Multiple Spell-Out and Contraction at the Syntax-Phonology Interface

Abstract: The Multiple Spell-Out model of Chomsky (2000, 2001, 2004) and Uriagereka (1999) provides a straightforward characterization of the syntactic environments for contraction. It is well known that *wanna*-contraction is possible in the subject control case (*Who do you wanna marry*?) but blocked in the DP + infinitival case (**Who do you wanna marry you*?). This asymmetry receives a straightforward account if the CP phase boundary demarcates the domain for contraction. More complex cases of contraction discussed by Postal and Pullum (1978, 1982) fall into place if left-branching structures form a self-contained Spelled-Out domain as in Uriagereka's model. The analysis can also derive a number of well-known generalizations regarding auxiliary reduction such as a) the invisibility of a Case-marked trace for reduction and b) the inhibitory effect of the gap on reduction. a) is a natural consequence of the TP-analysis for *that*-less finite complements whereas b) is the result of the tight interaction between the syntactic system and the fine-grained prosodic classification of function words developed by Selkirk (1995). Particular details of the analysis

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support various principles of syntax such as the Economy of Projection and the notion of CP phase. This paper, therefore, achieves the minimalist desideratum of explaining linguistic phenomena solely in terms of interface conditions and computational efficiency.

1. Introduction

In this paper, I explore the nature of the syntax-phonology interface from the perspective of the recent derivational theory of syntax with a case study of contraction in English. I propose that the Multiple Spell-Out (MSO) models of syntax developed by Chomsky (2000, 2001, 2004) and Uriagereka (1999) correctly delimit syntactic environments under which tense-contraction and auxiliary reduction are possible. The proposed analysis derives this result in tandem with independently motivated structure-sensitive prosodic characteristics of certain function words (Selkirk 1995).

My analysis has several consequences for the theory of syntax and its interface with phonology. First, it substantiates the notion of the "Economy of Projection" variously argued for in the literature (Fukui 1986; Law 1991; Bošković 1995, 1997; Chomsky 1995). This is a welcome result from the perspective of the Minimalist Program (MP), which takes language to be a non-redundant computational system that disallows any superfluous steps or symbols in derivation and representation. Second, my analysis suggests that a dynamically bifurcated derivational system of syntax, such as the MSO model, is more viable than a purely representational alternative in correctly demarcating the range of syntactic environments under which contraction may be found. Finally, my

analysis indicates that syntactic computation tightly interacts with the external phonological component via certain shared interface notions such as Spell-Out and domain-finality.

The paper is organized as follows. In the next section, I introduce two versions of the MSO model, one developed by Chomsky's recent work and the other developed by Uriagereka (1999). I propose that certain mid-derivational chunks in these systems (i.e., the complement of *v* and C for Chomsky; an internally complex left-branching specifier and adjunct for Uriagereka) serve to define a range of possible domains for morphphonological rule application at the post-syntactic phonological component. In section 3, I demonstrate that the core distributional properties of tense-contraction noted in the literature receive a straightforward account under the MSO model without any additional stipulations concerning the PF-visibility of certain classes of empty categories for contraction. In section 4, I show that the proposed analysis can also naturally derive a number of important generalizations concerning auxiliary reduction once the proposed system is coupled with the independently motivated fine-grained prosodic characterization of function words proposed by Selkirk (1995). Section 5 is the conclusion.

2. Multiple Spell-Out and Contraction at the Syntax-Phonology Interface

MSO is the hypothesis that phonological and semantic information is transferred from the syntactic computation to the phonological and semantic components in a piecemeal fashion. Phase Theory, developed by Chomsky (2000, 2001, 2004), is one version of this hypothesis. Chomsky proposes that this transfer occurs at specific derivational cascades called *phases*, which he takes to be

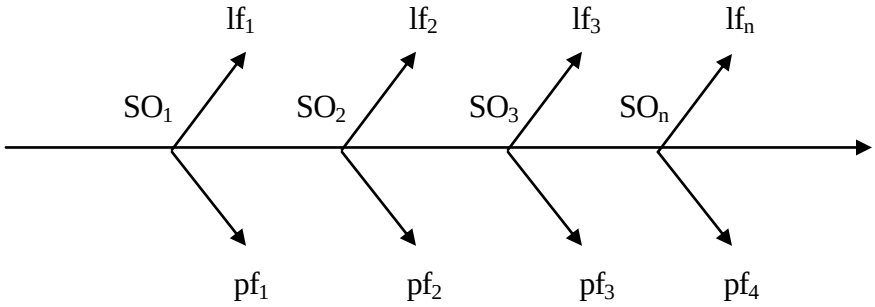
headed by C or *v*. According to this model, at the point of the derivation where the *v*P and CP have been assembled, the complement domains of the phase heads, namely, VP and TP, are transferred and evaluated at the phonological and semantic components. Phase Theory is conceptually natural and meets the best design consideration; it significantly reduces computational complexities in that the syntactic computation can forget about material once it has been transferred to the interpretive systems.

Uriagereka (1999) proposes a different version of the MSO hypothesis from the viewpoint of linearization. Kayne's (1994) Linear Correspondence Axiom states that if α asymmetrically c-commands β in the syntactic structure, α precedes β in the linear ordering. This procedure, however, functions only with uniformly right-branching configurations. It cannot determine the relative ordering among the terminal nodes contained within two internally complex configurations. Uriagereka proposes that syntactic derivation Spells-Out one of the complex structures before it merges with the other so that the ordering of the terminals within the Spelled-Out structure may be fixed by Kayne's linearization algorithm. When the ordering is fixed, the structure becomes something like a "frozen giant lexical compound" whose set-theoretic status is no different from a simplex lexical item and is later plugged into where it belongs in the whole derivational cascade. This model straightforwardly derives the effects of the so-called *Condition on Extraction Domain* (Cattell 1976; Huang 1982), which prohibits movement of an element from within non-complement positions. The complex specifier and adjunct, being an internally left-branching configuration, are Spelled-Out early to the phonological

interface and become a giant lexical compound. As a result, movement from within these positions becomes impossible.

One of the original architectural motivations for the MSO is that a certain mid-derivational syntactic object corresponds to a significant unit for the purposes of phonological and semantic interpretation as well, as schematically illustrated in (1).

(1) The Interface between Syntactic Computation and the Phonological/Semantic Components



One immediate move in this regard, which is already pointed out by Uriagereka (p. 262-265), is to hypothesize that Spelled-Out chunks in the syntactic computation delimit domains of phonological rule application. This is the strongest hypothesis about the syntax-phonology interface since it needs no extra assumptions at the phonological system. Other researchers have independently come to similar conclusions, applied to a different set of data. Kahnemuyipour (2004) proposes a reformulation of the nuclear sentence stress rule within Phase Theory; nuclear stress falls on the highest constituent within the complement domains of the CP and *v**P (see also Adger (2007) and Krazter and Selkirk (2007) for a phase-theoretic analysis of nuclear sentence stress). Dobashi (2003) proposes a similar hypothesis for

phonological phrasing. Johnson (2003) also develops a similar hypothesis about the syntax-phonology interface from focus spreading within his revised version of Uriagereka's MSO model.

Under this transparent syntax-phonology correspondence, VP and TP domains in Chomsky's Phase Theory and the complex left-branching non-complement structures in Uriagereka's system should correspond to the set of domains for phonological rule application. Then, syntactically governed morphophonological phenomena, one classic example of which has been contraction since the early 1970s, should be explained just as a simple corollary of this syntax-phonology mapping hypothesis. In the following sections, I show that the MSO model allows for a straightforward characterization of syntactic environments under which tense-contraction and auxiliary reduction are (im-)possible.

3. Tense-Contraction

Wanna-contraction (or *to*-contraction, more broadly) has a rich history in the generative literature since the early 1970s, starting with the observation of the contrast between (2b) and (2d) first made by Lakoff (1970), who in turn attributes it to Larry Horn. In the subject control configuration in (2a), *wanna*-contraction is acceptable, as shown in (2b); in the alternative V + DP + infinitive configuration in (2c), this contraction is blocked, as shown in (2d).

(2) a. Who$_i$ do you want to marry t_i? (subject control)

b. Who$_i$ do you wanna marry t_i? (subject control)

c. Who$_i$ do you want t_i to marry you? (V + DP + infinitive)

d. *Who$_i$ do you wanna marry you? (V + DP + infinitive)

One central question about *wanna*-contraction since the early 1970s has been what type of empty categories (traces or copies) block this contraction and if so, why those entries, despite their phonologically empty status, have any role to play in what appears to be an essentially a morphophonological phenomenon. However, no previous work has successfully worked out a principled solution to these questions. A quick review of the past representative approaches to *wanna*-contraction below will make this point clear.

First, Jaeggli (1980) (see also Chomsky 1986a) develops a PF adjacency-based analysis of the contrast between (2b) and (2d) whereby only Case-marked traces block contraction. (2d) is out because the Case-marked *wh*-trace intervenes between *want* and *to*. There are two conceptual problems with this line of analysis. One is that Case is no longer considered as making an intervening category visible for PF reasons within the MP (Chomsky 1995), as originally encoded in the Case Filter in the Government-&-Binding (GB) Theory (Chomsky 1981, 1986a, b). The other problem is that several works within the MP (e.g. Chomsky and Lasnik 1993; Martin 1996, 2001; Bošković 1995, 1997) argue that PRO is in fact assigned a special case called *Null Case*. To the extent that this argument holds, the Jaeggli-style analysis would predict (2b) as well as (2d) to block contraction. Second, Aoun and Lightfoot (1984), Zagona (1988) and Browning (1991) propose a government-based account of the

contrast between (2b) and (2d) whereby *to* may contract onto *want* only when the verb governs it at surface structure. This line of account is untenable within the MP, which dispenses with any stipulative geometric relation, including government, that is not naturally derived from the syntactic computation. Third, Snyder and Rothstein (1992) and Bošković (1995, 1997) argue that it is Case-assigners like null C in (3d) that block contraction. However, this analysis begs the question raised above, namely, why phonologically empty elements block this essentially PF phenomenon. Finally, Pesetsky (1982) and Baltin (1995) propose that *wanna*-contraction is blocked by all type of empty category but again the same criticism leveled against Snyder and Rothstein/Bošković applies to this analysis.

