How the reality can be compatible with the strong minimalist thesis: Interfacing, economy, and variation

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Abstract

This paper explores possibilities of implementing the Strong Minimalist Thesis (SMT) of Chomsky (2000, 2001, 2004) in the particular empirical domain of the computational system of human language (see (1)). Capitalizing on some specific approach to multiple spell-out and its interesting application to some concrete linguistic phenomena (Epstein et al., 1998; López, 2003), it shows that the 'invasion' property of a number of external modules interfacing narrow syntax in the sense of Epstein et al. (1998; see also López, 2003, and its modification in the present paper) may have certain restricting effects on one of the central assumptions of the cartography project (Rizzi, 1997; Cinque, 1999, Cinque (Ed.), 2002; Rizzi (Ed.), 2004; Belletti (Ed.), 2004) to the effect that "the interpretation is read off the syntactic configuration" (Belletti, 2004: 17), it being possible for linguistic features to enter narrow syntactic derivation at the time of spell-out, for example (López, 2003). Note that the idea of interfaces invading the syntax and assigning it 'interface' features and of the syntax coping with this situation should definitely point to that of narrow syntax (language/FL) being usable in terms of the interfaces, thus explicitly representing one of the

plausible and viable ways Chomsky's (2000, 2001, 2004) SMT may be implemented within the domain involving the computational system of human language. Interfaces (PF, LF, pragmatics, and others) have now been called 'components' rather than 'levels' since they are assumed to exist interspersed throughout the computational component, due to the adoption of multiple approaches to spell-out (Chomsky, 2000, 2001, 2004; Epstein et al., 1998; Uriagereka, 1999). I further show mainly based on López (2003) (see also Epstein et al., 1998) that interfaces should be considered to be 'invasive' (in the sense that they assign/attach linguistic features in some way to the syntactic structure under derivation at the time of spell-out; see also further development/modification of the notion throughout the present paper) rather than interpretive (the latter interpretation of interfaces having so far been standardly assumed). As for concrete analytical devices, I adhere to Chomsky's (2001) original, rigid version of the Phase-Impenetrability Condition instead of its weaker version, and make an extensive use of Chomsky's (2001) 'guiding principle,' which is called the Phase-Guiding Principle in the present paper. I also propose the standard X'-schema analysis of coordinate and adjunction structure, ConjP and AdjP constituting a strong phase, respectively. It will further be seen in the paper that the major part of parametric variation across languages should be attributed to optionality seen in optional rules/principles, the latter applying in accordance with economy, and that an 'interfacing' account of interactions between narrow syntax and various external (to it) modules/components is ensured by the SMT as a specific instance of its implementation in the domain of the computational system of human language.

1. Introduction

One of the most fascinating foundational concepts of Chomsky's (2000, 2001, 2004) Minimalist Program (MP) should be the strong minimalist thesis (SMT), and it can be said that what makes minimalism what minimalism is or should be must be the presence of the SMT. The thesis was first presented as a regulatory principle/axiom of the relationships between the faculty of language (FL) and the two interfaces (the PF and LF interfaces; the 'sign' and LF interfaces in the case of sign language, FL applying in a modality-independent manner).[1] Chomsky (2000: 96) gives his "strongest minimalist thesis" as follows:

(1) Language is an optimal solution to legibility conditions.

Chomsky (2000: 96) observes at the same time that the SMT may apply in all other empirical domains such as acquisition/learnability, processing, neurology, language change, and so on, stressing that "a system that satisfies a very narrow subset of empirical conditions in an optimal way — those it must satisfy to be usable at all — turns out to satisfy all empirical conditions." I tentatively give the SMT as it applies to acquisition/learnability, as follows (Suzuki, 2002: 17):

(2) FL is an optimal solution to language acquisition and learnability.

The main purpose of this paper is to explore consequences of applying the SMT to the empirical domains of the interfaces (PF, LF, pragmatics) and to that of acquisition/learnability. All this would amount to the claim that FL/language must make itself usable for the purposes of these domains by 'mirroring' aspects of them in ways that it is possible for it to implement.

Turning first to the case of acquisition/learnability, which will be discussed only in conceptual terms in the present paper (the reader may be referred to works cited in the paper text and *References*). I basically follow Suzuki (2002), who criticizes both Gibson and Wexler (1994) and Fodor (1998) among many others, in assuming that in order for the SMT to be satisfied in this domain, some innately specified association between a parameter and a (basically, semantic, phonological, pragmatic, or pertaining to any external module interfacing with the computational system) bootstrapping mechanism is needed, the syntactic, which is necessarily abstract given the nature of FL that is responsible for the articulation of all natural languages, being inaccessible to the child and the semantic, phonological, pragmatic, (etc.), which may arguably assumed to be accessible to the child, being instrumental in some sense in making it possible for the learner to have access to the abstract syntax/FL/language thanks to their accessible nature. Recall also that FL should be modality-independent, spoken and sign language being only the two instances of the many possible ways (perhaps, infinite, in principle) language may be expressed and realized. Helen Adams Keller's case went partly toward what might be called 'touch language,' the more elaborate example of which may be seen in

the case of Braille language, necessarily in the direction of interpretation/processing. Presumably, a number of physical (chemical, neurological, physiological, etc.) conditions pertaining to the way(s) the natural world (including human conditions) exists may have a bias in favor of/against a specific instance of modality with possible differences between processing and production. Now, the problem we are faced with now with respect to the satisfaction of the SMT is how to cope with the phonological part of spoken language in the cases of other instances of modality. Continuing to assume the general validity of the SMT, I do not think that bootstrapping association between parameters and signs is nonexistent in the case of sign language acquisition, nor that there may not exist such association in other possible cases of modality. Given the natural nature of such bootstrapping association, it should be the case that the child is born innately endowed with a set of parameter-*signifiant* bootstrapping associations for each instance of modality (in addition to such associations involving semantic and pragmatic fragments, arguably independently of the modality type involved; see the discussion below concerning the establishment of such association *before birth* between the semantics and the epistemology in connection with Minkoff, 2003; see also Petitto et al., 2004, for the case of hearing babies acquiring assign language).

As for the original SMT in (1), we will see one interesting instance of its implementation in terms of the 'invasive' property of external modules interfacing narrow syntax (see Epstein et al., 1998, López, 2003; see also further modification of the original proposal below), observing further that these considerations may have interesting implications for the validity of the so-called "cartography project" started with Rizzi (1997; with a special emphasis on the left periphery of the

clause). Specifically, one of the most important cartographic claims that "the relation between syntax and the interpretative interface (LF) is expressed in an optimally simple way: the interpretation is read off the syntactic configuration (Belletti, 2004: 17)" will be called into question, and it will be shown, given multiple spell-out (Chomsky, 2000, 2001, 2004; Epstein et al., 1998; Epstein and Seely, 1999, 2002; Uriagereka, 1999), that the 'invasive' property of interfaces (Epstein et al., 1998) as implemented in López (2003),[2] for example, may make it unnecessary to have in place all the syntactic heads and projections corresponding to each interpretation by identifying their particular place in the clausal structure as a narrow syntactic configurational property. (Actually, I will argue below that it may be one of the defining properties (i.e., its usability) of the computational system that it is receptive in its nature of certain elements (linguistic features such as [+presuppositional], [+contrastive], and so forth which narrow syntax's EPP and the Spec associated with it receive, e.g., in the case of López, 2003) of 'invasive' interfaces, thus satisfying Chomsky's (2000) original SMT (1), defining one of the ways the SMT functions (i.e., through interface invasion at the time of (multiple) spell-out), and explicitly indicating one of the ways language/FL/the computational system of human language can be usable in regard to interface legibility conditions.) Recall that Chomsky's (1995) main reason for discarding Agr heads and projections from the grammar altogether as part of the inventory of syntactic descriptive devices has largely been because of their uninterpretability (hence, their disappearance at LF) arising presumably from the redundant nature of their presence in the inflectional system. Focusing on transitive ing verb constructions, Chomsky (1995: 352) observes that "there is a simple way to force overt

DP-raising without the functional category Agr: namely, by adding to
v itself a strong D-feature (...) that requires overt substitution in the
'outer Spec' of a multiple-Spec configuration," thus suggesting a possi-
ble (and, perhaps, plausible) way to ensure syntactic positions for vari-
ous elements not by creating new heads and projections, but by
capitalizing on 'outer Specs' of the already existing heads (presumably,
in conformity with economy and minimalist considerations). Chomsky
(1995: 355) further concludes the section by "eliminating Agr from UG
entirely ... and ... keeping to functional categories with intrinsic prop-
erties that are manifested at the interface levels" (though with various
further possibilities remaining to be seen).

Among the possibly problematic functional heads that Rizzi (1997)
includes in his CP periphery are Top(ic) and Foc(us), which López (2003)
and his other work prefer to exclude as possible functional heads.
López (2003: 210) proposes that those elements that Rizzi (1997) would
assume to be in Top and Foc positions, in fact, occupy stacked Specs of
Fin(ite) (I will return to this later).

2. Some general discussion

Notice that Chomsky (2004) seems to want only two factors to
exist in FL at the time of birth (i.e., S_0): things due to interface condi-
tions (the principled part of FL) and general properties of organic sys-
tems (presumably, pointing to principles of efficient computation that
the computational system of human language has incorporated into it),
thus leading to his (2004: 106) 'extremely strong minimalist thesis
SMT.' And Chomsky (2004: 105, 106) mentions in connection with the
discussion of FL (i.e., S_0) ingredients something like "others that

remain unexplained at this level of analysis and must be attributed to something independent: perhaps path-dependent evolutionary processes or properties of the brain that remain unknown" or "a residue to be accounted for in other terms." I would assume that at least part of this 'unexplained' category may be due to neurology and physiology factors, pertaining to the presence of the critical period or the sensitive period in the development and acquisition of biological competences. (See Suzuki, 2001 for an interesting application of these considerations to the possible explication of differences between first and second language acquisition. They are assumed there to roughly be restricted to the acquisition of the lexicon, and neurological and physiological factors which emerge within the critical period seem to greatly contribute to the 'rapid' learning of words in L1 acquisition, for example. How parameter 'resetting' in L2 acquisition may be implemented is an unsolved problem, inviting basically two approaches to it: either in the same fashion as L1 acquisition or through some instance of 'general learning strategy.' Discussing triggers for parameter setting and capitalizing on the notion of bootstrapping, Suzuki (2002) proposes bootstrapping for parameter setting trigger and suggests that UG associate every parameter with a bootstrapping mechanism, thus hoping to satisfy the SMT in the domain of acquisition/learnability. Although (ever-changing) FL is in us throughout our life, it may be doubtful if the kind of UG-induced parameter-bootstrapping association above still functions enough beyond the critical period for L2 acquisition to proceed at least no less easily than the L1 acquisition case. Indeed, widely observed cases of the difficulty of L2 acquisition of typologically remote and diverse languages (e.g., the case of Korean-speaking learners of English) may lead one to conclude that FL/UG

must not be involved in L2 parameter 'resetting,' departing from the critical period, presumably, making it difficult in gradual terms for the learner to detect and recognize relevant parameter-bootstrapping associations and general learning strategies, in turn, taking the place of the UG-induced mechanism.) Roughly speaking, the two factors constituting FL, the IC (interface condition) part and general properties (physical, chemical, mathematical), can be said to correspond to substantive and formal universals in the sense of Chomsky (1965), respectively (Suzuki, 2003: 5-8).

Turning to the Agr problem, it should be quite easy to see that if Agr lacks interpretive content (on the LF side, in this case), its presence cannot be due to interface conditions, and it may be extremely difficult to prove that either general properties of organic systems (principles of computational efficiency) or the unexplained FL part (see its desirable absence due to the SMT) do require the presence of a thing whose existence has already been observed to be redundant in the domain where it should exist.

