Adjunction, Labeling, and Bare Phrase Structure

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This article argues for a version of bare phrase structure which maintains that — contrary to the standard view on phrase structure — adjunction structures are simpler than structures involving complements and specifiers. Assuming with Hornstein (forthcoming) that the operation *Merge* is to be decomposed into two basic operations, namely, *Concatenate* and *Label*, the article shows that whereas the building of complements and specifiers requires that the output of a Concatenate operation be labeled, adjuncts may only require concatenation to receive a proper interpretation at the interface. It is argued that taking adjunction structures to be label-less concatenates not only complies with Chomsky's (1995) Inclusiveness Condition, but also makes it possible to account in a principled manner for the dual behavior of adjuncts, which sometimes behave as integral parts of the target of adjunction and some other times behave as completely independent elements.

Keywords: adjunction, bare phrase structure, labels, Merge, X'-Theory

1. Introduction

It is fair to say that what adjuncts are and how they function grammatically is not well understood. The current wisdom comes in two parts: (i) a description of some of the salient properties of adjuncts (they are optional, not generally selected, often display island effects, etc.) and (ii) a technology to code their presence (Chomsky-adjunction, different labels, etc.). Within the Minimalist Program, adjuncts have largely been treated as afterthoughts and this becomes clear when the technology deployed to accommodate them is carefully (or even cursorily) considered.

Our primary aim in this contribution is to propose a phrase structure for adjunction that is compatible with the precepts of Chomsky's (1995) *bare phrase*

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structure (BPS). Current accounts, we believe, are at odds with the central vision of BPS and current practice leans more to descriptive eclecticism than to theoretical insight. We have a diagnosis for this conceptual disarray. It stems from a deeply held, though seldom formulated, intuition: the tacit view that adjuncts are the abnormal case, while arguments describe the grammatical norm. We suspect that this has it exactly backwards. In actuality, adjuncts are so well behaved that they require virtually no grammatical support to function properly. Arguments, in contrast, are refractory and require grammatical aid to allow them to make any propositional contribution. This last remark should come as no surprise to those with neo-Davidsonian semantic sympathies. Connoisseurs of this art form are well versed in the important role that grammatical (aka, thematic) roles play in turning arguments into modifiers of events.[1] Such fulcra are not required for meaningfully integrating adjuncts into sentences. In what follows, we take this difference to be of the greatest significance and we ask ourselves what this might imply for the phrase structure of adjunction.

A second boundary condition in what follows is that an adequate theory of adjunction comport with the core tenets of BPS. Current approaches sin against BPS in requiring an intrinsic use of bar levels and in using idiosyncratic labeling conventions whose import is murky at best. We rehearse these objections in the following sections. A goal of a successful theory of adjuncts should be to come up with a coherent account of adjunction structures that (at least) allows for a relational view of bar levels along the lines of Chomsky (1995), itself following earlier suggestions of Muysken (1982).

More ambitiously, one could require that the bar-level properties of adjunction structures play no grammatically significant role. Hornstein (forthcoming: chap. 2) proposes a strong version of the Inclusiveness Condition, one in which *only* intrinsic features of lexical elements can be used by the computational system. This excludes, among other things, bar-level information (which is relational) from the purview of the syntax.[2] Thus, syntactic rules cannot be stated in terms like "Move/delete XP" or "Move X^0" or "never move X′", etc. Relational information *may* be important, at the interpretive interfaces for example, but syntactic computations *per se* cannot exploit these relational notions (given a strong version of the Inclusiveness Condition), as they are not intrinsic features of lexical items.[3] In what follows, we will try to adhere to this strong

1 See Higginbotham (1986), Parsons (1990), Schein (1993), and Pietroski (2004) for extensive discussion.

2 "Other things" plausibly includes grammatical and/or thematic role information, Case information, agreement, hierarchical information, and chains, all of which are relational and go beyond the information contained in lexical items alone.

3 The exact interpretation of the Inclusiveness Condition is somewhat murky. Chomsky (1995: 225) puts it as follows:

> Another natural condition is that outputs consist of nothing beyond properties of items of the lexicon (lexical features) — in other words, that the interface levels consist of nothing more than arrangements of lexical features. To the extent that this is true, the language meets a condition of *inclusiveness*. [footnote omitted — NH & JN] We assume further that the principles of UG involve only elements that function at the interface levels; nothing else can be "seen" in the course of the computation […].

version of the Inclusiveness Condition.[4]

The article is organized as follows. In section 2, we review the general properties of adjunction structures assumed in the literature and show that their standard account in terms of Chomsky-adjunction is not easily accommodated within the BPS approach to adjunction in terms of a distinct labeling procedure. Section 3 discusses what goes wrong if adjunction structures are assigned the same label as non-adjunction structures. In section 4, we argue that the output of a Merge operation need not be labeled, and this is crucial for the distinction between arguments and adjuncts. Section 5 discusses some consequences of this proposal and section 6 offers a brief conclusion.

2. General Properties of Adjunction Structures

Prior to minimalism, adjunction was an operation that returned a phrase of the same type as the one the operation had targeted. (1) formally illustrates (Chomsky-)adjunction with respect to phrases.

(1) $[_{XP}$ $[_{XP}$ $[_{XP}$ … X^0 …] ADJUNCT] ADJUNCT]

(2) $[_{VP}$ $[_{VP}$ $[_{VP}$ read a book] quickly] in the yard]

(3) $[_{NP}$ $[_{NP}$ student of physics] from France]

(2) and (3) exemplify the structure in (1) with the adjuncts *quickly/in the yard* and *from France* adjoining to VP and NP, respectively, and returning VP and NP, respectively. Accounts differed on whether adjuncts adjoined to XPs or to X's. However, they agreed in assuming that the output of adjunction left the input labeling (and constituency) intact.

The labeling in (1)–(3) codes five important properties criterial of adjunction. First, adjunction conserves bar-level information. Note that in (1)–(3) adjunction leaves the maximality of the input structure intact and in this regard, it contrasts with complementation as the latter changes bar-level information. For example, in (2) a V^0 *read* combines with an NP *a book* to yield a VP (not a V^0). Second, adjunction leaves the category information intact: If the input is verbal, the output is verbal. Third, headedness is preserved. Thus, the head of the complex in (1) is X^0, the head of (2) is *read*, and the head of (3) is *student*. Fourth, the adjunction structure 'inherits' the bar-level information of the target. Thus, in (2), we have three maxV projections: *read a book*, *read a book quickly*, and *read a book*

A strong version of the above is that *the computational syntax* can only manipulate lexical features, not relations among these established during the course of the derivation: relational notions like bar level, chain, phrase, specifier, complement, etc. There are, however, other readings of this condition, but we will refrain from exegetical combat and simply see if the strong version mooted here can be sustained.

4 This version of the Inclusiveness Condition suggests a strong reading of the autonomy of syntax thesis. If correct, syntactic operations are blind to certain kinds of information that the interfaces may exploit. This makes the divide between syntax and the other components of the faculty of language (FL) rather broad.

quickly in the yard. Last of all, there is no apparent upper bound on the number of adjuncts. Once again, this contrasts with arguments where there is generally an upper bound of three.

These five properties are well grounded empirically. The preservation of categoricity and headedness tracks the fact that adjoined structures do not introduce novel subcategorization or distribution relations. For example, in (4a) below perfective *have* selects/subcategorizes for a perfective *-en* marked V. This selection requirement is unchanged in (4b) despite the adjuncts.

(4) a. has/*is [$_{VP}$ eaten a bagel]
b. has/*is [$_{VP}$ [$_{VP}$ [$_{VP}$ eaten a bagel] quickly] in the yard]

On the standard assumption that only heads can be seen by elements outside an XP and that heads mark the category of a complex phrase, the data in (4) indicate that the complex complement of *has* in (4b) is a VP projection of the perfective head *eaten* (as in (4a)). The same argument can be made in the nominal domain. For example, (5a) shows that *these* demands a plural nominal head and (5b) shows that adding nominal adjuncts does not change this requirement.

(5) a. these [$_{NP}$ students/*student of physics]
b. these [$_{NP}$ [$_{NP}$ students/*student of physics] from France]

Nor does adjunction affect the distribution of expressions. Thus, if an XP can occur in some position, an XP modified by any number of adjuncts can, as well. For example, predicative NPs can occur in (6a) and the more complex NPs in (6b) can, too.

(6) a. John is a [student of physics].
b. John is a [[student of physics] [from France]].

The conservation of bar level reflects a different set of facts — two kinds actually. If an XP can be target of a grammatical operation (e.g., movement, ellipsis, or anaphoric dependency), then adjunction does not remove this property. Thus, VP-fronting can apply to the VP *eat the cake* in (7a) and can still apply to it in (7b).[5]

(7) a. John could [eat the cake] and [eat the cake] he did.
b. John could [[eat the cake] [in the yard]] and [eat the cake] he did [in the yard].

Thus, the VP status of *eat the cake* is not disturbed by adjoining *in the yard* to it. In addition, the VP plus adjuncts are also VPs as they too can be fronted.

(8) a. … and [[eat the cake] [in the yard]] he did [with a fork].
b. … and [[[eat the cake] [in the yard]] [with a fork]] he did.