3.1. Wanna-*Contraction: The Core Cases*

The MSO model provides a natural account of the different between (2b) and (2d), which is free from the "contraction" debate discussed above (Postal and Pullum 1978, 1982). Following a reviewer's suggestion, I adopt the view along the lines of the recent Distributed Morphology framework (Halle and Marantz 1993) that the *want + to* sequence is optionally rebracketed as the derived morpho-lexical form *wanna* as part of the Spell-Out operation. The present analysis thus states that this rebracketing is possible only when *want* and *to* are in the same Spelled-Out chunk.

Consider now (2b). Though the standard/GB-analysis (e.g. Chomsky 1981, 1986a) says that the infinitival complement of *want*-class verbs in the subject control case is CP (the head of which was hypothesized to protect the embedded DP subject from government by the matrix verb), cross-

linguistic evidence from A-scrambling out of control provides strong evidence that the infinitival complement of this verbal class in the case at hand is of category TP.[1] Consider examples (3a, b).

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[1] Bošković (1995, 1997) provides another argument for the TP analysis based on the different distributional patterns of null Cs in finite vs. non-finite complements, as illustrated in (ia-c) and (iia, b).

(i) a. It is believed [$_{CP}$ C [$_{IP}$ he is crazy]].

b. *[$_{CP}$ C [$_{IP}$ He would buy a car]] was believed *t* at that time.

c. * It was believed at that time [$_{CP}$ C [$_{IP}$ you would fail her]]. (Bošković 1995: 33)

(ii) a. I tried at that time [$_{CP}$ C [$_{IP}$ PRO to fail her]].

b. [$_{CP}$ C [$_{IP}$ PRO to buy a car]] was desirable at that time. (Bošković 1995: 34)

Following Stowell (1981), Bošković assumes that the null C must be governed. Thus, (ib, c) are bad since there is no governor for the null C in the passivized and postposed CPs. Bošković argues that the grammaticality of (iia, b) suggests that the infinitival complement are not CPs but IPs. As an anonymous reviewer notes, however, a government-based analysis is impossible in the current MP. More importantly, the reviewer notes, the contrast between (ib, c) and (iia, b) may well be accounted for under the standard uniform CP analysis by the stipulation that *only finite Cs* must be governed. Based on these reasons, in the

(3) a. Everyone$_i$ seems to his$_i$ father t_i to be crazy.

b. Everyone$_i$ his$_{j/?*i}$ father kissed t_i. (Bošković 1995: 38)

It is widely known that A′-movement, not A-movement, induces the so-called weak crossover effect. (3a) involves A-movement of *everyone*. This moved element can locally bind the pronoun *his*. This is not the case in (3b), which involves A′-movement of *everyone*. With this observation in mind, consider (4a, b) from Serbo-Croatian.

(4) a. Nekoga$_i$ njegov$_{j/?*i}$ otac veruje da oni mrze t_i.
someone his father believes that they hate
'Someone, his father believes that they hate.'

b. Nekoga$_i$ njegov$_i$ otac planira PRO kazniti t_i.
someone his father is-planning to-punish
'Someone, his father is planning to punish.' (Serbo-Croatian: Bošković 1995: 37)

As first noted by Mahajan (1990) and Nemoto (1991) in Hindi and Japanese, respectively, scrambling out of control infinitives exemplifies A-movement, unlike scrambling out of finite CPs,

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text, I discuss Bošković's (1995, 1997) argument for the TP analysis based on A-scrambling out of controlled infinitives, which seems to me to be more convincing and to stand the test of time.

which invariably instantiates A′-movement. In (4a), the scrambled quantifier *nekoga* 'someone' cannot be coindexed with the pronoun (*njegov* 'his') it locally c-commands, just as *everyone* cannot in (3b). This fact suggests that the preposed quantifier in (4a) is in A′-position. Now, compare (4a) with (4b). In (4b), the scrambled quantifier can locally bind the pronoun, just as *everyone* can in (3a). The lack of weak crossover effects here thus shows that scrambling in (4b) instantiates A-movement. Now, if the infinitival complement in (4b) were of category CP, the example should be ungrammatical due to the violation of the Improper Movement Constraint, which bans the movement through an A′-position ending in an A-position (Chomsky 1973; May 1979; Fukui 1993). This constraint is illustrated in (5a, b).

(5) a. * John$_i$ seems [$_{CP}$ t_i that [$_{TP}$ Bill likes t_i]].

b. *John$_i$ seems [$_{CP}$ t_i that [$_{TP}$ it was told t_i]].

Since scrambling in (4b) is an instance of A-movement, the grammaticality of (4b) suggests that the control infinitival there cannot be of category CP but TP.

As an anonymous reviewer points out, the question arises whether there is direct empirical evidence, internal to English, for the TP-analysis of subject control verbs. After all, it is well known that the complement taking potential of verbs may differ crosslinguistically, as previous studies on Exceptional Case-Marking Constructions in English, Romance and other languages (Chomsky 1981;

Kaneko 1988; Kayne 1981) have shown, and previous arguments for the TP vs. CP analysis of *try*-class verbs has been largely theoretical in nature (see discussion on p. 8). Although it is in general very difficult to argue for or against the TP analysis due to the morphologically impoverished nature of (standard) English across the CP-TP region, Matsubara (2002) argues that the data from Belfast English reported by Henry (1992) are best analyzed as empirical support for the TP analysis of subject control verbs. Henry observes that unlike in Standard English, *for* appears in all infinitival complements in Belfast English, irrespective of whether they take a PRO subject or a lexical subject, as illustrated in (6a-f).

(6) a. I tried [*for to* get them].

b. I believe [them *for to* have done it].

c. I want [*for to* meet them].

d. I wanted [Jimmy *for to* come with me].

e. John seems [*for to* be better].

f. It was stupid [*for* them *to* do that]. (Henry 1992: 279, 283-285)

Matsubara provides several arguments that *for* of the sequence *for to* as illustrated in (6a-e) is not a complementizer but rather is part of infinitival morphology stranded under T with no Case-assigning abilities. Firstly, referring to historical works such as Mustanoja (1960), Visser (1963-1973), and

Nakao (1972), Matsubara (p. 251) observes that that "*for* was introduced in the late 11th century as an intensifier of *to* to reinforce the directive meaning of *to*, and later *for to* and *to* became free variants." This indicates that *for* and *to* are located in the same syntactic position. Secondly, Lightfoot (1979: 186-188, 195-196) argues that *for* is part of infinitival morphology from the outset, based on the example in (7b), where a lexical subject could have nominative Case and precede *for*.

(7) a. [For to go] is necessary. (1205-1590)

b. [I for to go] is necessary. (14th c. – 1607) (Lightfoot 1979: 187)

Thirdly, *for* and *to* are often employed as morphologically one word, as shown in (8a, b), suggesting that *for* is part of infinitival morphology.

(8) a. *Forte* don him understonden. (a1175 Cott. Hom. 211 (OED))

b. it is no shame *forto* swinken (c1300 Hauelok 799, cited in Lightfoot (1979: 201))

Finally, some dialects such as Jamaican Creole, an English-lexified creole language spoken mainly in Jamaica, have infinitival marker *for* merging in T instead of *to*, as shown in (9a, b).

(9) a. Mi waan yu *fi* sel i.

me want you for sell it

'I want you to sell it.'

b. Im waan *fi* haid dem.

him want for hide them

He wants to hide them.' (Bailey 1966, as cited in Matsubara 2002: 252)

Given the observation that the *for-to* sequence in Belfast English is located under T, the TP analysis for subject-control/*try*-class verbs provides a straightforward account for the examples in (10a-c).

(10) a. I tried for to get them. (=6a)

b. * I tried him for to go home.

c. * I tried for him to go home. (Henry 1992: 283))

(10a) is fine because PRO checks Null Case against the infinitival *for-to* complex. (10b) is ruled out because *him* has its Accusative Case unchecked. (10c) is ungrammatical because the morphological unity of the *for-to* complex is disrupted by the intervening pronominal. Henry (1992), on the other hand, advances a CP-analysis for infinitival *for-to* complements for subject-control/*try*-class verbs and suggests that the paradigm in (10a-c) can be accounted for if a) *for*-cliticization to I is optional and b) *for*-deletion

is obligatory when *for* is adjacent to the verb at S-structure. Under this analysis, (10a) is fine because PRO remains ungoverned from the matrix verb *tried* due to the CP boundary. (10b) is bad, however, because the infinitival subject is not assigned Case from the matrix verb. Finally, (10c) is ungrammatical because *for* remains undeleted in violation of the obligatory *for*-deletion. The CP-analysis, however, has a number of conceptual and empirical drawbacks. Firstly, Henry's analysis resorts to GB-concepts, such as D/S-structure, the PRO Theorem, and the concept of government, none of which is tenable in the current minimalist practice. Secondly, it is difficult to see why the two operations, *for*-cliticization and *for*-deletion, are obligatory and/optional in certain cases but not in other cases (see Matsubara 2002 for more detailed discussion on this point). Finally, Matsubara (p. 244) observes that if Case-checking is accomplished in the syntax, as has been assumed since GB Theory, Henry's analysis erroneously predicts that the example in (11) should be grammatical; *for* should be able to assign accusative Case to *him* before it is deleted in the PF component.

