ON INCREMENTALITY, OVERT AGREEMENT, THE DUALITY OF MERGE AND THE DUALITY OF SEMANTICS

Iván Ortega-Santos

The University of Memphis

Introduction[1]

The goal of this research is to show how a close inspection of the properties of a parser/production system can help solve some of the challenges theoretical linguists face. Specifically, it is argued that Incrementality, a well-established principle in experimental research (e.g., Bock et al. 1992, Phillips 1996 and Ferreira 1996), is relevant for two theoretical debates:

i. how to reconcile the phase-based framework assuming Long-Distance Agreement (Chomsky 2004, 2005a, etc.) with the fact that across languages moved elements tend to trigger agreement as opposed to in situ elements
ii. how to derive the mapping between the duality of Merge and the duality of Semantics put forward within the said framework (cf. Chomsky 2004, 2005a, etc.)

With regard to (i), the crosslinguistic facts mentioned above were originally taken to constitute an argument for grammatically significant Spec,Head configurations, that is to say, for the existence of checking relations under m-command. These relations are, nonetheless, at odds with the phase-based framework. In this paper, it is argued that incremental computation of Agreement (cf. Barlow 1992) explains such paradigms in a way that is compatible with Long-Distance Agreement (Chomsky 2001, etc.). As far as (ii) is concerned, Chomsky (2004 and 2006) proposes that External Merge or movement is associated to discourse-related and scopal properties as opposed to theta roles. However, this researcher acknowledges that the correlation is not a logical necessity (Chomsky 2004: 11). It is argued that such mapping does not have to be stipulated but rather it can be derived from the workings of Incrementality.

Section 1 presents the relevant crosslinguistic generalizations concerning agreement paradigms and the role of Incrementality in this context. Section 2 discusses the mapping between the duality of Merge and the duality of Semantics and, again, the role of Incrementality in this context.

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1. On crosslinguistic variation in agreement paradigms

It is often claimed in the literature that one can find languages where agreement follows the paradigms in (1) and (2) but not the one in (3) (where this is illustrated in terms of Probes (P) and Goals (G)):

(1)   G P$_{overt\ agreement}$ vs.   P$_{overt\ agreement}$ G   √ across languages

(2)   G P$_{overt\ agreement}$ vs.   P G   √ across languages

(3)   G P   vs.   P$_{overt\ agreement}$ G   * across languages

The crosslinguistic validity of this observation is present in some way or other in works such as Barlow (1992), Chomsky (2004), Corbett (1979), Franck, Lassis, Frauenfelder and Rizzi (2006), Koopman (2003) and (2006), Manzini and Savoia (1998), Moravcsik (1978), Park (2006) and Samek-Lodovici (2002), among others.[2] The following data from the Italian dialect of Ancona and French illustrate the generalization:

(4)   Italian Dialect of Ancona
   a. Questo, lo   f*a*   / *f*anno* sempre i   bambini.
      thisACC itACC does / do   always the children
   b. Questo, i   bambini lo   f*anno* / *f*a* sempre.
      thisACC the children itACC do   / does always (Cardinaletti 1997a: 38-9)

(5)   *French*
   a. Jean a   v*u* / *v*ue*   la fille
      Jean has seen / seen.AGR.FEM the girl
      'Jean saw the girl.'
   b. Quelle fille Jean a(-t-il) v*ue*   / *v*u*?
      which girl Jean has-he seen.AGR.FEM / seen
      'Which girl did Jean see?'
   c. Cette fille a   été v*ue*   / *v*u*
      this   girl has been seen.AGR.FEM / seen
      'The girl was seen.' (Boeckx 2004: 23)

A number of languages, some of them genetically unrelated, follow this pattern, e.g., Arabic, Hungarian, and some African languages (see Samek-Lodovici 2002 for an overview), a fact that provides further evidence for the validity of the above generalization. Such facts have played a prominent role in syntactic theorizing because they provided and argument for the role of Spec,Head relations (cf. Kayne 1989).

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[2] For the time being I abstract away from anti-agreement effects, which are dealt with in section 1.4. Also, note that not every language shows such Agreement Asymmetries: some languages show overt Agreement irrespective of the precedence relations between the P and the G, others show no overt Agreement, etc. The existence of language-particular variation is beyond question. Still, the correlation in (1-3) seems to be robust, a fact that we would like to explain. Therefore, I do not take such crosslinguistic variation to question the relevance of such observation and, consequently, the general approach explored in this paper.