5 See section 4 below for some discussion on head–to–head adjunction.

As shown in (9) and (10) below, similar effects are attested with VP-ellipsis, *do–so* anaphora, and *one*–substitution. These each target the head+complement (obligatory) plus any number of adjuncts (optional).

(9) John ate a cake in the yard with a fork and
   a. Bill did (so) too.
   b. * Bill did (so) an apple in the hall with a spoon.
   c. Bill did (so) in the hall.
   d. Bill did (so) with a spoon.
   e. Bill did (so) in the hall with a spoon.

(10) this [[[student of physics] with long hair] from France] and
   a. that one
   b. * that one of chemistry (with long hair from France)
   c. that one from Belgium
   d. that one with short hair
   e. that one from Belgium with short hair

The fact that the complement cannot be left out in (9b) and (10b) is attributed to the fact that the head sans complement is not an XP of the right 'size'. The fact that any number of adjuncts can optionally be targeted follows if head and complement, plus any number of adjuncts, are all of the same size (measured in bar levels).

To recap, the classical approach to adjunction captures several salient properties: It preserves the bar-level information of the target, retains the category information and headedness of the target in the adjoined structure, returns a constituent with a bar level identical to that of the target, and can do this without limit. The labeling convention in (1) succinctly summarizes these facts by having adjunction label the output of the adjunction operation with same label as the target/input.

It is worth noticing that this standard account of adjunction structures is incompatible with BPS views concerning bar levels and so is not in accord with either BPS dicta or the Inclusiveness Condition. To see this, consider the fact that adjunction leaves the maximality of the target XP intact. In BPS, a projection is maximal if it no longer projects. However, the conservation of headedness in adjunction structures implies that the head of the input is also the head of the output. But this is incompatible with BPS if we also insist that the XP that projects still retains its XP status. Thus, from a strict BPS perspective, either head properties are not conserved in adjunction structures or the XP to which the adjunct has adjoined becomes nonmaximal after adjunction. Similar considerations apply to XPs associated with multiple adjunctions. Take (1), repeated below in (11), for instance. Given a BPS understanding of bar levels as relational, only the outmost XP can be maximal; crucially, the 'intermediate' adjunction structure cannot be maximal if conservation of headness is preserved in the larger structure.

(11) $[_{XP}\ [_{XP}\ [_{XP} \ldots X^0 \ldots]\ \text{ADJUNCT}\ ]\ \text{ADJUNCT}\ ]$

This would seem to present BPS with empirical problems for we noted above that there is interesting empirical evidence that each of the XPs in (11) can function as targets of the same operations (cf. (7)–(10)). We also found evidence that the selection properties of (11) are identical to those of the simple non-adjoined XP in (12).

(12) $[_{XP} \ldots X^0 \ldots]$

This suggests that the head of (11) is the same as that of (12). There is, thus, a *prima facie* incompatibility between BPS, the classical approach to adjunction in terms of Chomsky-adjunction, and the facts.

The Minimalist Program has a different account of adjuncts. It proposes that adjuncts are labeled differently from complements.[6] As Chomsky (1995: 248) puts it:

> Substitution forms L = {H(K), {α, K}}, where H(K) is the head (= the label) of the projected element K. But *adjunction forms a different object* [our emphasis; NH & JN]. In this case L is a two-segment category, not a new category. Therefore, there must be an object constructed from K but with a label distinct from its head H(K). One minimal choice is the ordered pair <H(K), H(K)>. We thus take L = {<H(K), H(K)>, {α, K}}. Note that <H(K), H(K)>, the label of L, (…) is not *identical* to the head of K, as before, though it is constructed from it in a trivial way.

Given this notation, an adjunction structure would look like (13):

(13) $[_{\langle x,\, x\rangle}\ [_{\langle x,\, x\rangle}\ [_{X(P)} \ldots X^0 \ldots]\ \text{ADJUNCT}\ ]\ \text{ADJUNCT}\ ]$

The passage above discusses segments versus categories, a distinction that we will return to anon. For now observe that the label of an adjoined structure is *different* from that of the element that it is adjoined to. Thus, the *head* of the adjunction structure is distinct from that of the constituent adjoined to. If one takes this to mean that the head of the target of adjunction has *not* projected, then one of the problems noted above for the classical theory can be addressed.[7] As the labels differ (i.e. the heads did not project), given BPS, the inner X(P) and the outer <X, X> categories are both maximal, thus being compatible with the movement in (7b), for instance. However, this result is achieved at a price of

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6 In fact, Chomsky's (2000) distinction between set-merge (for arguments) and pair-merge (for adjuncts) suggests that not only the output of the merger operation may be different depending on whether we are dealing with an argument or an adjunct, but the merger operations themselves may be of a different nature. From a methodological point of view, the best situation would be that there is nothing that distinguishes the operation that merges arguments from the one that merges adjuncts. See section 4 below for further discussion.

7 Whether the head has projected is actually unclear given Chomsky's observation that the label of the adjunct is constructed from the head of the adjoined-to in a 'trivial' way. Still, given Chomsky's underscoring the fact that the two labels are distinct (not *identical*), it appears that he would not see the label of the adjunction structure as the same as that of the adjoined-to.

redun-dancy, as VP-movement now resolves into two different operations — <X, X> movement as in (8a) and (8b) and X(P) movement as in (7b) — at least if operations are distinguished by the objects they apply to.

Moreover, the <X, X> notation still leaves several unresolved questions. For example: What is the status of the inner *<X,X>* projection in (13) — is it maximal or not? If it is, then how come it determines the label of the outer projection? On the other hand, if it is not maximal, we would expect it to function differently from the outer projection, but so far as we can test this, the two function identically. Thus, given that the outer adjunction projection in (8b), for instance, can move, so can the inner one, as shown in (8a). More generally, if the labels of adjunction structures differ from those of their targets, then how do we account for the fact that their distributional properties are identical? Why are they subject to the same selectional restrictions? Why do they behave alike with respect to grammatical rules like ellipsis, movement, or anaphora? To put this same point more baldly: If the labels of adjunction structures are not *identical* to the labels of the non-adjunction categories that they target, why is it that the properties of the two kinds of constituents are indistinguishable?

The issues reviewed here show that the BPS approach to adjuncts in terms of distinct labels misses the generalizations that the classical theory coded. The trouble seems to be that the labeling that has been proposed relies on bar-level information in a crucial way. But this information should not be available as it is relational and not intrinsic to the lexical elements involved. Put another way, the labeling one finds with adjuncts differs from that found with complements, but it is not clear how this labeling is to be interpreted. In the next sections, we will suggest that the critical difference between complements and adjuncts is that the former *requires* integration into structures with labels while the latter does not. This gives adjunction structures greater grammatical latitude, in some respects. But before discussing adjunction in detail, we need to outline some principles of phrasal composition.

3. Same Labeling

Let's assume a simple view of phrase structure in which adjunction is not marked by any special kind of labeling convention. Under this view an adjunction structure will look something like (14) given BPS assumptions.

(14) $[_X\ [_X\ [_X\ X\ YP\ ]\ WP\ ]\ ZP\ ]$

Given conventional assumptions, the two innermost X-marked constituents in (14) will be understood as X's, while the outer one will be understood as an XP. In addition, it is conventionally assumed that YP can be read as the internal argument of X as it is the immediate projection of X. All these are *relational* notions and they can be defined for structures like (14) if they need to be. One place where this information may be important is at the interfaces, where syntactic configurations are interpreted. A strong version of the Inclusiveness Condition (which we are adopting here) allows such relational notions to *only* be relevant at the interfaces and not in the syntax proper, where only the intrinsic properties of lexical items are manipulated or noted.

How does the syntax 'read' (14)? Let's assume that the labels are understood conventionally (as in Chomsky 1955) via the "is-a" relation and that being bracketed together means that the bracketed elements have been concatenated. Given this, we read in (14) that X concatenated with YP (X^YP) is an X. In other words, concatenation plus labeling delivers back one of the original concatenates. WP and ZP are read in the same way: $[_X$ X^YP]^WP is an X and $[_X$ $[_X$ X^YP] ^WP]^ZP is an X. In effect, repeated concatenation and labeling produce bigger and bigger X-objects. In each case above, YP, WP, and ZP interact with X (and only with X) via concatenation.[8] If the Conceptual–Intentional interface understands concatenation here in terms of conjunction, then each concatenative step introduces another conjunct. We will return to this point in a minute. For now, let's consider how (14) fares with respect to the empirical properties noted in section 2.

The fact that adjunction has no effect on selection follows directly as the head of the adjunction structure in (14) is the same as the head of a structure free of adjunctions. What is less clear is how the ellipsis, anaphora and movement operations that seem to target specific projection levels (e.g., VP-ellipsis, VP-fronting, *one*-substitution targeting NPs, etc.) are to be reformulated given a phrase structure like (14). Let's rehearse the basic facts and see precisely what role bar-level information played before we consider an alternative.

Let's take examine VP-movement, for concreteness:

(15) a. It was kick Fred that John did.
b. It was kick Fred that John did in the yard.
c. It was kick Fred in the yard that John did.
d. It was kick Fred in the yard that John did at noon.
e. It was kick Fred in the yard at noon that John did.
f. * It was kick that John did Fred.