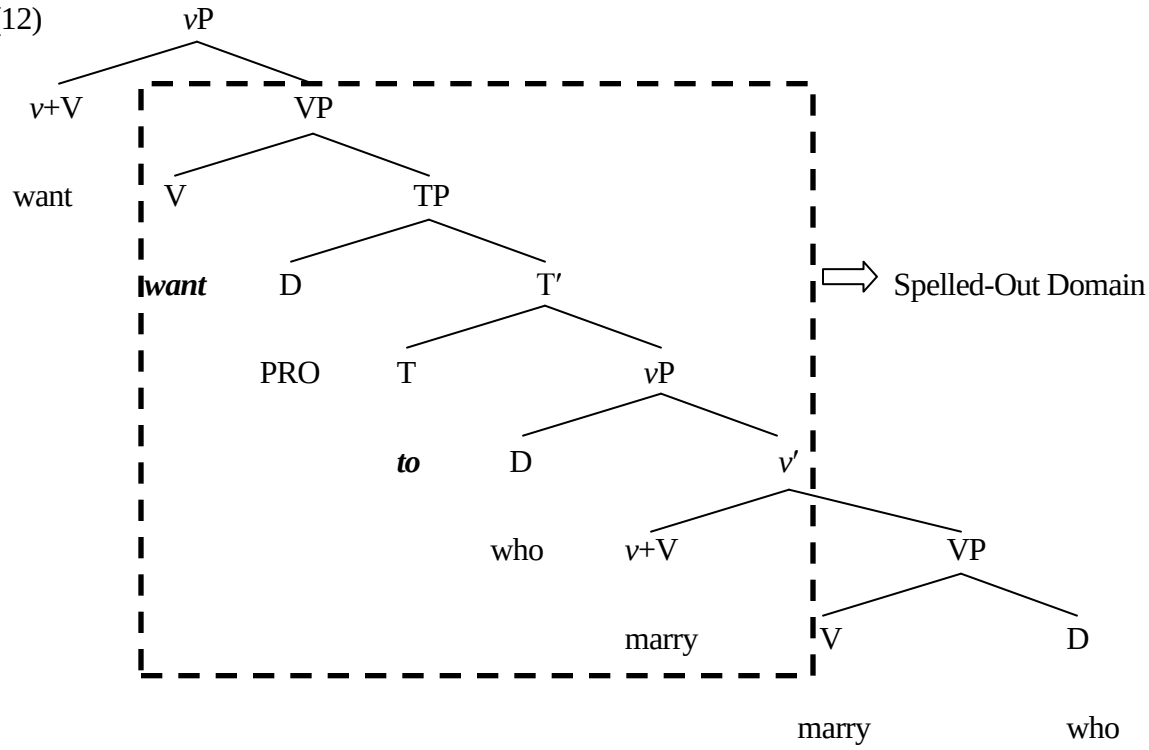
(11) * I tried him to go home. (Matsubara 2002: 245)

Our alternative TP-analysis, on the other hand, correctly predicts the example in (11) to be ungrammatical. *For* in the *for-to* complex is part of infinitival inflection under T from the outset with no Case-assigning abilities. As a result, the accusative Case feature of *him* remains unchecked in (11).

Based on the consideration above, I conclude that the TP-analysis of subject control verbs/*try*-class verbs is to be preferred over the CP-analysis on empirical grounds.

With this TP analysis of the infinitival complement of subject control verbs in mind, let us consider now the relevant part of the derivation for (2b), shown in (12).

(12)



In this derivation, the boxed VP domain of the higher *v*P phase contains both *want* and *to*. Note that the TP in (12) does not separate the two elements in question because it is not dominated by the phase head C. As a result, the *want* + *to* sequence can be optionally rebracketed as *wanna* as shown in (2b).[2]

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[2] One might wonder whether *want* is not located in the same Spelled-Out domain as *to* in (12). At the point when the matrix VP is Spelled-Out, *want* must have already moved out of the VP domain into the *v* at the higher phase. This is forced by the Phase Impenetrability Condition (Chomsky 2000, 2001, 2004), which states that the complement domain of a phase becomes inaccessible to operations at the next higher phase. In this paper, I take the operation of Spell-Out to a derivational interface point that activates the relevant Spelled-Out domains for purposes of phonological operation on the syntax-external phonological component. Under this view, when the matrix VP is shipped off, the phonological component reads information relevant to contraction (i.e. that *want* and *to* both occur in the same Spelled-Out domain) and stores/records this information in some phonological storage point external to the syntactic computational system. In a similar vein, Fox and Pesetsky (2005) propose that the linearization statement established in a Spelled-Out domain may not be contradicted by another statement established in a later phase. This proposal crucially requires the syntax to examine the contents of Spelled-Out domains that have been already shipped over to the phonological interface. However, this proposal still preserves a certain encapsulation of the Spelled-Out domains as intended in Chomsky's Phase Theory in that later cycles can only access previously stored information, not the entire phase itself. See also Boeckx (2006) for a recent claim that Spell-

Consider now the derivation for (2d). It is standardly assumed since the GB era that when *want*-class verbs select an infinitival complement with the lexical subject in it, they instantiate the ECM configuration. This assumption is supported by traditional tests for the ECM structure (i.e., idiom chunks and *there*-expletive constructions), as shown in (13a, b).

(13) a. I don't want [advantage to be taken care of Lionel].

b. I want [there to be at least 100 chairs in this room by noon tomorrow].

However, evidence from passivization shows that this is not the whole story. As noted by Snyder and Rothstein (1992) and Bondaruk (2004), unlike bona-fide ECM constructions headed by *believe*-class verbs, *want*-class verbs disallow passivization of the embedded subject, as shown in (14a, b).

(14) a. * The team was wanted to win. (cf. Tom wanted the team to win.)

b. The team was believed to have won. (cf. Tom believed the team to have won.)

((14a) from Bondaruk 2004: 40)

Out is best understood as a point of "interface invasion", which is quite compatible with and close in spirit to what is assumed here. Thanks to an anonymous reviewer for bringing my attention to the relevance of Fox and Pesetsky (2005) in the present context.

The failure of passivization in (14a) suggests that the apparent ECM-verb *want* does not have the ability to Case-mark an embedded lexical subject since "exceptional passivization" is possible only with ECM verbs that assign structural Accusative case. With this observation in mind, consider (15a-e):

(15) a. I want (for) you to leave.

b. I want very much *(for) John to leave.

c. Who$_i$ do you want (*for) t_i to leave?

d. Who$_i$ do you want very much (*for) t_i to leave?

e. Who$_i$ do you want (for) John to meet t_i? (Snyder and Williams 1992: 252)

These examples show that *want* can select a CP complement with the overt C *for*. Because we just saw above that this verb does not Case-mark the embedded subject, it must be the case that a Case-assigning C head must be present, either overtly or covertly, to Case-mark the subject of the embedded clause. These facts, thus, support the view (Bresnan 1972; Chomsky 1981; Lasnik and Saito 1991; Bošković 1995, 1997; Martin 1996, 2001) that the infinitival complement of *want*-class verbs with a lexical subject, as illustrated in (2c), is of category CP with the null counterpart to *for* as a case assigner for the embedded subject.[3]

[3] Lasnik and Saito (1991) (see also Bach 1977) provide support for the CP analysis of the DP + infinitival complement of *want*-class verbs based on Condition C effects, reciprocal binding, negative

Under this CP analysis of the DP + infinitival complement selected by *want*-class verbs, the relevant part of the derivation for (2c) will be as in (16):

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polarity licensing, and binominal *each*, but their argument seems too weak to support the CP analysis. To illustrate one of their arguments based on Condition C effects, consider examples (ia, b):

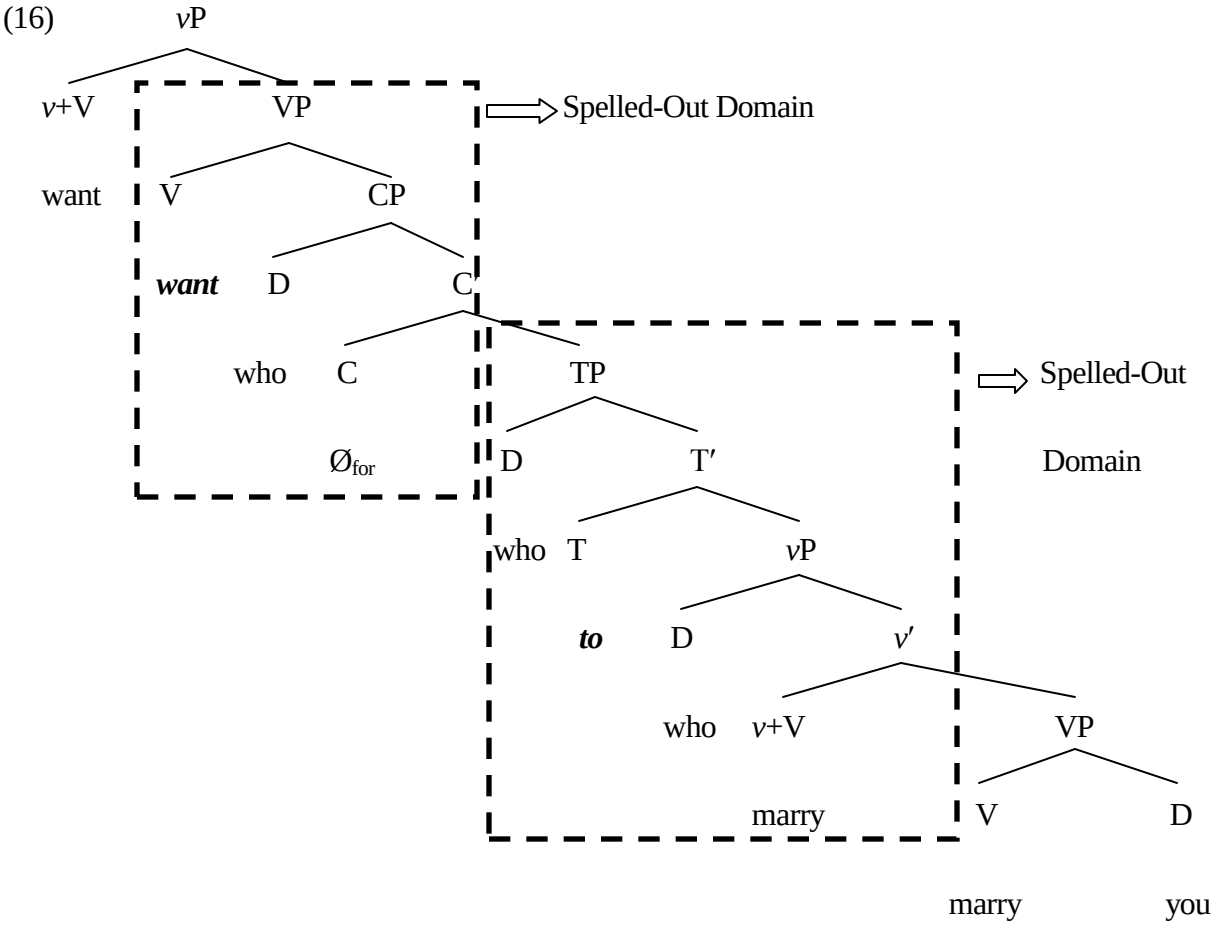
(i) a. ?* Joan believes him_i to be a genius even more fervently than $Bob's_i$ mother does.

b. ? Joan wants him_i to be successful even more fervently than $Bob's_i$ mother does.

