

Željko Bošković*

Introduction

DOI 10.1515/tlr-2015-0012

The operation Merge, which combines two elements X and Y into {X,Y}, is minimally required for language. A long-standing assumption of the generative grammar has been that the nature of the resulting object needs to be specified. To take a concrete example, when a verbal and a nominal element are merged, as in the ergative structure in (1), information needs to be provided regarding whether the resulting object is verbal or nominal in nature. In the case of (1), the resulting object is verbal in nature. In slightly more technical terms, *arrive* projects in (1), labeling the resulting object.

(1) {arrive, John}

Syntactic representations are then taken to be hierarchical structures involving labeled objects.

In the Government and Binding framework (GB), labels were essentially provided by the X-bar theory, i.e. they were part of structure building. The early minimalism has kept the gist of this approach. The Inclusiveness Condition, which states that the computational system can only manipulate the lexical items entering the computation—it cannot introduce anything new – is a fundamental principle of Minimalism. The Inclusiveness Condition is essentially a ban on creationism in the syntax. Under the Inclusiveness Condition, syntactic representations are bare in that they cannot include bar level distinctions, which are not present in the lexicon. Still, the early minimalism kept the gist of the GB approach to labeling, adapting it to the Bare Phrase Structure system. Thus, for Chomsky (1995), labeling is part of the definition of Merge: when X and Y are merged, either X or Y projects, i.e. labels the resulting object.¹ This can be represented as in (2), where X is the label of the syntactic object formed by merging X and Y.²

¹ See, however, Citko (2008) on the possibility of both X and Y projecting.

² Interestingly, Chomsky (1995: 396) suggests that it is the interfaces that require the information provided by labeling, anticipating in this respect Chomsky's (2013, 2015) conclusions discussed below.

*Corresponding author: Željko Bošković, Department of Linguistics, University of Connecticut, Storrs, CT 06269, USA, E-mail: zeljko.boskovic@uconn.edu

$$(2) \text{ Merge}(X,Y) = \{X, \{X,Y\}\}$$

One question that immediately arose is how to determine whether X or Y projects. For movement (i.e. external Merge), it was assumed that the target projects (see for example Chomsky 1995: 256); for non-movement cases (i.e. internal Merge), the issue was left open in Chomsky (1995), the implicit assumption being that in principle, either X or Y can project, though in many cases something would go wrong if one of the two projects. This would for example be the case if in the transitive structure in (3), *John* projects after merging with *kiss*, as in (3a), instead of *kiss*, as in (3b).

- (3) a. {Peter, {John, {kiss, John}}}
 b. {Peter, {kiss, {kiss, John}}}

The assumption that with movement, the target projects has been questioned. Thus, Donati (2006) argues that in free relatives like (4), the moved *wh*-element projects after it moves, merging with the clause, this being the reason why free relatives are nominal in nature with respect to a number of properties (see also Cecchetto and Donati 2015; Citko 2008).

- (4) *John ate what I cooked.*

A more fundamental proposal was made in Collins (2002), who argues that labels themselves can be, hence should be, eliminated (for a more recent discussion, see Collins 2014). Collins (2002) thus argues for a label-free theory, simplifying (2) as in (5), where structure building through Merge takes place without recourse to labels.

$$(5) \text{ Merge}(X,Y) = \{X,Y\}$$

Collins discusses how various mechanisms that were previously assumed to involve recourse to labels, like various generalizations of the traditional X-bar theory and the Minimal Link Condition, can be implemented in a label-free theory.³ (For much relevant discussion, the reader is also referred to Seely 2006, who observes that the postulation of labels as part of the syntactic object

³ Collins also examines how selection (i.e. subcategorization) would work in a label-free theory, though, as discussed in Seely (2006), this mechanism does raise non-trivial issues in this respect.

formed by Merge raises several questions which trivially dissolve in a label-free theory; Seely also observes that the elimination of labels requires a derivational approach to c-command (see Epstein 1999), the label-free theory being incompatible with the standard representational approach to c-command).

Chomsky (2013), which is the starting point for the articles in this volume, also assumes that labels are not encoded in the output of Merge, i.e. that labeling is not part of the definition of Merge, thus adopting (5) rather than (2), Merge being a set-formation operation that combines two syntactic objects (SOs) without label projection. However, Chomsky keeps the traditional assumption that when *X* and *Y* are merged, the nature of the resulting object needs to be specified. Taking a concrete case again, it needs to be specified that the object resulting from the merge operation in (1) is verbal in nature. Crucially, Chomsky argues that syntax itself does not require this information; the information is required by the interfaces so that syntactic objects can be interpreted. In other words, Chomsky assumes that although there is nothing wrong with unlabeled objects in the syntax, such objects are uninterpretable. Chomsky then provides an algorithm that specifies labels (more informally, the nature of an object formed by Merge), which applies at the point of transfer to the interfaces, given that labeling is interface-driven. Under this view, labeling does not apply as part of Merge, as in Chomsky (1995). In this respect, Chomsky (2013) follows Collins (2002) and Seely (2006). However, syntax is still not fully label-free, as in Collins (2002), and Seely (2006), labeling taking place at the phasal level, when the syntactic structure is sent to the interfaces.