The paradigm in (15) can be described using bar-level information as follows: Vmaxs (but no V^n, *n* not max) can be clefted. Adjunction of modifiers is to VP and the output of adjunction is bar-level identical to the input. Thus, if the structure of the affected VPs in (15) is as in (16), then structure preservation constraints (conditions that require Xmaxs in specifier and complement positions) lead us to expect the pattern in (15).

(16) $[_{VP}$ $[_{VP}$ $[_{VP}$ kick Fred] in the yard] at noon]

In particular, the reason that *kick Fred* plus any number of adjuncts can be fronted is that *kick Fred* in (16) is a Vmax, and so is *kick Fred* plus any of the adjuncts. Moreover, the reason why (15f) is unacceptable is that *kick* is not a Vmax, and so

8 Hornstein (forthcoming: chap. 2) suggests that elements can only interact via concatenation and that labeling produces bigger and bigger atomic concatenative units. As atoms have no internal structure accessible to concatenation and the label defines an atom, concatenation is always between atoms. See Hornstein (forthcoming: chap. 2) for further details.

structure preservation blocks its movement to a Spec-position.

The problem with (14), given the paradigm in (15), is that the structure of *kick Fred in the yard at noon* would not be (16), but (17) below. If we assume that bar-level information cannot be used, then it is unclear why the data distribute as seen.

(17) $[_{V}$ $[_{V}$ $[_{V}$ kick Fred] in the yard] at noon]

There are, to be specific, two problems with (17) — one more general than the other. The more general one is how to prevent targeting *kick* for movement, as in (15f). If *kick Fred*, *kick Fred in the yard*, and *kick Fred in the yard at noon* are all Vs and can move, why can't *kick*, which is also a V, move?

The more specific problem with (17) concerns structure preservation. Hornstein (forthcoming: chap. 3) argues that one can derive structure preservation given two assumptions: that morphology can only operate on lexically simple expressions and that movement must obey the A-over-A Condition (A/A).[9] The former assumption is of no moment here, so we put it aside (but see section 4 for discussion). However, the second is very relevant in at least two respects. First, we can use the A/A reasoning to explain why it is that (15f) is unacceptable. Note that the V *kick* moves out of the larger V *kick Fred*. This is an A/A violation and should not be permitted.[10] Second, given this exact same reasoning, the V-movements in (15b) and (15d) both appear to violate the A/A Condition and so should both be barred.

Clearly, these pair of points are related and it would be nice to figure out a way to preserve the positive effects of this and hence derive the unacceptability of (15f), while at the same time figuring out why (15b) and (15d) are fine. This is what we aim to do in the next section.

4. No Labeling

How are phrases composed? There are two operations: concatenation (aka Merge) and labeling. When two elements are concatenated, one of the two marks this blessed event by giving the result its name. In (18) below, X and Y concatenate, and X names the resulting object X. Combining Chomsky (1955) and BPS, we read (18) as saying that X concatenated with Y is (an) X.

(18) $[_{X}$ X^Y]

Concatenation is defined over a set of atoms and labeling turns a non-atomic complex concatenate into a (complex) atomic element suitable for concatenation. In other words, what labels *do* is allow concatenation to apply to previously concatenated objects by bringing these complexes into its domain. In

9 The A/A Condition is itself reduced to minimality in Hornstein (forthcoming).

10 Hornstein (forthcoming: chap. 2) argues that structure preserving constraints can largely be accommodated if a BPS conception of phrase structure plus a version of minimality defined on paths (thereby deriving the A/A Condition) is adopted.

(18), for instance, concatenation applies to the atomic units X and Y (X^Y) and labeling yields a new complex atomic unit ([$_X$ X^Y]), whose content is no longer available for further concatenation. Assume that this is the correct way of construing Merge (see Hornstein, forthcoming: chap. 3 for further details).

We can now ask whether labeling is always required after concatenation. What happens if we fail to label? In other words, how should we read (19)?

(19) [$_X$ X^Y]^Z

Here the concatenate X^Y is (an) X but not so [$_X$ X^Y]^Z. The two objects contrast in that the former is a concatenate *and an atomic object that can be input to further concatenations*, whereas the latter is a concatenate, but it *is not an atomic object* and so *cannot be input to further concatenation*. Z, as it were, dangles off the complex [$_X$ X^Y] without being integrated into a larger X-like expression. Assume that adjuncts can so dangle, whereas arguments must be integrated into larger structures via labeling.[11] In other words, whereas Z can be interpreted as an adjunct in (19), it cannot be interpreted as an argument. Under this view, a syntactic object such as *eat the cake in the yard* may have the structure in (20a) below, where *in the yard* is just concatenated with a projection of V, or the structure in (20b), where the result of the concatenation is also labeled as ("is a") V.[12] Furthermore, under the standard assumption that only labeled elements (syntactic constituents) can be targets of syntactic operations,[13] it should be possible to move *eat the cake in the yard* in (20b), but not in (20a).

(20) a. [$_V$ eat^the–cake]^in–the–yard
b. [$_V$ [$_V$ eat^the–cake]^in–the–yard]

What does this buy us? Recall that syntactic operations like VP-movement can target a V+complement plus any number of adjuncts, but not a V alone, as illustrated in (21) (see (15) above).

(21) a. [eat the cake] he did in the yard
b. [[eat the cake] in the yard] he did
c. *eat he did the cake in the yard

If adjuncts need not resort to labeling to be licensed, as proposed here, the two possibilities in (21a) and (21b) are due to the two different structures that may underlie *eat the cake in the yard*. That is, (21a) is to be associated with (20a) and (21b) with (20b). Notice (21a) cannot be associated with (20b), for movement of *eat the cake* would violate the A/A Condition as it is part of a larger V-projection.

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11 That adjuncts are non-labeled constituents has been previously suggested by Uriagereka (1998: chap. 4, in press: chap. 6) and Chametzky (2000). Our proposal can be viewed as a specific implementation of this suggestion.

12 We abstract away from the internal structure of the complement DP and the adjunct PP. We treat them here as atoms.

13 Hornstein (forthcoming: chap. 3) derives this for any syntactic operation that involves concatenate as a sub-operation, e.g., movement.

In turn, (21b) cannot be associated with (20a), for *eat the cake in the yard* is not a syntactic constituent in (20a) and therefore cannot undergo movement. More interestingly, although the structural ambiguity of *eat the cake in the yard* allows licit derivations for (21a) and (21b), it is impossible to move *eat* alone in either (20a) or (20b) without violating the A/A Condition, as *eat* is a V contained within a larger V that can be target of the same operation. Thus, *if* complements must be inside labeled concatenates and adjuncts need not be, we can ascribe the unacceptability of examples like (21c) to a violation of the A/A Condition.

We have outlined the one adjunct case. The multiple adjunct case will function in the same way. An expression such as *eat the cake in the yard with a fork in the afternoon*, for example, may have the structure in (22) below, where each PP is concatenated with the same labeled concatenate, forming a kind of pile. Under (22), only *eat the cake* will be able to move, yielding (23), as it is the largest V-projection.

(22) $[_V$ eat^the–cake]^in–the–yard
^with–a–fork
^in–the–afternoon

(23) [eat the cake] he did in the yard with a fork in the afternoon

Alternatively, we may also have structures in which one, more than one, or all the adjuncts are integrated into a larger V-projection through concatenation and labeling, as in (24) below, for instance. Under the structures in (24), the A/A Condition will enforce movement of the largest V-projection, stranding adjuncts that were added to the structure without resort to labeling, as respectively shown in (25a)–(25c).

(24) a. $[_V$ $[_V$ eat^the–cake]^in–the–yard]^with–a–fork
^in–the–afternoon
b. $[_V$ $[_V$ $[_V$ eat^the–cake]^in–the–yard]^with–a–fork]^in–the–afternoon
c. $[_V$ $[_V$ $[_V$ $[_V$ eat^the–cake]^in–the–yard]^with–a–fork]^in–the–afternoon]

(25) a. [eat the cake in the yard] he did with a fork in the afternoon
b. [eat the cake in the yard with a fork] he did in the afternoon
c. [eat the cake in the yard with a fork in the afternoon] he did

Again, neither (22) nor structures like (24) allow movement of the verb alone without violating the A/A Condition; hence the unacceptability of (26):

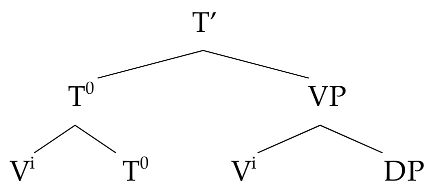
(26) *eat he did the cake in the yard

To sum up the discussion thus far, a labeled concatenate is a complex atom. Atoms have no accessible innards. By rendering a complex concatenate atomic, the label prevents the insides of the labeled elements from being targets of movement by the A/A Condition.[14] When adjuncts don't move with the elements they modify, it is because they are not members of the *labeled* concatenate that has moved (cf. (24a,b)/(25a,b)). However, arguments can never be other than members of a labeled concatenate, for their interpretive lives depend on it. A side effect of this requirement is that bare heads become ineligible targets and the derivation of sentences such as (26) is ruled out by the A/A Condition.