(6) *Spec,Head relations*

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                XP
              /    \
           DP        X'
           ↑        /  \
           :      X      ...
           :......:
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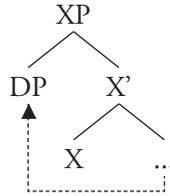
Within an approach to syntax which assumes grammatically significant Spec,Head configurations, the relation between the P and the G at the point of Spell-out is different in the in situ and the movement counterparts. Hence, it is natural to consider the Spec,Head relation the domain of (morphological) agreement (Kayne 1994) at least in the relevant languages. In keeping with this view, related discussions in the literature provide evidence for such grammatically significant Spec,Head relations both in theoretical and experimental research (e.g., Koopman 2003 and 2006 and Franck, Lassis, Frauenfelder and Rizzi 2005, respectively among others).

In contrast, the picture changes once one assumes Long Distance Agreement (Chomsky 2001, etc.).

(7) *Long Distance Agreement (LDA)*

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                X'
              /    \
           X    ...    DP
           :..........:
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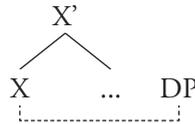
Within such a system, there is no distinction between the moved and the in situ version in terms of the relation of P and G at the point of Spell-out: things move or do not move but the relation between P and G is the same no matter what. Therefore, such Agreement Asymmetries do not follow from the system, in contrast to an approach in terms of grammatically significant Spec,Head configurations or checking under m-command.

In fact, as Chomsky (2005: 13) states, as the role of Spec,Head relations is diminished, this calls for a reconsideration of a number of issues, Agreement being among the most relevant ones. Recent attempts to do so are discussed in the next section.

1.1. Previous approaches within the phase-based LDA framework

The literature includes (at least) the following attempts to deal with the above agreement facts within the LDA-based system:[3]

   i. the data are not a reflex of the Spec,Head relation but of the way this configuration is established: internally Merge as opposed to external Merge (Chomsky 2004)
   ii. Spec,Head configurations allow for local licensing, which is more direct than LDA, a fact reflected in the morphology. E.g., in the case of subject licensing

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[3] Still another approach is to reject LDA and adopt a generalized Spec,Head analysis of (all) agreement configurations (Koopman 2003). This entails a radical readjustment/reconsideration of a number of standard structures and derivations. As a consequence, I abstract away from this possibility.

in English existentials, LDA between T and the subject takes place indirectly via agreement between T and the head of the VP phase which in turn, has agreed with the subject. This indirect agreement would be forced by the Phase Impenetrability Condition.[4] In contrast, elements that end up in a Spec,Head configuration agree directly with the Probe when escaping the VP phase (Legate 2005)

iii. the data follow from the properties of expletives present in the in situ counterparts and absent otherwise (Cardinaletti 1997b)

iv. rich agreement in the movement counterpart correlates with the presence of an (optional) agreement projection, absent in the case of the in situ counterpart (Boeckx 2004)

v. Spec,Head configurations entail double-checking the relation between the Probe and the Goal, hence their stricter agreement requirements (Frank, Lassi, Fraudenfelder and Rizzi 2005)

Although these approaches are interesting, they seem to have some limitations. Specifically, (i) seems to be a coding trick rather than an explanation. In turn, (ii) faces the challenge that such agreement asymmetries do not seem to correlate with the opacity effects caused by the Phase Impenetrability Condition (PIC). For example, in situ subjects of transitive verbs are available for direct agreement according the PIC and, nonetheless, might correlate with poor agreement in certain languages (cf. (4)). Similarly, with regard to (iii), it is worth noting that the Agreement asymmetries under discussion are found in contexts where the presence of expletives is implausible (e.g., internal to DP's or PP's as shown by Hornstein et al. 2006: 119). As a consequence, an analysis contingent on such elements (Cardinaletti 1997b), though relevant, is not general enough to capture the paradigm. As to (iv), it is at odds with the rejection of agreement projections within the minimalist enterprise and seems slightly ad hoc. Lastly, the solution in (v), even though it would generate the data correctly, does not provide any explanation of how such a Spec,Head checking mechanism would work in the context of the conceptual arguments made by Chomsky (2005, etc.) against this checking configuration (see below). The purpose of the next section is to address this concern, showing that Spec,Head configurations can indeed be grammatically significant.