(Lasnik and Saito 1991: 336)

According to Lasnik and Saito, the ungrammaticality of (ia) shows that the embedded subject moves to a matrix clause position for Case checking, causing a Condition C violation. Then, the grammaticality of (ib) indicates that the embedded subject checks its Case against the embedded null C. As pointed out by an anonymous reviewer and confirmed by my native English consultants, the judgment here is too weak to build the argument on for the CP analysis. Indeed, Lasnik and Saito acknowledge this subtlety, stating that "there does seem to be at least something of a contrast" (Lasnik 1999: 19) between (ia) and (ib).

(16)



In this derivation, *who*, base-generated in the embedded [Spec, *v*P], undergoes successive-cyclic movement through the embedded [Spec, TP] into the embedded [Spec, CP] in a manner required by the Phase Impenetrability Condition (see note 2). The *wh*-phrase checks/receives accusative Case against the null C when it lands in the embedded [Spec, TP]. This derivation is crucially different from the one given in (12) in that the embedded TP in the former *is* a Spelled-Out domain because it is selected by the phase-defining C head. This means that the embedded TP and the matrix VP form two

distinct Spelled-Out domains. The *want + to* sequence cannot be bracketed as *wanna* in (3d) because *want* and *to* are not Spelled-Out together in (16).

We can draw two conclusions from my analysis of the contrast between (2b) and (2d). First, the (im-) possibility of *wanna*-contraction crucially depends on the CP phase boundary in Chomsky's Phase Theory. Uriagereka's (1999) version of the MSO hypothesis cannot derive this contrast because no distinction can be made between two specific categorial nodes (CP vs. TP) that would be pertinent to the application of Spell-Out in his system. Furthermore, his model would incorrectly predict contraction to be possible in (2d). Uriagereka (p. 256) assumes that Spell-Out is a Last-Resort operation that applies to an otherwise unlinearizable structure. Under this view, then, *want* and *to* would be included in the same Spelled-Out chunk *both* in (12) and in (16). Therefore, the core cases of *wanna*-contraction in (2b, d) provide important support for Chomsky's Phase Theory. Second, the proposed analysis does not need any extra stipulations regarding the "visibility" of empty categories/traces/copies for the purposes of morphophonological operations, which have been predominant in the majority of work on *wanna*-contraction, as reviewed at the beginning of this section. What we need instead is just the transparent syntax-phonology mapping hypothesis, naturally derivable from the very system of the MSO.

The proposed analysis makes two predictions. We have just seen that TP does not constitute a Spelled-Out domain unless it is selected by the C head. Thus, the categorial status of the DP + infinitival complement of *want* in (2a, b) is no different from that of genuine raising verbs. Therefore,

we can correctly derive the observation, first made by Postal and Pullum (1978), that certain lexically specified raising verbs allow *to*-contraction as well, as shown in (17a-e).

(17) a. There's ***gonna*** be a storm.

b. There ***hasta*** be a catch on this.

c. There ***oughta*** be a law against doing it like that.

d. There's ***gotta*** be some kinda rule for these causatives.

e. There's ***supposta*** be a man on guard. (Postal and Pullum 1978: 14)

Second, it has been shown that factive verbs such as *regret, remember* and *know* obligatorily select CP complements. Thus, Melvold (1991) argues that CP is necessary for these verbs because the [+definite] operator is inserted in [Spec, CP] of the factive complement, which causes the CP to be interpreted as a definite/presupposed event. This analysis correctly accounts for the inability of *wh*-extraction out of a factive complement, as in (18a-c), because the trace of the movement is not properly licensed by the moving element due to the intervention of the factive operator in [Spec, CP].

(18) a. ? What$_i$ do you regret [$_{CP}$ that John ate t_i]?

b. *Who $_i$ do you regret [$_{CP}$ t_i ate the cookies]?

c. *Why do you regret [$_{CP}$ that John ate the cookies t_i]?

The MSO analysis thus correctly predicts that there are no instances of *to*-contraction for factive verbs, as shown by the ungrammaticality of the examples in (19a, b), because *to* and a factive verb sit in two distinct Spelled-Out domains due to the CP phase boundary, as in the derivation in (16).[4]

(19) a. ?? I always ***forgetta*** lock the door. [forgetta = forget + to]

b. * Every time I ***learna*** use PowerPoint, I always forget the acronyms. [learna = learn + to]

3.2. Wanna-*Contraction: More Complex Cases*

Let us now examine more complex cases of *wanna*-contraction as illustrated in (20a-g). In none of these examples, contraction is acceptable.

(20) a. ? I don't ***want*** [***to*** flagellate in public] [to become standard practice in this monastery].

b. ?* It seems like [to ***want***] [***to*** regret that one does not have].

c. I do not want [anyone who continues to ***want***] ***to*** stop wanting.

d. One must ***want*** [(in order) ***to*** become an over-effective consumer].

e. I ***want*** [***to*** dance] and [to sit].

f. I don't [need] or [***want***] ***to*** hear about it.

[4] I thank an anonymous reviewer for the examples in (19a, b).

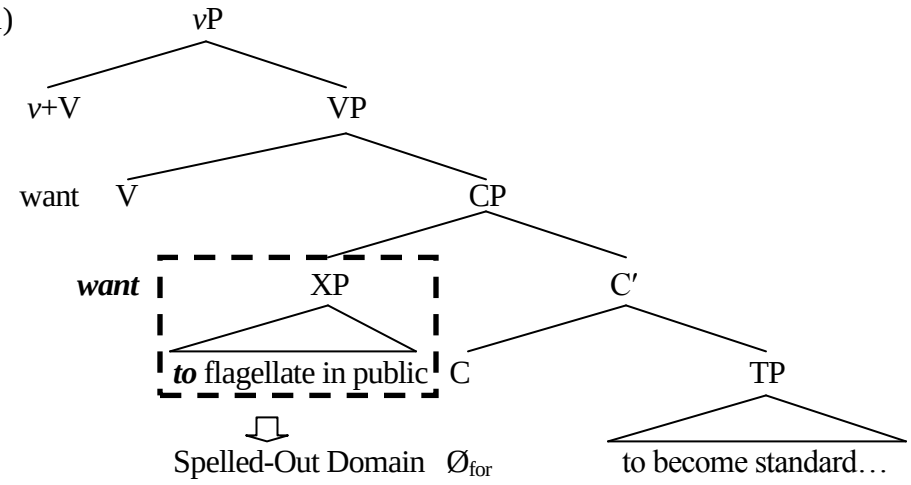
g. I want, to be precise, a yellow four-door De Ville convertible.

(14a-f) from Postal and Pullum 1982: 124-126; (14g) from Postal and Pullum 1978: 17)

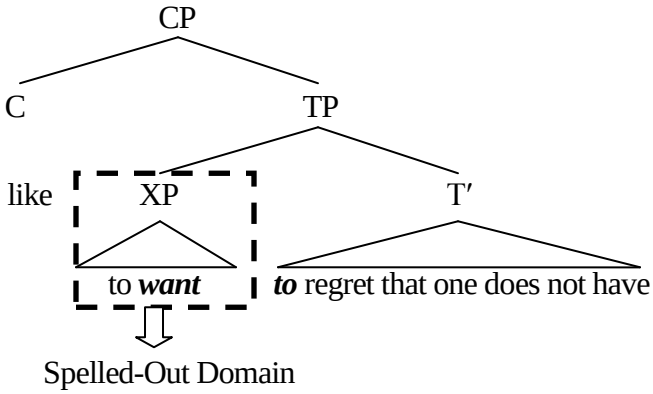
Postal and Pullum (1978, 1982) argue that the failure of contraction in these examples is not accounted by the Jaeggli-style adjacency analysis, which assumes Case-marked traces to be visible for contraction, because there is no element, Case-marked or not, that intervenes between *want* and *to* in these examples. Our MSO analysis, however, correctly predicts this result.

Consider first (20a-c). As pointed out by an anonymous reviewer, what these examples have in common is that the sub-structure that contains either *want* or *to* is an internally complex, left-branching structure. Accordingly, Uriagereka's (1999) MSO model derives the impossibility of *wanna*-contraction. The relevant parts of the derivations for the examples are shown in (21), (22) and (23), respectively.

