On the locality and motivation of Move and Agree: An even more minimal theory. *Linguistic Inquiry* 38: 589–644.
Bošković, Željko. 2008a. On the operator freezing effect. *Natural Language and Linguistic Theory* 26, 249-287.
Bošković, Željko. 2008b. On successive-cyclic movement and the freezing effect of feature checking. In *Sounds of silence: Empty elements in syntax and phonology*, ed. by Jutta M. Hartmann, Veronika Hegedűs, and Henk van Riemsdijk, 195–233. Amsterdam: Elsevier North Holland.
Bošković, Željko. 2011a. On Unvalued Uninterpretable Features. In *Proceedings of 39th Conference of the North-Eastern Linguistic Society (NELS 39)*, ed. by Suzi Lima, Kevin Mullin, and Brian Smith. Amherst: GLSA, University of Massachusetts.
Bošković, Željko. 2011b. Last resort with Move and Agree in derivations and representations. In *The Oxford handbook of linguistic minimalism*, ed. by Cedric Boeckx, 327-353. Oxford: Oxford University Press.
Bošković, Željko. 2012. On NPs and clauses. In *Discourse and grammar: From sentence types to lexical categories*, ed. by Günther Grewendorf and Thomas Ede Zimmermann, 179-242. Berlin: Mouton de Gruyter.
Bošković, Željko. 2014. Now I'm a phase, now I'm not a phase: On the variability of phases with extraction and ellipsis. *Linguistic Inquiry* 45: 27–89.
Bošković, Željko. 2015. From the Complex NP Constraint to everything: On deep extractions across categories. *The Linguistic Review* 32: 603–669.
Bošković, Željko. 2016a. On the timing of labeling: Deducing Comp-trace effects, the Subject Condition, the Adjunct Condition, and tucking in from labeling. In *The Linguistic Review* 33: 17–66.
Bošković, Željko. 2016b. What is sent to spell-out is phases, not phasal complements. *Linguistica* 56: 25–56.
Carstens, Vicki, Norbert Hornstein, and Daniel Seely. 2016. *The Linguistic Review* 33, 67-86.
Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: MIT Press.
Chomsky, Noam. 1993. A minimalist program for linguistic theory. In *The view from Building 20*, ed. by Kenneth Hale and Samuel J. Keyser, 1-52. Cambridge, MA: MIT Press.
Chomsky, Noam. 1994. Bare phrase structure. In *MIT Occasional Papers in Linguistics* 5. MITWPL, Department of Linguistics and Philosophy, MIT, Cambridge, Mass.
Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.
Chomsky, Noam. 2000. Minimalist inquiries. In *Step by step: Essays on Minimalist syntax in honor of Howard Lasnik*, ed. by Roger Martin, David Michaels, and Juan Uriagereka, 89–155. Cambridge, MA: MIT Press.
Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, ed. by Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.
Chomsky, Noam. 2008. On phases. In *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud*, ed. by Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta, 133–166. Cambridge, MA: MIT Press.
Chomsky, Noam. 2013. Problems of projection. *Lingua* 130: 33–49.
Chomsky, Noam. 2015. Problems of projection: Extensions. In *Structures, strategies and beyond: Studies in honour of Adriana Belletti*, ed. by Elisa Di Domenico, Cornelia Hamann, and Simona Matteini, 3–16. Amsterdam: John Benjamins.
Dadan, Marcin. 2019a. Movement that is kept and movement that is lost: Movement, adjunction, and labeling in diachronic perspective. Paper presented at LSA 93, NYC, January 3-6, 2019.
Dadan, Marcin. 2019b. Loss of Specifiers in Slavic reflexives: Acquisitional structure reanalysis and diachronic change. Paper presented at FASL 28, Stony Brook University, May 3-5, 2019.

