

## Syntactic amalgams as dynamic constituency in top-down derivations

Maximiliano Guimarães

The aim of this paper is to provide additional evidence for dynamic top-down derivations (Phillips 1996, Drury 1998, Guimarães 1999, Richards 1999). The phenomenon under investigation here is syntactic amalgamation (Lakoff 1974, Tsubomoto & Whitman 2000), which seems to exhibit a constituency paradox if analyzed from the point of view of either a representational approach or a bottom-up derivational approach, requiring extra hidden structure along with *ad hoc* ellipsis and sluicing rules parasitic on one another. Once the directionality of derivation is ‘corrected’, and constituency is taken to be dynamic, the paradox disappears with no need for additional construction-specific machinery.

### 1. Paradoxical constituency?

This paper is about the construction exemplified in (1), which was first analyzed by Lakoff (1974), who named it *syntactic amalgam*.

(1) John invited you’ll never guess how many people to his party.

Here I present a comparative analysis of a few subcases of amalgamation in Romance (exemplified with Portuguese) and English, as part of a larger cross-linguistic research.

What is puzzling about this construction is that it seems to exhibit a paradoxical constituency, since it is not obvious which clause is the matrix clause and which is the embedded clause. On the one hand, sentence (1) means that John invited a number  $x$  of people to his party, where the value of  $x$  is unknown to the listener. This suggests either that the chunk **you will never guess** is somehow adjoined to the DP **how many people**, as in (2a), or that **you will never guess how many** is a complex determiner that gets combined with the NP **people**, as in (2b).

- (2) a. John invited [<sup>DP</sup> [<sup>α</sup> you’ll never guess how many] [<sup>NP</sup> people]] to his party.  
b. John invited [<sup>DP</sup> [<sup>α</sup> you’ll never guess] [<sup>DP</sup> how many [<sup>NP</sup> people]]] to his party.

On the other hand, the impossibility of sentences like (3) suggests that, at the relevant level of abstractness, the complement of **guess** in (1) is the full clause **John invited how many people to his party**, instead of **how many people** or just **how many**. After all, what is being guessed is not just the number  $x$ , but the number  $x$  such that John invited  $x$  people to his party.

- (3) a. \* How many people will you never guess?  
 b. \* You will never guess 300 people.

Thus, the structure of (1) would be something like (4), where the matrix verb **guess** selects **John invited how many people to his party** as its clausal complement, within which **how many people** undergoes local WH-movement.

- (4) [<sup>IP</sup> you will never guess [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>1</sub> [<sup>IP</sup> John invited t<sub>1</sub> to his party]]]

The combination of the two conclusions above leads to a content-container paradox. In (2), **John invited (how many) people to his party** is the matrix clause within which **you will never guess (how many)** gets embedded. In (4), the chunk **you will never guess** belongs to the matrix clause, which takes **John invited how many people to his party** as its clausal complement. Is it possible to have both (2) and (4)? How is the subordination established in (1)?

## 2. The hidden-structure analysis: having the cake and eating it too

According to Tsubomoto & Whitman (2000) – who piggyback on Lakoff's (1974) original insight – the actual representation for (1) has properties of both (2) and (4), without directly facing the content-container paradox. This is achieved by duplicating a chunk of the structure and putting one token of it in the matrix clause and the other one in the embedded clause. The core structure of the matrix clause would be as in (5), where the direct object is an elliptical indefinite DP (which, in one version of Lakoff's analysis, corresponds to a full DP like **a lot of people** that undergoes deletion). This 'kernel sentence', then, gets combined with the structure in (4), which undergoes internal sluicing and adjoins to the elliptical indefinite DP in (5), eventually yielding (6).<sup>1</sup> This kind of amalgam obtains in Romance too, as in (7), from Portuguese.

- (5) John invited [<sup>DP</sup> *e*] to his party.

- (6) John invited [<sup>DP</sup> [<sup>DP</sup> *e* ]<sub>1</sub> [<sup>CP</sup> [<sup>IP</sup> you'll never guess [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>1</sub> ~~John invited t<sub>1</sub> to his party~~]]]]] to his party.

<sup>1</sup> Tsubomoto & Whitman (2000) also postulate a further LF-movement internal to the clause that is adjoined to the elliptical DP, as in (i).

(i) [<sup>DP</sup> [<sup>DP</sup> *e* ]<sub>1</sub> [<sup>CP</sup> [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>1</sub> ~~John invited t<sub>1</sub> to his party~~]<sub>2</sub> [<sup>IP</sup> you'll never guess t<sub>2</sub> ]]

- (7) O João convidou você nunca vai adivinhar quantas pessoas para  
 the John invited you never will guess how-many persons to a  
 festa dele.  
 the party of-his  
 ‘John invited you’ll never guess how many people to his party’

A problem with the analysis in (6) is that it requires a construction-specific kind of deletion that is not found in ordinary sluicing outside amalgams.<sup>2</sup>

- (8) a. \* John invited a lot of people to his party. You will never guess how many people.  
 b. John invited a lot of people to his party. You will never guess how many.
- (9) a. John invited you’ll never guess how many people to his party.  
 b. \* John invited you’ll never guess how many to his party.