Emphasizing the distinction between the case of Chomsky's (1995) abandonment of Agr heads and projections, where the issue is Agr's possible uninterpretability arising from its redundancy, and the case of such inflectional heads as mood, tense, aspect, voice, and so forth with a clear interpretive content and of such left peripheral heads as force, finiteness, topic, and focus with certain interpretively relevant properties, Rizzi (2004) stresses that the latter case easily satisfies the requirements of minimalist analysis, pointing to the kinship to core ideas of minimalism of the cartographic project that is largely driven by a fundamental intuition of simplicity. Rizzi (2004: 7, 8) goes on to observe that "complex structures arise from the proliferation of extremely

simple structural units," and that "natural language design favors local attribution of single properties and is prepared to pay the price of multiplying the occurrences," but while these remarks may generally be on the right track, they may not necessarily lead to "..., along with a very rich articulation of functional structures." Moreover, I would assume that minimalist assumptions require the smallest possible number of functional heads in this case as well, in spite of the surface presence/proliferation of various functional heads and projections. (This will make it necessary to capitalize on (multiple) Specs of already existing functional heads whose configurational/structural presence is well-established in the literature. Perhaps one of the most urgent issues is how to secure the observed surface order of relevant functional elements without the explicit articulation of functional structures in minute details of the cartographic sort, to which I return below.).

In terms of his parameter-bootstrapping association approach to learnability, Suzuki (2002) introduces the notion of EPP-parametrization (i.e., a maximally generalized version of the EPP encompassing a large class of parameters associated with the EPP-feature that regulates the possibility of the realization of various functional positions (both X^0 and XP)), adopting the framework of Cinque (1999) for its implementation. Drawing primarily on Rosengren (2002), which is an attempt to establish that the EPP is a syntactic device in the service of semantics, and reinterpreting Rosengren's work the other way around so as to make use of various accessible interpretational pieces of information that can arguably be gained from parsing/processing on the part of the learner for the purposes of setting various EPP-parameters on the basis of UG-provided associations between semantic bootstrapping mechanisms (on condition that

the learner be able to identify and recognize relevant interpretational information that she is accessible to) and relevant EPP parameters, Suzuki (2002) tries to establish a learnability framework on the basis of the UG-provided parameter-bootstrapping association partly to get rid of the 'parametric ambiguity' problem arising from the Gibson and Wexler (1994) approach to learnability in a way other than Fodor's (1998). Since the kind of semantic information gained from parsing on the part of the learner may derive from the relevant surface position in a way to determine that that position should receive the interpretation in question and that hence, it should be EPP-licensed, the issue here is how to get over the problem of the decreased transparency between positions and interpretations induced by making use of multiple Specs of a single head with a certain interpretive property for the purposes of more than one interpretation, to which I also return below.

3. Interfaces as 'invasive' components

Since the adoption of multiple approaches to spell-out (Chomsky, 2000, 2001, 2004; Epstein et al., 1998; Uriagereka, 1999), interfaces (PF, LF, and, perhaps, pragmatics) have generally been considered to be components of some sort rather than (single) levels. (More precisely, "the language L generates a set of derivations. The last line of each derivation D is a pair <PHON, SEM>, where PHON is accessed by SM (the sensorimotor system) and SEM by C-I (the conceptual-intentional system). D converges if PHON and SEM each satisfy IC (interface condition)..... Assume further that L has three components: narrow syntax (NS) maps LA (lexical array) to a derivation D-NS; the phonological component Φ maps D-NS to PHON; the semantic component Σ maps

D-NS to SEM" (see Chomsky, 2004: 106-107). Chomsky further assumes the presence of the operation TRANSFER that applies to the narrow-syntactic derivation D-NS: "TRANSFER hands D-NS over to Φ and to Σ," which I call 'spell-out' in the present paper. PHON and SEM are interfaces, and Φ and Σ are components, according to Chomsky, 2004. Overall I use the terms PF, LF, and pragmatics in this paper, referring ambiguously either to interfaces or to components, as long as the context remains clear. So, for example, it should be the components, but not the interfaces, that are assumed to be 'invasive,' although I may casually use the term 'interface' instead of 'component' on innocuous occasions. See below.) On the other hand, they have so far been standardly assumed to be interpretive.

I show mainly on the basis of López (2003) (see also Epstein et al., 1998) that interfaces should be assumed to be 'invasive' rather than interpretive, given some ways in which PF/LF/pragmatics and the syntax interact at the time of spell-out for some interface properties to enter the syntax, such properties being carried along throughout the syntactic derivation (Boskovic, 2001 for PF-related cases; Legate, 2003 for a PF-related case; López, 2003 for pragmatics-related cases; López and Winkler, 2003 for a LF-related case, albeit in a somewhat different instance of implementation). According to López (2003), for example, the pragmatic interface provides the syntactic structure with linguistic features such as Topic and Focus, presumably in order for the syntax to be able to express a number of things, rather than interpret syntactic structures in terms of relevant linguistic features (Topic, Focus, etc.). Note that in the latter standard case the linguistic features may derive either from the interpretive component (in which case LF may have to read syntactic structures to determine which interpretation to

assign to which syntactic position) or from the syntactic structure (which situation may correspond to that pertaining to approaches in the cartography project framework and must have LF read syntactic structures to know which position has which interpretation). You see easily that it is quite difficult to deny that either way has a strong representational flavor, and the situation does not seem to be remedied by relying on phase-wise approaches to multiple spell-out (Chomsky, 2000, 2001, 2004) or even on application-wise approaches to it (Epstein and Seely, 1999, 2002), because the very way of reading structures remains unchanged. Presumably, the method may remain representational however small the relevant structure is. In contrast, the 'invasion' approach to the syntax-interface interaction should necessarily be derivational, indeed, derivational even in the strongest sense, since there exist no syntactic structures to read and it can be said that it is inherently derivational in that very sense.

Recall that Chomsky's (2000, 2001, 2004) strong minimalist thesis states that "language is an optimal solution to legibility conditions." Given the long-standing organization of the grammar (e.g., that of early minimalism still having a Y-model flavor) or given even the most recent organization involving the mechanism of multiple spell-out, constant observations that the SMT has a global flavor seem to have a certain amount of warrant. In the case of Y-model grammars, interfaces having the relevant legibility conditions are assumed to be far ahead of narrow syntax in terms of derivational processes, inviting the usual concern over 'look-ahead.' Almost the same sort of concern may arise in the case of multiple spell-out grammars as long as the interfaces are interpretive. Notice the difficulty or the near impossibility of having a syntactic element have an interpretation that can match that

assigned to it by the relevant interpretive interface somewhere far ahead in the derivation, unless you resort to some method of cartographic approaches, where every syntactic head and projection have an interpretive label on it (to which framework I return below). It is now crystal clear that the 'invasion' approach does not bring about any such concern over globality, given the almost inherent (in this sort of approach) transparency between structure and interpretation: i.e., structure and interpretation become one and the same thing in some sense when the latter is assigned/attached to the former through 'invasion.' The approach seems to give perhaps the easiest and least forced method for implementing the SMT. (It may be interesting to note that it may be the very presence of the SMT that ever makes it possible to formulate cognitive grammars, semantic grammars, functional grammars, etc., particularly given the transparency above between structure and interpretation (semantic, phonological, pragmatic, perhaps even epistemological, etc.) Indeed, it may even be possible to formulate a grammar or grammars in terms of every empirical domain that can 'interface-connect' to narrow syntax and hence 'invade' it in the sense of López, 2003 and Epstein et al., 1998. But such grammars may only be able to go halfway to the truth/fact of language. See more on this below.)

Note that Fodor (2000) makes an interesting and important distinction between local and global mental processes, the former having the properties that they are quite compatible with Turing's theory that thinking is computation, that they are largely modular in nature, and that much of their architecture is innately specified (see below; it might be speculated that (part of) global processes that do not have the properties mentioned may have a lot to do with the so-called 'general

learning strategy').

I further speculate that FL can connect with anything that can be analyzed in the fashion of the three properties above in the sense of Fodor (2000), presumably being usable on the part of any such local mental process (including language, music, etc.) More concretely, this situation may lead to one where FL can connect with any interface: PF, LF, pragmatics, prosody (part of PF), lexicon, conception, morphology, epistemology, etc. Recall that Chomsky (2000: 96) suggests that language/FL satisfying legibility conditions in an optimal way satisfies all other empirical conditions too: acquisition, processing, neurology, language change, and so on. My speculation apparently has much to do with Chomsky's (2000) suggestion in the sense of FL being usable for the purposes of a number of empirical domains, only the former pointing to its broader application.

4. Multiple spell-out and the syntax-phonology interface

4.1. Bošković (2001)

In one of his appendices, Bošković (2001) applies Chomsky's (2000, 2001) phase-wise multiple spell-out to the analysis of certain facts concerning cliticization in coordinate structures in Bulgarian, object shift in Scandinavian, and constructions involving negative constituents in Romance, making a case against the possibility of phonological movement and against non-derivational models of the grammar. Following Chomsky (2000, 2001), Bošković assumes that CP, but not TP is a phase. And one of the relevant properties of the phase is that the structure is sent to the phonology cyclically phase by phase. Bošković (2001: 266-

269) ingeniously deals with cliticization cases in Bulgarian coordinate structures on the assumption that PF affects word order by determining which copy of a non-trivial chain is pronounced (with the pronunciation of the highest copy being the default case), given encliticization and procliticization properties at PF and Chomsky's (2000, 2001) assumption above that CP, but not IP is a phase (in regard to multiple spell-out). We see here another instance of an interface's 'invasion' property when Bošković (2001: 269) observes that "PF needs to have access to an intermediate syntactic representation." He (2001: 269-282) goes on to extend the analysis to object shift in Scandinavian and negation in Romance, thus giving two more arguments establishing yet more firmly that phonology needs to have access to intermediate syntactic structures (which is possible only in the multiple spell-out model).

We then see each of Bošković's (2001) three arguments in some detail, focusing on the exact mechanism(s) involved there in conjunction with specific interface properties relevant to the phenomena in question. After that we see Legate's (2003) case, which provides us with some interesting considerations concerning the domain where the relevant rule applies with possible implications for rule ordering. Bošković's (2001; 266-269) first argument derives from the analysis of cliticization in coordinate structures in Bulgarian, primarily based on the following pair of examples:

(3) a. I   ti   go   dade.
       and you-DAT it-ACC gave
       (And he/she gave it to you.)   (his (177))

b. I   dade li ti   go?

   and   gave Q you-DAT it-ACC

   (And did he/she give it to you?)   (his (179))

The apparent problem here is how to account for the difference between (3a,b) in positioning of pronominal clitics with respect to the verb. Adopting the minimalist copy theory of movement and the assumption that the highest copy in the chain is pronounced in the default case, Bošković (2001) observes that the phonology takes i into consideration in (3a), while it is necessarily ignored in (3b) under the assumption that CP, but not TP is a phase. The relevant structural properties of the relevant portions in (3a,b) may be as in the following, where the parenthesized portions are not pronounced:

(4) a. i [$_{TP}$ ti go dade (ti go)]   (for (3a))

     b. [$_C$ (ti go) dade+li] ti go   (dade) (for (3b))

As seen in (4a,b), the (partial) structure is represented in accordance with Bošković's (1997) approach to economy of representation (i.e., the TP structure in (4a) vs. the CP structure with *li* heading it in (4b)). Notice that in (4a) TP is not a phase, the whole structure being built without TP being sent to the phonology, and that the clitics encliticize to the preceding element (i.e., *i*) and can be pronounced in the highest position since *i* can support clitics, there being no reason to pronounce the lower copy. Turning now to (4b), the portion "ti go dade+li ti go dade" is sent to the phonology before *i* is merged since it constitutes a CP (i.e., a phase; this may be an instance of spell-out of PH in full, that is, of a root clause (Chomsky, 2004: 108)). On the assumption that pronominal

clitics are enclitics in Bulgarian (Bošković, 2001: 180), the clitics in the lower position will have to be pronounced to avoid having stranded enclitics (i.e., the highest copy of the pronominal clitics) at PF. The pronunciation of the verb follows the default case. Notice that encliticization (a PF rule which is in this case instrumental in determining which copy of the pronominal clitics to pronounce) applies to (4b) (which has been sent to the phonology by spell-out) and that after that the structure is somehow sent back to narrow syntax (presumably, with some relevant phonological treatment in place; this may be a possible instance of the implementation of interface 'invasion'), where the next syntactic derivational operation (i.e., Merge of (4b) and i) applies. The phonological properties that have been attached/assigned to the structure will be carried along throughout the narrow syntactic derivation.