It should, however, be noted that it is not obvious that labels are indeed needed for interpretation. In fact, formal semantics models typically do not make recourse to labels. Even if labels are needed for interpretation, a question arises if they are needed in all cases, which opens up a potentially interesting avenue for further research. In this respect, Chametzky (2000), Hornstein and Nunes (2008), Hunter (2010), and Bošković (in press) argue that adjunction does not require labeling for interpretation, which under Chomsky (2013) would entail that the result of adjunction is not labeled at all. In fact, Bošković (in press) suggests that not labeling should be taken as the defining property of what is referred to as adjunction, segmentation being dispensable (for a different labeling-based perspective on adjunction, see Yoo 2015). The claim that labels are needed for interpretation should then be taken as programmatic, to be subjected to careful investigation.

This, however, should not be considered a weakness of the overall system. On the contrary, that the system opens up new areas of research only contributes to its inherent interest. Previous approaches to labeling essentially stipulated that labeling was necessary to permit further applications of Merge, with

Merge applying only to labeled structures. If labeling is not part of Merge, a number of interesting questions arise.

There are essentially three positions here: (i) labeling as part of Merge, as in Chomsky (1995), where labeling is always triggered immediately by the Merge operation itself; (ii) label-free system, as in Collins (2002), and Seely (2006), where labels are eliminated; and (iii), what I will call “label-or-not” system, where labeling is not triggered by Merge itself but labels are not (completely) eliminated.

From a strictly research perspective, (iii) is the most interesting situation, due to a host of intriguing questions that it raises. As noted above, Chomsky (2013) suggests that labels are needed for interpretation. Questions arise here whether this is indeed the case and whether this holds uniformly for all cases (cf. the above suggestion about adjunction). Chomsky’s interpretation-driven approach to labeling leads to labeling taking place at the phasal level. Phases are taken to determine the points of spell-out, i.e. when the structure is sent to the interfaces. If labeling occurs strictly for interpretative reasons, we would expect it to occur at this point. As noted in Bošković (this volume), a serious chicken-or-the-egg style question then arises: Bošković (2015) argues that phasehood determination requires labeling, i.e. phases do not really exist prior to labeling: to know whether something is a phase we need to know its label (see Bošković 2015 for evidence that unlabeled elements cannot be phases; it is shown in that work that the well-known ban on movement out of moved elements can be deduced given that unlabeled objects cannot be phases). Since phases determine the points of spell-out, without any labeling structure cannot be sent to the interfaces, which in turn is necessary for labeling under a purely interpretative approach to labeling. Bošković (this volume) observes that this problem dissolves if head-complement merger is labeled immediately since this is actually all that is needed to determine the points of spell-out. However, there would then need to be a syntactic reason for labeling in this particular case, assuming position (iii) from above, rather than position (i), where labeling is automatic. It seems plausible that in this case, i.e. the head-complement configuration, labeling may be required by subcategorization, i.e. that satisfying subcategorization requires that the element with the requirement to take a complement project (i.e. determine the label of the resulting object), otherwise, there would be no head-complement relation here (see in this respect Chomsky 2000; for relevant discussion, see also Chametzky 2000; Adger 2003; Collins and Stabler in press). In fact, Chomsky (2013) treats labeling in the case of head-complement merger rather differently from other cases, a difference that is not surprising in the context of the current discussion. In particular, Chomsky (2013) proposes a theory of labeling where in the case where a head and a phrase

merge (which is essentially the head-complement configuration), the head projects, providing the label for the resulting object. On the other hand, when two non-minimal projections (i.e. phrases) merge, neither of them projects, labeling taking place through prominent feature sharing (I am ignoring for the moment the case where one of the phrases moves away, a trivial case in the relevant respect given that for Chomsky, traces are basically ignored for the purpose of labeling).

To illustrate, consider the embedded clause of (6): after C, a head, merges with its complement TP, the C projects, providing the label for the resulting object. When *which book*, a DP, merges with this object, which is a CP, neither of the two elements that undergo merger projects by itself in Chomsky (2013). The label is determined through feature sharing: what is projected, determining the label of the resulting object, is the Q-feature, which is shared by *which book* and the interrogative CP.