1.2. Phase-based syntax allows for grammatically significant Spec, Head relations

According to Chomsky (2000-2006), the licensing of in situ Goals takes place via LDA. It is not clear how this approach can be made compatible with crosslinguistic tendencies for moved elements to trigger agreement as opposed to in situ elements, in spite of the fact that the literature includes a number of approaches to this issue

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[4] According to the *Phase Impenetrability Condition* (PIC), in a phase α with head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations; the domain of H is the sister of H, and the edge of H is a hierarchy of one or more Specs (Chomsky 2000: 108).

(cf. the previous section). In this section, it is argued that there can be checking relations in the Spec,Head configuration, though not the regular probing of the Spec by the Head under m-command.

The point of departure of this proposal is Chomsky's (2005: 13) observation that 'for minimal computation, the Probe should search the smallest domain to find the Goal: its c-command domain. It follows that there should be no m-command, hence no Spec,Head relations, except for the special case where the Spec itself can be a Probe.' As argued already, the agreement paradigms above remain cryptic under this approach, because Spec,Head relations are not allowed into the system.[5] Still, according to Chomsky (2005a: 13, cf. the quote above), Spec,Head relations can exist provided that the Specifier qualifies as a Probe.[6] It is unclear in which contexts Specs would qualify as Probes. At least the following proposals found in the literature are relevant:

   i. Uriagereka's (1999) Multiple Spell-out
  ii. Epstein & Seely's (2006) approach in terms of XP → X' demotion
 iii. Starke's (2001) framework

Chomsky characterizes Probes in the following way:

   i. Probes are/have uninterpretable features (e.g., Chomsky 2001: 6)
  ii. only heads can be Probes (e.g., Chomsky 2004: 109)
 iii. only phase-heads drive operations (e.g., Chomsky 2005a: 11)[7]

Under the assumptions that (a) arguments bear uninterpretable case features and (b) arguments are phases (e.g., they have a phase head capable of driving operations), it follows that arguments in Specifier positions can be Probes.[8] The only condition missing is that Specs would have to be heads. Fortunately, Uriagereka (1999) provides strong conceptual reasons in favor of this view.

Uriagereka's (1999) Multiple Spell-out proposal addresses some shortcomings of the Linear Correspondence Axiom as originally formulated (Kayne 1994). In Uriagereka's proposal, all Specs would be heads (cf. also Gelderen 2004 for relevant discussion). For current purposes, this would mean that Specs would qualify as Probes and, consequently, Spec,Head relations exist/may exist in the system. Why? Chomsky's argument against this is that checking would take place under m-command as opposed to c-command (cf. fn. 6 and related discussion). However, once

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[5] In fact, related questions would arise for any Specifier that is expected to participate in a checking relation with the head that does not c-command it (e.g., subject specifiers in need of a theta role or certain phrases generated in situ in A-bar positions). I abstract away from these issues in order to focus on agreement. Nonetheless, the present proposal would also be able to address such concerns.

[6] Cf. also Chomsky (2005b: 14) or Chomsky's (2004: 114) analysis of externally merged expletives, where the expletive probes the head of the projection hosting it.

[7] Needless to say, following Chomsky's framework, I am assuming a label-free system (Collins 2002) though I might occasionally use these for the sake of explanation. Furthermore, I assume that X'-projections are inert for syntactic purposes.

[8] Cf. Chomsky (2001: 14) for evidence that DPs are phases and cf. Soltan (2003) for evidence concerning PPs. Cf. also Hornstein (1995) for independently motivated arguments that PPs have uninterpretable features (other than those valued by their arguments).

one adopts Uriagereka's proposal, Specs can be shown to fulfill the three features that define Probes within Chomsky's system. As a consequence, the Spec can probe the head of the projection under c-command, not m-command.[9]