Moreover, nothing in this Lakoff-style approach explains why both sluicing and DP ellipsis are obligatory, as shown in (10).<sup>3</sup> If we aim to eliminate the construction-specific character of amalgamation, and derive its effects from the interaction of other independent grammatical mechanisms, we must avoid having two independent mechanisms being parasitic on one another just by stipulation.<sup>4</sup>

- (10)a. John invited [<sup>DP</sup> e] you will never guess how many people  
~~John invited to his party~~ to his party. [**+ellipsis,+sluicing**]  
 b. \*John invited [<sup>DP</sup> a lot of people] you will never guess how many  
 people ~~John invited to his party~~ to his party. [**-ellipsis,+sluicing**]  
 c. \*John invited [<sup>DP</sup> e] you will never guess how many people  
 John invited to his party to his party. [**+ellipsis,-sluicing**]  
 d. \*John invited [<sup>DP</sup> a lot of people] you will never guess how many  
 people John invited to his party to his party. [**-ellipsis,-sluicing**]

Also, as pointed out by Tsubomoto & Whitman (2000) themselves, it is not clear why and how the elliptical indefinite DP in (6) gets interpreted as co-referential with the WH-phrase [<sup>DP</sup> **how many people**] in the specifier of the

<sup>2</sup> We should also consider the alternative analysis in (i), which is a combination of (2a) and (6).

- (i) John invited [<sup>DP</sup> [<sup>α</sup> you will never guess how many ~~people John invited to his party~~]  
 [<sup>NP</sup> people]] to his party.

An obvious advantage is that, as opposed to what happens in (6), **people** is also affected by sluicing within the embedded clause, which corresponds exactly to ordinary sluicing outside amalgams (cf. (8)). Moreover, the facts in (3) follow straightforwardly.

<sup>3</sup> The same criticism applies to Romance, as shown below (check example (7) for the glosses):

- i. O João convidou ~~muita gente~~ você nunca vai adivinhar quantas pessoas ~~o João convidou~~  
~~pra festa dele~~ pra festa dele.  
 ii. \* O João convidou muita gente você nunca vai adivinhar quantas pessoas ~~o João convidou~~  
~~pra festa dele~~ pra festa dele.  
 iii. \* O João convidou ~~muita gente~~ você nunca vai adivinhar quantas pessoas o João convidou  
 pra festa dele pra festa dele.  
 iv. \* O João convidou muita gente você nunca vai adivinhar quantas pessoas o João convidou  
 pra festa dele pra festa dele.

<sup>4</sup> Notice that the alternative analysis suggested on footnote 2 does not face this problem.

embedded CP. That is, why is it that the gap in (1) is interpreted as ‘a number *n* of people, such that you will never guess what the cardinality of *n* is’, as indicated by the indices in (6)?<sup>5</sup>

Finally, the analysis in (6) cannot account for Romance cases where the amalgamation affects a DP that is the complement of a preposition, as in (11).

- (11) John invited 300 people to [<sup>DP</sup> [<sup>DP</sup> *e* ]<sub>i</sub> [<sup>CP</sup> you can imagine  
[<sup>DP</sup> what kind of a party]<sub>j</sub> ~~John invited 300 people to t<sub>i</sub>-~~]]

An exact analog of (11) is impossible in languages like Portuguese, as shown in (12a). Crucially, the preposition must appear after the material that is supposedly adjoined to the DP complement of that very preposition, as in (12b). The opposite pattern obtains in English, as shown in (13).

- (12)a. \*O João convidou 300 pessoas pra você pode imaginar que tipo de festa.  
the John invited 300 persons to you can imagine what kind of party.  
b. O João convidou 300 pessoas você pode imaginar pra que tipo de festa.  
the John invited 300 persons you can imagine to what kind of party.
- (13)a. John invited 300 people to you can imagine what kind of a party.  
b. \*John invited 300 people you can imagine to what kind of a party.

If we maintain the view that the syntactic chunk **you can imagine** (and its Romance equivalent) is a sluiced sentence that adjoins to an elliptical DP, we are forced to assume that, in the matrix clause, the preposition that takes that elliptical DP as its complement somehow undergoes ellipsis in Romance but not in English, as in (14). This also applies to the complex-determiner analysis of (2a), as shown in (15).<sup>6</sup>

- (14) O João convidou 300 pessoas [<sup>PP</sup> ~~pra~~ [<sup>DP</sup> [<sup>DP</sup> *e* ] [<sup>CP</sup> você pode imaginar  
the John invited 300 persons ~~to~~ you can imagine  
pra que tipo de festa ~~o João convidou 300 pessoas~~]]  
to what kind of party ~~the John invited 300 persons~~

<sup>5</sup> Tsubomoto & Whitman’s solution is formalized under an indexation-through-predication approach, with feature-percolation mechanisms. Although it makes the right predictions, such analysis is problematic from a minimalist perspective, given its reification of indices.

<sup>6</sup> Here the alternative analysis of footnote 2 does not work unless an extra mechanism of preposition ellipsis in the matrix clause is stipulated. Moreover, the material within the hypothetical complex determiner does not correspond to ordinary sluiced sentences outside amalgams regarding the morphophonological form of the WH-element or the choice of the preposition.

- i: O João convidou 300 pessoas pra um certo tipo de festa. Você pode imaginar **qual**.  
the John invited 300 persons to a certain kind of party. You can imagine **which**.  
ii: O João convidou 300 pessoas pra uma festa. Você pode imaginar **de** que tipo.  
the John invited 300 persons to a party. You can imagine **of** what kind.

The same problem arises in English. In (13a), the object of the preposition **to** in the matrix clause would be [<sup>DP</sup> [<sup>α</sup> you can imagine what kind of party John invited 300 people to] [<sup>NP</sup> kind of a party]]. This is problematic to the extent that it requires a special kind of sluiced sentence not found elsewhere (cf. \*John invited 300 people to a certain kind of party. You will never guess **what**).

- (15) O João convidou 300 pessoas [<sup>PP</sup> ~~pra~~ [<sup>DP</sup> [<sup>α</sup> você pode imaginar  
the John invited 300 persons ~~to~~ you can imagine  
pra que] tipo de festa]]  
to what kind of party

Alternatively, we may say that, in Romance, the elliptical argument which the sluiced sentence adjoins to is the entire PP, as in (16), rather than the DP.