Dadan, Marcin. in press. Loss of movement and labeling: Grammatical pressure and diachronic change. In *Proceedings of the 36th West Coast Conference on Formal Linguistics*.
Dadan, Marcin. in preparation. Head labeling preference and language change. Doctoral dissertation, University of Connecticut.
Danckaert, Lieven. 2012. *Latin embedded clauses: The left periphery.* Amsterdam: John Benjamins.
Diesing, Molly. 1996. Semantic variables and object shift. In *Studies in comparative Germanic syntax. Vol. 2.* ed. by Höskuldur Thráinsson, Samuel D. Epstein, and Steve Peter, 66-84. Dordrecht: Kluwer.
Di Sciullo, Anna Maria. 2015. On the domain specificity of the human language faculty and the effects of principles of computational efficiency: contrasting language and mathematics. *Revista Linguística* 11(1), 57-70.
Duguine, Maia and Aritz Irurtzun. 2014. From obligatory WH-movement to optional WH-in-situ in Labourdin Basque. *Language* 90: 1-30.
Epstein, Samuel D. 2007. On i(internalist)-functional explanation in Minimalism. *Linguistic Analysis* 33:20–53.
Epstein, Samuel D. 2009. The unification of theta relations: How TRANSFER renders SpecvP a theta marked complement. Ms., University of Michigan.
Epstein, Samuel D. and T. Daniel Seely. 2002. Rule Applications as Cycles in a Level-Free Syntax. In *Derivation and Explanation in the Minimalist Program*, ed. by Samuel D. Epstein and T. Daniel Seely, 65-89. Oxford: Blackwell.
Epstein, Samuel D. and T. Daniel Seely. 2006. *Derivations in Minimalism: Exploring the elimination of A-chains and the EPP*. Cambridge: Cambridge University Press.
Fortson IV, Benjamin W. 2004, *Indo-European Language and Culture: An Introduction.* Blackwell Publishing.
van Gelderen, Elly. 2004. *Grammaticalization as Economy.* Amsterdam: John Benjamins.
van Gelderen, Elly. 2009. Renewal in the left periphery: Economy and the complementizer layer. *Transactions of the Philological Society* 107.2 (2009): 131-195.
van Gelderen, Elly. 2011. *The Linguistic Cycle.* Oxford: OUP.
van Gelderen, Elly. 2015. Problems of Projection: The role of language change in labeling paradoxes. *Studia Linguistica*: 1-15.
Ginzburg, Jonathan and Ivan A. Sag. 2000. *Interrogative Investigations*. Stanford: CSLI Publications.
Goto, Nobu. 2013. Labeling and scrambling in Japanese. *Tohoku: Essays and Studies in English Language and Literature* 46. 39–73.
Hale, Mark. 1987. *Studies in the Comparative Syntax of the Oldest Indo-Iranian Languages.* Doctoral dissertation, Harvard University.
Harris, Alice C., and Lyle Campbell. 1995. *Historical Syntax in Cross-Linguistic Perspective*. Cambridge: Cambridge University Press.
Heim, Irene, and Angelika Kratzer. 1998. *Semantics in Generative Grammar.* MA: Blackwell.
Huddleston, Rodney and Pullum, Geoffrey K. 2002. *The Cambridge Grammar of the English Language*, Cambridge: Cambridge University Press.
Kang, Jungmin. 2014. On the Absence of TP and its Consequences: Evidence from Korean. Doctoral dissertation, University of Connecticut, Storrs.
Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
Kayne, Richard. 2010. Why are there no directionality parameters? In *Proceedings of the 28th West Coast Conference on Formal Linguistics*, ed. by Mary Byram Washburn, Katherine McKinney-Bock, Erika Varis, Ann Sawyer, and Barbara Tomaszewicz, 1-23. Somerville: Cascadilla Press.

Kiparsky, Paul. 1996. The Shift to Head-Initial VP in Germanic. In *Studies in Comparative Germanic Syntax II*, ed. by H. Thráinsson, S. Epstein, and S. Peter, 140-179. Dordrecht: Kluwer.

Koizumi, Masatoshi. 1994. Layered specifiers. In *Proceedings of the North East Linguistic Society 24*, ed. by Mercè Gonzàlez, 255-269. GLSA, University of Massachusetts, Amherst.

Kuroda, Shige-Yuki. 2007. On the syntax of Old Japanese. In *Current issues in the history and structure of Japanese*, ed. by Bjarke Frellesvig, J.C. Smith, and Masayoshi Shibatani, 263-318. Tokyo: Kurosio.

Lasnik, Howard. 1995. Case and expletives revisited: On Greed and other human failings. *Linguistic Inquiry* 26:615-633.

Ledgeway, Adam. 2012. *From Latin to Romance. Morphosyntactic Typology and Change.* New York: Oxford University Press.

Lightfoot, David, 1979. *Principles of diachronic syntax*. Cambridge: Cambridge University Press.

Lobeck, Anne. 1990. Functional Heads as Proper Governors. In *Proceedings of the North East Linguistic Society* 20, 348-362.

McCloskey, James. 2000. Quantifier float and wh-movement in an Irish English. *Linguistic Inquiry* 31:57-84.

Messick, Troy. 2015. Matrix subject questions and the nature of the EPP. Ms., University of Connecticut, Storrs.

Meyer, Roland. 2017. The C System and Complement Clauses in the History of Slavic Languages. *Language* 93(2): e97-e113.

Mizuguchi, Manabu. 2014. Phases, labeling, and wh-movement of the subject. Presented at the 32nd Conference of the English Linguistic Society of Japan, Gakushuin University, Tokyo, November 8.

Moro, Andrea. 1997. *The raising of predicates. Predicative noun phrases and the theory of clause structure*. Cambridge: Cambridge University Press.

Moro, Andrea. 2000. *Dynamic Antisymmetry*. Cambridge, MA: MIT Press.

Müller, Gereon. 2010. On deriving CED effects from the PIC. *Linguistic Inquiry* 41: 35–82.