Next, I would like to discuss two other approaches, those of Epstein and Seely (2006) and Starke (2001). According to Epstein and Seely, at the time a Spec merges with the unit formed by the head and its complement, the following happens: right before merge of the Spec and the rest of the structure takes place, the unit formed by the head and the complement is a maximal projection in that it has projected as much as it can given the situation. According to Epstein and Seely, this makes the unit an XP as opposed to an X'. An X' is inert for the purposes of syntax, but an XP is not. Given that at the point the Spec is merged with the rest of the structure, such structure is an XP, this XP can establish an active (checking) relation with the Spec. Afterwards, this XP becomes an (inert) X'; but a relation analogous to the Spec,Head relation has already taken place. Aside from the fact that on conceptual grounds, this XP $\rightarrow$ X' demotion seems questionable, this (temporary) XP would not be a head and as such would not qualify as a Probe under the framework I am assuming.

Starke (2001), in turn, denies the existence of Spec,Head relations but allows Spec's to probe the structure. This approach sharply departs from the framework adopted in this work, and, most importantly, it is unable to deal with the fact that across languages moved elements tend to trigger rich agreement as opposed to in situ ones (cf. Starke 2001: 170). Given that such facts will play a major role in the argumentation below, I do not adopt this framework.[10]

To sum up, Uriagereka's (1999) proposal that Specifiers are heads allows Specifiers to function as Probes. This is the case because within such frameworks Specifiers have all the features of a Probe, as defined in Chomsky's work. According to this view, Probes are defined as follows:

    i. Probes are/have uninterpretable features (e.g., Chomsky 2001: 6)
    ii. only heads can be Probes (e.g., Chomsky 2004: 109)
   iii. only phase-heads drive operations (e.g., Chomsky 2005a: 11)

Note that a Spec might probe a head and, nonetheless, that very head would label the resulting structure. I take this not to introduce a new assumption, but rather to follow from independent factors, namely, the subcategorization restrictions imposed by the head that would merge with the resulting structure. In fact, such restrictions might in certain cases allow/force the Spec that is probing a head to label the structure. (See Chomsky 2005: 12 and references therein for discussion).

To sum up, the LDA mechanism, a hallmark of phase-based syntax (Chomsky 2000-2006), fails to provide a proper understanding of agreement asymmetries

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[9] A priori it would seem that Uriagereka's Multiple Spell-Out would wrongly predict that in situ specifiers are islands. The reader can read Uriagereka (2002) and Hornstein (2005) for analyses on how to avoid such problems in spite of the claim that Specs are heads.

[10] Note that any approach that tries to argue that external merge (as opposed internal merge) allows for a checking relation between a head and a specifier-to-be misses the point that probe-goal relations are contingent on c-command/hierarchical structure. A head and a specifier-to-be do not qualify for such probe-goal relations and, as a consequence, cannot establish a checking configuration.

across languages. This section has shown how such facts can be reconciled with the phase-based framework under the assumption that under certain circumstances Specifiers can be heads (cf. Uriagereka 1999 and 2002) and that Probes are heads (Chomsky 2004: 119). Under this scenario, it follows that Specifiers can be Probes, as suggested, for instance, by Chomsky's (2004) analysis of externally-merged expletives. In this way, we can successfully address the puzzle that agreement paradigms across languages pose for the phase-based-system.

In the next section, some remaining issues concerning agreement are addressed. Specifically, the regularities in Agreement paradigms previously noted are reconsidered from the point of view of the computational dynamics of the interfaces, more specifically, from the incremental nature of the parser/production system (Levelt 1989) and its interaction with the syntax (e.g., Bock et al. 1992, Phillips 1996 and Ferreira 1996).

1.3. On the role of Incrementality in Agreement paradigms

With regard to regularities in Agreement paradigms across languages, it has been argued that such data provide evidence for the redefined Spec,Head relations proposed above. Nonetheless, one piece of the argument is missing. The above technology allows for 'rich' agreement under (local) Spec,Head configuration. A remaining question is, what underlies the existence of 'poor' agreement under LDA? Agreement is Agreement, whether local or long-distance in nature. Why would languages have a tendency to adopt the patterns in (1-3) as opposed to other possible patterns? This section focuses on this issue by discussing the role of Incrementality in the paradigm.