The reader will have noted that this is not entirely satisfactory. We need an explanation for *why* there is this distinction between arguments and adjuncts, for otherwise haven't we simply recorded the facts? Though we agree that an explanation is needed (and we will provide one in a moment), it behooves us to note that if the above is tenable, then we have already accomplished something. We have attributed the label properties of adjunction constructions to structural ambiguity rather than to a novel labeling convention. What distinguishes adjunction structures is not a new *kind* of label but the absence of one. The V+complement in the non-labeled adjunction structure (cf. (22)) is clearly maximal for nothing with a different label dominates it in the relevant configuration. Where the V+complement plus a number of adjuncts move, the V+complement is not maximal (cf. (24)). When the V+complement+adjunct(s) moves, it is this V+complement+ adjunct(s) that is the maximal V. In other words, there is nothing amiss about labeling the whole moving constituent a projection of V in just the way that V+ complement is a labeled projection of V. Once one allows adjuncts to live within non-labeled concatenates, the standard facts about adjuncts are accommodated without running afoul of BPS conceptions. Clearly, more needs to be said about structures such as (22) or (24).[15] However, this is sufficient detail for the time being.

Let's now have a brief excursion on head adjunction structures. Take V–to–T movement, for concreteness. If we were to translate the standard Chomsky-adjunction structure in (27) below in terms of the proposal advocated here, we should get something along the lines of (28), with T concatenating with a projection of V twice. In one case, this yields a labeled constituent and in the other case, it doesn't.

(27)



[14] This reasoning extends to *one*-substitution cases and ellipsis on the assumption that A/A is respected here, as well. The logic is compatible with proposals that consider *one* to be thematically inert (unable to assign a θ-role). If so, having *one* as an anaphoric head prevents its complement from integration into the proposition (cf. (10)). The same account presumably can extend to the *do–so*-cases if this is seen as the verbal counterpart of *one* (cf. (9)).

[15] For instance, one must determine the interface conditions that presumably motivate/license labeling in structures such as (24). Also, linearizing adjunction structures such as (22) and (24) appears to require special provisos. See, for instance, Chomsky's (2004) suggestion that adjunction might involve a different plane and Chomsky (1995) for arguments that the linearization of adjuncts is different from the linearization of arguments.

(28) $[_T\ T\hat{}[_V\ V^i\ D\ ]]$
$\hat{}V^i$

Structures such as (28) raise several questions. First, why isn't the first merger between T and a projection of V sufficient to establish all the necessary relations between T and V? That is, why must T merge with (a projection of) V twice? Second, movement of the V-head appears to violate the A/A Condition, given that it is dominated by a larger V-projection. Third, when V concatenates with T for the second time, it does not target the root of the tree, thus violating the Extension Condition (Chomsky 1995). Finally, head adjunction structures do not behave like XP-adjunction structures with respect to movement possibilities. Descriptively speaking, XP-adjunction structures allow the adjunct and the target of the adjunction to move independently of one another. By contrast, in head adjunction structures movement of the adjoined element ('excorporation') is taken to be impossible (Baker 1988) or severely restricted (Roberts 1994). Moreover, it seems to be a point of consensus that the head of an adjunction structure cannot be excorporated, leaving the adjoined head stranded.

Let's consider two approaches under which head–to–head movement would be compatible with our proposal. Under the first approach, the problems reviewed above are not real because head movement is actually a PF phenomenon and not part of narrow syntax (see, among others, Boeckx & Stjepanović 1999 and Chomsky 2001: 38). If this approach is correct, the problems above actually provide a rationale for this gap in the computations of narrow syntax. Under the second approach, the problems are real, but tractable. A common assumption within minimalism is that if an expression X assigns a θ-role to Y, then it cannot also check a feature, say Case, of Y (see Chomsky 1995, Grohmann 2003). So, for example, a 'transitive' light verb assigns a θ-role to its Spec, but checks the Case-feature of the DP that is θ-marked by the lower verb. In other words, the assumption is that the one and the same head cannot simultaneously θ-mark and morphologically check the same expression. One could extend this division of labor to other morphological relations, as well. So, if T has both morphological and selection requirements to be satisfied by V, T must concatenate with (a projection of) V twice. Furthermore, it is arguable that morphological requirements must involve simplex (word-like) elements and not complex atomic elements (phrases).

That being so, the A/A Condition should accordingly be understood in a relativized manner. In other words, if a complex element such as the labeled projection $[_V\ V\ D\ ]$ cannot satisfy the morphological requirements of T (it is not word-like), it does not induce minimality effects of the A/A type for the movement of the simplex verbal head (see Hornstein, forthcoming: chap. 2). From this perspective, excorporation of the adjoined head or the target of adjunction will cause the derivation to crash because T will not have its requirements satisfied later in the morphological component. So, if T is to undergo head movement later on, it must label the object resulting from its concatenation with the verbal head so that the latter is pied-pied when it moves.[16] And like the previous V–to–T

[16] In this case, the resulting structure would be as in (i).

movement, if [$_T$ V^T] moves for morphological reasons, the larger complex projections of T will be inert for purposes of the A/A Condition. Finally, cyclicity (the Extension Condition) is not a problem if head movement proceeds via sideward movement (see Bobaljik 1995a, Nunes 1995, 2004, Bobaljik & Brown 1997, and Uriagereka 1998). That is, the verb can be copied from within [$_V$ V^D] and concatenated with T prior to the merger between T and [$_V$ V^D], as illustrated in (29).

(29) a. *Assembly of [$_V$ V^D] + selection of T from the numeration:*
[$_V$ V^D]   T
b. *Copy of V from [$_V$ V^D] + Concatenation with T:*
[$_V$ V^i^D]   T^V^i
c. *Concatenation of T with [$_V$ V^D] + labeling (cf. (28)):*
[$_T$ T^[$_V$ V^i D]]
^V^i

It is worth noting that none of the potential problems associated with X^0-adjunction structures arise in virtue of the specifics of our proposal. Rather, they also permeate Chomsky-adjunction representations such as (27) and their BPS cousins. So whatever is the ultimate solution for these problems, it is likely to be oblivious to the general theory of adjunction one adopts. We will leave the choice between the two approaches sketched above for future work.

OK, we have dallied long enough: Why the labeling differences between adjuncts and complements? What *conceptually* motivates the different treatment that we have seen is empirically required? We believe that the proposed difference tracks an independently required semantic contrast between the two, namely, the fact that to be predicated of events, arguments (in contrast to adjuncts) need a thematic pivot. Here's what we mean.

In a neo-Davidsonian semantics the core of the proposition is the event.[17] The V is a predicate of events and everything else modifies it. Thus, the logical form of (30a) is something like (30b).

(30) a. John ate the cake in the yard.
b. ∃e [eating(e) & subject(John,e) & object(the cake, e) & in–the–yard(e)]

The crucial feature of (30b) for current purposes is that the verb *eat* and the adjunct *in the yard* apply to the event directly, whereas *John* and *the cake* modify the event via two designated relations, here marked *subject* and *object*. Whether it is grammatical functions like subject and object or thematic relations like agent and theme/patient is irrelevant here. What is important is that adjuncts can *directly* modify events, while arguments only do so *indirectly*. They need help in relating to the event and this help is provided by relational notions like subject, object, etc. In an event-based semantics, arguments — not adjuncts — are the

(i) [$_T$ [$_T$ V^i^T]^[$_V$ V^i^D]]

17 For details, see Higginbotham (1986), Parsons (1990), Schein (1993), and Pietroski (2004), among others.

interpretive oddballs. They can only modify the event if aided by relational notions.

How does this bear on the requirement that arguments must be inside labeled concatenates while adjuncts need not be? If we assume the traditional definitions of subject, object, etc., then we need labels.[18] For example, objects are traditionally defined as the immediate concatenates of V, e.g., NP–of–V (i.e. $[_{VP}$ V NP]) in the Standard Theory. Given the assumptions that subject and object relations must be marked so as to be of use at the Conceptual–Intentional interface (the place where the syntactic object is interpreted, viz. integrated into a neo-Davidsonian event-based proposition), we must provide the structural where-withal to define it. And if we understand notions like subject and object in classical terms, then labeling is critical for defining these relations. Thus, whereas arguments necessarily require being in a complex labeled structure, adjuncts can be licensed with simple concatenation.

Assuming that this proposal is on the right track, let's consider some of its implications for the computation of adjuncts.

5. Some Consequences

The traditional description of adjunction structures is that the adjunct somehow dangles off the target of adjunction. This accounts for the fact that when the target moves as in VP-fronting, for instance, it may pied-pipe the adjuncts or leave them stranded (cf. (23) and (25)). We have reanalyzed this optionality in terms of structural ambiguity. When an adjunct is left stranded, that's because its concatenation with the target was not followed by labeling, as sketched in (31a); on the other hand, if the adjunct is carried along, labeling has taken place, as represented in (31b).

(31) a. $[_V$ V^D]^ADJUNCT
b. $[_V$ $[_V$ V^D]^ADJUNCT]

In this section we will focus on structures such as (31a). Assuming that concatenation without labeling is a grammatical possibility for adjuncts, the structure in (31a) invites two inferences. On the one hand, the adjunct should be invisible to operations involving the labeled structure, as it is 'dangling off' the labeled V. On the other hand, given that it is not dominated by a labeled structure, the Extension Requirement does not prevent it from merging with another element. That is, the adjunct in (31a) may 'dangle onto' a different structure. We discuss each possibility below.