- (16) O João convidou 300 pessoas [<sup>PP</sup> [<sup>PP</sup> *e*] [<sup>CP</sup> você pode imaginar  
the John invited 300 persons you can imagine  
pra que tipo de festa ~~e João convidou 300 pessoas]]  
to what kind of party ~~the John invited 300 persons~~~~

Either in (14)/(15) or in (16), we end up stipulating an additional parametric difference between English and Romance for which there is no independence evidence.<sup>7</sup> The conclusion, then, is that, as opposed to English, there is no slot in the structure of Romance amalgams where the adjunct could possibly fit. I take this to be a major problem for the hidden-structure analysis of amalgams.

### 3. The remnant-movement alternative

I propose that amalgams are generated through remnant movement, without duplication of any syntactic chunk (therefore no additional ellipsis or sluicing). The derivations for English and Portuguese are as in (17) and (18) respectively.

- (17)a. **building the embedded clause**  
[<sup>IP</sup> John invited 300 people to [<sup>DP</sup> what kind of a party]]]  
b. **local WH-movement (with preposition-stranding)**  
[<sup>CP</sup> [<sup>DP</sup> what kind of a party]<sub>1</sub> [<sup>IP</sup> John invited 300 people to t<sub>1</sub> ]]  
c. **building the matrix clause**  
[<sup>CP</sup> [<sup>IP</sup> you can imagine  
[<sup>CP</sup> [<sup>DP</sup> what kind of a party]<sub>1</sub> [<sup>IP</sup> John invited 300 people to t<sub>1</sub> ]]]]  
d. **remnant-movement of the embedded IP to a topic-like position**  
[<sup>CP</sup> [<sup>IP</sup> John invited 300 people to t<sub>1</sub>]<sub>2</sub> [<sup>IP</sup> you can imagine  
[<sup>CP</sup> [<sup>DP</sup> what kind of a party]<sub>1</sub> t<sub>2</sub>]]]  
(18)a. **building the embedded clause**  
[<sup>IP</sup> o João convidou 300 pessoas [<sup>PP</sup> pra que tipo de festa]]  
the John invited 300 people to what kind of party

---

<sup>7</sup> The analysis in (16) faces the additional problem that (the equivalents of) **you can imagine** and the elliptical DP inside the elliptical PP do not seem to stand in a syntactic relation that is local enough for the meaning described in §2 to straightforwardly obtain via semantic compositionality.

- b. **local WH-movement (with pied-piping)**  
 [<sup>CP</sup> [<sup>PP</sup> pra que tipo de festa]<sub>1</sub> [<sup>IP</sup> o João convidou 300 pessoas t<sub>1</sub> ]]  
 to what kind of party the John invited 300 people
- c. **building the matrix clause**  
 [<sup>CP</sup> [<sup>IP</sup> você pode imaginar [<sup>CP</sup> [<sup>PP</sup> pra que tipo de festa]<sub>1</sub>  
 you can imagine to what kind of party  
 [<sup>IP</sup> o João convidou 300 pessoas t<sub>1</sub> ]]]]  
 the John invited 300 people
- d. **remnant-movement of the embedded IP to a topic-like position**  
 [<sup>CP</sup> [<sup>IP</sup> o João convidou 300 pessoas t<sub>1</sub>]<sub>2</sub> [<sup>IP</sup> você pode imaginar  
 the John invited 300 people you can imagine  
 [<sup>CP</sup> [<sup>PP</sup> pra que tipo de festa]<sub>1</sub> t<sub>2</sub>]]]  
 to what kind of party

Ultimately, the contrast between English and Romance has nothing to do with amalgamation *per se*. It follows from whatever parameter is responsible for WH-movement allowing preposition-stranding in English but not in Romance. We don't need to worry about the nature of those elliptical indefinite DPs, since they actually do not exist. Hence, no rule of PF-deletion or LF-copying is needed, and no condition on such a rule needs to be postulated or derived. With no elliptical DPs to worry about, the co-reference problem mentioned above completely goes away, since in the structure from which the syntactic amalgam originates there is only one occurrence of **invited**, whose object is [<sup>DP</sup> **how many people**] itself, instead of an elliptical DP whose proper interpretation would require an extra mechanism to obtain. As far as sluicing goes, no questions arise, since there is actually no sluicing. After all, there is no embedded sentence adjoined to [<sup>DP</sup> **how many people**] or to [<sup>NP</sup> **people**], where sluicing could possibly apply.

This analysis, however, is not free of problems. Let's consider again the example (1), under the remnant-movement analysis, as in (19).

- (19)a. [<sup>XP</sup> [<sup>IP</sup> John<sub>2</sub> [<sup>VP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> [<sup>DP</sup> how many people] t<sub>1</sub> [<sup>PP</sup> to his party]]]]]  
 b.#[<sup>CP</sup> [<sup>XP</sup> [<sup>PP</sup> to his party]<sub>3</sub> [<sup>IP</sup> John<sub>2</sub> [<sup>VP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> [<sup>DP</sup> how many people] t<sub>1</sub> t<sub>3</sub> ]]]]  
 c. [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>4</sub> [<sup>XP</sup> [<sup>PP</sup> to his party]<sub>3</sub> [<sup>IP</sup> John<sub>2</sub> [<sup>VP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> t<sub>4</sub> t<sub>1</sub> t<sub>3</sub> ]]]]  
 d. [<sup>IP</sup> you will never guess [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>4</sub> [<sup>XP</sup> [<sup>PP</sup> to his party]<sub>3</sub>  
 [<sup>IP</sup> John<sub>2</sub> [<sup>VP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> t<sub>4</sub> t<sub>1</sub> t<sub>3</sub> ]]]]  
 e. [<sup>CP</sup> [<sup>IP</sup> John<sub>2</sub> [<sup>VP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> t<sub>4</sub> t<sub>1</sub> t<sub>3</sub> ]]]]<sub>5</sub> [<sup>IP</sup> you will never guess  
 [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>4</sub> [<sup>XP</sup> [<sup>PP</sup> to his party]<sub>3</sub> t<sub>5</sub> ]]]

A core property of remnant movement constructions is that all movements involved should be independently motivated (Müller 1998). The movement of the WH-phrase to the specifier of the lower CP in (19c) is independently attested (cf. 20), as well as the movement of the lower TP to the topic position somewhere in the CP-domain of the matrix clause in (19e), as shown in (21).