Recent research has provided evidence for:

  i. the fact that overt agreement is a PFish/morphological phenomenon, not a syntactic one (e.g., Bobaljik 2004 and Sigurδsson 2006)
 ii. the incremental nature of production (e.g., Bock et al. 1992, Phillips 1996 and Ferreira 1996)

According to the Principle of Incrementality 'different levels of processing can work on different pieces of an utterance at the same time. Thus, the phonological encoder can work on the early part of the clause while the syntactic encoder works on filling out what remains' (F. Ferreira 2000: 28; see also V. Ferreira 1996, and Schriefers et al. 1998, Levelt 1989 or Phillips 1996). This allows for fast/efficient computation in the sense that the production system does not have to wait for all elements of the sentence to be available before beginning the utterance. The syntactic framework that captures the incremental nature of production most naturally is Left-to-Right Syntax (Phillips 1996).[11] I will adopt this framework for the sake of exposition, though see below for an alternative compatible with bottom-up syntax.

Within the said framework, Agreement is computed from left-to-right (e.g., Phillips 1996, Legate 1999) and the top of the tree is assembled/made available earlier

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[11] See Drury (2005), Guimarães (2004), Phillips (1996 and 2003), Richards (1999 and 2003) for syntactic evidence in favor of this framework.

than the bottom of the tree. Arguably, this state of affairs conspires to derive the above agreement asymmetries, an idea that goes back to Barlow (1992). Specifically, in the P-G order the production system works on P irrespective of whether the rest of the sentence has been coded or not, so as to allow for fast(er) production (cf. Phillips 1996).[12] Nevertheless, a P showing morphological/rich agreement cannot be uttered until G has been coded, because agreement causes P to "wait" for G to become available. Only then can P be spelled-out. Inasmuch as such a "wait" goes against the spirit of incremental production, one option to avoid it is to drop agreement markers or adopt default agreement.

In turn, in the G-P order (that is to say, in the Spec,Head configuration), the 'wait' for G takes place anyway because it precedes P. Hence, there is nothing to be gained by dropping agreement markers.

Notice that the uncontroversial assumption that production is incremental in nature together with the redefined Spec,Head relations posited above correctly derives the relevant paradigms.

Let's see how the proposal works with the data in (4). The crucial factor is whether the element triggering the agreement is already available in the structure or not, at the point that the element carrying the overt agreement morphology is hit.
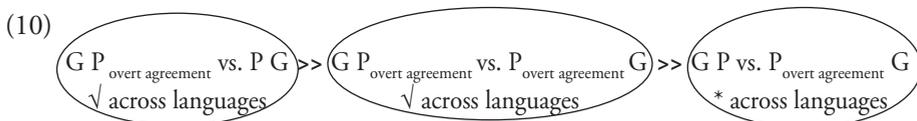
(8)   Course of production of (4)a
        Questo – available for production
                lo – available for production
                    fa(no) – production contingent on the availability of the subject
                        → wait or adopt default
                    ... Agreement.

(9)   Course of production of (4)b
        Questo – available for production
                i bambini – available for production
                        lo – available for production
                            fanno – subject is available so default Agreement is unnecessary
                            ...

Notice that if overt Agreement is computed in a separate operation (completely different from LDA) after syntax (Bobaljik 2004) in the spirit of Distributed Morphology framework (Halle and Marantz 1993), this approach would be compatible not only with left-to-right syntax but also with standard bottom-up syntax. Assuming that such a computation of overt Agreement is incremental and that Spec,Head relations can indeed exist in the cases under discussion, we can derive the mentioned Agreement Asymmetries within the LDA framework (Chomsky 2000-2006).

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[12] Cf. the crosslinguistic tendency for old information to come before the new information, in keeping with the idea that optional movement is related to surface semantics effects (Chomsky 2001 etc.).

Going back to the observation in (1-3), the present approach suggests the following ranking among Agreement patterns, from the most advantageous system in terms of Incrementality to the less advantageous one.

(10) (G P $_{\text{overt agreement}}$ vs. P G) >> (G P $_{\text{overt agreement}}$ vs. P $_{\text{overt agreement}}$ G) >> (G P vs. P $_{\text{overt agreement}}$ G)
        √ across languages   √ across languages   * across languages

Given this, the system at the bottom of the ranking should be fairly uncommon if it exists at all, as seems to be the case.