5.1. *Dangling Off*

One finds evidence from different domains that indicates that adjuncts may be

[18] See, for example, Chomsky (1965).

invisible to certain grammatical computations. For instance, as opposed to arguments, adjuncts do not project focus (see Gussenhoven 1984 and Selkirk 1986, among others). A sentence such as (32a) below, for example, with *books* being prosodically prominent, can be a felicitous answer to *What did John buy?* (object focus), *What did John do?* (VP focus), or *What happened?* (sentence focus). Interestingly, addition of an adjunct, as in (32b), does not preclude any of these interpretive possibilities. By contrast, if the adjunct of (32b) is prosodically prominent, as represented in (33), it can only be an appropriate answer for *Where did John buy books?* (narrow focus) or *Did John buy books here?* (contrastive focus).

(32) a. John bought BOOKS.
     b. John bought BOOKS in that shop.

(33) John bought books in that SHOP.

From the perspective explored here, the contrast between arguments and adjuncts with respect to focus projection is a byproduct of the fact that arguments must be fully integrated into their structure (concatenation and labeling are both required), whereas adjuncts are allowed to be dangling out (only concatenation is required). As arguments necessarily become integral parts of larger and larger structures, they allow focus to project to these structures, as exemplified by the simplified representations in (34a) below. In turn, as adjuncts are just concatenated, they are not very communicative with their neighbors and cannot project focus beyond their own projection, as illustrated in (34b).

(34) a. [$_T$ John^[$_T$ T^[$_V$ bought^BOOKS]]]
-----------object focus
--------------------------VP focus
---sentence focus

b. [$_T$ John^[$_T$ T^[$_V$ bought^books]]]
^in-that-SHOP
------------------adjunct focus

The contrast depicted in (34) in fact shows two points. First, it shows that labeling is not optional. If it were, the concatenate in (34b) could be labeled and the distinction between arguments and adjuncts with respect to focus projection would be lost. Second, if labeling concatenate structures involving adjuncts is not optional and must be triggered by some interface conditions (see fn. 15), focus projection is not one of them. If it were, it would license the labeling in (34b) and, again, we would have no principled basis to account for the different behavior of arguments and adjuncts regarding focus.

Thus, the lack of optionality of labeling illustrated by the behavior of adjuncts with respect to focus projection indicates that leaving a structure unlabeled is more economical (in the sense that fewer operations are applied) than labeling it. Say this is on the right track. Doesn't it contradict our proposal in section 4 that the multiple choices for VP-movement rested on structural ambiguity, depending on whether or not a concatenate involving an adjunct is labeled? Not really. To say that a given surface string involving multiple adjuncts may correspond to different structural configurations depending on whether labeling follows the concatenation of the adjuncts does *not* entail that labeling is optional. All it entails is that whatever triggers/licenses labeling in these cases must have been enforced when adjuncts are pied-piped under VP-movement.[19] Our proposal in fact predicts that all things being equal, adjuncts should be able to project focus once the labeling is properly sanctioned. In other words, an adjunct should be able to project focus if it is pied-piped when the VP is fronted.

With this in mind, consider the contrast between (35) and (36).

(35) [Context: *What will John do?*]
- a. He will play SOCCER on Sunday.
- b. #He will play soccer on SUNDAY.

(36) [Context: *What will John do?*]
- a. #Play SOCCER on Sunday what he'll do.
- b. Play soccer on SUNDAY is what he'll do.

(35) replicates the contrast in (34): the object but not the adjunct allows focus projection. As mentioned above, a question such as *What will John do?* can be used as a diagnostics for VP focus and, therefore, the sentence in (35b) with high pitch on *Sunday* is expected to be infelicitous, as it only licenses narrow or contrastive focus (i.e. it would only be a felicitous answer to *When will John play soccer?* or *Will John play soccer on Saturday?*). Surprisingly, we get the reverse pattern in (36): The adjunct admits VP focus, but the object doesn't. Prosodic prominence on the object in (36a) triggers narrow or contrastive focus readings (i.e. (36a) is a felicitous answer to *What will John play on Sunday?* or *Will John play golf on Sunday?*). The crucial difference between (35) and (36) is that in the latter, VP-fronting under pseudo-clefting carries the adjunct along. According to our proposal, the fact that the adjunct is pied-piped in (36b) signals that labeling after its concatenation was licensed. Once fully integrated into the structure, focus can then propagate from the adjunct to the larger VP of which it became an integral part, as illustrated in (37).

(37) $[_{V}$ $[_{V}$ play^soccer]^on–SUNDAY]

$\underline{\hspace{4cm}}_{\text{adjunct focus}}$

$\underline{\hspace{9cm}}_{\text{VP focus}}$

In turn, (36a) is infelicitous in the context given for the same reason (38a) below is odd in a VP or sentence focus context: There is no need to resort to an extraneous pitch accent if regular sentence intonation is sufficient to convey VP and sentence

[19] Interestingly, Johnson (2001) and Szczegielniak (2004) have argued that VP-movement underlies VP-ellipsis. If so, the several possibilities available for ellipsis involving multiple adjunction should fall together with VP-fronting, as far as the licensing of labeling involving the concatenation of adjuncts is concerned.

focus.

(38) [Context: *What did John do?/What happened?*]
  a. #He KISSED Mary.
  b. He kissed MARY.

Summing up thus far, even though the exact trigger for labeling adjunction structures remains to be specified, the contrast between (35) and (36) lends support to our account of the general asymmetry between arguments and adjuncts with respect to focus projection in terms of (lack of) labeling.

Consider another domain in which adjuncts are also oblivious to the computations in play. As illustrated by the contrast in (39), for instance, the negative head *not* blocks affix hopping (see Chomsky 1957), but the adjunct *never* does not.

(39) a. * John not baked cakes.
  b. John never baked cakes.

The contrast above receives a straightforward account under the standard assumption that *not* heads a labeled constituent (NegP) intervening between T and VP(see Pollock 1989), whereas the adjunct *never* is just concatenated with VP, as respectively shown in (40). Crucially, *never* is dangling off of VP in (40b) and does not interfere with the adjacency requirements on affix hopping (see Bobaljik 1995b for discussion).[20]

(40) a. $[_{T}$ *–ed*^$[_{Neg}$ not^$[_{V}$ bake^cakes]]]
  b. $[_{T}$ *–ed*^$[_{V}$ bake^cakes]]]
    ^never

Our proposal also allows an account of seemingly unorthodox aspects of grammatical computations when adjuncts are involved. Take the standard assumption that syntactic operations do not target discontinuous elements, for instance. When cases such as (41) and (42) below are considered, it seems that this requirement must be relaxed as far as adjuncts are concerned, for VP-movement, ellipsis and *do–so* anaphora appear to be targeting a discontinuous object (*eat the cake in the afternoon* in (41) and *eat the cake with a fork* in (42)).

(41) John *ate the cake* in the yard with a fork *in the afternoon*,
  a. and [eat the cake in the afternoon], he should have in the kitchen, with a spoon.
  b. but Bill did (so) in the kitchen, with a spoon.

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20 See also Avelar (2004), who argues that different arrangements among the functional heads *v*, T, D, Poss, and Top in Brazilian Portuguese underlie the lexical access to the copulas *ser* 'be' and *estar* 'be' and to the existential/possessive verb *ter* 'have'. Interestingly, 'intervening' adjuncts are disregarded and do not interfere with the access to a particular vocabulary item.

(42) John *ate the cake* in the yard *with a fork* in the afternoon,
a. and eat the cake with a fork, he should have in the kitchen in the morning.
b. but Bill did (so) in the kitchen in the morning.

However, the fact that adjuncts can be left dangling provides an alternative analysis of data such as (41) and (42), which is compatible with the standard assumption that discontinuous objects cannot be targeted by syntactic operations. Recall that in section 4 we argued that structural ambiguity is what allows VP-movement, ellipsis, and *do–so* anaphora to also target any number of adjuncts without violating the A/A Condition. The idea is that the multiple possibilities for these grammatical operations are actually associated with different syntactic structures, depending on whether or not concatenation of the adjuncts is followed by labeling. The same can be said about the sentences above. That is, (41) is to be associated with the structure in (43), and (42) with the one in (44).

(43) [$_V$ [$_V$ ate^the–cake]^in–the–afternoon]]
^in–the–yard
^with–a–fork

(44) [$_V$ [$_V$ ate^the–cake]^with–a–fork]]
^in–the–yard
^in–the–afternoon

Given the structures in (43) and (44), the object that is targeted by the computational system in (41) and (42) is indeed a labeled concatenate (a syntactic atom) and not a discontinuous element. Rather than requiring some relaxation in the computational system, what sentences such as (41) and (42) actually do is show that the surface order among the adjuncts does not provide any information as to whether or not labeling has occurred. Or to put it in other words, the linearization of adjuncts in the PF component does not seem to be ruled by the same mechanisms that deal with the linearization of arguments (see fn. 15).[21]

There is an additional happy consequence of the approach we are proposing. Regardless of whether ellipsis resolution is to be ultimately accounted for in terms of PF deletion or LF copying, we have seen that ellipsis in (41b) and (42b) arguably disregards adjuncts that were merely concatenated into the structure. This opens a new avenue for the analysis of ellipsis resolution that may lead to infinite regress such as the ones in (45).