Let us turn to object shift in Scandinavian. Partly based on Chomsky's (2001) criticism of Holmberg's (1999) phonological analysis of object shift and basically adopting Bobaljik's (1994) PF merger analysis of the phenomenon, Bošković (2001) gives an account of the Scandinavian object shift case seen below. But before getting on to Bošković's account itself, some explication of how Bobaljik's PF merger works may be in order (see Bošković, 2001: 118-121). Consider the following paradigmatic examples on which to base the argument (elements in parentheses being traces or unpronounced copies):

(5) a. I gær   máluthu studentarnir husith [$_{VP}$ ekki (husith)]

    (Icelandic)

    yesterday painted   the students the house not
    (The students didn't paint the house yesterday.)

b.*at   Peter den [VP laeste (den)]   (Danish)

   that Peter it   read

   (that Peter read it)

c. at Peter [VP laeste den]

d.*Hann hefur bókina [VP lesith (bokina)]   (Icelandic)

   he   has   the book   read

   (He has read the book.)

e. Hann hefur [VP lesith bókina]

According to Bobaljik (1994) who gives a verbal morphology account of the data in (5) in terms of the PF adjacency requirement that a stem and its related affix be adjacent at PF (note that in our case, the verbal element, which may correspond to the stem, enters the syntax fully inflected, as would be required by Lexical Phonology, and the related affix still must be adjacent to the verbal element at PF) and assumes that Scandinavian object shift is in principle optional, lack of V-movement in auxiliary+participle clauses (Icelandic) and embedded clauses (Danish) causes the object shift option to be ruled out due to the PF adjacency requirement above.

(6) a.*at [TP Peter T [vP den [v' laeste (den)]]]   (5b)

   b. at [TP Peter T [vP laeste den]]   (5c)

   c. *Hann hefur [PartP Part [vP bókina [v' lesith (bókina)]]]   (5d)

   d. Hann hefur [PartP Part [vP lesith bókina]]   (5e)

Consider (5b-e) with some structure added to them (6a-d). Bobaljik (1994) assumes that the relevant affixal heads here are T and Part (the participial affix) for (6a,b) and (6c,d), respectively. Notice that the

ungrammatical cases (6a,c) contain a portion of structure where the relevant affixal head (T for (6a) and Part for (6c)) and the verbal element are not adjacent to each other due to the presence of an intervening object-shifted DP in violation of the PF adjacency requirement. Then, paying attention to Diesing's (1996) observation that specific, non-contrastive definite DPs always undergo object shift overtly, while non-specific indefinite DPs cannot undergo object shift, Bošković (2001) describes how Bobaljik's (1994) mechanism can account for semantics-phonology interaction cases such as (6b,d). (6b,d) may have the following representation at some intermediate level in accordance with the minimalist copy theory of movement:

(7) a. at [$_{TP}$ Peter T [$_{vP}$ den [$_{v'}$ laeste den]]]   (6b/5c)

    b. Hann hefur [$_{PartP}$ Part [$_{vP}$ bókina [$_{v'}$ lesith bókina]]]   (6d/5e)

Bobaljik (1995) proposes that specific, non-contrastive definite DPs undergo object shift even in embedded and auxiliary+participle constructions (see (7a/6b/5c) and (7b/6d/5e), respectively) under Diesing's (1996) semantic condition above, the examples entering PF with the structures in (7a,b). (Note that Chomsky, 2001: 13-14; 2004: 107-108 may encounter an intricate, technical problem in regard to the treatment of an already spelled-out portion of the structure. Chomsky, 2001 observes that in the structure '[$_{ZP}$ Z ... [$_{HP}$ α [H YP]]]' YP is spelled out at the level HP, assuming that HP and ZP are strong phases and remarking immediately below that "the picture improves further if interpretation/evaluation takes place uniformly at the next higher phase, with spell-out just a special case," presumably intending that in the case of spell-out YP be spelled out at HP, but not that HP be spelled out at ZP.

Chomsky, 2001 further makes an important distinction between 'at ZP' and 'within ZP.' The probe T (a 'within ZP' case), for example, can access an element of the domain YP of HP, while the probe Z cannot access the domain YP when Z = C (an 'at ZP' case), for example, due to the Phase-Impenetrability Condition (PIC; see below). We are here forced to detect some technical problem with this distinction: Chomsky says that the probe T (above HP and below ZP) can access an element of the domain YP of HP. How would it be possible to have access at a later stage to an element that is contained in the domain (YP) which has already been spelled out (i.e., sent to the phonology, for instance)? Notice further that Chomsky observes that the probe C cannot access the domain YP due to the PIC, but would this mean that C can access YP in the absence of the PIC? It may seem quite natural to assume that spelled-out elements are invisible/frozen in some sense; ideally in the sense that spelled-out YP is not accessible to operations outside HP in the case under discussion (see Chomsky, 2001: 13 (7)), but phase-wise in the sense that YP is not accessible to operations at the next higher strong phase ZP (Chomsky, 2001: 14 (11); Chomsky, 2004: 108 (6)). The latter case still needs the special treatment of what comes between HP and ZP (e.g., the probe T) in view of the natural assumption that spelled-out elements are generally invisible to/frozen in regard to further narrow syntactic operations. Note that this situation may put us in danger of losing the important part of the whole empirical content of the notion of spell-out. Let us see what Chomsky, 2004: 107-108 has to say about this situation. There Chomsky introduces the new term 'TRANSFER' applying both to the phonological and the semantic components, somehow reserving the term 'spell-out' for the TRANSFER to the phonological component and maintaining the assumption that

spell-out removes from narrow syntax all features that do not reach the SEM interface (note 14). I use the term 'spell-out' in the present paper to refer to TRANSFER both to the phonology and the semantics, as I presume may be appropriate. In regard to the structure '[$_{ZP}$ Z ... [$_{HP}$ α [H YP]]],' Chomsky, 2004 observes that YP must be spelled out at HP to permit spell-out of root phrases and to allow for meaningful cyclic computation, but he goes on immediately below to remark that T, which is between HP (vP, for example) and ZP (CP), can access an element within HP (perhaps, even within the domain YP of HP), while Z can only access the edge (i.e., α and H) of HP. It is now clear that we have exactly the same special treatment of what comes between HP and ZP, as discussed above. Based on his discussion in note 19 of quirky NOM objects, which neither raise nor undergo any phonetic change in situ with their structural Case feature invisible, Chomsky, 2004 concludes that the sister of H (i.e., YP) can be spelled out at HP if properties of FL conspire to ensure that a universally invisible unvalued feature will be understood to be a morphological convention rather than an actual feature with no crash at PHON, leading to the assumption that the PIC can be formulated in terms of spell-out of the domain (sister) of the head. (See also Nissenbaum's, 2000: 189 formulation of spell-out: "Spell-out applies to the internal domain on each cycle: The spell-out property of a head H is satisfied by applying rules of phonology to the sister of H.") Although spell-out of the domain of the head (on the PF) side does not seem to bring about undesirable consequences with no crash at PHON, the situation seems to be a bit complicated in narrow syntax itself. The probe T can access quirky NOM object within vP (and hence, within VP), and when it has access to such objects it modifies their feature structure and also its own. Note that if

VP should be spelled out at vP (as Chomsky, 2004 notes and a la Nissenbaum, 2000), the probe T would be accessing an already spelled-out portion of the structure that contains actual features, unlike Chomsky's, 2004, PF-side case in note 19. And it would be quite inconvenient to allow spell-out a la Nissenbaum to apply only in one component to the exclusion of the other, the optimal design for the organization of the grammar presumably requiring that the three components (narrow syntax, the phonological component, and the semantic component) derivationally proceed in a parallel, single-cyclic fashion.) In (7a,b) we have specific, non-contrastive definite DPs (*den, bokina,* respectively) overtly object-shifted to the edge of vP in accordance with Diesing's (1996) semantic condition. Notice that (7a,b) (= (6b/5c), (6d/5e), respectively) are grammatical, with the lower copies of the relevant DPs pronounced instead of the default case where the heads of the chains are pronounced (the heads of the chains being deleted in these cases; see (6b/5c) and (6d/5e)) and with the raising of the DPs needed due to Diesing's (1996) semantic condition. We see here an interesting instance of an interaction between phonology and semantics which would only be possible under a multiple spell-out approach to the syntactic derivation, where narrow syntax somehow has an exit/entrance for each of the PF and LF interfaces at each stage of (multiple) spell-out. Bošković (2001: 121) observes based on Bobaljik's (1995) analysis that "a lower member of a non-trivial chain can be pronounced instead of the head of the chain if this is necessary to avoid a PF violation." One might worry about a certain amount of look-ahead flavor inherent in such an observation. But 'avoiding a PF violation' comes in simultaneously with the (phonological) interpretation of the examples. Following Chomsky (2001: 13-14), I assume that both spell-

out and the phonological component can proceed strong-phase-wise without checking back to earlier stages and that in the structure '[$_{ZP}$ Z ... [$_{HP}$ α [H YP]]]' an operation within ZP (but not at ZP/Z) can access an element of the domain YP of HP, the Phase-Impenetrability Condition (PIC) imposing no restriction on this.[3] Consider (7a,b) as they reside at PF. Recall that VP is spelled out at vP and TP at CP (Chomsky, 2001, 2004; Nissenbaum, 2000) and notice that at the time Bobaljik's (1994) PF merger applies at PF the VP portion should somehow be in a state of oblivion (Chomsky, 2004: 107). And the relevant stage of spell-out in this case is the strong phase CP and the root clause for (7a,b), respectively, TP being spelled out in both cases. The place where Bobaljik's PF merger applies is outside VP and inside TP, *laeste* being at v and *T* heading TP, and *lesith* being at v and PartP inside TP for (7a,b), respectively. So Bobaljik's PF merger legitimately applies between *laeste* and *T* (both outside VP and inside TP) and between *lesith* and *Part* (both outside VP and inside TP) for (7a,b), respectively (assuming that (strong) phases are relevant at PF as well). It may then turn out that the adjacency requirement imposed by the PF merger analysis on the relation between *T/Part* and the verbal element rules out the pronunciation of the higher copy of *den/bókina* in (7a,b) (presumably, by marking their higher copy for deletion in regard to pronunciation), leading to the situation where their lower copy must be pronounced. Now the problem is how it may be possible at the next higher strong phase for the phonology to access an element of the domain of the head of the lower phase. Chomsky (2004: 107) observes that "Φ is greatly simplified if it can 'forget about' what has been transferred to it at earlier phases; otherwise, the advantages of cyclic computation are lost." But here it seems that the guiding principle to the

effect that a strong phase is interpreted/evaluated at the next higher strong phase comes in (Chomsky, 2001: 14). Let us then assume that this guiding principle can void the frozen status of what has been spelled out at earlier phases as long as the earlier phase in question is adjacent to the current phase. (The guiding principle may also make it possible for the probe T to have access to an element of the domain VP, modifying its feature structure and its own. See above.) Since the higher copy interferes with the PF merger requirement, the phonology then searches the domain of the downstairs phase including the already spelled-out domain of the head of the previous phase for another copy of the same DP to pronounce, so long as Chomsky's (2001) guiding principle above is observed (see here a certain amount of last resort flavor). That is, the searching domain can only be one strong-phase down. Note that there is nothing wrong with the interpretive side since (7a,b) as they reside at LF have enough ingredients in them to satisfy Diesing's (1996) semantic condition, and that the worry above over look-ahead possibility may disappear for the time being (Chomsky's phase-wise implementation of grammatical operations being necessarily representational to that extent; I return to this below).

Let us return to Bošković's (2001) account of Scandinavian object shift itself, which heavily relies on Bobaljik's (1994) PF merger (as a specific mechanism) and multiple spell-out (as a general hypothesis concerning the organization of the grammar). In spite of the observed impossibility of (5d) (see (6c)), where object shift has applied in an auxiliary+participle construction, the example will become grammatical if the participle undergoes movement to [Spec, C] (which Holmberg, 1999 calls V-topicalization).