Finally, it is worth mentioning that within the context of this research, crosslinguistic variation regarding agreement (and lack of thereof) with in situ elements comes from the fact that the strategies of the parser/production system are defeasible: e.g., central embedding in English is disfavored due to its costly nature, but it is not banned by the parser/production system. In this sense, the present approach succeeds in providing a rationale for the existence of the paradigms under consideration. The choice to follow the most incremental pattern or to 'defeat' the strategies of the parser/production system would be a language-particular matter.[13]

Next, I discuss one remaining issue, anti-agreement effects.

1.3.1. A note on anti-agreement effects

As far as anti-Agreement effects are concerned, A'-moved subjects may fail to trigger overt agreement in a number of languages in spite of the fact that they precede the subject:

(11) Quante   ragazze gl'h*a*   / *h*anno* telefonato?
       how-many girls   GLI has/ *have   phoned? (Campos 1997: 94)

Note that within the current framework T is not in itself the locus of Case, Agreement or EPP features, rather the C/T complex is (e.g., cf. Chomsky 2004 & 2005). Hence, A'-moved elements in C can not only interact with EPP or Agreement features, they are indeed predicted to do so as in the above example (cf. Chomsky 2004: 116 for related discussion on the effects of successive cyclic A'-movement in the agreement system headed by C and, crucially, also on the agreement system headed by T). In that sense, Anti-Agreement effects are part of the system and the claim that overt Agreement is computed incrementally is not at odds with such effects.

1.4. Interim summary

It has been shown how evidence for grammatically significant Spec,Head relations can be accommodated within the phase-based Long Distance Agreement

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[13] With regard to unbalanced coordination, in a number of languages such facts are found in the G-P order (Johannessen 1993), a fact incompatible with the current analysis. Furthermore, the contrast between full agreement and first/second conjunct agreement affects interpretation in some languages, (e.g., binding possibilities, see Aoun, Benmamoun and Sportiche 1994 among others), a fact at odds with a treatment of the phenomenon in terms of incrementality considerations.

framework (Chomsky 2000-2006). Specifically, Specifiers have been argued to be heads (cf. Uriagereka 1999) that, as such, can establish a Probe Goal relationship with the head of the projection hosting them. This relation would fulfill the minimalist desiderata of minimizing computations by restricting probing to c-command domains. The differences in agreement morphology found across languages depending on whether the Probe Goal relation is established locally (cf. Spec,Head relation) or long-distance (LDA) are explained by claiming that:

  i. Agreement Asymmetries are not a purely syntactic phenomenon as suggested by recent research (Bobaljik 2004 and Sigurδsson 2006)
  ii. Incremental production (e.g., Bock et al. 1992, Phillips 1996 and Ferreira 1996) conspires to derive the Agreement Asymmetries mentioned above

The discussion so far has illustrated how a close inspection of the properties of the parser/production system can inform linguistic research on morphological agreement. The purpose of the next section is to provide still another instance of such fruitful perspective by focusing on the relationship between movement and semantics.

2. On Incrementality and the duality of Merge and Semantics

The goal of this section is to consider the duality of semantics and its relationship to movement. According to Chomsky (2006: 8), 'the two types of Merge correlate well with the duality of semantics that has been studied from various points of view over the years. EM [External Merge] yields generalized argument structure, and IM [Internal Merge] all other semantic properties: discourse-related and scopal properties.' Nonetheless, Chomsky (2006: 8) notes that the correlation is not perfect, whereas Chomsky (2004: 11) acknowledges that the correlation is not a logical necessity. Therefore, a question suggests itself: why is the mapping between Merge and Semantics this way? It will be argued that Incrementality helps explain the said mapping.

2.1. On Incrementality and the Duality of Merge and Semantics

As stated above, Incrementality allows for fast/efficient computation in the sense that the production system does not have to wait for all elements of the sentence to be available before beginning the utterance. Given that narrow syntax is assumed not to encode order (e.g., Chomsky 1995 & 2005, following Reinhart 1979), word order differences might result from Incrementality. For instance, old information would become available earlier than new information and, therefore, the former would precede the latter in surface order. This view is supported by the following facts:

  i. this crosslinguistic tendency seems to be robust, as frequently noted
  ii. there is experimental evidence in favor of this view, (cf. V. S. Ferreira and Yoshita 2003 study on Japanese scrambling or Wind Cowles 2003)

Say this is right: it follows that word order variations, which we currently analyze in terms of movement, are closely related to the old vs. new information dichotomy.