(6) *I wonder* [_Q *which book*_i [_{CP} C [_{TP} *John bought t_i*]]]

Labeling in the cases where a head and a phrase merge, i.e. the head-complement configuration, is thus done rather differently from the cases where two phrases undergo merger: in the former case, one element essentially automatically projects, while in the later case, neither of the two elements undergoing merger projects by itself. Chomsky thus basically keeps the automatic nature of labeling when it comes to the former case, substantially changing labeling only for the latter case. However, the automatic nature of labeling in the former case can no longer come from labeling being part of Merge, since it would then extend in the same way to all cases. As noted in Bošković (this volume), the difference can however still be captured if labeling in the former case is subcategorization-driven, where satisfying subcategorization requires that the element with the requirement to take a complement project (i.e. determine the label of the resulting object), since otherwise there would be no head-complement relation here. Based on such considerations, Bošković (this volume) argues that in the case of a head-complement merger, labeling can be done immediately (which also resolves the problem noted above regarding determining the points of spell-out), while in the case of a merger of two non-minimal projections, labeling takes place when the structure is sent to the interfaces.⁴

⁴ In this context, it may also be worth noting that the labeling of the base step, i.e. the head-phrase configuration, is determined via minimal search, the same operation as Agree Closest, a syntactic mechanism falling under minimal computation. Minimal search does not determine the label this way when two phrases merge. Since the labeling of the base step is done through

Chomsky's assumption that traces are ignored for the purpose of labeling also seems to lead to such a position; otherwise, without adopting additional assumptions, a head that undergoes head-movement in many cases would not be able to label the resulting object. Consider in this respect (7), where Z is the first phasal head in the structure (for another relevant case, see Shlonsky 2014). If labeling takes place only at the phasal level, i.e. when Z is introduced into the structure in (7), given that traces are ignored for the purpose of labeling the result of merger of Y and KP in (7) could not be labeled (by Y) as YP. The problem does not arise if the head-complement configuration can be labeled immediately.

$$(7) \quad Z^0 \text{ [}_{XP} Y^0 + X^0 \text{ [}_{YP} t_Y \text{ KP]]}$$

At any rate, the above discussion illustrates the kind of issues that arise under the label-or-not view, i.e. the position (iii) from above.

In fact, taking the labeling issue seriously opens up a number of new areas of research as well as fresh perspectives on a number of long-standing issues. To take the papers in this volume as an illustration,⁵ Bošković (this volume) shows that the above proposal regarding the timing difference in the labeling of the head-phrase and phrase-phrase merger, coupled with a labeling-based approach to antilocality (where movement to X must cross a projection distinct from X, with unlabeled projections being non-distinct from labeled projections), enables us to deduce in a unified manner a number of locality effects, in particular, the Subject Condition, the Adjunct Condition, Richards's (2001) tucking in effect, and the full range of Comp-trace effects (in declarative, relative, and extraposed clauses), including a number of related phenomena, like the effect that wh-movement has on agreement in languages like Kinande.⁶ Furthermore, we

an essentially syntactic mechanism, it may not be surprising that it takes place when the relevant configuration is created (see Bošković this volume).

⁵ I will limit the discussion here to the phenomena and mechanisms which are relevant to the works in this volume (also tying the current labeling perspective to the relevant previous works); the following by no means exhausts the domains where the labeling theory may provide a fresh perspective.

⁶ Still sticking with the locality of movement, Bošković (in press) provides a labeling-based account of a generalized version of the Complex NP Constraint, which extends to all complements of all lexical heads (with the exception of non-ergative V, movement being banned from complements of lexical heads), and Bošković (2015) provides a labeling-based account of the traditional ban on movement out of moved elements. For another locality-relevant issue, see Yoo (2015), who provides a labeling-based account of Bošković's (2009, 2013) claim that left-branch extraction, and more generally splitting of a modifier-N sequence, requires the two to agree.

are not dealing here with simple labeling-based restatements of previously adopted mechanisms. In fact, what appear to be simple restatements of that kind often end up having very different effects. Thus, the labeling approach to antilocality, the ban on movement that is too short, adopted in Bošković (this volume), requires movement to cross a labeled category (in the spirit of the previous versions of the ban on movement that is too short) but also ends up banning movement from targeting unlabeled categories: no matter how many phrases movement crosses it violates antilocality if it targets an unlabeled category under this approach, which is very different from all the previous approaches to antilocality.

The labeling framework also opens up new avenues of research regarding the head/intermediate level/phrase distinction, some of which are addressed in Rizzi's contribution to the volume. Consider in this respect the embedded clause in (6). In the Bare Phrase Structure system of Chomsky (1995), both the result of the merger of C and the TP and the result of the merger of this object with the *wh*-phrase is labeled by C.