(8) a. Kysst har jag henne inte (bara hallit henne i handen).

Kissed have I her not only held her by hand

(Kissed her I haven't (only held her by the hand).)

b. [CP kysst [C' har [TP jag (har) [PartP Part [vP henne [v' inte [v' (kysst)

(henne)]]]]]]] (bara hallit henne i handen)

c. ... [PartP kysst [Part' Part [vP ...

(Note that the negation *inte* is adjoined to the main VP/vP in (8b), while Bošković (2001: 276) suggests based on other examples that it can also be adjoined to the VP headed by the auxiliary.) The operation which is called V-topicalization by Holmberg (1999) but can be reanalyzed as an instance of remnant VP fronting under the multiple spell-out approach (Bošković, 2001: 272-273) has applied in (8a), and (8b) shows relevant portions of the structure. Criticizing Holmberg's (1999) phonological analysis of the construction on the basis of Chomsky (2001) and adopting Bobaljik's (1994) PF merger approach to the analysis of Scandinavian object shift (see above), Bošković (2001: 272) proposes that in (8) the verbal element undergoes successive cyclic movement to [Spec, C] and that on its way to the final landing site it passes at some point through the position adjacent to the null head that it is required to (PF-)merge with (see (8c) for a instance of the implementation of this idea; the participle passing through [Spec, Part]).

Assuming that (strong) phases are relevant at PF (see above), I propose the following interactions between the syntax and the phonology at the time of the completion of the strong phase CP: first, the whole CP structure is sent to the phonology (an instance of spelling out a root phase in full, Chomsky, 2004: 108), the relevant PF merger operation applies at the relevant portion of the structure (8c), and all the

occurrences of the participle but the one in [Spec, C] are marked for deletion in regard to pronunciation in accordance with some general principle, and then the phonologically treated structure is sent back to the syntax, every effect of the phonological treatment being preserved throughout the syntactic derivation (with further interactions with interfaces at spell-out). Presumably, the idea of every effect of the phonological treatment thus obtained being preserved during further syntactic derivation may constitute a plausible case of interface 'invasion' of narrow syntax.

We then see the third argument for multiple spell-out on the basis of negation in Romance (Bošković, 2001: 277-282). Consider the following well-known paradigm from Italian:

(9) a. Gianni *(non) mangia.

      Gianni   not   eats

      (Gianni does not eat.)

   b.*(Non) mangia Gianni.

   c. Nessuno (*non) mangia.

      Nobody   not   eats

      (Nobody eats.)

   d. *(Non) mangia nessuno.

   e. Gianni *(non) mangia niente.

      Gianni   not   eats   nothing

      (Gianni does not eat anything.)

   f. Nessuno (*non) mangia niente.

      Nobody   not   eats   nothing

      (Nobody eats anything.)

The paradigm in (9) shows that negation in Italian is always phonologically realized (*non;* 9a,b) in negative constructions not containing a negative constituent, while it is sometimes phonologically realized (9d,e) and sometimes not (9c,f) in constructions containing a negative constituent (*nessuno, niente,* etc.). Bošković (2001) goes on to assume that negation in Italian is itself always phonologically null and a PF affix on a negative constituent. On the standard assumption that negation is situated somewhere between vP and TP (whether it heads its own projection or is simply an adjunct), the subject *nessuno* merges with the negation, serving as its host and satisfying its affix requirement in (9c), for example, thus accounting for the absence of *non,* which functions in the fashion of *do*-support by being inserted into the structure only when the (null) negation cannot merge with a negative constituent. Since the null negation cannot merge with a negative constituent due to the absence of such a constituent (9a,b) and due to the absence of adjacency between the null negation and a negative constituent (a violation of the PF merger requirement; 9d,e), *non* has to be inserted in these examples to avoid a stranded affix. In (9c,f) the null negation and the negative constituent in [Spec, T] are adjacent to each other, satisfying the PF merger requirement and thus making the insertion of *non* unnecessary. Consider the following, where *non*-insertion does not take place:

(10)   A nessuno Gianni (*non) dice niente.

       to no one Gianni   not says nothing

       (Gianni does not say anything to anyone.)

Notice that *non* is not present in (10) in spite of the fact that the null

negation is not adjacent to a negative constituent. According to Bošković (2001:278), the negative constituent *a nessuno* may have been adjacent to the null negation at some point of the derivation, where the structure is sent to the phonology and the PF merger of the negative constituent and the null negation can take place. In our terms, [$_{VP}$ a nessuno dice niente] is sent to the phonology at the completion of the vP phase, and [$_{TP}$ Gianni a nessuno *neg* [$_{vP}$ Gianni dice [ϕ]]] at the completion of the CP phase (*neg* standing for the null negation, *a nessuno* being in an intermediate position on its way to the final landing site, the second *Gianni* marked for deletion at PF, the ϕ portion indicating the already spelled out part, and abstracting away from possible further movement of the verb). At the time TP is spelled out and sent to the phonology, the negative constituent and the null negation are adjacent to each other, satisfying the PF merger requirement in regard to a PF affix. Note that the negative constituent further moves to its final landing site, where it is pronounced. So let us assume that which copy of a non-trivial chain to pronounce is determined after the operation of Bobaljik's (1994) PF merger for PF affixes (see the discussion below (7a,b)).

4.2. Legate (2003)

Exploring possibilities of the phasehood of vPs at PF, Legate (2003) takes up the Nuclear Stress Rule (NSR) roughly to the effect that "primary stress in English is assigned to the final stress-bearing element in the VP." Consider the following pair of examples from Bresnan (1972, "On sentence stress and syntactic transformations"; cited in Legate, 2003):

(11) a. Mary liked the proposal that George leáve.

  b. Mary liked the propósal that George left.

While the NSR applies normally in (11a), assigning primary stress to the final *leave,* the primary stress appears on the nonfinal *proposal* in (11b). According to Legate (2003), Bresnan's (1972) assumption that the NSR applies cyclically and the further assumption of the raising analysis of the restrictive relative construction (Kayne, 1994) are sufficient to account for the cases in (11). Let us see the procedure in some detail. At the completion of the embedded vP phase, we have '[$_{vP}$ George leave [$_{VP}$ leave]]' and '[$_{vP}$ proposal George left [$_{VP}$ left proposal]]' for (11a,b), respectively. At this stage VP is spelled out, being sent to the phonology, where the NSR applies (cyclically), assigning primary stress to *leave* and *proposal* for (11a,b), respectively. Actually, the VPs thus phonologically treated are sent back to narrow syntax, and the copy phonologically modified in the VP makes the other copy of the same element in the vP modified in the same manner, thus leading to the situation in which we have le'ave and propo'sal in the vP as well for (11a,b), respectively (roughly, thanks to the natural assumption that all copies of the same element share all features). But the VPs that have come back are somehow assumed to be frozen/inaccessible (in regard) to further upstairs operations (possibly, only with the exception of cases where Chomsky's, 2001, guiding principle (a sort of last resort strategy; see above) allows the lower strong phase to be interpreted/-evaluated at the next higher strong phase *for some reason,* and the determination of which copy of a non-trivial chain to pronounce (call it the 'which-copy-to-pronounce rule') being dependent on the frozen/inaccessible status of earlier spelled-out portions, thus deriving the

default case where the highest copy is pronounced and an exceptional case relying on Chomsky's, 2001, guiding principle above). Note that in (11b) *propósal* in embedded [Spec, v] further raises to embedded [Spec, C], where it retains the primary stress assigned to it at PF, giving some validity to the assumption above that the spelled-out portion that have been treated at PF has to be sent back to narrow syntax, presumably because movement can only take place in narrow syntax (see Bošković, 2001, for arguments against PF movement). I assume that the phonology consists only of its own vocabulary (phonological material alone), rules, and principles, continuing to interact with narrow syntax (proceed in a parallel fashion with it in its derivation) and to treat sent-in portions and send them back to narrow syntax at each completion of the strong phase (I omit mention of 'sending back' below, unless needed).

(12) a. Please put them/$^?$the dishes awáy.

     b. Please put away the díshes.

Here some remarks on how to apply the which-copy-to-pronounce rule may be in order. While the usual case should one dependent on the frozen status of earlier spelled-out parts (that is, all copies in frozen domains are deleted unless Chomsky's, 2001, guiding principle intervenes), there may be cases in which some notion of economy has to be resorted to. We will see a case where which copy to pronounce must be determined due to economy considerations in the sense that another operation cannot apply unless it is determined. (12b) may be a case in point. Assuming the small-clause analysis of the relation between the object and the particle and the raising of the latter to the verb

(Legate,2003: note 11), we have '[$_{vP}$ Subj put-away [$_{VP}$ put-away [$_{SC}$ the dishes away]]]' at the completion of the vP phase, the VP being sent to the phonology by spell-out. Notice that the NSR cannot apply to the VP because of the presence of more than one copy of the same element (presumably, due to the same deeper principle responsible for Kayne's, 1994, LCA, which rules out a set of terminals that contains more than one copy of the same element because of the impossibility of linearly ordering the terminals of such a set),[4] inviting the application of the which-copy-to-pronounce rule to it so that the NSR can apply to it. It should be the case that the which-copy-to-pronounce rule applies in the default fashion in economy-motivated cases such as this (or presumably thanks to the fact that Chomsky's, 2001, guiding principle simply does not apply for structural reasons), thus deleting the second *away* and allowing the NSR to assign primary stress to *the dishes*. In (12a), we have '[$_{vP}$ Subj put [$_{VP}$ put [$_{SC}$ them/$^?$the dishes away]]]' at the completion of the vP phase, the VP being sent to the phonology and the NSR assigning primary stress to *away*.

5. Syntax-pragmatics interface (López, 2003)

Given the discussion so far on the way the syntax and the phonology interact at spell-out, López (2003) should be considered to be the starting point of my whole analysis in this paper. Specifically, I wholly rely on his implementation of Epstein et al.'s (1998) 'invasive' interpretation of the way other components (PF, FL, pragmatics) interface with the syntax. Including an interpretive module called *pragmatics* (probably, a sub-module of the cognitive-intentional system) among the possible components that interface with the syntax in addition to

the much-discussed PF and FL components, López (2003) adopts in his analysis of Catalan right and left dislocations and focus fronting Chomsky's (2000, 2001) phase-based approach to multiple spell-out and, crucially, Epstein et al.'s (1998) idea that interpretive systems (PF, LF, pragmatics) interface 'invasively' with the syntax. (Note that in the discussion I use the term *interface* interchangeably either to mean the act/state of interfacing or to mean the components/modules themselves that interface with narrow syntax, using such expressions as *LF-interface, pragmatics-interface,* etc.) Another important assumption of López (2003) may be the crucial use of the EPP feature (a 'selectional' feature), which is standardly responsible for pied-piping (a certain amount of) phonological material to the spec of the probe (*pace* much current work in the direction of eliminating the feature altogether from the grammar). According to López (2003), moreover, the EPP feature is visible to interfaces that will give a certain interpretation to the spec formed in this way, thus illustrating the notion of 'invasion' in the sense of Epstein et al. (1998). Allowing C_HL to interface at the points of (multiple) spell-out with *pragmatics* (the interpretive module that deals with focus/presupposition structures, contrast, and so forth), López (2003) goes on to propose that "pragmatic values be regarded as features that are assigned to constituents in C_HL and stay with those constituents as part of their feature matrix." (p.195) The three major constructions that are treated in López (2003) are focus fronting (FF), clitic right dislocation (CLRD), and clitic left dislocation (CLLD). A FFed constituent appears at the left periphery of the clause and is identified as focus by a strong accent. A CLRDed constituent is deaccented and is doubled by a clitic. A CLLDed constituent does not have any particular accent and also is doubled by a clitic. And López

(2003) assumes that all the three constructions involve movement from a vP-internal position. Phases are assumed in López (2003) to define how pragmatic interpretation takes place as each phase culminates, in addition to defining the way in which the syntactic derivation and cyclic spell-out unfolds. The interpretive consequences that López (2003) concludes these constructions have are like the following: CLRD is presuppositional, FF is contrastive, and CLLD is both presuppositional and contrastive.