However, the movement of [<sup>PP</sup> to his party] in (19b) is not legitimate in any construction other than syntactic amalgams, as exemplified by (22).<sup>8</sup>

- (20)a. How many people did John invite to his party?  
 b. I wonder how many people John invited to his party.  
 (21) John invited 300 people to his party, she believes.  
 (22) \* She will never know that [<sup>PP</sup> to his party]<sub>2</sub> John invited a lot of people t<sub>2</sub>.

This means that in order for the remnant movement mechanics to work, we need to stipulate an *ad hoc* movement in English and Romance that is parasitic on TP-topicalization.<sup>9</sup>

Notice that this scrambling-like movement is crucial to get the amalgam in question. Without it, the derivation would be as in (23), yielding the sentence in (24), which is also grammatical but is not what we are trying to account for.

- (23)a. [<sup>CP</sup> [<sup>TP</sup> John<sub>2</sub> [<sup>vP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> [<sup>DP</sup> how many people] t<sub>1</sub> [<sup>PP</sup> to his party]]]]]  
 b. [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>4</sub> [<sup>TP</sup> John<sub>2</sub> [<sup>vP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> t<sub>4</sub> t<sub>1</sub> [<sup>PP</sup> to his party]]]]]  
 c. [<sup>TP</sup> you will never guess [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>4</sub> [<sup>TP</sup> John<sub>2</sub> [<sup>vP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> t<sub>4</sub> t<sub>1</sub> [<sup>PP</sup> to his party]]]]]]]  
 e. [<sup>CP</sup> [<sup>TP</sup> John<sub>2</sub> [<sup>vP</sup> t<sub>2</sub> invited<sub>1</sub> [<sup>VP</sup> t<sub>4</sub> t<sub>1</sub> [<sup>PP</sup> to his party]]]]]<sub>5</sub> [<sup>TP</sup> you will never guess [<sup>CP</sup> [<sup>DP</sup> how many people]<sub>4</sub> t<sub>5</sub> ]]

- (24) John invited to his party you will never guess how many people.

#### 4. Dynamic top-down syntax

One of the hottest topics in Minimalism is, perhaps, the derivationalism-*versus*-representationalism debate. The mainstream view is that the syntactic component of UG is a derivational structure-building system that works in a bottom-up fashion, as in (25), incorporating economy principles (cf. Chomsky 1995, 1998; Abraham, Epstein, Thráinsson & Zwart 1996; Collins 1997; Kitahara 1997; Epstein, Groat, Kawashima & Kitahara 1998; Epstein & Hornstein 1999).

- (25) step n:            [<sup>Z</sup> δ ε]            step n+2:        [<sup>Y</sup> β [<sup>X</sup> γ [<sup>Z</sup> δ ε]]]  
 step n+1:        [<sup>X</sup> γ [<sup>Z</sup> δ ε]]        step n+3:        [<sup>W</sup> α [<sup>Y</sup> β [<sup>X</sup> γ [<sup>Z</sup> δ ε]]]]

<sup>8</sup> In Portuguese, the same generalizations hold, as shown below [= (20), (21) & (22)].

i: a. Quantas pessoas o João convidou pra festa dele?  
 b. Eu me pergunto quantas pessoas o João convidou pra festa dele.  
 ii: O João convidou 300 pessoas para a festa dele, ela acredita.  
 iii: \* Ela nunca vai saber que [<sup>PP</sup> pra festa dele]<sub>2</sub> o João convidou muita gente t<sub>2</sub>.

<sup>9</sup> Notice, however, that this kind of PP fronting is legitimate in matrix clauses, as in (i). But even in those cases, it is impossible to have a WH-movement crossing the topicalized PP, as in (ii).

i: To his party, John invited a lot of people.  
 ii: \* How many people to his party did John invite?

Alternatively, syntax may be conceived as a set of declarative statements imposing restrictions on the shape of LF phrase-markers generated in a single step (cf. Brody 1995, 1998, 2000; Frank & Vijay-Shanker 1999).

As Chomsky (1995, 1998) points out, these two perspectives are very hard to tease apart. Arguments go in both directions, and, in most cases, analyses are fully inter-translatable from one framework to the other. Cornell (1999) goes even further, and claims that these two apparently opposite approaches are two sides of the same coin, and must co-exist in any (transformational) theory of grammar. Chomsky (1998) even admits that his choice for a derivational approach is somewhat arbitrary, when he says: ‘I will adopt the derivational approach as an expository device, though I suspect it may be more than that’.