Narita, Hiroki. 2011. Phasing in Full Interpretation. Doctoral dissertation, Harvard University.

Narita, Hiroki. 2012. Phase cycles in service of projection-free syntax. In *Phases: Developing the framework*, ed. by Ángel J. Gallego, 125–172. Berlin: Mouton de Gruyter.

Ogawa, Kunihiko. 1976. Where diachronic and synchronic rules meet: A Case study from Japanese interrogatives and Kakari-Musubi. *Papers in Japanese Linguistics* 5, 193-242.

Ott, Dennis. 2012. *Local Instability: Split Topicalization and Quantifier Float in German*. Berlin: De Gruyter.

Pesetsky, David. 1987. *Wh*-in situ: Movement and unselective binding. In *The representation of (in)definiteness*, ed. by Eric J. Reuland and Alice G. B. ter Meulen, 98-129. Cambridge, Mass.: MIT Press.

Pesetsky, David, and Esther Torrego. 2001. T-to-C movement: Causes and consequences. In *Ken Hale: A life in language*, ed. by Michael Kenstowicz, 355-426. Cambridge, MA: MIT Press.

Reglero, Lara. 2004. *A'-Dependencies in Spanish and Basque*. Doctoral dissertation, University of Connecticut.

Richards, Norvin. 2001. *Movement in language: Interactions and architectures*. Oxford: Oxford University Press.

Richards, Norvin. 2010. *Uttering trees*. Cambridge, Mass.: MIT Press.

Richards, Norvin. 2016. *Contiguity theory*. Cambridge, Mass.: MIT Press.

Rizzi, Luigi. 2006. On the form of chains: Criterial positions and ECP effects. In *Wh-movement: Moving on*, ed. by Lisa Lai-Shen Cheng and Norbert Corver, 97-133. Cambridge, MA: MIT Press.

Roberts, Ian. 1993 *Verbs and Diachronic Syntax: A Comparative History of English and French*. Dordrecht: Kluwer.
Roberts, Ian. 1997. Directionality and word order change in the history of English. In *Parameters of Morphosyntactic Change*, ed. by A. van Kamenade and N. Vincent, 397-426. Cambridge: Cambridge University Press.
Roberts, Ian. 2007. *Diachronic Syntax*. New York: Oxford University Press.
Roberts, Ian and Anna Roussou. 2003. *Syntactic Change: A Minimalist Approach to Grammaticalization.* Cambridge University Press.
Saito, Mamoru, and Keiko Murasugi. 1990. N'-deletion in Japanese: A Preliminary Study. *Japanese/Korean Linguistics* 1, 258-301.
Spevak, Olga. 2010. *Constituent Order in Classical Latin Prose.* Amsterdan: Benjamins.
Stepanov, Arthur. 2001. Cyclic domains in syntactic theory. Doctoral dissertation, University of Connecticut, Storrs.
Takahashi, Daiko. 1994. Minimality of movement. Doctoral dissertation, University of Connecticut, Storrs.
Takita, Kensuke, Nobu Goto, and Yoshiyuki Shibata. 2016. Labeling through Spell-Out. *The Linguistic Review* 33, 177-198.
Uriagereka, Juan. 1999. Multiple Spell-Out. In *Working minimalism*, ed. by Sam Epstein and Norbert Hornstein, 251-282. Cambridge, MA: MIT Press.
Uriagereka, Juan. 2012. *Spell-out and the Minimalist Program*. Oxford: Oxford University Press.
Walkden, George. 2014. *Syntactic reconstruction and Proto-Germanic*. (Oxford Studies in Diachronic and Historical Linguistics 12). New York, NY: Oxford University Press.
Wang, Shuyan. 2019. Reconsideration of yi 'one' and classifiers in Mandarin Chinese. Ms., University of Connecticut, Storrs.
Watanabe, Akira. 2002. Loss of overt wh-movement in Old Japanese. In *Syntactic Effects of Morphological Change*, ed. by D. Lightfoot. Oxford.
Whitman, John. 2001. Kayne 1994: p. 143, fn. 3. *The Minimalist Parameter: Selected Papers from the Open Linguistics Forum, Ottawa, 12-23 March 1997*, ed. by G. Alexandrova & O. Arnaudova, 77-100. Amsterdam: John Benjamins.
Willis, David. 2007. Specifier-to-Head reanalyses in the complementizer domain: Evidence from Welsh. *Transactions of the Philological Society* 105 (3):432–480.
Wolfe, Sam. 2018. *Verb Second in Medieval Romance*. Oxford: Oxford University Press.
Wurmbrand, Susi. 2013. QR and selection: Covert evidence for phasehood. In *NELS 42*, ed. by Stefan Keine and Shayne Sloggett, 277–290. Amherst: University of Massachusetts, Graduate Linguistic Student Association.
Zyman, Erik. 2018. On the Driving Force for Syntactic Movement. Doctoral dissertation, University of California, Santa Cruz.