Let us see the three constructions in further detail one by one. As for CLRD, López (2003: 201-209) assumes CLRDed constituents to be in [Spec, v] (in an outer spec of v above the subject) and its operation to be A-movement. Capitalizing on Chomsky's (2001) proposal that the presuppositional interpretation be associated with the EPP position of v, López takes the semantic value [+p(resuppositional)] to be a linguistic feature that is assigned to the EPP feature by the interpretive module called *pragmatics,* [Spec, v] also becoming [+p] so long as it is licensed by an EPP with [+p]. Note that pragmatics is invasive in this case roughly in the sense of Epstein et al. (1998), having the ability to inspect a syntactic structure and attach a feature to it. Assuming Chomsky's (2000, 2001) phase-wise implementation of (multiple) spell-out, pragmatics can invade narrow syntax and assign [+p] only after the completion of the vP phase in this case. In regard to possible concern over inclusiveness considerations (Chomsky, 1995), López (2003) says that since the feature [+p] is not created by C$_{HL}$, but is assigned to it by an external (to narrow syntax) system, drawing a feature from pragmatics does not violate the inclusiveness condition any more than drawing it from an array/numeration. Furthermore, a clitic that doubles a CLRDed constituent is taken to be the (phonological) spell-out of

[+p]. Here a remark on some details of the notion of 'invasion' may be in order. While it seems that López interprets the notion quite literally (e.g., "inspect a syntactic structure and attach a feature to it," as if pragmatics had an eye/arm to extend into narrow syntax), the present paper takes a more moderate stance, but with some qualifications. Primarily based on Chomsky's (2004) notion of TRANSFER, I assume that TRASFER hands a portion of the narrow-syntactic derivation (i.e., the complement of the head of a strong phase) over to the phonological component and to the semantic component at the completion of the strong phase, the spelled-out portion of the narrow-syntactic derivation is phonologically and semantically treated at PF and LF, respectively, and finally, the treated portion is sent back to narrow syntax from PF and from LF, respectively (see the discussion below (11)), inviting the assumption that the resulting narrow-syntactic structure thus obtained should involve the effects of treatment both at PF and at LF, which will be carried along throughout the derivation. (Recall that my terminology may somewhat depart from the standard practice in that I use the three terms 'spell-out,' 'TRANSFER,' and (the act/state of) 'interfacing' more or less interchangeably, with some important qualifications to the effect that a spelled-out/TRANSFERred (from narrow syntax) portion that interfaces with an external component (PF, LF, pragmatics) comes back to narrow syntax after being treated by the specific component in question, leaving behind in that specific component what may constitute the original spelled-out portion expressed in the terms/vocabulary of the component.) As for (part of) the sequence of operations involved in CLRD (López, 2003: 207-208), the procedure will be as follows in my terms:

(12) i) vP is built from a subarray with an EPP feature on v and an XP as complement of the verb.

ii) After Agree, EPP pied-pipes XP to outer [Spec, v].

iii) The complement of the phase head (VP) is sent to the pragmatics, to the phonology, and, presumably, to the semantics (actually, to as many components as can interface with narrow syntax; alternatively, Uriagereka's (1999) economy-based approach to (multiple) spell-out may handle the situation more efficiently in that it can limit the operation to the smallest number of absolutely necessary cases), being treated in each component and then sent back to narrow syntax, and becoming inaccessible in some sense.

iv) The next strong phase (CP) is built, the complement of the phase head (TP) being sent to every component interfacing narrow syntax. The pragmatics detects the EPP feature on v (EPP is active up to the completion of the CP phase due to Chomsky's (2001) guiding principle above for this reason), and EPP and the spec associated with it receive a [+p] feature. Then [+p] on v is spelled-out as clitic at PF (here we see an interaction between the pragmatics and the phonology through interfacing with narrow syntax as the center of the operation). Since the default rule of [-p] assignment to the rest of the structure (VP, in this case) applies after [+p] assignment, the already frozen VP (see iii)) must be accessible *to the pragmatics* (as well as to narrow syntax) at the CP phase level. I presume this to be possible, once again, thanks to Chomsky's (2001) guiding principle; the strong vP phase is interpreted/evaluated at the next higher strong CP phase, interpretation/evaluation here naturally

involving things through interfacing with various external components as well.

Let us turn to CLLD, which is both presuppositional and contrastive in its interpretation. A CLLDed constituent appears displaced in the left periphery, which somehow correlates with being contrastive, as in the case of FF. Let us see an example of CLLD from López (2003):

(13)　Les taules les　　vaig　　portar al　matí.
　　　the tables CL.ACC PAST.1SG　bring　in-the morning
　　　(The tables, I brought in the morning.)

CLLD has the presence of a clitic and the presuppositional interpretation in common with CLRD. Departing from Rizzi's (1997) fine structure of the left periphery: '[$_{ForceP}$ Force [$_{TopP}$ Top [$_{FocP}$ Foc [$_{TopP}$ Top [$_{FinP}$ Fin TP]]]]],' López (2003) argues based on his own earlier work that the theory of grammar would be better off without FocP and TopP, only ForceP and FinP constituting the whole left periphery structure, and wh-phrases, focus-phrases, and dislocated phrases occupying stacked specs of Fin: '[$_{ForceP}$ Force [$_{FinP}$ CLLD [$_{Fin'}$ FF/wh [$_{Fin'}$ Fin TP]]]].' (Here I pursue an approach to syntactic phrase structure that is more impoverished in terms of the number of projection labels primarily for reasons adduced in Gill and Tsoulas (2004) (contra cartographic approaches to it, as exemplified by Rizzi, 1997, Cinque, 1999, etc.).) Assuming with López (2003) that contrastiveness, which is expressed with the feature [+c] in linguistic terms, is associated with the left periphery and that [+c] is connected with Fin and is assigned by the pragmatics, let us see the derivation of CLLD (in my terms). Since

CLLD is both presuppositional and contrastive, a CLLDed constituent must be both in [Spec, v] (see the discussion above concerning CLRD) and in [Spec, Fin] at some point of the derivation. Let us take (13) as an example and see (the important parts of) the derivation in some detail with concomitant discussion. At the completion of the vP phase, we have '[$_{vP}$ les taules Subj portar [$_{VP}$ portar les taules al mati]],' the domain of the phase head (VP) is sent to external (to the syntax) components that interface with narrow syntax, being treated in some way in various components (with possible interaction between two or more components through interfacing with narrow syntax as the center connecting with external components), sent back to narrow syntax (leaving behind in each component what corresponds to VP in the terms/vocabulary of the component in question), and becoming in principle frozen/inaccessible (in regard) to further operations. Then at the completion of the CP phase (of the ForceP phase, following López, 2003), we have '[$_{ForceP}$ Force [$_{FinP}$ les taules Fin [$_{TP}$ Subj vaig [$_{vP}$ les taules Subj portar [$_{VP}$ ϕ]]]]],' the domain of the phase head (FinP) is sent to the pragmatics (and other components). Two heads (v occupied by *portar* and Fin) contain an EPP feature. Recall that Chomsky's (2001) guiding principle above (an economy/last resort principle) plays a part here, reactivating in a sense the EPP features that have been 'checked and deleted' in the early minimalist terminology. I assume that the features in question get marked for deletion when 'checked,' either being deleted forever if nothing happens until the completion of the next higher strong phase or being reactivated by an economy condition such as Chomsky's (2001) guiding principle. (Notice further that I do not make a distinction between the EPP feature on v and that on Fin for the sake of parsimony, as is done in López, 2003: 211.) Now, the

pragmatics assigns [+p] to the EPP on v and the spec associated with it (*les taules*), and further assigns [+c] to the EPP on Fin and the spec associated with it (*les taules*), thus accounting for the fact that CLLD is both presuppositional and contrastive in its interpretation, EPP being visible for a *reason* (assignment of the [+p] and [+c] features by the pragmatics) thanks to Chomsky's (2001) guiding principle. As for the clitic (the phonological spell-out of [+p] on v), I assume that it further moves at least as high as above T. The behavior of the clitic may further interest us. Assuming that the subarray responsible for the vP phase contains the clitic (*les,* a lexical item), it seems that it does not come into the derivation, thus remaining in the subarray for the vP phase until [+p] is assigned to v by the pragmatics at the completion of the next higher strong phase (ForceP). That is, the subarray for the ForceP (the next higher strong phase) is somehow accessed before that for the downstairs phase (the vP phase) is exhausted, contrary to the standard assumption. Let us see what we can do with this situation. First, I assume that the clitic is not the phonological spell-out of the feature [+p] (in the sense that the phonology does not play a part in letting the clitic into the (syntactic) derivation), but simply an element of the lexicon (a lexical item). Then, taking subarrays (phase-related entities) to be subject to Chomsky's (2001) guiding principle, we assume that the remaining element of the subarray for the vP phase, the clitic, can be inserted into the derivation (either adjoining to *portar* or heading its own projection somewhere near there) even at the completion of the next higher strong phase, further moving to its final landing site. Alternatively, if we take the clitic to be the (phonological) spell-out of the feature [+p] as in López (2003), everything may fall into place on the assumption that the parallel phonological derivation proceeds phase by

phase and that Chomsky's (2001) guiding principle comes in to help in this case as well, given a reason. Notice here that both the pragmatics and the phonology are *interpretive* components interfacing narrow syntax, the former component assigning an interpretation ([+p]) to a syntactic element (v) and the latter component somehow interpreting phonologically the pragmatic feature assigned (to the syntactic element), a nice illustration of very close interaction between external components interfacing with narrow syntax that otherwise do not have any points of connection between themselves.

Given the parsimonious approach above to the EPP feature in different places, we are faced with the obvious problem that arises in our case (but does not arise in López, 2003, where a distinction is made between EPP and EPP'). It is precisely one of how to determine the way the feature [+p] (or [+c]) selects the *right* EPP feature, given two instances of EPP here (one on v and the other on Fin) and the basic minimal assumption that the only syntactic entity that is visible to the pragmatics in this case is the EPP feature. Actually, this kind of ordering problem may be far more general in that it always arises in a case where more than one element occupies a (multiple) spec of a single head, given the notion of impoverished syntax in the sense above. (I leave this as an open question pending future research, but I return to it below with some general remark.)

Let us turn to our third and final operation of FF dealt with in López (2003). Recall that FF is contrastive in its interpretation. Consider the following example from López (2003):

(14)　　ELS GANIVETS li　　　　vaig　　　　donar.

　　　　the　knives　　　CL.DAT　PAST.1SG give

　　　　(THE KNIVES, I gave her/him.)

A strong accent indicated by capital letters identifies the constituent as focus. FF, which is contrastive, shows up in the left periphery, like CLLD. But, unlike CLLD and CLRD, it is not presuppositional and is not doubled by a clitic. López (2003), moreover, presents empirical evidence that in FF there is no evidence of the two-step movement that characterizes CLLD and that FF reconstructs to its initial merge position, not to a middle-field position, pointing to an FFed constituent not passing through [Spec, v] (but see López and Winkler, 2003, for empirical evidence showing that [Spec, v] can be a landing site for focus-phrases and wh-phrases). But López (2003) somehow expresses some doubt as to the validity of the notion of phase transparency in the sense of Chomsky (2001: 14), observing, "Phase transparency seems to me to weaken the theory substantially. The default hypothesis is that a constituent that has been spelled-out should be completely opaque without exceptions" (p.215). Roughly pursuing an approach in the spirit based on López's (2003) observation above but departing somewhat from him in minute details of specific analyses, I present my analysis of (14) as an FF example on the basis of the following two assumptions:

(15) a. PIC (rigid version):

　　　　The domain of H is not accessible to operations outside of HP;

　　　　only H and its edge are accessible to such operations.