Arguably, this can serve as a trigger causing the association between Internal Merge and surface semantics (assumed to form a natural class encompassing but not limited to the given-new ordering). It could be the case that the child acquiring language is sensitive to this trigger (present in spontaneous language production of the child itself and of its parents; cf. the above references to experimental work) or else this trigger might have caused the grammaticalization of the said relationship between Merge and Semantics in the history of particular languages. Once this relationship is grammaticalized, for sure, the child would be able to find evidence for it in language production.[14] Support for this view (and for previous claims concerning Agreement) comes from the following considerations:

    i. language processing *is* Incremental (F. Ferreira 2000; V. Ferreira 1996, Schriefers et al. 1998, Phillips 1996 a.o.)

   ii. There is no such a thing as a mechanism of Incrementality that needs to be justified, rather the computational dynamics of language allow for Incrementality

  iii. The only 'technology' that this approach relies on, Incrementality, is a source of optimality and efficiency within the system, in keeping with the Minimalist emphasis on such concepts

Given this scenario, how did languages get to be divided into those that express surface semantics via movement (say, Spanish) and those that show surface semantics in situ (say English)? Assuming Bever's (2006) preference for canonical surface forms, a preference related to general cognitive principles, languages would have a choice to make this peculiarity of old information appearing first canonical or else make canonical any word order that arises in informationally neutral contexts. In turn, whenever we do not see such mapping (e.g., whenever movement takes place but this does not correlate with surface semantics), there is a third factor involved, namely, the fact that surface semantics is subject to economy. Hence, only optional movement would show surface effects (cf. the view that an optional rule can apply only when necessary to yield a new outcome; Chomsky 2001: 34, following Reinhart 1997 and Fox 1995, 2000).

If this view is on the right track, the mapping between the duality of merge and the duality of semantics (Chomsky 2006) does not have to be stipulated but rather follows from the computational dynamics of the system.[15]

It is worth noting that this proposal is not committed to a particular view on the relationship between the parser and the grammar: It could be that the parser and the grammar are the same thing (Phillips 1996), a state of affairs that would be compatible with the mentioned mapping of Merge onto Semantics. Nonetheless, it could

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[14] Cf. also Uriagereka's (2006) view that mapping a more or less entangled syntax specifically to a semantics of comparable complexity is realistic, both from a developmental (learnability) and, ultimately, an evolutionary (minimalistic) perspective. The present view, while compatible with such approach, provides another piece of the puzzle.

[15] For sure there are some remaining questions. E.g, one wonders why scope is associated to movement (cf. Uriagereka 2006) or whether scrambling correlates with surface semantics or not (cf. Miyagawa 1997 & Ishii 1997 vs. Saito 1989, 1992).

also be the case that the parser and the grammar are different from one another. Under the latter scenario, even though the parser and the grammar might be different, the workings of Incrementality may serve as the trigger to associate External Merge to Edge Effects, as stated before.

2.2. Interim summary

In the last section, still another instance of the relationship between the parser/ production system and the grammar has been discussed. It has been shown that the mapping between the duality of Merge and the duality of Semantics (Chomsky 2004, 2005 and 2006) does not have to be stipulated but rather follows from the computational dynamics of the system in keeping with the stress that the Minimalist Programs puts on efficient/optimal computations.

3. General Conclusion

This research has shown that the Principle of Incrementality (e.g., Bock et al. 1992, Phillips 1996 and Ferreira 1996) allows us:

   i. to reconcile the phase-based framework assuming Long-Distance Agreement (Chomsky 2000-2006) with the fact that across languages moved elements tend to trigger agreement as opposed to in situ elements
  ii. to derive the mapping between the duality of Merge and the duality of Semantics (cf. Chomsky 2000-2006)

Furthermore, it has been shown how certain developments (e.g., Uriagereka's 1999 and 2002 theory of Multiple Spell-out) conspire to allow for grammatically significant Spec,Head configurations within the phase-based system. This is the case because conceptual arguments against such configurations (cf. Chomsky 2000-2006) do not apply to the present proposal.

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