[21] Independent evidence for this claim is provided by production data. Rodrigues (2006) examined production errors with respect to subject–verb agreement in Brazilian Portuguese and found that for a target subject such as N_{SG} $[_{PP}$ P $NP_{PL}]$, there were significantly more agreement errors (with a plural verb) when the PP was an argument than when the PP was an adjunct (average of errors for argument PPs = 1.7; average of errors for adjunct PPs = 0.74; maximal score = 6.0). These results suggest that as opposed to what happens to PP arguments, the surface position of PP adjuncts is determined after subject–verb agreement is computed.

(45) a. John greeted everyone that I did.
b. John worded the letter as quickly as Bill as did.
c. John kissed someone without knowing who.

(45a) is a classical example of antecedent contained deletion (ACD) construction of the sort first extensively discussed in May (1985). (45b) is an ACD construction in which the major constituent containing the elided material is an adjunct (see Hornstein 1995). Finally, (45c) involves sluicing contained within an adjunct (see Yoshida 2005). In all of them, a simple-minded ellipsis resolution copying the matrix VP in (45a) and (45b) or the IP in (45c) into the ellipsis site will recreate a structure with elided material in need of resolution. This is not the place to discuss the intricate properties associated with each of these constructions. We would just like to point out that they appear to be amenable to the same analysis we suggested for (41b) and (42b).

More concretely, the infinite regress problem arises just in case the adjuncts in (45) are analyzed as forming a syntactic constituent with the target of the adjunction. Suppose that along the lines we have been exploring here, the simplified structures underlying the sentences in (45) are as in (46).

(46) a. [$_T$ John^[$_T$ T^[$_V$ greeted^everyone]]]
^that–I–did

b. [$_T$ John^[$_T$ T^[$_V$ worded^the–letter]]]
^as–quickly-as–Bill–did

c. [$_T$ John^[$_T$ T^[$_V$ kissed^someone]]]
^without–knowing–who

In each structure of (46), there is a constituent that can provide the relevant template for ellipsis resolution without forcing infinite regress; namely, the V-labeled concatenate in (46a) and (46b), and the outer T-labeled concatenate in (46c). The crucial aspect in the structures in (46) is that the adjunct containing the ellipsis site is just concatenated with its target and therefore is not a proper part of the structure it modifies. As it dangles off the constituent with which it was concatenated, it is invisible for purposes of ellipsis resolution and this doesn't lead to the infinite regress trap.[22]

[22] Sentences such as the ones in (i), pointed out to us by Alex Grosu (p.c.), seem to be problematic in that the concatenation of the adjunct appears to be followed by labeling, given that the adjunct appears to have been pied-piped. However, if concatenation with the relative clause is followed by labeling, this gives rise to the infinite regress problem as the matrix VP includes the elided VP.

(i) a. Everyone that I expressedly didn't, Bill effusively invite.
b. How many people that you refused to did Bill nonetheless invite?

There is an alternative derivation for the sentences in (i), though. The derivation of (ia), for instance, can proceed along the lines of (ii)–(v) below. Given the two clauses in (ii), *everyone* is copied from K, as shown in (iii), and concatenates with L (an instance of sideward movement in the sense of Nunes 2001, 2004), as shown in (iv). Once no labeling

We would like to stress that it was not our intent to provide a detailed analysis of the several types of phenomena reviewed in this section. Our purpose was just to highlight empirical domains that may find a more streamlined explanation if our proposal that adjuncts may be just concatenated with their target is on the right track.[23]

5.2. *Dangling On*

There is one more aspect of adjunction structures that we haven't mentioned here. Grammarians distinguish between domination and containment (see May 1985). According to this distinction, XP in (47a) below is in the domain of Y^0 but not in the domain of Z^0 as it is dominated by all maxY projections. In contrast, XP in (47b) is in the domain of both Y^0 and Z^0 because it is not dominated by all maxY projections; that is, it is dominated by ZP but only contained by YP.

(47) a. $[_{ZP} \ldots Z^0 [_{YP}$ XP $[_{Y'} \ldots Y^0 \ldots]]]$
b. $[_{ZP} \ldots Z^0 [_{YP}$ XP $[_{YP} \ldots Y^0 \ldots]]]$

The distinction between domination and containment has been empirically useful in allowing expressions to be members of more than one domain. One interesting case that illustrates this possibility is provided by Kato & Nunes's (1998, 2007) analysis of matching effects in free relatives. In Portuguese, for example, free relatives allow a kind of preposition sharing between different verbs. The data in (48) below show that the verbs *discordar* 'disagree' and *rir* 'laugh' in Portuguese select for the preposition *de* 'of', whereas the verbs *concordar* 'agree' and *conversar* 'talk' select for the preposition *com* 'with'. When one of

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takes place in (iv), *everyone* can concatenate with the Top projection, as shown in (v), which surfaces as (ia) after deletion of the lower copy of *everyone* in K. Notice that the structure in (v) does not give rise to the infinite regress problem, as the VP of the matrix clause does not contain the relative clause. See fn. 24 below and Nunes (2001, 2004) for similar derivations.

(ii) K = $[_{ToP}$ Top^$[_T$ Bill–effusively–invite–everyone]]
L = $[_C$ that–I–expressedly–didn't]

(iii) K = $[_{ToP}$ Top^$[_T$ Bill–effusively–invite–everyone^i]]
L = $[_C$ that–I–expressedly–didn't]
M = everyone^i

(iv) K = $[_{ToP}$ Top^$[_T$ Bill–effusively–invite–everyone^i]]
N = everyone^i^$[_C$ that–I–expressedly–didn't]

(v) $[_{Top}$ everyone^i^$[_{ToP}$ Top^$[_T$ Bill–effusively–invite–everyone^i]]]
^$[_C$ that–I–expressedly–didn't]

23 If movement is to be computed in terms of paths (see Hornstein, forthcoming: chap. 2) and if paths are defined in terms of traversed constituents (labeled concatenates in our terms), lack of labeling should block movement as paths can't be computed. In other words, lack of labeling may provide an account for why one can't move out of adjuncts. As for pied-piped adjuncts (which under our proposal must have triggered labeling), whatever accounts for why moved arguments become (CED) islands should in principle account for their island behavior, as well.

these verbs takes a free relative clause as a complement, the selectional properties of the matrix and the embedded verb must match, as shown in (49). Intuitively speaking, (49c), for instance, is ruled out because the matrix verb selects for *com*, while the embedded verb selects for *de*:

(48) a. Eu discordei/ri **d**ele / ***com** ele.
I disagreed/laughed of.him / with him
'I disagreed with him.' / 'I laughed at him.'

b. Eu concordei / conversei **com** ele / ***d**ele
I agreed / talked with him / of.him
'I agreed with him.' /'I talked to him.'

(49) a. Ele só conversa **com** quem ele concorda.
he only talks with who he agrees
'He always talks to whoever he agrees with.'

b. Ele sempre ri **de** quem ele discorda.
he always laughs of who he disagrees
'He always laughs at whoever he disagrees with.'

c. Ele sempre concorda ***com** quem / ***de** quem ele ri.
he always agrees with who / of who he laughs
'He always agrees with whoever he laughs at.'

Assuming the traditional distinction between domination and containment, Kato & Nunes propose that the derivation of a sentence such as (49a), for instance, proceeds as follows. The computational system assembles the 'relative' CP and the verb *conversa* is selected from the numeration, as shown in (50) below. K and L in (50) cannot merge at this point because *conversa* does not select for a CP. The strong *wh*-feature of C then triggers the copying of the PP *com quem*, as shown in (51). Next, the computational system adjoins M to K, allowing the strong *wh*-feature to be checked, and merges the resulting structure with L, as shown in (52). Crucially, merger of the matrix verb and CP in (52) now satisfies Last Resort because the moved PP also falls within domain of *conversa* and they can establish the relevant syntactic relation (θ-assignment).

(50) a. K = $[_{CP}$ C [ele concorda $[_{PP}$ com quem]]
b. L = *conversa*

(51) a. K = $[_{CP}$ C [ele concorda $[_{PP}$ com quem $]^{i}$]
b. L = *conversa*
c. M = $[_{PP}$ *com quem* $]^{i}$

(52) $[_{VP}$ conversa $[_{CP}$ $[_{PP}$ com quem $]^{i}$ $[_{CP}$ C [ele concorda $[_{PP}$ com quem $]^{i}$]]]]
talks with who he agrees with who

In sum, the utility of distinguishing containment from domination is that elements contained within a projection are still visible beyond that projection, while those dominated by a projection are not. However, this distinction crucially hangs on allowing XP in a structure like (47a) to be distinguished from XP in a structure like (47b) and this brings back all the questions we discussed in section 2. Note, for instance, that the assumption that the lower YP in (47b) determines the label of the outer projection but retains its status as a maximal projection is at odds with the notion of projection in BPS. In addition, it violates the Inclusiveness Condition in that bar-level information is tacitly being used as a primitive by the computational system. Moreover, notice that if these problems were to be fixed in consonance with BPS and the Inclusiveness Condition, (47b) should be reanalyzed along the lines of (53) below, where bar levels are not intrinsically distinguished. The problem now is that we lose the distinction between adjuncts and specifiers that was used to account for the matching effects in (49), for (53) would be the BPS rendition of both (47a) and (47b).