　　　　　　　　　　　　　　　　　　　　　　　　(Chomsky, 2001: 13)

b. Phase-Guiding Principle (PGP):

A strong phase is interpreted/evaluated at the next higher strong phase. (Chomsky, 2001: 14)

Chomsky (2001: 13-14) appears to combine (15a,b) to give his (11) (p.14). But I claim that the rigid version of the PIC (15a) should be adopted, primarily for reasons we have seen in López (2003) and also because there is a certain degree of redundancy in empirical content between the PGP (15b) and Chomsky's (2001: 14) (11), and that the PGP in (15b) should be interpreted as an economy/last resort principle, as have already been shown above. Now let us see the derivation of (14) phase by phase. At the completion of the vP phase, we have '[$_{vP}$ li els ganivets Subj donar [$_{VP}$ donar li donar els ganivets]]' (assuming the VP-shell structure for the double object construction a la Larson, 1988; see also Takano, 1998), the domain of the phase (VP) being sent to various interfaces, treated there, and sent back to narrow syntax. VP is now (in principle) inaccessible to operations outside of vP due to (15a). Our relevant point in the derivation is the completion of the ForceP (the next higher strong phase with respect to the current strong phase vP). At the completion of the ForceP phase, we have '[$_{ForceP}$ Force [$_{FinP}$ els ganivets Fin [$_{TP}$ Subj li vaig [$_{vP}$ li els ganivets Subj donar [$_{VP}$ ϕ]]]]].' Here I take the whole structure to be FinP, following Bošković's (1997) approach to economy of representation (see the discussion below (3/4)), and propose a 'relativized' interpretation of phase determination: Take the domain of the strong phase head to be a relevant strong phase in the absence of that strong phase for some reason. It follows then that we are talking about the (relativized) strong phase FinP, the domain of the phase head TP in this case being subject to various interface

interpretations through TRANSFER. Let us focus on (possible) [+p] assignment by the pragmatics to *els ganivets* in [Spec, v], which actually does not take place due to the fact that FF is not presuppositional. There seem to be at least two possible ways to cope with the situation, with vP and FinP as the current strong phase and the next higher strong phase, respectively, in regard to the PGP in (15b): (i) the EPP feature on v that has been marked for deletion continues to be invisible since there is no reason for the PGP to come in to play a role for convergence (and hence, no [+p] assignment); (ii) the whole interfacing with the pragmatics does not take place on condition that there be no other reason to require it (and hence, no [+p] assignment). As for the TRANSFER of the remaining FinP portion, I assume either that FinP (as a root clause) is simply subject to TRANSFER (see Chomsky, 2004: 108) or that you could employ some variant of Ross's phonologically empty performative analysis, FinP becoming the domain of the head of the 'performative' phrase and hence, undergoing TRANSFER (Nissenbaum, personal communication, cited in Chomsky, 2004: note 17). The pragmatics then detects the EPP feature on Fin (which has been marked for deletion but somehow turns visible due to economy considerations deriving from the PGP), EPP on Fin and *els ganivets* receiving [+c] from the pragmatics. Some remarks on Chomsky's (2001: 14) version of phase transparency on the basis of his (11) (p.14) may be in order here. Given the rigid version of the PIC in (15a; Chomsky, 2001: 13 (7)), it is impossible for the probe T to have access to an element of the domain VP of the phase head v, the actual fact being that it can. In my terms, the fact is accounted for by the PGP in (15b; Chomsky, 2001: 14 (10)) now reformulated as an economy condition, an Agree relation between T and a DP in VP, for example, being allowed to hold at the

completion of the CP phase when everything from TP to vP is subject to TRANSFER and the inaccessible status of VP somehow being voided for convergence. I assume that counter-cyclicity in this case may be accommodated thanks to the very motive for Chomsky's (2001: 14) (10) and the PGP.

Let us reconsider Bošković's (2001) examples of cliticization in coordinate structures in Bulgarian, repeated here as (16a,b) (see (3), (4)), in light of our new set of assumptions:

(16) a. I   ti   go   dade.
        and you.DAT it.ACC   gave
        (And he/she gave it to you.)
     b. I   dade li ti   go?
        and gave Q you.DAT it.ACC

Recall that Bulgarian pronominal clitics are enclitics, encliticizing onto the preceding phonological element. Let us see the examples one by one in further detail in terms of our set of assumptions primarily consisting of the rigid version of the PIC (15a) and the PGP (15b). At the completion of the vP phase in (16a), we have '[$_{vP}$ Subj ti go dade [$_{VP}$ dade ti dade go]],' VP being subject to TRANSFER. Then we somehow reach the stage where we have '[$_{ConjP}$ i [$_{TP}$ Subj ti go dade [$_{vP}$ Subj ti go dade [$_{VP}$ ϕ]]]]' (assuming V-raising to T (see Bošković, 2001) and somewhat abstracting away from irrelevant minute details of the analysis of clitics), where ConjP may be sent to the phonology and to other interfaces (presumably, in accordance with economy; see above) either thanks to Chomsky's (2004) root-clause spell-out or to Nissenbaum's proposal concerning Ross's performative analysis (see above). As for

the pronunciation of the clitics, their highest copies can (phonologically) encliticize to the preceding conjunction *i*, inviting the which-copy-to-pronounce rule to opt for the default case. Now, as for (16b), we have exactly the same structure as that for (16a) at the completion of the vP phase, VP being sent to the phonology and to other interfaces. At the completion of the next higher strong phase CP, we have '[$_{CP}$ ti go dade li [$_{TP}$ Subj ti go dade [$_{vP}$ Subj ti go dade [$_{VP}$ ϕ]]]],' TP being sent to the phonology (and to other interfaces in accordance with economy), where the which-copy-to-pronounce rule opts (cyclically) for the verb in TP (the default case) and for the clitics in vP (in light of their enclitic status). We then go on to have '[$_{ConjP}$ i [$_{CP}$ ti go dade li [$_{TP}$ ϕ]]]' at the completion of the whole derivation. Assigning the strong phase status to the largest structure (either the root clause, ConjP in this case; or the abstract 'performative' phrase a la Ross), notice that the copy of the verb selected by the which-copy-to-pronounce rule at the completion of the CP phase resides in the strong phase CP (in TP), while the copies of the clitics opted for by the rule resides in the vP phase. Note that we are now at the completion of the strong phase ConjP (or 'performative' phrase) and recall that the PGP in (15b) can deal with at most two strong phases at a time. The PGP can then see the highest strong phase and CP (excluding the strong phase vP), where the phonology detects two instances of the verb, the higher one of which is selected by the which-copy-to-pronounce rule applying cyclically as there is no reason to opt otherwise. As for the copies of the clitics, nothing happens at this stage since the PGP cannot see into vP (which is too downstairs), the phonological which-copy-to-pronounce rule simply not applying at this stage due to the fact that the copes in TP have been deleted (so I assume) by the previous cyclic application of

the rule, and the copies in vP continuing to be pronounced, which determines that the highest copies in CP should be deleted at this stage.

6. Syntax-semantics interface and parametric variation

6.1. López and Winkler (2003)

Departing from the standard functional paramerization hypothesis concerning possible variation across languages (Borer, 1984), López and Winkler (2003) explores possibilities of motivating an assumption that at least part of syntactic variation can be attributed to the interpretive systems on the basis of data from the comparison of Western Bade, a Chadic language, and English and of the vP analysis of English gapping constructions. According to López and Winkler (2003), wh-phrases and contrastive foci appear in [Spec, C] in English and many other languages, while wh/focus-phrases seem to appear in [Spec, v] in Western Bade, which difference they attempt to account for not in terms of properties of functional categories, but in terms of a parameter at the syntax-semantics interface. Moreover, López and Winkler somehow introduce the notion of a 'soft' (universal but ranked; reminiscent of optimality theory) rule into their explanation, observing that "what 'the right place' is is what is subject to language variation" in the sense that "if the constituent is not in 'the right place' at the end of the derivation, the interpretive modules can't read it" (p.232). I re-analyze some of their examples in terms of the rigid version of the PIC and the PGP in (15) above to see if it is possible to dispense with such a dubious device as a 'soft' rule. Let us consider the following English and Western Bade examples (López and Winkler, 2003: 232):

(17) a. Which paper did Jeong-Shik write?

b. gafa-n   ke   viiriidgwarən?
   caught   who giant-rat
   (Who caught a giant rat?)

Assuming the Q-feature and the wh-feature involved in the examples to be part of narrow syntax as in Chomsky (2000), we have '[$_{vP}$ which paper Jeong-Shik write [$_{VP}$ write which paper]]' at the completion of the vP phase in (17a), ignoring TRANSFER of VP as only the Q- and wh-features are relevant here. Note that v has both an uninterpretable Q-feature and an EPP-feature on it, the former being involved in Agree and the latter in pied-piping. The uninterpretable wh-feature on the wh-phrase is marked for deletion here. At the completion of the next higher strong CP phase (C having both an uninterpretable Q-feature and an EPP-feature on it), we have '[$_{CP}$ which paper did [$_{TP}$ Jeong-Shik T [$_{vP}$ which paper Jeong-Shik write [$_{VP}$ ϕ]]]],' ignoring once again TRANSFER of TP. Here the PGP in (15b) (an economy/last resort condition) comes in to play a role in reactivating the uninterpretable wh-feature on the wh-phrase in [Spec, v] (now marked for deletion) and thus making Agree possible between the probe C and the wh-phrase in [Spec, v]. With the uninterpretable wh-feature ultimately deleted in [Spec, C] and the concomitant pied-piping done, we have the English example in (17a) with the wh-phrase neatly in place a la English. In (17b), at the completion of the vP phase, we have '[$_{vP}$ ke ke gafa-n [$_{VP}$ gafa-n viiriidgwarən]],' ignoring TRANSFER of VP here as well. We then have '[$_{TP}$ gafa-n [$_{vP}$ ke ke gafa-n [$_{VP}$ ϕ]]],' TP being subject to TRANSFER as a result of Chomsky's (2004) 'root-clause' TRANSFER or of Ross's 'performative' analysis (attributed to Nissenbaum), and PerP

(performative phrase), the domain of whose head is TP, being interpreted as a strong phase (see above). Here the PGP does not work in regard to the uninterpretable wh-feature on (wh-head of) the wh-phrase since there is no probe, *ke* in outer [Spec, v] ending up being there. (Note that the which-copy-to-pronounce rule deletes the lower *ke* and the two lower copies of *gafa-n* at PF, the PGP playing a role to make the lowest *gafa-n* visible by voiding the frozen status of VP for this purpose.) Consider the example in (18) from López and Winkler (2003):

(18)　[Which of the papers that he₂ wrote for Mrs. Brown₃] did every student₂ get her₃ to grade?

In (18), the wh-phrase must reconstruct so that the quantifier phrase *every student* c-commands the bound pronoun *he,* and in such a way that we do not have a violation of Principle C of the binding theory at the same time. I here avoid the exact timing of adjunction (see the standard 'late merger' hypothesis and Chomsky's (2004) claim based on the SMT that adjunction applies cyclically). At the completion of the vP phase associated with the verb *get,* we have '[$_{vP}$ wh-phrase every student get [$_{VP}$ get her to grade wh-phrase]],' the internal structure of VP being duly simplified. Then, at the completion of the strong CP phase, we have '[$_{CP}$ wh-phrase did [$_{TP}$ every student T [$_{vP}$ wh-phrase every student get [$_{VP}$ ϕ]]]],' TP being subject to TRANSFER and the lower copy of *every student* (as well as *get* and wh-phrase in VP, due to PGP effects) being marked for deletion. Assuming the abstract PerP (as a strong phase) a la Ross/Nissenbaum, we then have CP TRANSFERred, the which-copy-to-pronounce rule marking the wh-phrase in outer [Spec, v] for deletion thanks to PGP effects. Now, we have to do the

interpretation in respect of the quantifier-pronoun pair and Principle C of the binding theory. This cannot be done with the wh-phrase in [Spec, C]. The PGP comes in here with CP and vP as the two relevant adjacent strong phases (assume that the 'abstract' PerP can be ignored here, or the problem does not arise if you adopt Chomsky's (2004) 'root -clause' TRANSFER analysis), reactivating the uninterpretable wh-feature on the wh-head of the wh-phrase in [Spec, v] (marked for deletion due to Agree) and the EPP feature on v (*get;* marked for deletion due to checking) in order for the wh-phrase to reconstruct and thus making it possible to do the quantifier-pronoun interpretation and due interpretation in regard to Principle C in this position, i.e., in outer [Spec, v].[5] Let us turn to the analysis of constructions containing a focus phrase. The examples in (19) are from López and Winkler (2003):

(19) a. zaneeŋəə, tləmpətə-g DəMAAN.

      gown-my tore   wood

      (My gown, WOOD tore it.)

  b. [At least ONE of the papers that he2 wrote for Mrs. Brown3] did every student2 get her3 to grade.