(8) {C, {which book, {C, {C, TP}}}}

The result of the merger of C and TP in this part of the structure is a maximal projection prior to *wh*-movement, given the definitions in (9) from Chomsky (1995: 242).

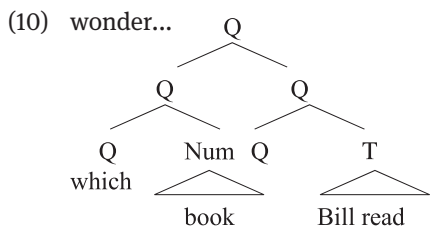
- (9) a. A category that does not project any further is a phrase.
 b. A category that is not a projection is a head.

In Chomsky (1995), after *which book* merges with this object, since C again projects, the phrasal status of the element created by the C-TP merger changes: it is no longer a phrase, but an intermediate projection. If only heads and phrases can undergo movement, it follows then that this element cannot undergo movement.⁷

⁷ It is often assumed that the Bare Phrase Structure system deduces the invisibility of intermediate categories for syntactic operations like movement, the reasoning being that such elements have no status in the Bare Phrase Structure system hence cannot be affected by syntactic operations. The issue is, however, not that simple. Intermediate categories have no status in the Bare Phrase Structure system because they are not defined. Notice, however, that they are not undefinable. It is quite easy to define them; on a par with the definitions in (9), they can be defined as elements that are both projections and project. In other words, there is no principled reason why such elements are not defined since they are perfectly definable. This in turn means that there is no principled reason why they have no status in the Bare Phrase

However, in the labeling framework, where the result of the C-TP merger is labeled by C, but the result of the merger of this object with the *wh*-phrase is not labeled by C, the former (i.e. the object created by the C-TP merger) appears to still be a phrase even after the *wh*-phrase merges with it, hence it appears that in principle it should be able to undergo movement.

Rizzi (this volume) addresses this issue, and more generally the non-trivial issue of how heads and phrases can be distinguished when Chomsky's (2013) labeling algorithm, where the distinction plays a very important role since only a head can act as a labeler, is combined with Bare Phrase Structure, proposing an analysis where the Q-feature discussed above with respect to (6) is crucially involved in all levels of labeling. In particular, Rizzi argues for the (slightly simplified) labeling in (10).



Applying the Bare Phrase Structure algorithm from (9), only the highest Q is a phrase: the result of merger of the interrogative C and the TP is not a phrase, hence cannot undergo movement. Furthermore, its sister, the *wh*-phrase *which book*, is also not a phrase, hence is also not allowed to undergo movement. The latter captures the well-known freezing effect of criterial positions like the traditional interrogative SpecCP (see here Epstein 1992; Rizzi 2006; Bošković 2008a, among others). Movement to a criterial position in a sense changes the phrasal status of the moved element, turning it into an intermediate projection, thus preventing its further movement.

What about successive cyclic movement? Bošković (1997, 2002, 2007, 2008b) provides a number of arguments that intermediate steps of successive cyclic movement do not involve feature checking (for relevant discussion, see also Boeckx 2003; Rizzi 2006, among others). Chomsky (2013) essentially adopts this position, assuming that there is no feature sharing with intermediate steps of

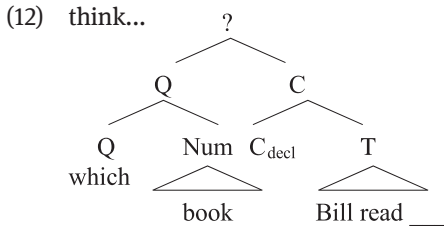
Structure system, which then means that the Bare Phrase Structure system does not provide a principled reason for the invisibility of intermediate categories (in other words, a refusal to define such elements does not amount to providing a principled reason for their invisibility, if they are indeed invisible (see in this respect the discussion below)).

successive cyclic movement. To take a more concrete case, Bošković provides evidence that complementizer *that* and the *wh*-phrase which passes through its Spec do not undergo agreement in (11).

(11) *Which book do you think t that John likes t?*

In Chomsky's labeling system, this is implemented as the lack of feature sharing between *that* and the *wh*-phrase. Due to the lack of feature sharing, the result of merger of the *wh*-phrase and the intermediate CP in (11) cannot be labeled at the intermediate CP-phasal level. However, since Chomsky assumes that traces are essentially ignored for the purpose of labeling, the object in question can be labeled after the *wh*-phrase moves away.

Consider, however, the structure before the movement, where ? indicates the lack of a label at this point.