A third alternative was proposed by Phillips (1996) – and explored by Drury (1998), Guimarães (1999), and Richards (1999) among others –, where derivations proceed in a top-down/left-to-right/root-first fashion, as in (26).

$$(26) \quad \begin{array}{ll} \text{step } n: & [{}^W \alpha \ \beta] \\ \text{step } n+1: & [{}^W \alpha [{}^X \beta \ \gamma]] \end{array} \quad \begin{array}{ll} \text{step } n+2: & [{}^W \alpha [{}^X \beta [{}^Y \gamma \ \delta]]] \\ \text{step } n+3: & [{}^W \alpha [{}^X \beta [{}^Y \gamma [{}^Z \delta \ \varepsilon]]]] \end{array}$$

This system works in such a way that constituency is partially destroyed at every step. What is a constituent (in the spine of tree) at a given step may no longer be a constituent from the next step onwards (e.g. in (26),  $[{}^W \alpha \ \beta]$  is a constituent at step  $n$ , but it gets destroyed when  $\gamma$  is introduced at step  $n+1$ ).

The fully conservative nature of the structure-building system in (25) is intuitively appealing on economy grounds (cf. Uriagereka 2002 on *conservation* from the perspective of Ontological Minimalism). But this is not a necessary property of derivational theories as a matter of logic. Changing structure – as in (26) – is something that only derivational systems can do. Therefore, Phillips’s (1996) research enterprise is justified on methodological grounds, as a potential way of concluding something about the derivationalism-*versus*-representationalism dilemma. By reversing the directionality of the derivation, we can make predictions that, *ceteris paribus*, no representational approach can. A given syntactic chunk  $\alpha$  may be a constituent at the specific derivational step when a grammatical operation  $K$  applies, and be destroyed later on, no longer counting as a constituent when another grammatical operation  $L$  applies. A dynamic system like this makes it possible for a chunk of structure  $\alpha$  to both be and not be a constituent, in a sense (cf. Phillips 1996, Guimarães 1999). This partial structure destruction is built into the very definition of the structure-construction device (i.e. merge), as in (27).

$$(27) \quad \textbf{Merge} \quad (\text{oversimplified definition, see Guimarães 1999 for details})^{10}$$

<sup>10</sup> In order for this definition to work, we need some phrase in the derivational workspace before merging the first terminal. I assume, then, that the system has a starting axiom, which introduces the phrase  $[{}^S \Sigma \emptyset]$  in the derivational workspace. This initial phrase is analogous to the node  $S$  of Chomsky (1955) and to the abstract terminal of Kayne (1994: 36-38). I take  $\Sigma$  to be an ‘assertion terminal’, along the lines of Echeperé (1997). From now on, this starting axiom will be

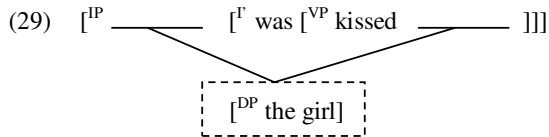
input: [<sup>A</sup> *x y*] & *z*, (where [<sup>A</sup> *x y*] is a right-branch in the spine of the tree)  
 output:[<sup>A</sup> *x* [<sup>B</sup> *y z*]]

Interestingly, regarding the fundamental syntactic relations of dominance and asymmetric c-command, top-down derivations like (26) are as structure-preserving as mainstream bottom-up derivations like (25), even though the shape of phrase-markers constantly changes along the derivational history. For instance, in (26), at step *n+1*, **α** asymmetrically c-commands **β** and **γ**, while **W** dominates **X**, **α**, **β** & **γ**, and **X** dominates **β** & **γ**. All these relations survive throughout the derivation (*n+2*, *n+3*, and so on). New relations of dominance and asymmetric c-command are monotonically introduced without destroying old ones (an idea that goes back to Weinberg 1985).<sup>11</sup>

According to Phillips (1996), in a left-to-right/top-down system, movement is always lowering. Under the technical implementation proposed by him, the effect of upward movement is achieved by making a silent copy (i.e. *copy* plus *PF-deletion*) of a given constituent and merging it at a position in the phrase marker lower than the position of the original copy, as shown in (28) for the sentence ‘*the girl was kissed*’. Notice that this is not the traditional concept of lowering, since the moved element gets pronounced in its original/higher position.

- (28)a. [<sup>IP</sup> [<sup>DP</sup> the girl] [<sup>I</sup> was kissed]]  
 b. [<sup>IP</sup> [<sup>DP</sup> the girl] [<sup>I</sup> was [<sup>VP</sup> kissed [<sup>DP</sup> ~~the girl~~ ]]]]

In what follows, I use the notation in (28) for expository reasons, but my analysis of amalgams depends on a different conception of movement. Here I endorse Drury’s (1998, 1999) proposal that movement is *remerge*. Under that view, there are no copies, and a phrase may have multiple mothers, occupying more than one position in the tree. Merge can assign new mothers to a phrase, while keeping the previous motherhood relation(s) intact, as in (29).<sup>12</sup>



This system incorporates a (reversed) version of Uriagereka’s (1999) multiple spell-out hypothesis. The lowered/remerged element is always pronounced in its higher position as an effect of multiple applications of spell-out, triggered by PF-linearization demands (satisfaction of the LCA (Kayne 1994)). When lowering/remerge happens, the affected element has already

omitted from the notation for expository reasons, but I want the reader to keep in mind that it is always present, or else no derivation could start.

<sup>11</sup> Depending on what we take phrasal labels to be, the monotonicity of dominance is not as straightforward as the monotonicity of asymmetric c-command (cf. Guimarães 1999, 2001).

<sup>12</sup> This idea of remerge and multi-motherhood is also present in some versions of bottom-up derivational systems, like the ones proposed by Bobaljik (1995), Gärtner (1997), Epstein, Groat, Kawashima & Kitahara (1998), among others.

been spelled-out. What is getting lowered/remerged is a combination of formal and semantic features whose corresponding morpho-phonological counterpart had already left the derivation for good (cf. Guimarães 1999, for details).