(19a) is an example from Western Bade. (Tentatively) following López and Winkler's (2003) assumption that wh-phrases and foci in Western Bade are in [Spec, v], we have '[vP dəmaan zaneeŋəə dəmaan tləmpətə-g [VP tləmpətə-g zaneeŋəə]]' at the completion of the vP phase in (19a). Then at the completion of the next higher strong CP phase, we have '[CP zaneeŋəə C [TP tləmpətə-g [vP dəmaan zaneeŋəə dəmaan tləmpətə-g [VP ϕ]]]],' assuming the topicalized phrase to be in [Spec, C]. With TP subject to TRANSFER, the which-copy-to-pronounce rule of

the phonology marks for deletion the copy of the verb at v (and its lowest copy in VP, due to PGP effects), the copy of the topicalized phrase in VP (due to PGP effects again), and the lower copy of the focus phrase in vP. Notice that v has (at least) two EPP features (marked for deletion now) at this stage and that one of the EPPs which is associated with the focus phrase (*dəmaan*) (reactivated by the PGP) and the spec associated with it (*dəmaan*) receive a [+foc(us)] feature from the pragmatics. Now, in accordance with Chomsky's (2004) root-clause spell-out hypothesis ('spell-out' in the sense of TRANSFER to various external modules that interface with the computational system of human language/narrow syntax, as discussed above), CP (a strong phase) is subject to TRANSFER, the topicalized phrase in vP being marked for deletion by the PF which-copy-to-pronounce rule thanks to PGP effects. Alternatively, it may be the case that since TP and hence the topicalized phrase in it are inaccessible at this stage so long as no economy/last resort consideration should cause the PGP to function to the due effect, there should be no need to take all the trouble to invoke the PF rule to deal with the element that are already dealt with (in the direction of 'deletion,' in this case), another sense of economy/parsimony. We then have (19a) in place, except for the syntactic analysis and interpretation of (what I have called) the topicalized phrase, which I leave as an open question, pending further exploration of Western Bade grammar. Let us turn to the analysis (in our terms) of (19b). At the completion of the vP phase associated with the verb *get,* we have '[$_{vP}$ focus-phrase every student get [$_{VP}$ get her to grade focus-phrase]]' (I call the phrase associated with a [+foc] feature/focus accent 'focus-phrase' even where the feature has not been assigned to it yet), VP being sent to various external modules. Then we have '[$_{CP}$ focus-phrase

did [$_{TP}$ every student T [$_{vP}$ focus-phrase every student get [$_{VP}$ ϕ]]]]' at the completion of the next higher strong CP phase, TP being subject to TRANSFER. Ignoring the necessary operations of the PF which-copy-to-pronounce rule, let us focus on the [+foc] feature assignment by the pragmatics. Notice that the PGP does not work at this stage, the focus-phrase in outer [Spec, v] not being assigned a [+foc] feature by the pragmatics. Comparing this situation in English (where [+foc] is assigned to the focus-phrase in [Spec, C] by the pragmatics, as we will see) with that of Western Bade, where the focus-phrase in [Spec, v] receives a [+foc] feature from the pragmatics, we may attempt to make a proposal in regard to a possible cause of variation in this case. I am here tempted to say that the difference in position of [+foc] assignment between English and Western Bade may be attributed to the absence vs. presence of PGP effects (economy/last resort effects) in specific positions. Finally, following Chomsky's (2004) root-clause spell-out proposal, we have CP (a strong phase) subject to TRANSFER; i.e., TRANSFER of '[$_{CP}$ focus-phrase did [$_{TP}$ ϕ]].' Focusing on [+foc] assignment from the pragmatics, we see that the feature is assigned to the focus-phrase in [Spec, C], the PGP making the EPP feature on C (*did*) (marked for deletion) visible to the pragmatics and hence, the pragmatics assigning [+foc] to that EPP feature and the spec associated with it (the focus-phrase in [Spec, C]). Here we can see that the function of the PGP somewhat departs from its original formulation in (15b), dealing with elements from the current strong phase as well, not only those from the phase downstairs. I presume that this situation is reasonable and desirable, since the PGP should be able to treat not the immediately downstairs strong phase alone, but all elements that are subject to TRANSFER at a given stage.

Let us get on to the problem of reconstruction. Since (19b) is grammatical, the focus-phrase must be interpreted where the quantifier phrase *every student* c-commands the bound pronoun *he* and a violation of Principle C of the binding theory does not arise in regard to *Mrs. Brown* and *her*. Such a position can only be [Spec, v] (associated with *get*). What is involved in reconstruction here may be at least as follows: The PGP operating at the CP level reactivates the EPP feature on v (*get*), which makes it visible to the semantics, which takes the spec associated with this EPP feature (the focus-phrase in outer [Spec, v]) to be the reconstruction site in the absence of other visible EPP features. (Note that reconstruction does not involve 'downward movement' of the relevant element, but its downstairs copy.) Notice further that the focus-phrase in [Spec, v] does not have [+foc], which is not a problem since it is not needed here, presumably in conformity with general economy considerations. Now, one might wonder how it is possible for the PGP to detect the object of reactivation here, for example. It looks as if the principle was almighty. But it is quite easy to see that PGP effects are limited to the very small domain, a domain ranging over at most two adjacent strong phases, and that in cases where PGP effects are involved in one position, it is currently subject to TRANSFER, whereas in cases where more than one position is being affected by the PGP, presumably at least one of them must be currently subject to TRANSFER. In the case at hand (reconstruction in (19b)), there are four EPP features in all (all marked for deletion) in the domain consisting of CP and vP (one on C, one on T, one on v, and one on embedded T (*to*); excluding the embedded vP phase ('[$_{vP}$ focus-phrase her grade [$_{VP}$ grade focus-phrase]]') which is outside the domain above). One relevant element here should be the focus-phrase that contains factors

relevant to interpretation (that in [Spec, C]). Notice that we have only '[CP focus-phrase did [TP ϕ]]' TRANSFERred over to the semantics here (due to Chomsky's, 2004, root-clause spell-out), the latter module not being able to see more than that portion unless the PGP becomes active. Assuming that the PGP can identify at the semantics NP/DP types such as pronouns, ordinary DPs, and so forth that are relevant to interpretation, it may not be very difficult for it to detect an entity with the same ingredients in it and the head with EPP (marked for deletion) associated with it, thus reactivating that EPP feature and the spec associated with it for reconstruction to take place. Presumably, the whole empirical content of the notion 'reconstruction' could be said to be a procedure that makes visible once again (at the semantics) through the kicking in of the PGP that portion that has already been passed during the derivation and made frozen/inaccessible in a sense.

6.2. Coordinate structure

Let us turn to gapping, which may provide us with further testing ground on which to be able to consider the notion of parametric variation across languages more in detail.

Departing from the (somewhat standard) Rossian approach to gapping, which assumes that the gapped clause is derived from a complete sentence from which the main verb (and possibly other material) has been deleted, López and Winkler (2003) somehow come to the conclusion primarily based on Johnson (1994, Bridging the gap; 1997a, In search of the English middle field), who assumes gapping to involve VP coordination and across-the-board raising of the verb to T, that gapping involves vP coordination and not CP coordination. López and

Winkler (2003: 239) go on to introduce the contrastivity requirement on gapping to the effect that in gapping the absent elements must be contextually given, while the remnants must occur in a contrastive relation to their correspondents. Then, pointing out that the remnants of gapping can be foci and also wh-phrases, they note that in gapping contexts English is more like Western Bade in that [Spec, v] can be the final landing site of a wh-phrase since it can be interpreted in that position and conclude that in English [Spec, v] is a landing site for wh-phrases and foci in gapping contexts. López and Winkler's (2003) discussion is crucially based on a dubious assumption that relevant parameters involve (optimality-theoretic) ranked/soft interpretive rules, which I seek to avoid in favor of a more reasonable device. I also take coordinate structures to be able to be expressed in terms of the standard X'-schema, in stead of their assumption that a coordination is an adjunction structure, and continue to assume that the relevant pragmatic feature should be [+foc]. Consider then (20) from López and Winkler (2003: 240):

(20) a. Bill asked which books we gave to Mary and [which records to John].

b. Bill asked which books we gave to which students and [which bones to which dogs].

In (20a), at the completion of the vP phase (the complement of the coordinate structure head *and*), we have '[$_{vP1}$ which records to John we gave [$_{VP}$ gave which records [$_{VP}$ to John gave which records]]],' following Takano's (1998) analysis of the DP-PP construction, where movement of the theme over the goal is involved, and the larger VP being subject

to TRANSFER at this stage (I ignore the operation of the which-copy-to-pronounce rule at PF in regard to this VP and other elements, when unnecessary for expository purposes). We also have to construct independently the spec of the coordinate structure head: '[$_{vP2}$ which books to Mary we gave [$_{VP}$ gave which books [$_{VP}$ to Mary gave which books]]],' the larger VP being subject to TRANSFER here again. I assume following López and Winkler (2003) that a coordinate structure constitutes a strong phase (Conj(unction) P(hrase)) although it is not an adjunction structure in my analysis as they claim. Assuming that ConjP lacks edge positions, we have the structure '[$_{ConjP}$ [$_{vP2}$ which books to Mary we gave [$_{VP}$ ϕ]][$_{Conj'}$ and [$_{vP1}$ which records to John we gave [$_{VP}$ ϕ]]]]' at the completin of the strong ConjP phase. I propose the way TRANSFER operates in a coordinate structure, as in the following:

(21) Coordinate Structure TRANSFER (CS TRANSFER)

At the completion of a strong ConjP phase, its spec and complement are subject to TRANSFER, its operation being subject to economy.

Then by CS TRANSFER at the completion of the strong ConjP phase, we send 'vP2 *and* vP1' to various modules, the which-copy-to-pronounce rule marking *we gave* in vP1 for deletion at PF, the pragmatics assigning the [+foc] feature to to *Mary* in vP2 and to *to John* in vP1, and the semantics tackling the problem of wh-interpretation with respect to the wh-phrases in vP2 and vP1, presumably with the aid of the PGP in identifying the variables, determining restriction range in various positions, and so forth with reference to (once inaccessible) VPs. I

propose that wh-interpretation take place in [Spec, v] in both conjuncts for reasons pertaining to parallelism, and also in [Spec, C] in the case of vP2 in (20a,b). Notice that selection associated with matrix verb requires such interpretation in any case. (See Fesler, 2004, for comparison and discussion in cases where there is no such selectional requirement of the construction involving an expletive wh-pronoun, that involving what is called the wh-copying strategy where the higher wh-phrase is not a place-holder but a full argumental copy of the associated wh-phrase, and the ordinary long-distance wh-movement case. Also see below.) While LF wh-interpretation for coordinate structure purposes takes place at CS TRANSFER (informally, in the form of the LF structure '[$_{vP2}$ for which x ... x] and [$_{vP1}$ for which y ... y]'), the ultimate derivation concerning the wh-phrase *which books* in the first conjunct vP2 should end up being roughly in the form of the LF structure '[$_{CP}$ for which x ... x].' I assume that the semantics may also contain something like the PF which-copy-to-pronounce rule that presumably uniquely delete at least all operator portions other than the highest to create an operator-variable structure, its operation being cyclic. In the case of (20a), we have the PGP treat CP and ConjP at the completion of the vP phase associated with the matrix verb in accordance with the Condition on the PGP Operation in (23a) below (note that the PGP may make visible elements belonging to modules other than narrow syntax), the LF operator deletion rule above deleting the wh-operator 'for which x' in vP2 and thus creating a neat operator-variable structure for *which books*. I assume that after CS TRANSFER what remains frozen/inaccessible is the complement of the ConjP phase head (vP1) in usual terms, which may indicate that special properties of the coordinate structure are expressed (only) in terms of CS TRANSFER at the