In contrast to (10), the *wh*-phrase in (12) is a maximal projection, hence it can undergo movement. This way, Rizzi captures the contrast between the freezing effect of criterial positions and successive cyclic movement within the labeling system.

Notice, however, that the sister of the *wh*-phrase in the embedded clause is also a maximal projection here, in contrast to Chomsky's (1995) Bare Phrase Structure system. Hence, it should in principle be able to undergo movement. Rizzi notes that in this particular case independent factors prevent its movement (see Bošković this volume for another such case), but the issue is more general. Even if we adopt Rizzi's account of the freezing effect of criterial positions, where the sister of the element that moves into a criterial position is not a phrase, hence cannot move, in the labeling system the sister of an element that undergoes successive cyclic movement is a maximal projection, in contrast to the more traditional structures where such elements are X-bars. We may then expect to find some cases where movement of such elements is possible. More generally, the labeling framework opens up an intriguing possibility that we may be able to find acceptable cases of traditional X-bar movement, the reason

being that some cases of traditional X-bar structures actually have a phrasal status in the labeling framework.

Returning to successive cyclic movement cases like (11), which Chomsky handles by assuming that traces are ignored by the labeling mechanism hence the embedded clause can be labeled after the *wh*-phrase moves away, Takita, Goto, and Shibata (this volume) point out a simpler way of handling such cases that does not require any special assumptions about traces. Successive cyclic movement typically targets phasal edges. Given that spell-out occurs at the phasal level, Takita, Goto, and Shibata suggest that spell-out essentially removes the phasal complement, changing the SO {C(-Q), TP} into a single head C(-Q) (for relevant discussion, see also Goto 2013; Narita 2014). The label of the SO that corresponds to the embedded clause can then be determined straightforwardly even before the *wh*-phrase moves away given that this SO 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; Chomsky also uses the assumption in question to motivate movement, with the need to label essentially driving movement. However, Takita, Goto, and Shibata observe that this approach cannot be generalized to all relevant cases, also observing that Bošković's 2007 approach to the driving force of movement in terms of uninterpretable features independently provides the necessary driving force in all relevant cases, making labeling as the driving force of movement unnecessary and in fact redundant.)

Regarding potential simplifications of Chomsky's (2013, 2015) labeling system, Epstein et al. (this volume) (EKS) point out that the labeling framework of Chomsky (2015) can be simplified (also resolving another case where Chomsky assumed traces are ignored for labeling), with several issues that arise in this framework resolved, if external pair-merge of heads (basically, base-generated head-adjoined structures; for relevant discussion, see also Rizzi this volume, Saito this volume), is allowed. EKS note that in Chomsky's (2015) system, the copy of a root which raises to *v*, which I will refer to as *V* for ease of exposition, in some cases needs to be visible and in some cases not. In particular, the former is the case in transitive constructions with DP objects which for Chomsky undergo movement to SpecVP, where *V* functions as a derived phase head (more precisely, its trace functions as a derived phase head after *V*-to-*v* movement cancels the phase-head status of *v*). On the other hand, in constructions with clausal CP objects, *V* is not visible, as a result of which the object {*V*, CP} is labeled by CP after *V* moves. EKS note that the issue can be resolved if in the cases where *V* is not visible, *v* and *V* are taken from the lexicon and externally pair-merged as <*V*, *v*>, i.e. if we are dealing here with a base-generated head-adjunction structure. The pair-merge inactivates the phase-head status of *v*, so

that transfer does not apply when $\langle V, v \rangle$ is merged with the CP object. Crucially, there is then no longer need to consider the lower copy of V invisible since this copy does not exist in the first place. EKS extend the analysis to several other cases; thus, they capture the existence of nominative objects in Icelandic, where T appears to agree (in spite of the Phase-Impenetrability Condition) with the object within VP, by externally pair-merging v and V , which cancels the phase-head status of v , thus dispensing with the need to assume that the Phase-Impenetrability effect kicks in only when a higher phasal head (here C) is merged into the structure (as in Chomsky 2001). They also show that their analysis dispenses with the need to posit the distinction between strong and weak phases. For them, there is only one type of v , Chomsky's weak v involving an externally pair-merged structure that cancels v 's phasal status.⁸

The Carstens, Hornstein, and Seely paper (CHS) also addresses head movement, arguing against Chomsky's (2013) treatment of inversion (i.e. T-to-C), where the only constraint is "locality independent of category", by showing that it does not generalize to other cases of head movement.

The CHS paper, as well as the Bošković paper, also address the puzzle of simple subject questions like (13).