In this dynamic top-down system, remnant movement is formalized as merging an element inside an already remerged/lowered constituent, as in (30).

- (30)a. [<sup>CP</sup> [<sup>VP</sup> [<sup>VP</sup> criticized] [<sup>PP</sup> by his boss]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> John] has never been]]]  
 b. [<sup>CP</sup> [<sup>VP</sup> [<sup>VP</sup> **criticized**] [<sup>PP</sup> **by his boss**]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> John] has never been  
 [<sup>VP</sup> [<sup>VP</sup> **criticized**] [<sup>PP</sup> **by his boss**]]]]]  
 c. [<sup>CP</sup> [<sup>VP</sup> [<sup>VP</sup> criticized [<sup>DP</sup> **John**]] [<sup>PP</sup> by his boss]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> **John**] has  
 never been [<sup>VP</sup> [<sup>VP</sup> criticized [<sup>DP</sup> **John**]] [<sup>PP</sup> by his boss]]]]]

In (30a), there is an incomplete/unsaturated VP in topic position. In (30b), this topicalized VP is lowered/remerged inside the IP. In (30c), the subject DP [<sup>DP</sup> **John**] is lowered/remerged inside the already lowered/remerged VP [<sup>VP</sup> [<sup>VP</sup> **criticized**] [<sup>PP</sup> **by his boss**]]. The extra (unpronounceable) copy of [<sup>DP</sup> **John**] that appears inside the topicalized VP is a mere notational artifact with no independent theoretical status, not counting as an extra (upwards) movement. There is only one VP, which is simultaneously the complement of **been** and the topic (specifier of CP); as well as there is only one DP, which is simultaneously the complement of **criticized** and the subject (specifier of IP).

### 5. Top-down amalgamation

Having seen the technical tools, let's go back to the data, and run the respective derivations to see how *Dynamic Top-Down Syntax* handles syntactic amalgams.

The generation of (1) – repeated below as (31) – would be as follows.

- (31) John invited you will never guess how many people to his party.

Starting from the top, first the DP [<sup>DP</sup> **John**] is generated (cf. 32a), and then merged with I, forming an IP (cf. 32b), which takes the verb **invited** as its complement in the next step (cf. 32c).<sup>13</sup>

- (32)a. [<sup>DP</sup> John]  
 b. [<sup>IP</sup> [<sup>DP</sup> John] I]  
 c. [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]]

This incomplete/unsaturated IP is then made a topic by being merged with the matrix complementizer (or whichever functional head happens encode topic/comment relations syntactically).

- (32)d. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] C]

<sup>13</sup> Here I am abstracting away from the *VP-Internal Subject Hypothesis*. See Guimarães (1999, 2001) for details.

The derivation proceeds downwards, step-by-step, by merging the other elements of the matrix clause, one by one.

- (32)e. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>DP</sup> you]]]  
 f. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> you] will]]]  
 g. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will never]]]]]  
 h. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will [<sup>VP</sup> never  
 [<sup>VP</sup> guess]]]]]]]

After the matrix verb is introduced, it is time to introduce the WH-phrase [<sup>DP</sup> **how-many people**] as a temporary complement of **guess**, so that it can become the specifier of the embedded CP later on. First, the determiner **how-many** is merged with **guess**, as in (32i). Then, **people** is merged with **how-many**, forming the DP [<sup>DP</sup> **how-many people**], as in (32j). This WH-phrase becomes the specifier of the embedded CP when the lower C enters the derivation at the step shown in (32k).

- (32)i. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will [<sup>VP</sup> never  
 [<sup>VP</sup> guess how-many]]]]]]]  
 j. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will [<sup>VP</sup> never  
 [<sup>VP</sup> guess [<sup>DP</sup> how-many people]]]]]]]]]  
 k. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will [<sup>VP</sup> never  
 [<sup>VP</sup> guess [<sup>CP</sup> [<sup>DP</sup> how-many people] C]]]]]]]]]

Then, the whole topicalized IP is lowered/remerged as the complement of the embedded C, as in (32l).

- (32)l. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]] [<sup>C</sup> C [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will [<sup>VP</sup> never  
 [<sup>VP</sup> guess [<sup>CP</sup> [<sup>DP</sup> how-many people] [<sup>C</sup> C  
 [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited]]]]]]]]]]]

At this stage, remnant movement happens. The WH-phrase in the specifier of the subordinate CP is lowered/remerged into its argumental position within the VP-shell under the lower IP, which has just been lowered/remerged at the previous step (cf. Phillips (1996: 31-32) for a brief discussion about VP-shells).

- (32)m. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited [~~t~~<sup>DP</sup> how-many people]]]]] [<sup>C</sup> C  
 [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will [<sup>VP</sup> never [<sup>VP</sup> guess [<sup>CP</sup> [<sup>DP</sup> how-many people] [<sup>C</sup> C  
 [~~t~~<sup>IP</sup> [~~t~~<sup>DP</sup> John] [~~t~~<sup>I</sup> [~~t~~<sup>VP</sup> invited [~~t~~<sup>DP</sup> how-many people]]]]]]]]]]]]]

Then, the preposition **to** is introduced as the sister of **invited**, followed by the merge of **his** and, finally, **party**; yielding the final representation in (32p).