(53) $[_Z \ldots Z\ [_Y X\ [_Y \ldots Y \ldots]]]$

The question before us is whether the useful distinction between domination and containment can be captured without friction with BPS or the Inclusiveness Condition in a theory that does not have specific labels for adjuncts such as the one we are advocating here. Recall that we suggested that adjuncts can concatenate with concatenative atoms, but the output need not project a label. Given this, we can represent the difference between domination and containment as the difference between (54a) and (54b).

(54) a. $[_X Z\hat{}[_X \ldots X \ldots]]$
b. $Z\hat{}[_X \ldots X \ldots]$

In (54a), Z has concatenated with the inner X-projection and the result has been labeled X again. (54b) exhibits a similar concatenation but the output is left *unlabeled*. If we assume that it is labeling that prevents all but a head to be 'seen' from outside the concatenate, then in (54b), Z can still be input to further concatenation.

To put it somewhat differently: Recall that in section 5.1 we discussed cases where adjuncts are disregarded by some operations because like Z in (54b), they are not part of a labeled constituent. Once an adjunct may be left dangling as in (54b), the converse situation may arise, as well. That is, the adjunct in (54b) may be targeted by some operation exactly because it is not a subpart of a bigger syntactic object. In particular, it is free to undergo merger in consonance with the Extension Requirement, as it is still a syntactic atom for purposes of concatenation.

Consider how our reworked version of the distinction between domination and containment operates in the case of the Portuguese free relatives described above. The derivation of the matching free relative in (49a), for instance, can be derived along the lines of (55).

(55) a. com–quem$\hat{}[_C C\hat{}[_T \ldots]]$

b. com–quem^$[_{C}$ C^$[_{T}$ …]]
$[_{V}$ conversa^]

In (55a) *com quem*, which was copied from within CP, concatenates with CP and no labeling takes place. Once *com quem* is still an atomic element for purposes of concatenation, it can merge with the verb *conversa*. However, in order for *com quem* to be interpreted as an argument, such concatenation must be followed by labeling, as shown in (55b). *Com quem* in (55b) counts as two beads on a string, so to speak: it is an integral part of the V-labeled expression and a 'mere' concatenate to the C-labeled expression. If one assumes that Merge is just an instance of concatenate, then there is no reason why *some* parts of the phrase marker may not be string-like. Our suggestion is that this more adequately describes what happens for contained expressions. They are parts of mere concatenates, not labeled ones.[24]

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[24] At first sight, our analysis fails to account for the acceptability of Portuguese sentences such as (i), for instance, where the free relative appears to have moved from the matrix object position. According to the derivation discussed above, such movement should not be possible, given that the PP and the relative CP do not form a constituent (cf. (55b)).

(i) Com quem ele conversa ele concorda.
with who he talks he agrees
'Whoever he talks to, he agrees with.'

However, upon close inspection there is a convergent source for (i), along the lines of (ii)–(vii) below (with English words and details omitted for purposes of exposition). That is, after K and L are assembled in (ii), the computational system copies *with who* and merges it with *talks* (an instance of sideward movement) to satisfy the θ-requirements of the latter (see Nunes 2001, 2004), yielding (iii). After the stage in (iv) is reached, another copy of *with who* is created, triggered by the strong feature of the head of the relative CP, as shown in (v). After the relative CP adjoins to the copy just created, as shown in (vi), *with who* is still an accessible atom for purposes of structure building (no labeling took place after concatenation in (vi)). *With who* may then merge with the Top-labeled constituent, yielding another Top-projection, as shown in (vii), which surface as (i) after deletion of the lower copies of *with who* and further computations. See Nunes (2001, 2004) for discussion of similar derivations.

(ii) K = $[_{Top}$ Top^$[_{T}$ he–agrees–$[_{P}$ with–who]]]
L = talks

(iii) K = $[_{Top}$ Top^$[_{T}$ he–agrees–$[_{P}$ with–who $]^{i}$]]
M = $[_{V}$ talks^$[_{P}$ with–who $]^{i}$]

(iv) K = $[_{Top}$ Top^$[_{T}$ he–agrees–$[_{P}$ with–who $]^{i}$]]
N = $[_{C}$ he–talks–$[_{P}$ with–who $]^{i}$]

(v) K = $[_{Top}$ Top^$[_{T}$ he–agrees–$[_{P}$ with–who $]^{i}$]]
N = $[_{C}$ he–talks–$[_{P}$ with–who $]^{i}$]
O = $[_{P}$ with–who $]^{i}$

(vi) K = $[_{Top}$ Top^$[_{T}$ he–agrees–$[_{P}$ with–who $]^{i}$]]
P = $[_{P}$ with–who $]^{i}$^$[_{C}$ he–talks–$[_{P}$ with^who $]^{i}$]

(vii) Q = $[_{Top}$ $[_{P}$ with–who $]^{i}$^$[_{Top}$ Top^$[_{T}$ he–agrees–$[_{P}$ with–who $]^{i}$]]]
^$[_{C}$ he–talks–$[_{P}$ with–who $]^{i}$]

Let's examine another potential example of an expression dangling onto a structure different from the one it concatenates with. Consider the contrast in (56) in English.

(56) a. There is likely to be someone in the room.
 b. * There is likely someone to be in the room.

The contrast in (56) is the textbook example presented by Chomsky (1995) as evidence for the preference of Merge over Move. The reasoning is as follows. After the syntactic object in (57) below is built, the EPP feature of *to* may be checked by either merger of *there* or by movement of *someone*. Assuming that both options lead to a convergent result, they are eligible for economy comparison, for they share that same numeration and the same computations up to (57). The fact that (56a) tramps (56b) is then interpreted as showing that all things being equal, Merge in (57) is to be preferred over Move.

(57) [to be someone in the room]

Under this analysis, the contrast in (58) below is completely unexpected, as it pulls in the opposite direction of (56). The problem with (58) is that if the movement of *books* to a position preceding the passive verb is to check an EPP feature, the computational system should then merge *there*, applying the preference of Merge over Move. This predicts that (58a) should preclude (58b), but we find the opposite.

(58) a. * There were likely to be put books on the table.
 b. There were likely to be books put on the table.

Chomsky (2001) proposes that the derivations in (58) are subject to the same economy comparison as the ones in (56) and that the derivation that should result in (58a) is indeed the winner. The fact that it cannot surface as such is attributed to an "idiosyncratic rule of English" (p. 24) referred to as *thematicization/extraction (Th/Ex)*, which is an operation of the phonological component that moves the complement of a passive or unaccusative verb to its edge. Th/Ex is taken to be a phonological operation due to its "semantic neutrality" (p. 26). In particular, it is different from object shift in that the moved object is not associated with specificity. In fact, the moved argument of constructions such as (59) exhibits defininetess effects and therefore patterns like the *in situ* argument of (60a) rather than the moved argument of (60b).

(59) There were likely to be some / *the books put on the table.

(60) a. There were likely to be some / *the books on the table.
 b. Some / the books were likely to be on the table.

Our proposal that concatenation is not always followed by labeling seems to provide a more elegant analysis to this set of facts. Let's see how it goes.

Following Lasnik (1992), assume that in English, *be* can assign (inherent) partitive Case (in the sense of Belletti 1988), but passive verbs can't. Being inherent, partitive Case is intrinsically linked to θ-role assignment (see Chomsky 1986). So, *be* should not be able to assign partitive to the Spec of a predicative PP in a structure such as (61), for instance, as there is no such case as 'exceptional θ-marking' (see Chomsky 1986, Belletti 1988).

(61) [be [$_{PP}$ books [$_{P'}$ on [the table]]]]

The question then is how *be* can assign inherent Case to *books* in a simple sentence such as (62) below if books sits in the Spec of PP, as in (61). Extending Kato & Nunes's (1998) proposal, Avelar (2004) proposes that existential constructions actually involve adjunction small clauses and that in a configuration such as (63), *be* can assign inherent Case to *books* because they are in mutual c-command relation as *books* is contained, but not dominated by PP.

(62) There are books on the table.

(63) [are [$_{PP}$ books [$_{PP}$ on [the table]]]]

In the terms of the system we are arguing for here, Avelar's proposal amounts to saying that *books* is only concatenated with the P-labeled expression, as represented in (64a), which in turn allows it to merge with and be assigned partitive by *be*, as shown in (64b).

(64) a. books^[$_{P}$ on^the–table]
b. books^[$_{P}$ on^the–table]
[$_{V}$ are^]

Let's get back to the contrasts in (56) and (58). If *be* assigns partitive Case, the two derivations in (56) do not actually compete.[25] After *someone* is Case-marked by *be* in (57), it becomes inactive for purposes of A-movement; hence, the only convergent continuation of (57) is to insert *there* and then move it later to check the EPP and the Case-feature of the matrix T. What about the sentences in (58)? Take the derivational step represented in (65a) below, after the participial clause is built. Assuming that Part has an EPP feature, the system can either move *books* or merge *there*. Notice however that if *there* is merged, it should induce minimality effects, preventing *books* from getting Case later on, when potential Case checkers are introduced in the derivation; hence the unacceptability of (58a). If merger of *there* does not lead to a convergent derivation, *books* is then allowed to move to check the EPP feature of the participial head. Crucially, *books* is active for purposes of A-movement as passive verbs in English do not assign partitive. *Books* is then copied and concatenates

25 This does not entail that there is no Merge–over–Move preference. All we're saying is that it is not obvious that the contrasts in (56) and (58) are examples of the effects of this preference.

with the complex expression labeled Part in (65a), yielding (65b).