(13) *Who left?*

The most standard treatment of such cases involves *wh*-movement to SpecCP via SpecTP, though it is also sometimes assumed that the *wh*-phrase remains in SpecTP in such examples. There is, however, evidence against both of these analyses, i.e. there is evidence that such cases involve direct *wh*-movement to SpecCP which does not stop in SpecTP. A number of these arguments are summarized in Bošković (this volume) (though see also CHS this volume). I will mention only two of them here.

Regarding the analysis on which the *wh*-phrase stays in SpecTP, Mizuguchi (2014) observes that if that were the case, we would expect (14) to be ambiguous, on a par with (15), which is not the case.

(14) *Who loves everyone?* (who>everyone; *everyone>who)

⁸ Bošković (in press) gives a number of cases where head-movement of a phase head voids phasehood, referred to as phase collapsing. For example, Bošković (in press) argues that head-movement to D voids the phasehood of a lower DP-internal phase in Setswana, which is responsible for the lack of Complex NP Constraint effects in Setswana. A question then arises whether the external pair-merge of heads analysis can be extended to these cases (there would be no loss of phasehood under that analysis since the relevant phrases would not be present in the first place).

- (15) *Someone loves everyone.* (someone>everyone; everyone>someone)

Consider also the following West Ulster English (WUE) data, noted by McCloskey (2000).

- (16) *Who_i was arrested all t_i in Duke Street?*
 (17) **They_i were arrested all t_i last night.*

While, in contrast to Standard English, WUE allows Q-float under wh-movement, just like standard English, WUE disallows (17). (17) indicates that a subject in SpecTP cannot float a quantifier in the postverbal position in passives. *Who* in (16) then cannot be located in SpecTP, given that subjects located in SpecTP cannot float a quantifier in this context. This example also rules out the derivation where *who* in (16) moves to SpecCP via SpecTP. If that were the case, the quantifier in (16) would still be floated under movement to SpecTP, which (17) shows is not possible.

Granted that the subject in examples like (13) moves directly to SpecCP, what happens here with the usual requirement for the subject to move to SpecTP in English? Bošković (this volume) provides two answers to this question (see also Carstens et al. this volume for discussion of such constructions). Troy Messick (p.c.) notes another rather interesting possibility that the labeling framework provides. Chomsky (2013) provides an analysis of the traditional EPP effect on which the effect has nothing to do with T. On Chomsky's analysis, when the external argument is merged with vP, a labeling problem arises since we are dealing here with the merger of two phrases that do not undergo feature sharing. The external argument then moves to resolve the labeling problem. The movement is thus not driven by a property of T, in fact it is not required by T at all.⁹ With subject wh-questions, the external argument must move anyway to SpecCP, vacating SpecvP. Wh-movement of the external argument then enables the labeling of vP; the object formed by the merger of T and vP is labeled by T given that we are dealing here with a head-phrase merger case, and the CP is labeled by the feature-sharing of the wh-phrase and the interrogative CP. Chomsky's (2013) system thus straightforwardly derives (13) via direct movement of the wh-phrase to SpecCP, resolving the puzzle noted above that constructions like (13) raise.

A more general theoretical point is worth noting here. Traditionally, the EPP effect has been considered to be due to a formal inadequacy of the target, in

⁹ This is not the case with Chomsky's (2015) analysis, where T in English does require a phrase to merge with it for labeling reasons (see also Carstens et al. this volume for discussion of Chomsky's 2013 analysis).

particular T. A number of authors have, however, argued that the effect arises due to a formal inadequacy of the moving element (see for example Boeckx 2000; Bošković 2002; Epstein and Seely 2006). More generally, Bošković (2007) develops a system where movement is never driven by an inadequacy of the target, but by an inadequacy of the moving element (or, more abstractly, by a formal inadequacy related to the base position of any movement step, not the target). Chomsky's (2013) analysis of the EPP effect, which we have seen above can nicely account for subject wh-questions, is more along the lines of the latter than the traditional, T-driven approach to the EPP effect. Though the exact reason is different, in both Bošković (2007) and Chomsky (2013), it is something about the base-generated structure of the subject that forces its movement. Furthermore, neither system actually requires the subject to move to SpecTP, i.e. in both Bošković (2007) and Chomsky (2013) the relevant inadequacy can be satisfied if the wh-phrase in (13) moves to SpecCP (in fact, Bošković 2008b argues for exactly this derivation of (13) within the Bošković 2007 system). In fact, in many respects, Chomsky's (2013) system and Bošković (2007) are quite similar. 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 and that for each step of successive cyclic movement, it is something about the base position of the movement that drives it,¹⁰ 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 of the movement, or anything in the higher structure, that motivates it in this sense. Thus, under Bošković's (2007) analysis of (11), there is no feature-checking/agreement between the wh-phrase and the complementizer *that* in the embedded clause. Furthermore, if the wh-phrase does not move from the embedded (declarative) SpecCP, a problem will arise in exactly this part of the structure; nothing would go wrong anywhere else. All this is very different from for example Chomsky (1995), but these are precisely the crucial ingredients of Chomsky's (2013) treatment of successive cyclic wh-movement. Now, Bošković (2007, 2008b) discusses a wide variety of cases which are argued to provide support for the base rather than the target driven movement. A question then arises whether those cases can also be productively re-analyzed from the perspective of the labeling theory.