- (32)n. [<sup>CP</sup> [<sup>IP</sup> [<sup>DP</sup> John] [<sup>I</sup> I [<sup>VP</sup> invited [~~t~~<sup>DP</sup> how-many people] to]]] [<sup>C</sup> C  
 [<sup>IP</sup> [<sup>DP</sup> you] [<sup>I</sup> will [<sup>VP</sup> never [<sup>VP</sup> guess [<sup>CP</sup> [<sup>DP</sup> how-many people] [<sup>C</sup> C  
 [~~t~~<sup>IP</sup> [~~t~~<sup>DP</sup> John] [~~t~~<sup>I</sup> [~~t~~<sup>VP</sup> invited [~~t~~<sup>DP</sup> how-many people] to]]]]]]]]]]]



- d. [<sup>CP</sup> [<sup>IP</sup> o João convidou 300 pessoas] [<sup>IP</sup> você pode imaginar  
the John invited 300 persons you can imagine  
[<sup>CP</sup> [<sup>PP</sup> **pra que tipo de festa**] [<sup>IP</sup> ~~o João convidou 300 pessoas~~]]]]  
to what kind of party ~~the John invited 300 persons~~
- e. [<sup>CP</sup> [<sup>IP</sup> o João convidou 300 pessoas [<sup>PP</sup> ~~pra que tipo de festa~~]  
the John invited 300 persons ~~to what kind of party~~  
[<sup>IP</sup> você pode imaginar [<sup>CP</sup> [<sup>PP</sup> **pra que tipo de festa**]  
you can imagine to what kind of party  
[<sup>IP</sup> ~~o João convidou 300 pessoas~~ [<sup>PP</sup> ~~pra que tipo de festa~~]]]]]  
~~the John invited 300 persons to what kind of party~~

#### 6. Concluding remarks (and beyond)

The main idea of this paper is that syntactic amalgams have no independent theoretical status. There are no construction-specific grammatical principles of ellipsis or sluicing responsible for amalgamation. The apparent constituency paradox is an effect of a combination of movements, rather than an effect of the presence of hidden structure in complex representations.

The remnant-movement analysis proposed here provides a straightforward account for the cross-linguistic variation of word-order in amalgams where the affected WH-phrase is the complement of a preposition (which is problematic for the hidden-structure analysis). This contrast simply piggybacks on whatever parameter is responsible for the pied-piping/preposition-stranding distinction. Therefore, my analysis makes the strong prediction that, unless there is interference of some other independent factor, every language exhibiting pied-piping should pattern like Portuguese in amalgam constructions, and every language exhibiting preposition stranding should pattern like English in that regard. More research is needed to test this prediction.

Apparent violations of the last resort constraint on movement are epiphenomenal effects of the dynamics of the derivation, which allows for a chunk of structure to be a constituent before a particular application of merge or remerge, and no longer be a constituent after that.

The phenomenon of syntactic amalgams is too complex to be discussed in 15 pages without leaving many crucial issues untouched. In this final section, I would like at least to mention a few of these pending issues, taking the opportunity to ‘advertise my work’.

Besides examples like (1) or (13a) above, both English and Romance exhibit cases of multiple amalgamation, which I haven’t discussed so far. Consider the sentence in (35), first presented by Lakoff (1974).<sup>15</sup>

<sup>15</sup> As Lakoff (1974) points out, it seems that, setting aside parsing limitations, the complexity of a syntactic amalgam is unbounded, as shown in (i).

i: John invited you will never guess how many people to you can imagine what kind of party, at it should be obvious where, with God only knows what purpose in mind, despite you can guess what pressures.

- (35) John invited God only knows how many people to you can imagine what kind of party.

As discussed in Guimarães (2001) such constructions are very problematic not only for the hidden-structure analysis in §2 and for the bottom-up remnant movement mechanics in §3, but also for the dynamic top-down system I am advocating for, requiring *ad hoc* instances of merge and move/remerge.

In Guimarães (2001, 2002), I suggest that a precise characterization of the structure of amalgams – either simple ones like (31) or more complex ones like (35) – requires multi-dimensional phrase markers, with multiple parallel trees (each one with its own independent root) that share one (or more) node(s), getting connected ‘somewhere in the middle’. This formalism is, in part, similar to what was proposed by van Riemsdijk (2000) for (transparent) free-relatives, which resemble amalgams in some respects (see also Wilder 1998, and Citko 2000). Putting all technical details aside, the sentence in (35) would be a combination of the three quasi-independent matrix clauses in (36), where the chunks marked with italics are the constituents shared by all three trees.

- (36)a. [<sup>CP</sup> C<sub>[-WH]</sub> [<sup>IP</sup> *John invited how many people to what kind of party* ] ]  
 b. God only knows [<sup>CP</sup> [*how many people*]<sub>1</sub> [<sup>C</sup> C<sub>[+WH]</sub> [<sup>IP</sup> *John invited t<sub>1</sub> to what kind of party* ] ].  
 c. You can imagine [<sup>CP</sup> [*what kind of party*]<sub>2</sub> [<sup>C</sup> C<sub>[+WH]</sub> [<sup>IP</sup> *John invited how many people to t<sub>2</sub>* ] ].

Interestingly, only (36b) is grammatical when in isolation. (36a) violates whatever principle requires WH-movement to be overt in English; while, in (36c), **what kind of party** moves across **how many people**, violating the M(inimal) L(ink) C(ondition) (Chomsky 1995). But when all these trees are connected, **how many people** satisfies its WH properties in (36b), acting as if it was a non-WH DP like **some people** in (36a) and (36c), therefore not inducing any violation of MLC or feature-checking requirements. The same is true of **what kind of party**, which has its WH properties satisfied in (36c), and behaves as **a party** in (36a) and (36b) (cf. Guimarães 2001 for details).

If this is on the right track, then the fact that amalgams don’t exhibit island effects (cf. Tsubomoto & Whitman 2000) is not surprising. In (37b), the chunk of structure {**he built e when**} is a relative clause with respect to **a house**, but a sentential complement with respect to **I don’t remember**, therefore not counting as an island (cf. Guimarães 2001, for details).