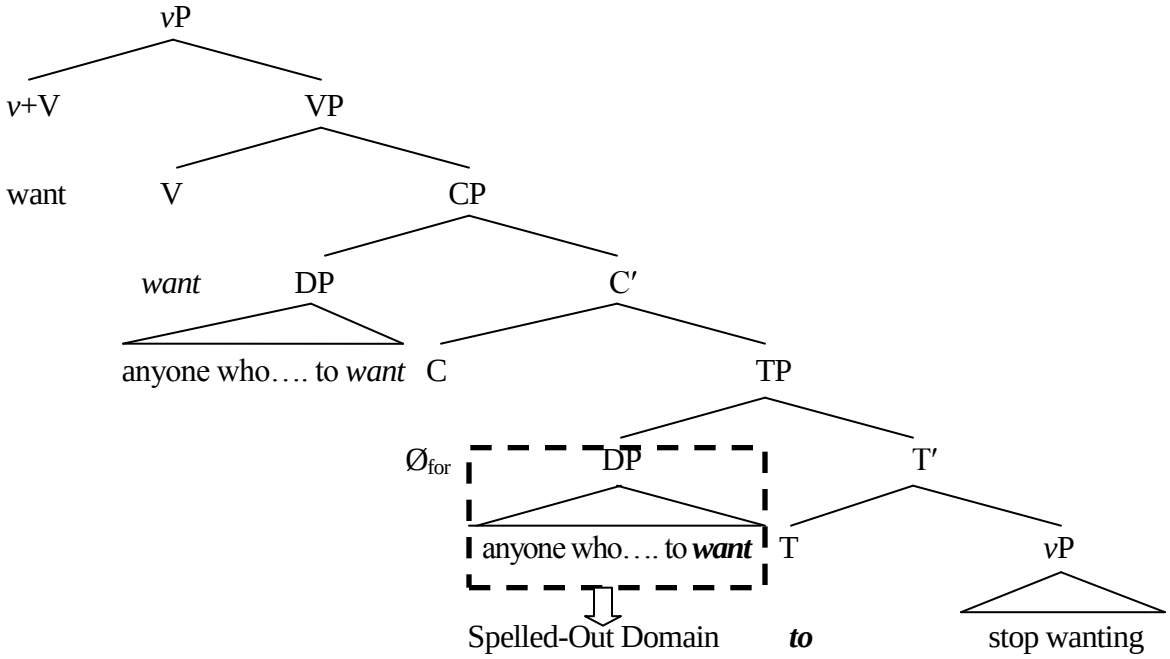
(21)



(22)



(23)

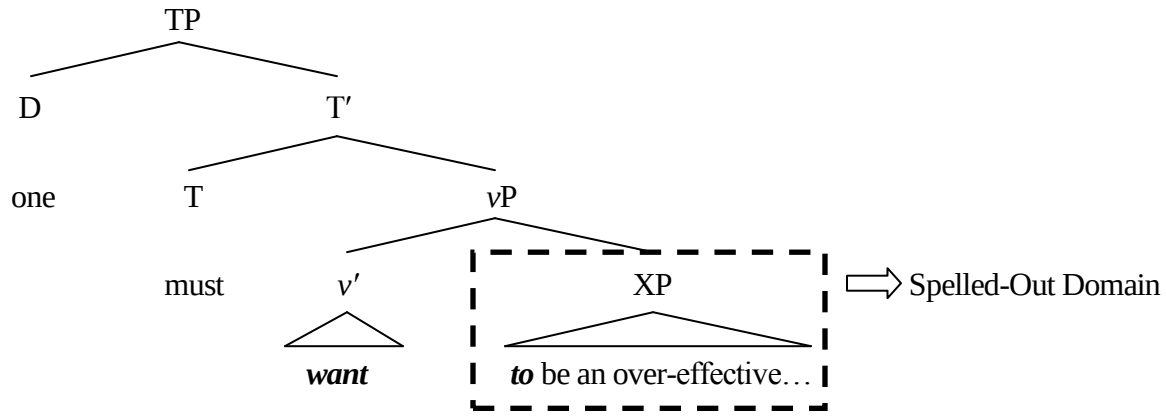


In these three derivations, the boxed domains, each being a left-branching specifier configuration, undergo early Spell-Out under Uriagereka's MSO model. Rebracketing of the *want* + *to* sequence as *wanna* is impossible in these derivations because the two elements are not Spelled-Out together.

Consider next the example in (20d). Postal and Pullum (1982) point out that this sentence blocks *wanna*-contraction when the infinitival clause is interpreted as a purpose clause ("If one is to become

an over-effective consumer, he/she needs to want."). Jones (1991: ch2) provides arguments, based on preposing, negative polarity licensing, pseudoclefts, the relative order of *to*- and *in order to*-purpose clauses, VP deletion and conjunction, that *to*-purpose clauses are adjuncts attached to VPs whereas *in order to*-clauses are adjuncts attached either to TPs or to VPs.[5] Under Jones' analysis, the relevant part of the syntactic derivation for the example in (20d) will be as in (24).

(24)



This derivation correctly blocks *wanna*-contraction. The XP here forms an independent Spelled-Out domain to the exclusion of *want*. Note that the same analysis also directly explains the unavailability of *gonna*-contraction in examples as in (25) when the adjunct infinitival clause *to annoy me* is interpreted as a purpose clause (25b).

[5] I am grateful to an anonymous reviewer for bringing Jones (1991) to my attention.

(25) He says he's is not going to annoy me.

a. He says he is not going to annoy me. (***gonna***; V + complement; cf. (11a))

b. He says he is not going somewhere in order to annoy me. (****gonna***; V + adjunct; cf. (13d))

Consider finally why contraction is bad in (20e-g). The account for (20e, f) is straightforward under Uriagereka's MSO system. Following a reviewer's suggestion, let us adopt the asymmetric view of coordination (Munn 1993; Kayne 1994), according to which the first and second conjuncts occupy the specifier and complement positions of the conjunction head, respectively. Under this view, the first conjunct, namely, *to dance* in (20e) and *want* in (20f), are contained within a left-branching structure that forms an independent Spelled-Out domain to the exclusion of *want* in (20e) and *to* in (20f). Note that Chomsky's version of the MSO hypothesis cannot be extended to cover (20e, f) because their derivations would be similar in crucial respects to that shown in (12), incorrectly allowing contraction in these cases. Thus, (20e, f) provide support for Uriagereka's version. The failure of contraction in (20g) is accounted for if parenthetical clauses, such as *to be precise*, are in a different plane/derivational cascade from the "central" syntactic workspace for constructing the main clause along the lines recently proposed by Chomsky (2004) and Guimarães (2004).

4. Auxiliary Reduction

Like *wanna*-contraction, the so-called auxiliary reduction, illustrated in (26), has received a fair amount of attention in the literature since seminal work by Zwicky (1970), Zwicky and Pullum (1983), Lakoff (1970), King (1970) and Bresnan (1971).

(26) Who do you think ***'s*** outside?

What has been called auxiliary reduction could be better named auxiliary contraction, as can be seen most notably in the spelling *–'s* for *is* in (26), where the auxiliary appears attached to the item on its left. I continue to use the traditional term, however, due to its greater familiarity in the literature. Auxiliary reduction differs from *wanna*-contraction in one crucial respect. Zwicky (1970) and Zwicky and Pullum (1983) observe that reduced auxiliaries are *leaners* in that they may attach to any immediately preceding phonological host irrespective of its syntactic category, as shown in (27a-d), unlike the infinitival *to*, which can only contract onto a certain class of verbal elements such as *want, going, supposed*, and *ought* (recall (2b) and (17a-e)).

(27) a. The person I was talking to ***'s*** going to be angry with me. [host = preposition]

b. The ball you hit ***'s*** just broken my dining room window. [host = verb]

c. Any answer not entirely right ***'s*** going to be marked as an error. [host= adjective]

d. The drive home tonight ***'s*** has been really easy. [host= adverb]

(Zwicky and Pullum 1983: 504)

This point will become relevant in section 4.2.

4.1. *Auxiliary Reduction across Case-Marked Traces and the Inhibitory Effect of Gaps*

There are two major generalizations in the literature that any analysis of auxiliary reduction must be able to capture. The two generalizations are stated in (28) and (29), with some illustrative examples.

(28) Generalization I: Auxiliary reduction can apply even if there is a (Case-marked) trace between an auxiliary and its host (Zwicky 1970; Schachter 1984)

a. What do you think ___ ***'s*** happening?

b. What do you think ___ ***'s*** been happening?

(29) Generalization II: Auxiliary reduction cannot apply if an auxiliary is immediately followed by a gap created by transformations or deletion (King 1970: Lakoff 1970; Bresnan 1971).

a. Murphy's taller than {Gabe is/*Gabe's} ___ .

b. I am wondering where {Mary is/*Mary's} ___ .

Consider first Generalization 1. Note that Jaeggli's analysis fails to account for the possibility of auxiliary reduction in (28a, b). This is because the Case-marked *wh*-trace that intervenes between the auxiliary *is/has* and the host verb *think* should block such reduction according to his analysis. The MSO analysis directly derives Generalization 1 once it is coupled with the recent "Economy of Projection"-based analysis (Bošković 1995, 1997; Doherty 1997; Grimshaw 1997) whereby finite clauses without overt Cs, like the embedded clauses in (28a, b), are of category TP, not CP. Various arguments have been presented in the literature for the TP-analysis; see Bošković (1995, 1997) for some arguments from the lack of C-trace effects, topicalization and extraction patterns in American Sign Language. Here, I review Doherty's (1997) argument in its favor from embedded topicalization and the placement of adverbials. Doherty observes that in embedded topicalization, the topicalized element must appear to the right of the C, not to its left, as shown in (30a, b) and (31a, b).

(30) a. I hope [$_{CP}$ that ***this book*** you will read].

b. She claims [$_{CP}$ that ***Guinness*** he likes] but [$_{CP}$ that ***whiskey*** he hate].

(Doherty 1997: 200)

(31) a. *I hope [$_{CP}$ ***this book*** that you will read].

b. *She claims [$_{CP}$ ***Guinness*** that he likes] but [$_{CP}$ ***whiskey*** that he hate].