(65) a. $[_{\text{Part}}$ Part^$[_{\text{V}}$ put–books–on–the–table]]
b. books^$[_{\text{Part}}$ Part^$[_{\text{V}}$ put–books–on–the–table]]

Once the concatenation in (65b) is not followed by labeling, *books* is still accessible for merger. It can then merge with and be Case-marked by *be*, as shown in (66), and *there* is inserted later in the matrix clause, yielding the sentence in (58b) after further computations.

(66) books^$[_{\text{Part}}$ Part^$[_{\text{V}}$ put–books–on–the–table]]
$[_{\text{V}}$ be^]

Needless to say that here we just touched on the tip of the iceberg that hides under existential constructions and much more needs to be said. But it is worth noting that our reanalysis of the notions of dominance and containment in terms of labeling provides a straightforward account for the fact that moved object in (58b)/(59) behaves like *in situ* objects of *be* in exhibiting definiteness effects. Its semantic neutrality, to use Chomsky's words, follows from the fact that like in simple existential constructions such as (62), it can merge with *be* in consonance the Extension Condition and be assigned partitive Case.

6. Concluding Remarks

Adjuncts are funny characters from a syntactic point of view, because they appear to be simultaneously inside and outside a given syntactic tree. Their double personality has led to the standard view in the literature according to which structures involving adjuncts are less trivial than the ones involving arguments. We have argued in this contribution that contrary to the traditional wisdom, exactly the opposite is true. Arguments — in order to be interpreted as such at the Conceptual–Intentional interface — require association with relational notions such as subject and object and the grammatical establishment of these relational notions is achieved through labeling. Hence, arguments must be parts of complex (labeled) structures. Adjuncts, on the other hand, may modify the event directly via concatenation and therefore need not invoke labeled structures to be properly interpreted. From this perspective, the addition of adjuncts into a given structure is achieved via the simplest possible operation, simple concatenation.

Our proposal for the distinction between arguments and adjuncts is conceptually couched on their distinctive role at the Conceptual–Intentional interface. But crucially, it accords well with both BPS (as we don't make use of bar-level information) and with the Inclusiveness Condition (as we don't introduce extraneous devices to code their difference). Rather, we rely on the unavoidable property that underlies the operation that builds complex syntactic objects (phrases) out of lexical atoms, namely, the concatenation procedure whose output is interpreted at the Conceptual–Intentional interface as conjunction. Our proposal has been that examining adjunction structures through interface lenses both leads to a conceptually more appealing approach to adjunction structures, and opens new avenues for analyzing recalcitrant data.

References

Avelar, Juanito. 2004. Dinâmicas morfossintáticas com *ter*, *ser* e *estar* em português brasileiro. Campinas: Universidade Estadual de Campinas MA thesis.

Baker, Mark. 1988. *Incorporation: A Theory of Grammatical Function Changing.* Chicago: University of Chicago Press.

Belletti, Adriana. 1988. The case of unaccusatives. *Linguistic Inquiry* 19, 1-34.

Bobaljik, Jonathan David. 1995a. In terms of merge: Copy and head movement. *MIT Working Papers in Linguistics* 27, 41-64.

Bobaljik, Jonathan David. 1995b. Morphosyntax: The syntax of verbal inflection. Cambridge, MA: MIT dissertation.

Bobaljik, Jonathan David & Samuel Brown 1997. Inter-arboreal operations: Head-movement and the extension requirement. *Linguistic Inquiry* 28, 345-356.

Boeckx, Cedric and Sandra Stjepanović. 1999. Head-ing toward PF. *Linguistic Inquiry* 32, 345-355.

Chametzky, Robert. 2000. *Phrase Structure: From GB to Minimalism* (Generative Syntax 4). Cambridge, MA: Blackwell.

Chomsky, Noam. 1955. The logical structure of linguistic theory. Ms., Harvard University/Massachusetts Institute of Technology. [Published in part as *The Logical Structure of Linguistic Theory*, New York: Plenum, 1975.]

Chomsky, Noam. 1957. *Syntactic Structures* (Janua Linguarum, Series Minor 4). The Hague: Mouton.

Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.

Chomsky, Noam. 1986. *Knowledge of Language: Its Nature, Origin, and Use* (Convergence). New York: Praeger.

Chomsky, Noam. 1995. *The Minimalist Program* (Current Studies in Linguistics 28). Cambridge, MA: MIT Press.

Chomsky, Noam. 2000. Minimalist inquiries: The framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, 89-155. Cambridge, MA: MIT Press.

Chomsky, Noam. 2001 Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A Life in Language* (Current Studies in Linguistics 36), 1-52. Cambridge, MA: MIT Press.

Chomsky, Noam. 2004. Beyond explanatory adequacy. In Adriana Belletti (ed.), *The Cartography of Syntactic Structures*, vol. 3: *Structures and Beyond* (Oxford Studies in Comparative Syntax), 104-131. New York: Oxford University Press.

Grohmann, Kleanthes K. 2003. *Prolific Domains: On the Anti-Locality of Movement Dependencies*. Amsterdam: John Benjamins.

Gussenhoven, Carlos. 1984. Testing the reality of focus domain. *Language and Speech* 26:61-80.

Higginbotham, James. 1986. Davidson's program in semantics. In Ernest Lepore (ed.), *Truth and Interpretation: Perspectives on the Philosophy of Donald Davidson*. Oxford: Blackwell.

Hornstein, Norbert. 1995. *Logical Form: From GB to Minimalism* (Generative Syntax 2). Cambridge, MA: Blackwell.

Hornstein, Norbert. Forthcoming. *A Theory of Syntax: Basic Operations and the Minimalist Program*. Cambridge: Cambridge University Press.

Johnson, Kyle. 2001. What VP ellipsis can do, what it can't, but not why. In Mark Baltin & Chris Collins (eds.), *The Handbook of Contemporary Syntactic Theory* (Blackwell Handbooks in Linguistics), 439-479. Oxford: Blackwell.

Kato, Mary & Jairo Nunes. 1998. Two sources for relative clause formation in Brazilian Portuguese. Paper presented at the *Eighth Colloquium on Generative Grammar (CGG)*, Lisbon. [Universidade de Lisboa, 19-22 April 1998.]

Kato, Mary & Jairo Nunes. 2007. A uniform raising analysis for standard and nonstandard relative clauses in Brazilian Portuguese. Ms., Universidade de Campinas & Universidade de São Paulo.

Lasnik, Howard. 1992. Case and expletives. *Linguistic Inquiry* 23, 381-405.

May, Robert 1985. *Logical Form: Its Structure and Derivation* (Linguistic Inquiry Monograph 12). Cambridge, MA: MIT Press.

Muysken, Pieter. 1982. Parametrizing the notion "head". *Journal of Linguistic Research* 2, 57-75.

Nunes, Jairo. 1995. The copy theory of movement and linearization of chains in the minimalist program. College Park, MD: University of Maryland dissertation.

Nunes, Jairo. 2001. Sideward movement. *Linguistic Inquiry* 31, 303-344.

Nunes, Jairo. 2004. *Linearization of Chains and Sideward Movement* (Linguistic Inquiry Monograph 43). Cambridge, MA: MIT Press.

Parsons, Terrence. 1990. *Events in the Semantics of English*. (Current Studies in Linguistics 19). Cambridge, MA: MIT Press.

Pietroski, Paul. 2004. *Events and Semantic Architecture*. Oxford: Oxford University Press.

Pollock, Jean-Yves. 1989. Verb movement, UG and the structure of IP. *Linguistic Inquiry* 20, 365-424.

Roberts, Ian. 1994. Two types of head movement in Romance. In Norbert Hornstein & David Lightfoot (eds.), *Verb Movement*, 207-242. Cambridge: Cambridge University Press.

Rodrigues, Erica. 2006. O processamento da concordância de número entre sujeito e verbo na produção de sentences. Rio de Janeiro: Pontifícia Universidade Católica do Rio de Janeiro dissertation.

Schein, Barry. 1993. *Plurals and Events* (Current Studies in Linguistics 23). Cambridge, MA: MIT Press.

Selkirk, Elisabeth. 1986. *Phonology and Syntax: The Relationship between Sound and Structure* (Current Studies in Linguistics 10). Cambridge, MA: MIT Press.

Szczegielniak, Adam. 2004. Relativization and ellipsis. Cambridge, MA: Harvard University dissertation.

Uriagereka, Juan. 1998. *Rhyme and Reason: An Introduction to Minimalist Syntax*. Cambridge, MA: MIT Press.

Uriagereka, Juan. In press. *Syntactic Anchors: On Semantic Structuring*. Cambridge: Cambridge University Press.

Yoshida, Masaya. 2005. Sometimes smaller is better: Sluicing, gapping and semantic identity. *North East Linguistic Society (NELS)* 36, 681-695.

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