An account that is somewhat along the lines of a combination of Bošković (2007) and Chomsky (2013) is actually provided in Saito (this volume). As discussed above, in Chomsky's analysis, agreement plays an important role in labeling through feature-sharing, which is essentially an agreement process.

¹⁰ What I mean by the base position here, and more generally this passage, is not the base-generated position of an SO, but the tail of any movement step.

Japanese, a language that is rich in case but lacks morphological agreement, has often been argued to lack ϕ -feature agreement more generally. In this context, Saito raises a question: if Japanese indeed lacks ϕ -feature agreement, how is labeling accomplished in the language? Adopting Bošković's approach to case which divorces case and agreement, Saito argues that case (realized through suffixal case-markers in Japanese) plays a crucial role in labeling in Japanese. In particular, it serves as an anti-labeling device, making the case-marked constituent invisible for labeling. From this perspective, Saito provides a labeling-based account of a number of differences between English and Japanese, in particular, their different behavior with respect to scrambling, the availability of null arguments, extensive employment of complex verb words, and multiple occurrences of case-markers. Saito also considers the possibility that case-valuation more generally creates feature-sharing that is involved in labeling (even in languages like English), which makes case play a very important role in labeling. He also provides a labeling perspective on ellipsis, where the elided constituent counts as a head for the purpose of labeling, providing a labeling-based account of the well-known generalization that only complements of functional heads with specifiers can be elided (see for example Lobeck 1990; Richards 2003; Saito and Murasugi 1999) and the phenomenon of argument ellipsis.

At any rate, the above discussion, which focuses on the issues addressed by the papers in this volume, can be taken as an illustration of the rich possibilities and fresh perspectives on long-standing issues that the labeling framework provides.

References

- Adger, David. 2003. *Core syntax*. Oxford: Oxford University Press.
- Boeckx, Cedric. 2000. EPP eliminated. Ms., University of Connecticut, Storrs.
- Boeckx, Cedric. 2003. *Islands and chains*. Amsterdam: John Benjamins.
- Bošković, Željko. 1997. *The syntax of nonfinite complementation: An economy approach*. Cambridge: MIT Press.
- Bošković, Željko. 2002. A-movement and the EPP. *Syntax* 5. 167–218.
- 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 Jutta M. Hartmann, Veronika Hegedüs & Henk van Riemsdijk (eds.), *Sounds of silence: Empty elements in syntax and phonology*, 195–233. Amsterdam: Elsevier.
- Bošković, Željko. 2009. On Leo Tolstoy, its structure, case, left-branch extraction, and prosodic inversion. In Steven Franks, Vrinda Chidambaram & Brian Joseph (eds.), *A linguist's*