- (37)a. \*I don’t remember [when]<sub>1</sub> John lives in [a house]<sub>2</sub> {that he built e<sub>2</sub> t<sub>1</sub>}  
 b. John lives in [a house]<sub>2</sub> {that he built e<sub>2</sub> I don’t remember when}

Finally, another potential problem for my analysis is that, if there is a one-to-one correspondence between the pied-piping/preposition-stranding distinction and the order of the preposition with respect to the ‘invasive clause’ in amalgams, it is not clear why (13b) is not as acceptable as (13a), since, in English, pied-piping is also attested (under certain restricted circumstances). In

Guimaraes (2001), I address this issue from the perspective of the E-Language/I-Language distinction.

#### Acknowledgments

I am extremely thankful to Jonathan D. Bobaljik, Juan Carlos Castillo, John Drury, Norbert Hornstein, Colin Phillips, Cilene Rodrigues, Juan Uriagereka and Jacek Witkos, for their many insightful comments. In particular, I express my deepest gratitude to Juan Uriagereka. I also thank the organizers of ConSOLE-X for the wonderful time I had there. This research was sponsored by the Brazilian Government (CAPES, grant # 2049/97-0).

#### References

- Abraham, W., S. Epstein, H. Thráinsson & C. J-W. Zwart (1996). *Minimal ideas: Syntactic studies in the minimalist framework*. John Benjamins, Amsterdam.
- Bobaljik, J. (1995). In Terms of Merge: copy and head movement. R. Pensalfini & H. Ura (eds.) *Papers in minimalist syntax: MIT working papers in linguistics* 27, pp. 41-64.
- Brody, M. (1995). *Lexico-logical Form: A radically minimalist theory*. MIT Press, Cambridge/MA.
- Brody, M. (1998). Projection and phrase structure. *Linguistic Inquiry* 29, pp. 367-398.
- Brody, M. (2000). Mirror theory: syntactic representation in perfect syntax. *Linguistic Inquiry* 31, pp. 29-56.
- Chomsky, N. (1955). *The logical structure of linguistic theory*. University of Chicago Press [1975].
- Chomsky, N. (1995). *The minimalist program*. MIT Press, Cambridge/MA.
- Chomsky, N. (1998). Minimalist inquires: The framework. *MIT Occasional Papers in Linguistics* 15.
- Citko, B. (2000). *The implications of (dynamic) antisymmetry for the analysis of (free) relatives*. [Paper presented at the Workshop on the Antisymmetry Theory, Cortona, May 15-17]
- Collins, C. (1997). *Local economy*. MIT Press, Cambridge/MA.
- Cornell, T. (1999). *Derivational and representational views of minimalist transformational grammar*. Manuscript University of Tübingen.
- Drury, J. (1998). The promise of derivations: atomic merge and multiple spell-out. *Groninger Arbeiten zur Germanistischen Linguistik* 42, pp. 61-108.
- Drury, J. (1999). *Movement as remerge and c-command as sub-derivational precedence*. [Paper presented at the GLOW 1999 workshops: Technical aspects of movement, Postdam, April 1<sup>st</sup>]
- Echepare, R. (1997). *The grammatical representation of speech events*. Ph.D. dissertation, University of Maryland.
- Epstein, S., E. Groat, H. Kawashima & R. Kitahara (1998). *A derivational approach to syntactic relations*. Oxford University Press.
- Epstein, S. & N. Hornstein. (1999). *Working minimalism*. MIT Press, Cambridge/MA.
- Frank, R. & K. Vijay-Shanker (1999). *Primitive c-command*. Manuscript, Johns Hopkins University and University of Delaware.
- Gärtner, H-M. (1997). *Generalized transformations and beyond (reflections on minimalist syntax)*. Ph.D. dissertation, Johan-Wolfgang-Goethe Universität.
- Guimaraes, M. (1999). *Phonological cascades and intonational structure in dynamic top-down syntax*. Manuscript, University of Maryland.
- Guimaraes, M. (2001). *Syntactic amalgams in dynamic top-down derivations*. Doctoral research paper, University of Maryland.
- Guimaraes, M. (2002). *Single root condition + local computations = multiple roots*. Manuscript, University of Maryland.
- Kayne, R. (1994). *The antisymmetry of syntax*. MIT Press, Cambridge/MA
- Kitahara, H. (1997). *Elementary operations and optimal derivations*. MIT Press, Cambridge/MA.

- Lakoff, G. (1974). Syntactic amalgams. *Papers from the 10<sup>th</sup> Meeting of the Chicago linguistic society*.
- Müller, G. (1998). *Incomplete category fronting: a derivational approach to remnant movement in German*. Kluwer, Dordrecht.
- Phillips, C. (1996). *Order and structure*. Ph.D. dissertation, MIT.
- Richards, N. (1999). Dependency formation and directionality of tree construction. *MIT Working Paper in Linguistics* 34 (Papers on morphology and syntax: cycle two).
- Riemsdijk, H. van (2000). *Free relatives*. Manuscript, Tilburg University.
- Tsubomoto A. & J. Whitman. (2000). A type of head-in-situ construction in English. *Linguistic Inquiry* 31, pp. 176-183.
- Uriagereka, J. (1999). Multiple spell-out. S. Epstein & N. Hornstein (eds.) *Working Minimalism*: MIT Press, Cambridge/MA, pp. 251-282.
- Uriagereka, J. (2002). *A mind plan?* Colloquium talk, Postdam University.
- Weinberg, A. (1995). Parameters in sentence processing: the case of Japanese. R. Mazuka & N. Nagai (eds.) *Japanese sentence processing*. Erlbaum.
- Wilder, C. (1998). Transparent free relatives. *ZAS Working Papers in Linguistics*, pp. 191-199.