(Doherty 1997: 200)

Rochemont (1989) and Lasnik and Saito (1992) analyze topicalization as an adjunction to IP/TP, as shown in (32a). When the CP complement is headed by a null C, on the other hand, this adjunction analysis takes the form shown in (32b).

(32) a. $[_{CP}$ that $[_{TP}$ Topic $[_{TP} \ldots]]]$ (embedded topicalization with overt C)

b. $[_{CP}$ Ø $[_{TP}$ Topic $[_{TP} \ldots]]]$ (embedded topicalization with covert C)

(Doherty 1997: 200, with a minor modification)

Suppose that all finite complements are of category CP, whether they are headed by an overt C or not. Then, it would be expected that both clause types display the same syntactic characteristic with regards to topicalization since there does not seem to be anything that should block topicalization only in the case of a *that*-less embedded clause. However, embedded topicalization is ungrammatical in such clauses, as illustrated in (33a, b).

(33) a. * I hope [***this book*** you will read].

b. * She claims [***Guinness*** he likes] but [***whisky*** he hates]. (Doherty 1997: 201)

The TP-hypothesis for *that*-less finite complements, on the other hand, provides a straightforward account for the contrast between (30a, b) and (33a, b) under the independently motivated assumption

(McCloskey 1992; Chomsky 1986b; see also Bošković 2004) that adjunction to argument is barred due to θ-theoretic considerations. The examples in (31a, b) are ungrammatical because the topicalized element adjoins to the argumental CP selected by the matrix predicates. The examples in (30a, b) are fine because the embedded final complements are CPs and the topicalized material adjoins to the non-argumental TP, not selected by the matrix verbs. Then, the ungrammaticality of (33a, b) directly falls out if the *that*-less finite complement is of category TP, contrary to the standard uniform CP hypothesis.

Doherty observes that the same distributional asymmetry is observed in adverb placement. First, the contrast in grammaticality between (34a, b) and (35a, b) shows that like topicalization, sentential adverbs must appear to the right of the finite C, not to its left. Second, sentential adverbs cannot be placed immediately after the matrix verb in a *that*-less finite complement, as shown in (36a, b).

(34) a. She prayed that ***next Wednesday*** the check would arrive.

b. We concluded that ***in the future*** he should be closely watched. (Doherty 1992: 202)

(35) a. * She prayed ***next Wednesday*** that the check would arrive.

b. * We concluded **in the future** that he should be closely watched. (Doherty 1992: 202)

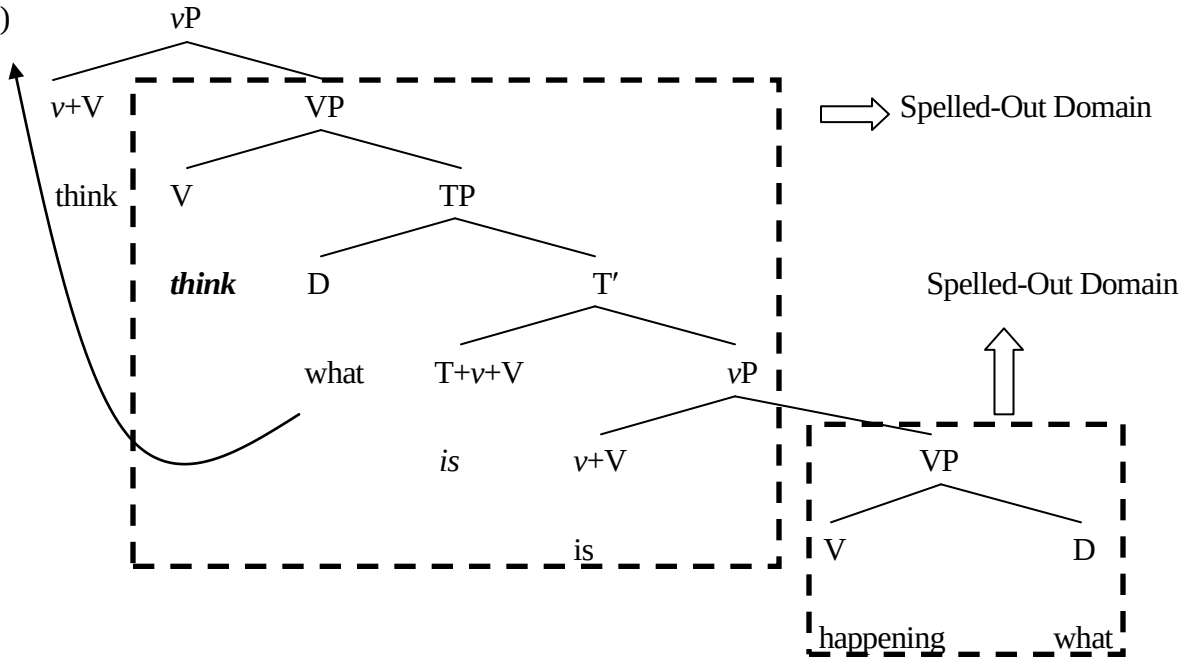
(36) a. * She prayed ***next Wednesday*** the check would arrive.

b. * We concluded ***in the future*** he should be closely watched. (Doherty 1992: 202)

Assuming that sentential adverbs are adjoined to TPs, it remains mysterious under the standard uniform CP-hypothesis why adverbial adjunction to a *that*-less clause behaves any differently from adverbial adjunction to a *that*-clause since there is no structural difference between the two clause types which seems responsible for the contrast between (34a, b) and (36a, b). Once again, the TP-hypothesis correctly predicts this contrast when coupled with the ban against adjunction to arguments. (35a, b) are ungrammatical because sentential adverbs are adjoined to the argumental CP. This is not the case with (34a, b), in which the adverbs are attached not to the argumental CP but to the TP. With this in mind, (36a, b) are ruled out if embedded *that*-less finite complements are of category TP.

With this TP analysis for a *that*-less finite complement in mind, consider now (28a). The relevant part of the syntactic derivation for the example is shown in (37).

(37)



In this derivation, the clitic auxiliary *is* and its linearly preceding phonological host verb *think* both occur in the matrix VP domain. Accordingly, auxiliary reduction is correctly predicted to be possible. The same account holds for (28b).

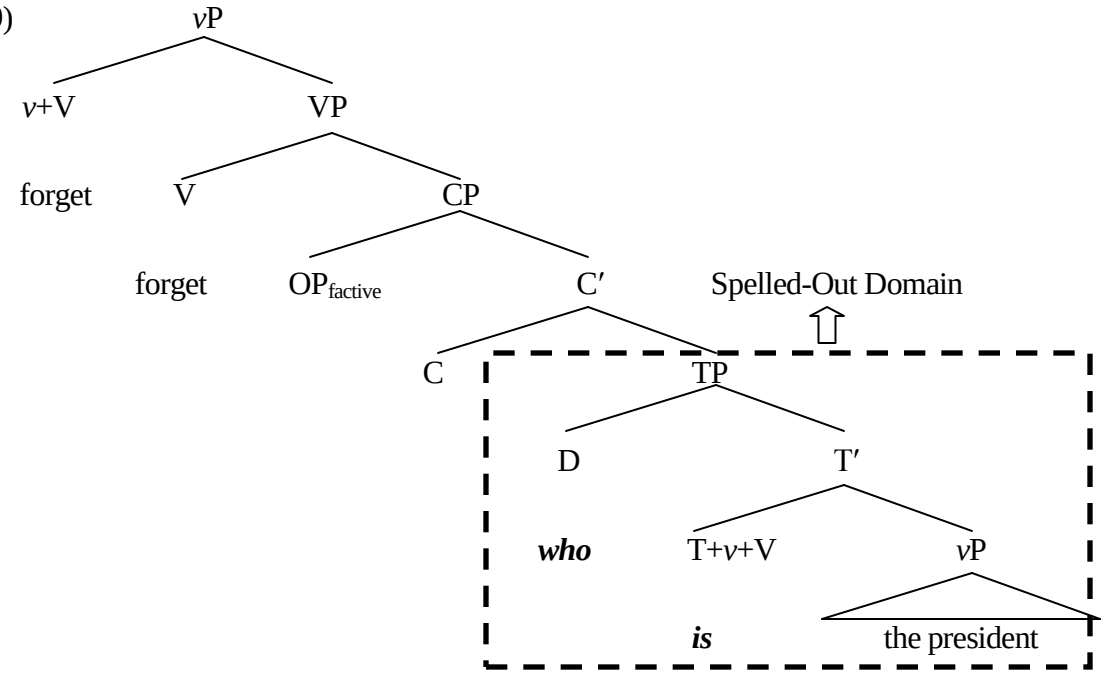
My present MSO analysis crucially relies on the idea that there is no CP phase boundary between the auxiliary and its phonological host. In other words, we predict that auxiliary reduction should be blocked when the two elements are separated by a CP boundary. This prediction is indeed confirmed by the contrast between (38a) and (38b) suggested to me by an anonymous reviewer.

(38) a. I always forget who ***'s*** the president.

b. * Who do you (always) forget ***'s*** the president?