- linguist: Studies in South Slavic linguistics in honor of E. Wayles Browne*, 99–122. Bloomington: Slavic.
- Bošković, Željko. 2013. Adjectival escapades. In Steven Franks, Markus Dickinson, George Fowler, Melissa Whitcombe & Ksenia Zanon (eds.), *Proceedings of Formal Approaches to Slavic Linguistics 21 (FASL 21)*, 1–25. Ann Arbor: Michigan Slavic Publications.
- Bošković, Željko. 2015. The ban on movement out of moved elements in the phasal/labeling system. Ms., University of Connecticut.
- Bošković, Željko. in press. From the Complex NP Constraint to everything: On deep extractions across categories. *The Linguistic Review: The GLOW issue*.
- Bošković, Željko. this volume. On the timing of labeling: Deducing Comp-trace effects, the Subject Condition, the Adjunct Condition, and tucking in from labeling.
- Carstens, Vicki, Norbert Hornstein & T. Daniel Seely. this volume. Head-head relations in *Problems of Projection*.
- Cecchetto, Carlo & Caterina Donati. 2015. *(Re)labeling*. Cambridge: MIT Press.
- Chametzky, Robert. 2000. *Phrase structure: From GB to minimalism*. Oxford: Blackwell.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge: MIT Press.
- Chomsky, Noam. 2000. Minimalist inquires. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 89–155. Cambridge: MIT Press.
- Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, 1–52. Cambridge: MIT Press.
- Chomsky, Noam. 2013. Problems of projection. *Lingua* 130. 33–49.
- Chomsky, Noam. 2015. Problems of projection: Extensions. In Elisa Di Domenico, Cornelia Hamann & Simona Matteini, (eds.), *Structures, strategies and beyond – studies in honour of Adriana Belletti*, 3–16. Amsterdam & Philadelphia: John Benjamins.
- Citko, Barbara. 2008. Missing labels. *Lingua* 118. 907–944.
- Collins, Chris. 2002. Eliminating labels. In Samuel David Epstein & T. Daniel Seely (eds.), *Derivation and explanation in minimalist syntax*, 42–64. New York: Wiley.
- Collins, Chris. 2014. Merge(X.Y) = {X,Y}. Ms., New York University.
- Collins, Chris & Edward Stabler. in press. A formalization of minimalist syntax. *Syntax*.
- Donati, Caterina. 2006. On *wh*-head movement. In Lisa Lai-Shen Cheng & Norbert Corver (eds.), *Wh-movement: Moving on*, 21–46. Cambridge: MIT Press.
- Epstein, Samuel David. 1992. Derivational constraints on A'-chain formation. *Linguistic Inquiry* 23. 235–259.
- Epstein, Samuel David. 1999. Un-principled syntax and the derivation of syntactic relations. In Samuel David Epstein & Norbert Hornstein (eds.), *Working minimalism*, 317–345. Cambridge: MIT Press.
- Epstein, Samuel David, Hisatsugu Kitahara & T. Daniel Seely. this volume. Phase cancellation by external pair-merge of heads.
- Epstein, Samuel David & T. Daniel Seely. 2006. *Derivations in minimalism*. Cambridge: Cambridge University Press.
- Goto, Nobu. 2013a. Labeling and scrambling in Japanese. *Tohoku: Essays and Studies in English Language and Literature* 46. 39–73.
- Hornstein, Norbert & Jairo Nunes. 2008. Adjunction, labeling and Bare Phrase Structure. *Biolinguistics* 2. 57–86.
- Hunter, Tim. 2010. *Relating movement and adjunction in syntax and semantics*. College Park, MD: University of Maryland dissertation.

- Lobeck, Anne. 1990. Functional heads as proper governors. In Juli Carter, Rose-Marie Déchaine, Bill Philip & Tim Sherer (eds.), *Proceedings of the 20th North-Eastern Linguistics Society Conference (NELS 20)*, 348–362. Amherst: GLSA, University of Massachusetts.
- McCloskey, James. 2000. Quantifier float and Wh-movement in an Irish English. *Linguistic Inquiry* 31. 57–84.
- 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.
- Narita, Hiroki. 2014. *Endocentric structuring of projection-free syntax*. Amsterdam: John Benjamins.
- Richards, Norvin. 2001. *Movement in language: Interactions and architectures*. Oxford: Oxford University Press.
- Richards, Norvin. 2003. Why there is an EPP. *Gengo Kenkyu* 123. 221–256.
- Rizzi, Luigi. 2006. On the form of chains: Criterial positions and ECP effects. In Lisa Lai-Shen Cheng & Norbert Corver (eds.), *Wh-movement: Moving on*, 97–133. Cambridge: MIT Press.
- Rizzi, Luigi. this volume. Labeling, maximality and the head – phrase distinction.
- Saito, Mamoru. this volume. (A) case for labeling: Labeling in languages without phi-feature agreement.
- Saito, Mamoru, and Keiko Murasugi. 1999. Subject predication within IP and DP. In Kyle Johnson & Ian Roberts (eds.), *Beyond principles and parameters: Essays in memory of Osvaldo Jaeggli*, 167–188. Dordrecht: Kluwer.
- Seely, T. Daniel. 2006. Merge, derivational c-command, and subcategorization in a label-free syntax. In Cedric Boeckx (ed.), *Minimalist essays*, 182–220. Amsterdam: John Benjamins.
- Shlonsky, Ur. 2014. A note on labeling, Berber states and VSO order. In Sabrina Bendjaballah, Noam Faust, Mohamed Lahrouchi & Nicola Lampitelli (eds.), *The form of structure, the structure of form: Essays in honor of Jean Lowenstamm*, 349–360. Amsterdam: John Benjamins.
- Takita, Kensuke, Nobu Goto & Yoshiyuki Shibata. this volume. Labeling through Spell-Out.
- Yoo, YongSuk. 2015. Labeling Algorithm and its consequences for movement. In *Proceedings of the 17th Seoul International Conference on Generative Grammar*.