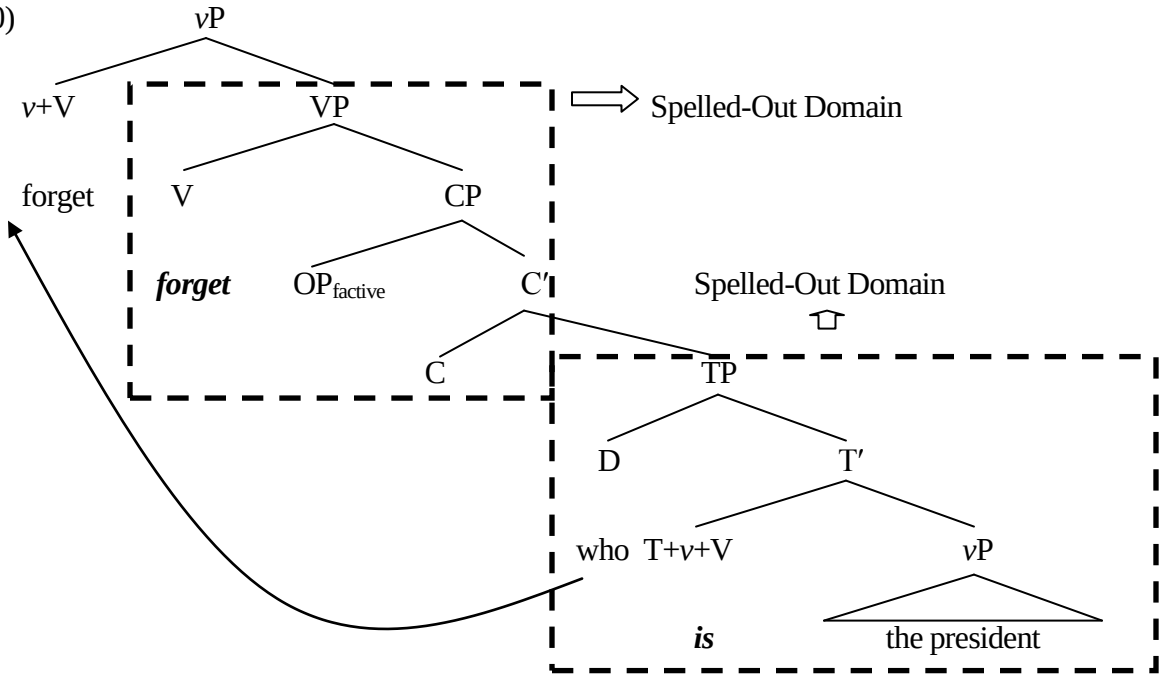
Recall Melvold's (1991) argument that factive complements are obligatorily realized as CPs that host the factive operator in their specifiers. As shown in the schematic derivation in (39) for (38a), both the reduced auxiliary and the host are within the same Spelled-Out domain (namely, the embedded TP, selected by the C head). As a result, auxiliary reduction is successful in (38a).

(39)



Now, the relevant part of the syntactic derivation for (38b) is in (40).

(40)



In this derivation, the host verb *forget* and the auxiliary are Spelled-Out in two different domains. Thus, reduction is blocked in (38b).

The crucial role of the CP phase for the purposes of auxiliary reduction is also illustrated by examples as in (41a) and (42a). Kaisse (1979) proposes to reduce the unacceptability of auxiliary reduction in (41a) to Generalization II in (29), namely, the inhibitory effect of its immediately following deletion site created by a transformation of some sort which she attributes to the unpublished work by Peters and Bach (1968). This transformation derives (41a) from the underlying structure in (41b).

(41) a. * What I wonder***'s*** whether we'll find a solution to this problem.

b. What I wonder***'s*** ~~I wonder~~ whether there was any beer.

(Kaisse 1979: 708, with a minor modification)

Pullum (1991: 35) observes, however, that Kaisse's account based on Generalization II is untenable. Auxiliary reduction is blocked in (42a) even though the subject is pseudo-clefted so that the deletion site does not immediately follow the auxiliary, as shown in its derivation in (42b).

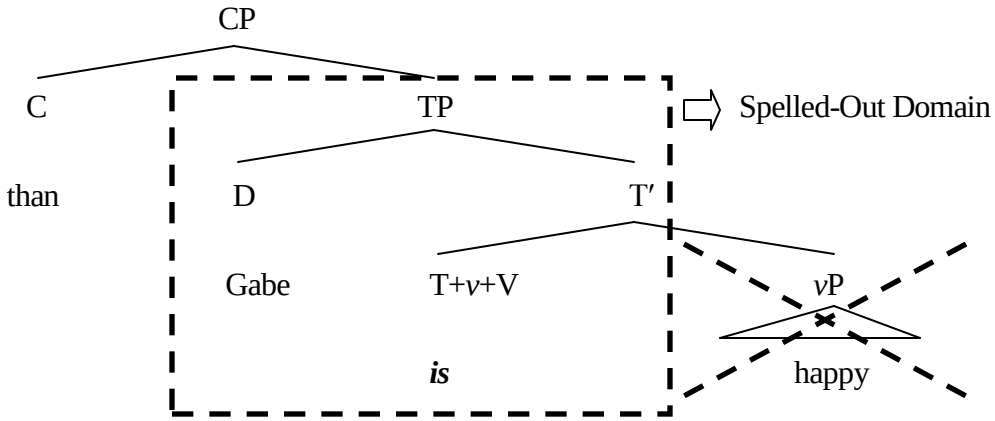
(42) a. * What is bothering {Bob is/*__Bob's__} your attitude.

b. What is bothering Bob is your attitude ~~is bothering him~~. (Pullum 1991: 35)

Whatever the ultimate account of pseudoclefts constructions might be, the impossibility of auxiliary reduction in (41a) and (42a) receives a simple account under the present analysis as long as the subject here is associated with a CP structure, a rather natural assumption. To take (41a), for example, the subject *what we wondered* has such a structure. This means that the complement domain TP that contains the potential host *wondered* undergoes Spell-Out. This domain does not contain the auxiliary. Thus, reduction is blocked in (41a). The same analysis applies to (42a); *Bob* and *is* are separated by the CP boundary and hence are Spelled-Out in two different mid-derivational chunks.

How about Generalization II in (29)? Consider the relevant part of the derivation in (29a), shown in (43), after *v*P deletion has taken place.

(43)



In this derivation, the TP complement of the phase-defining C head is Spelled-Out. Both the auxiliary and the phonological host are within this Spelled-Out domain but reduction is prohibited in (29a). This is the

point where syntactic computation closely interacts with the prosodic computation at the syntax-external interface. Let us propose that when an auxiliary such as *is* and *has* occurs at the right edge of a Spelled-Out domain, it is realized not as a clitic (qualified for reduction) but as an autonomous word. Selkirk (1995) provides independent evidence for this proposal from the phenomenon of intrusive "-r" in eastern Massachusetts dialects of English. McCarthy (1991, 1993) observes that the right-edge of a prosodic word defines the locus of this insertion, as shown in (44a, b). With this observation in mind, the possibility of the intrusive "-r" in (44c) shows that the phrase-final function word *is* is preceded by a prosodic word.

(44) a. He put the tuna-***r*** on the table.

b. I said I was gonna-***r*** and I did.

c. It's more scary than a subpoena-***r*** is. (Selkirk 1995: 454, 455)

Within the Theory of Prosodic Hierarchy shown in (45), Selkirk (1978, 1984) (see also Nespor and Vogel 1986) proposes the Strict Layer Hypothesis to the effect that a prosodic category of level *i* in the hierarchy must immediately dominate (a sequence of) prosodic categories of level *i-1*.

(45) The Prosodic Hierarchy

Utt	Utterance	
IP	Intonational Phrase	
PPh	Phonological Phrase	
PWd	Prosodic Word	
Ft	Foot	
σ	Syllable	(Selkirk 1995: 442)

Under the Strict Layer Hypothesis, then, if two parts are properly contained in a prosodic category of a certain level, then the two parts must be exhaustively parsed as prosodic categories of an immediately subordinate level. The example in (44c) shows that *a subpoena* is the prosodic word and hence must be dominated by a phonological phrase. The Strict Layer Hypothesis then leads to the conclusion that the other part of the same phonological phrase is also a prosodic word.

It has also been widely observed in the literature (Baker 1971; Selkirk 1984; see also references cited therein) that phrase-final auxiliaries in (29a, b) are associated with (non-low) stress. Again, assuming the Prosodic Hierarchy given in (45), the presence of stress on a prosodic category means that it is at least a prosodic word because a stressed syllable is the head of a foot (i.e. the minimal stress-bearing prosodic category) and every foot must be exhaustively dominated by a prosodic word.

This observation, together with evidence from the intrusive "-r" phenomenon, therefore shows that the Spelled-Out domain final auxiliary in (29a, b) is an autonomous prosodic word. Given this status, then, the failure of reduction in these cases is straightforwardly explained by a general phonological condition, independently of the present MSO analysis: an autonomous prosodic word cannot cliticize onto its preceding host (e.g., **John'it Mary*, where *'it* is the reduced form of *hit*)

An anonymous reviewer points out that my proposed analysis does not rule out contracted examples of the so-called comparative subdeletion, such as ??*The bookcase is longer than it's wide* (The judgment is due to the reviewer). Bresnan (1973: 323-326; 1975: 50) observes that auxiliary reduction results in total ungrammaticality in this case and assimilates this observation to Generalization II above. However, Neidle and Schein (1978), Selkirk (1984) and Grimshaw (1987) observe that the effects are surprisingly weak in comparative subdeletion. Thus, like the reviewer, Grimshaw (p. 662) reports that the examples in (46a-c) are less than perfect, but they are not in the same league as other extraction cases covered by Generalization II such as (29a, b), repeated here as (47a, b).

(46) a. There's more meat than there ***is/'s*** rice.

b. John was more upset then than he is/***'s*** angry now.

c. She was as happy about it then as she is/***'s*** sad about it now. (Grimshaw 1987: 662)

(47) a. *Murphy's taller than {Gabe is/*Gabe's} ___ . (=29a)

b. *I am wondering where {Mary is/*Mary's} ___ . (=29b)

The relative acceptability of (46a-c) vis-à-vis (47a, b), thus, suggests that the apparent inhibitory effect of the former is not due to Generalization II but falls within some other phonological factor. This is indeed the line pursued by Selkirk and Grimshaw. Selkirk (p. 377-379) argues that the weak blocking effect in (46a-c) is caused by the focus structure of the compared constituent (i.e., *rice* in (46a), *angry* in (46b) and *sad* in (46c)), which, in turn, creates a rhythmic break before the constituent. As a result, the rhythmic break blocks destressing of the auxiliary and hence auxiliary reduction. Grimshaw provides further support for Selkirk's view that the inhibitory effect of the rhythmic break is independent from the inhibitory effect of the gap. In (48a), the gap created by the subcomparative transformation is located inside the subject NP rather than following it and hence is not in a structural position to block auxiliary reduction. However, auxiliary reduction still gives slightly odd results comparable to those of (46a-c), as shown in (48b).

(48) a. More meat is on the table than [*e*] bread is in the refrigerator.

b. More meat's on the table than [e] bread***'s*** in the refrigerator. (Grimshaw 1987: 663)

This result follows from Selkirk's analysis if a rhythmic break must obligatorily precede and follow the focused constituent in comparative subdeletion. (46a-c) are slightly odd because the rhythmic break preceding the compared constituent blocks reduction. Similarly, (48a, b) are degraded a bit because the reduction is blocked this time by the rhythmic break following the compared constituent.

4.2. *Where does Auxiliary Reduction Apply? The Phono-Syntax of Clitic Auxiliaries*

In this section, I address a number of questions regarding the mechanism and timing of auxiliary reduction, which I have left vague so far in this paper. Consider again (27a-d), repeated here as (49a-d).

(49) a. The person I was talking to ***'s*** going to be angry with me. [host = preposition]

b. The ball you hit ***'s*** just broken my dining room window. [host = verb]

c. Any answer not entirely right ***'s*** going to be marked as an error. [host= adjective]

d. The drive home tonight ***'s*** has been really easy. [host= adverb]

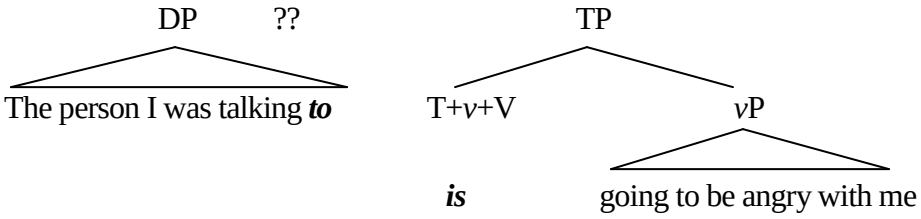
(Zwicky and Pullum 1983: 504)

These examples were used earlier to show that the reduced auxiliaries can attach to any immediately overt phonological material. The question arises under our MSO analysis, however, as to why auxiliary reduction is possible in these cases. Under Uriagereka's model, all the complex subjects in (49a-d) should be Spelled-Out early for the purposes of linearization to the exclusion of the auxiliaries under

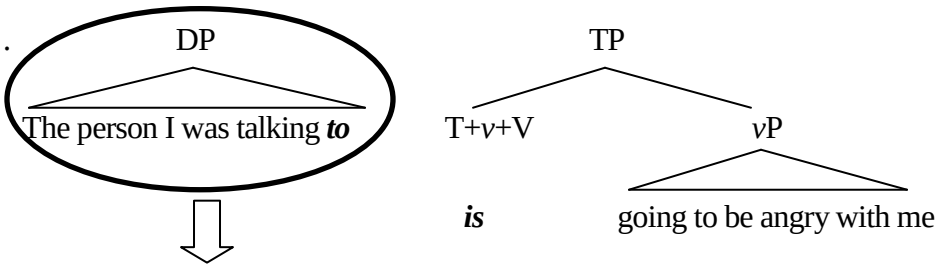
the T head. As a result, we incorrectly predict that reduction is impossible in these examples. Below, I propose a solution to this problem which is in fact not only consistent with Uriagereka's MSO model but also correctly captures certain phono-syntactic characteristics observed in auxiliary reduction.

Recall that Spell-Out in Uriagereka's system is triggered by the linearization requirement from the sensorimotor system. All internally left-branching configurations, including specifiers and adjuncts, are Spelled-Out early and returned to where it belongs in the syntactic derivation after the linear ordering of the terminals within the configurations has been fixed and recorded at some storage point external to the narrow syntactic computation. The Spelled-Out and flattened material comes back to the derivation as a derived simplex lexical item with a particular label so that the element as *a whole* can participate in further computation; otherwise, even simple sentences like *Which book did you buy*? are underivable. According to this analysis, the example in (49a) can be reanalyzed as shown in (50a-c).

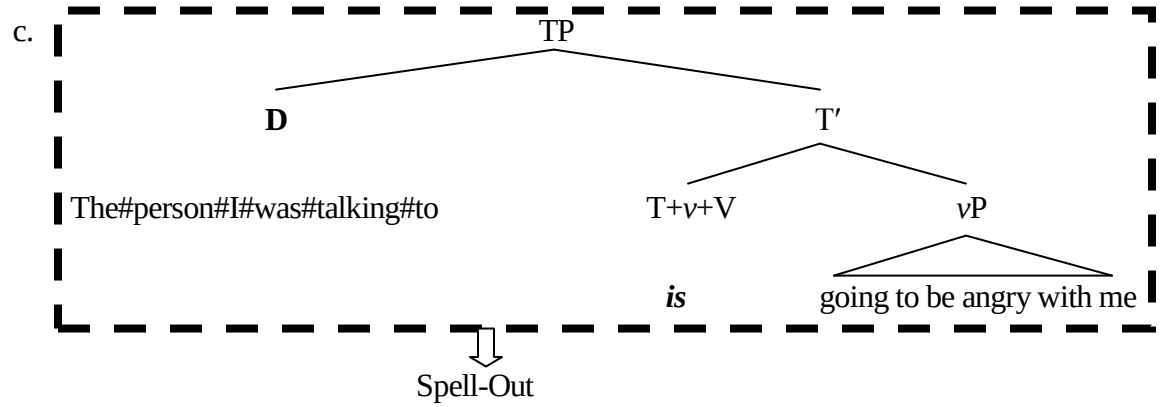
(50) a.



b.



Spell-Out (ordering is fixed)



In this derivation, the subject DP, being an internally complex configuration (50a), undergoes Spell-Out for the purposes of linearization (50b) and is later plugged into [Spec, TP] as a simplex derived item with the label D (50c). The internal constituent structure of the subject has been destroyed but crucially the lexical item as a whole is still active in the ensuing syntactic derivation. When this derived D merges with the TP in the main derivational cascade, followed by the further merger of the C head, the entire TP in (50c) is Spelled-Out to PF. Auxiliary reduction is successful in (49a) because the reduced auxiliary can attach to the preceding host within the simplex subject.

The present analysis can also capture a well-known observation regarding the host of the reduced auxiliaries, which is not immediately obvious under a purely phonological account. Kaisse (1983) establishes the generalization that reduced auxiliaries can cliticize only onto a preceding NP (or DP in modern terminology). The contrast between (49a-d) and (51a-c) illustrates this generalization:

(51) a. More important {is/***'s**} her insistence on honesty. [host = AP]

b. Under this slab {is/***'s**} buried Joan of Arc. [host = PP]

c. That John finally ate {is/***'s**} making Momma happy. [host = CP]

(Kaisse 1983: 108, 109, 111)

It remains mysterious how this categorial restriction can be captured under a purely phonological account, according to which a reduced auxiliary is a simple clitic that must attach to a preceding host. However, this type of category-based restriction is precisely what we expect under Uriagereka's MSO model because the Spelled-Out material comes back to the syntactic workspace as a derived lexical item with a label used as further instruction for syntactic computation. Therefore, the apparently problematic examples as in (49a-d), upon a closer inspection, provide further support for our derivational analysis of auxiliary reduction rather than undermine it and lead to a deep understanding of the phono-syntax of this phenomenon.

The proposed analysis may also explain why *to* cannot be contracted onto the preceding *want* discussed in (20a-f). After the left-branching specifier is Spelled-Out and returned to the active workspace, all the syntactic derivation can examine is the top-most label of the derived simplex item (arguably, D in (20a, b, c, e), C in (20d) and V in (20f)). The phonological component cannot conduct the optional rebracketing (*want* + *to* → *wanna*) operation because at the point it applies, all the pieces

of information internal to the Spelled-Out (crucially, the information that the host verb *want* was included in the Spelled-Out domain) have been destroyed and become unavailable for the PF operation.

Our results thus far indicate that Chomsky's and Uriagereka's versions of the MSO hypothesis are both necessary in correctly demarcating the range of syntactic environments under which tense-contraction and auxiliary reduction are attested. The former can capture the role of the CP phase boundary in the core cases of *wanna*-contraction and auxiliary reduction whereas the latter can straightforwardly explain the failure of *wanna*-contraction in left-branching specifiers and adjuncts as well as the acceptability of auxiliary reduction in complex specifiers. The two models, therefore, seem to cut the derivational workspace into two mutually complementary pieces − the main derivational cascade and everything else. Our results in this paper have shown that the two contraction phenomena do reflect this division of labor between the two derivational models in a certain way. *To*-contraction is sensitive to both the CP-phase boundary and complex left-branching configurations while auxiliary reduction is only sensitive to the CP-phase boundary. Why the two phenomena differ exactly along the lines sketched here is an important question but I wish to leave it for future research.

5. Conclusions

This paper has shown that the recent Multiple Spell-Out model of syntax proposed by Chomsky (2000, 2001, 2004) and Uriagereka (1999) allows for a straightforward characterization of environments under which tense-contraction and auxiliary reduction can take place. Our analysis provides support for

the Economy of Projection (Fukui 1986; Law 1991; Bošković 1995, 1997; Chomsky 1995), for the notion of CP phase at the syntax-phonology interface and for the fine-grained prosodic characterization of certain function words in English (Selkirk 1995). The overall result of this paper indicates that a dynamically bifurcated view of syntactic computation is viable in correctly demarcating the domain of morphophonological rule application on the syntax-external phonological component. The present analysis thus meets the minimalist goal of explaining linguistic phenomena solely in terms of interface conditions and general design considerations of the computational component of the language faculty.

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