completion of the strong ConjP phase. At the completion of the strong CP phase, we have '[$_{CP}$ which books C [$_{TP}$ we gave [$_{ConjP}$ [$_{vP2}$ which books to Mary we gave [$_{VP}$ ϕ]][$_{Conj'}$ and [$_{vP1}$ ϕ]]]]],' TP being subject to TRANSFER and the which-copy-to-pronounce rule at PF marking *we gave* in vP2 for deletion. I follow the discussion in López and Winkler (2003) (mainly due to Johnson's work) in assuming that *gave* in TP is in the T head position, but depart from Johnson in claiming that V-to-T has taken place from the v position of vP2. At the completion of the vP phase associated with the matrix verb, we have '[$_{vP}$ ... [$_{CP}$ which books C [$_{TP}$ ϕ]]],' the matrix VP containing CP being sent to various external modules (perhaps subject to economy). As for the multiple wh example in (20b), it should be able to be treated basically in a fashion similar to the way (20a) has just been dealt with, roughly except for different feature manipulation and semantic interpretation due to the presence of another wh-phrase in place of the focus-phrase. I leave the task of analyzing (20b) to the reader. Notice that we have so far accounted for the difference in positioning of a wh/focus phrase (in the default case) between Western Bade and English and treated the English gapping case where the [Spec, v] position has to be invoked for wh/focus phrases, without any apparent need to make a parametric distinction between a 'more marked' and 'less marked' choice with respect to rule application (or with respect to [+foc] assignment and wh-interpretation, in our case). The basic situation with rules should be one where there are rules and the rules apply or do not apply, depending on the circumstances. Certain structures built (by some rules) up to some point of the derivation may be the same across all languages (abstracting away from word order, and possibly from other factors), and then optional rules kick in, operating subject to economy and

applying only for a reason. It seems to me that it is *only* these optional rules that are responsible for parametric variation across languages (see Suzuki, 2002, for the notion of 'EPP-Parametrization'). It would then take a detailed conceptual argument to accommodate such exotic rules as soft/ranked ones in the sense of López and Winkler (2003), because their evidence has been shown to be successfully dealt with in other terms. Alternatively, it might be the case that 'some rules' in the sense above that build 'certain structures' common across all languages may also be optional rules (subject to economy), all (linguistic) rules then being optional and subject to economy. And there must always happen to be a reason for rule application in regard to the common portion across all languages, which situation might constitute a structural 'substantive universal.' Then every structure beyond the substantively universal structure should entail structural variation, which I presume may constitute the whole empirical content of the notion of 'parametric variation' across languages (see Suzuki's, 2002, EPP-Parametrization). And I claim that it should be the notion of economy that plays a central role in defining it.

Consider the CSC violation example in (22) in light of the assumptions above concerning coordinate structures:

(22)   *Which book did you buy this journal and?

At the completion of the strong ConjP phase, we have '[$_{ConjP}$ [$_{DP2}$ this journal] [$_{Conj'}$ and [$_{DP1}$ which book]]],' the complement of the phase head (DP1) being subject to TRANSFER and presumably CS TRANSFER not applying for economy reasons in this case. Then we have '[$_{vP}$ you buy [$_{VP}$ buy [$_{ConjP}$ this journal and [$_{DP1}$ ϕ]]]]' at the completion

of the next higher strong vP phase, VP being sent to various components. Notice that it is only at (and after) the completion of the vP phase that the PGP can kick in to deal with vP and ConjP, for example. After its TRANSFER DP1 continues to be invisible due to its status of being marked for inaccessibility until the completion of the next higher strong vP phase, but at (and after) its completion DP1 cannot raise to [Spec, v] because vP has already been established. It should be quite obvious then that DP1 (*which book*) cannot reach its final landing site ([Spec, C]), thus accounting for the ungrammaticality of (22) and adding support to the above assumptions in regard to coordinate structures. Then I here assume that it may be possible for the PGP to select for treatment a pair of strong phases excluding the current phase and perhaps including the immediately downstairs phase. Then the relevant pair of phases treated by the PGP in the case under discussion (20a) should be CP and ConjP, the relevant condition on the PGP operation being as in (23a), and I assume the timing of inaccessibility determination to be defined as in (23b):

(23) a. Condition on the PGP Operation

In principle the operation of the PGP at some point of the derivation may range over at most three adjacent strong phases crucially including the current phase as the highest of the three. The PGP can deal with any two adjacent strong phases out of the three phases in the sense above in narrow syntax and also in any given external module interfacing with it with its operation subject to economy.

b. Timing of Inaccessibility Determination

In the structure '[$_{Ph3}$ ... [$_{Ph2}$ ... [$_{Ph1}$ ... [$_E$ ...]]]],' where Ph is a strong phase and E an element TRANSFERred at the completion of Ph1, E continues to be marked for inaccessibility and hence potentially able to be made visible by the PGP (at the completion of a strong phase) until the completion of the strong phase two stairs up (Ph3), and at the completion of the latter phase it turns inaccessible to any further operations across modules forever.

6.3. Felser (2004)

Let us see how the condition in (23a) and the assumption in (23b) fare in accounting for the following three German constructions taken from Felser (2004):

(24) a. *Wovon* glaubst du, *wovon* sie träumt?　　　　(*wh*-copying)

　　　 of.what believe you, of.what she dreams

　　　 (What do you believe that she dreams of?)

　　 b. *Wovon* glaubst du, dass sie träumt?　(long-distance extraction)

　　　 of.what believe you that she dreams

　　　 (What do you believe that she dreams of?)

　　 c. *Was* glaubst du, *wovon* sie träumt?　　　　(partial movement)

　　　 what believe you of.what she dreams

　　　 (What do you believe that she dreams of?/

　　　 What do you believe as to what she dreams of?)

In (24a), we have '[$_{vP}$ wovon sie [$_{VP}$ wovon träumt] träumt]' at the

completion of the embedded strong vP phase, VP being sent to other modules (perhaps subject to economy). Then at the completion of the next higher embedded strong CP phase, we have '[$_{CP}$ wovon C [$_{TP}$ sie [$_{vP}$ wovon sie [$_{VP}$ ϕ] träumt] träumt]],' TP being subject to TRANS-FER. Here the PGP comes in to make VP visible (at PF) and to have the PF which-copy-to-pronounce rule delete the wh-phrase in VP (a default operation; note that we are only dealing here with the wh-phrase and its phonological realization(s), ignoring the verb and other elements). At the completion of the matrix strong vP phase, we have '[$_{vP2}$ wovon du [$_{VP2}$ [$_{CP1}$ wovon C [$_{TP1}$ ϕ]] glaubst] glaubst],' VP2 being subject to TRANSFER. Here the PGP makes visible the TP1 portion minus VP1, which turned inaccessible forever at the completion of the matrix vP2 phase (see (23b); note that the PGP is now going to deal with CP1 and vP1 (see (23a))), and treat the wh-phrase in [Spec, C1] and that in [Spec, v1] for the purposes of the PF which-copy-to-pronounce rule, the latter rule deleting the wh-phrase in [Spec, v1], a default case. Then at the completion of the matrix strong CP phase, we obtain the structure '[$_{CP2}$ wovon glaubst [$_{TP2}$ du [$_{vP2}$ wovon du [$_{VP2}$ ϕ] glaubst] glaubst]],' TP2 being sent to various external modules. And, finally, at the 'root -clause' TRANSFER, we have the structure '[$_{CP2}$ wovon glaubst [$_{TP2}$ ϕ]]' TRANSFERred to other modules. Again, for the purposes of the PF which-copy-to-pronounce rule (in regard to the wh-phrase), the PGP deals with the wh-phrase in [Spec, C2] and that in [Spec, v2] by making the TP2 portion minus VP2 visible (at least) to the phonology (interpreting the 'root-clause' TRANSFER as constituting another strong phase and thus serving as the strong phase two stairs up from the strong vP2 phase; see (23b)), and have the which-copy-to-pronounce rule delete the wh-phrase in [Spec, v2], a default copy-deletion case

again. Now, as for the *wh*-copying case in (24a), we have two copies of the wh-phrase remaining in [Spec, C1] and in [Spec, C2], the PGP having applied three times for the purposes of the which-copy-to-pronounce rule in regard to the wh-phrase. Let us turn to the long-distance extraction case in (24b), where we have only one copy of the wh-phrase appearing/remaining (phonologically) in the sentence. All the structures obtained and PGP operations (with respect to the PF which-copy-to-pronounce rule in regard to the wh-phrase) up to the completion of the matrix strong vP phase are exactly the same in (24b) as in (24a), so I immediately get to the stage where the matrix CP phase is completed, when we obtain the structure '[$_{CP2}$ wovon glaubst [$_{TP2}$ du [$_{vP2}$ wovon du [$_{VP2}$ ϕ] glaubst] glaubst]],' TP2 being subject to TRANSFER. The PGP kicks in here to make visible (specifically, to the phonology) the VP2 portion minus TP1 (see (23b)), to treat the wh-phrase in [Spec, v2] and that in [Spec, C1], and to have the which-copy-to-pronounce rule delete that in [Spec, C1], a default copy-deletion case, accounting for the absence of the wh-phrase in [Spec, C1] in the long-distance extraction case, in contrast to the *wh*-copying case, where we see a wh-phrase in that position. And, as for the stage where the 'root-clause' TRANSFER takes place, all the structures involved and PGP operation (except for what structures and PGP operation are involved in the deletion of the wh-phrase in [Spec, C1]) are exactly the same in (24b) as in (24a). Overall, as for (24b), we have only one wh-phrase remaining (phonologically, here) in matrix [Spec, C2], the PGP having applied four times for the purposes of the PF which-copy-to-pronounce rule with respect to the wh-phrase. Finally, turn to the partial movement case in (24c). I follow Felser (2004; and several works cited there) in assuming that *was* originates in matrix object position (hence its

incompatibility with predicates selecting clausal complements only) and that it is a CP-proform and argumental, and the embedded wh-clause a secondary predicate. Assuming that a secondary predicate is a sort of adjunct and that *was* does not enter into any kind of direct dependency relationship with the contentful wh-phrase in the embedded clause, I propose that the latter clause independently come to the stage where Chomsky's 'root-clause' TRANSFER applies, when we have the structure '[$_{CP1}$ wovon C [$_{TP1}$ ϕ]]' TRANSFERred to various external interfacing components, the PGP operating to deal with the wh-phrase in [Spec, C1] and that in [Spec, v1] (note that in (24a,b) the current strong phase in the corresponding case is vP2) and to allow the PF which-copy-to-pronounce rule to delete the lower wh-phrase, and the number of the PGP applications in the embedded clause in regard to the wh-phrase copy deletion operation being two. The matrix clause involving *was* is independently constructed: at the completion of the matrix strong vP phase, we obtain the structure '[$_{vP2}$ was du [$_{VP2}$ was glaubst] glaubst],' VP2 being subject to TRANSFER; then at the completion of the matrix CP phase, we have '[$_{CP2}$ was glaubst [$_{TP2}$ du [$_{vP2}$ was du [$_{VP2}$ ϕ] glaubst] glaubst]],' TP2 being sent to other external modules, and the PGP kicking in here to treat the wh-phrase in [Spec, v2] and that in VP2 and allowing the PF which-copy-to-pronounce rule to delete the latter wh-phrase, a default deletion case; then, finally, at the 'root-clause' TRANSFER, we have the portion '[$_{CP2}$ was glaubst [$_{TP2}$ ϕ]]' TRANSFERred to other interfacing modules, the PGP coming in to deal with the wh-phrase in [Spec, C2] and that in [Spec, v2] and letting the which-copy-to-pronounce rule delete the latter, a default case, and the number of the PGP applications in the matrix clause with respect to the wh-phrase copy deletion operation being two. It follows then that the total

number of PGP operations in (24c) amounts to four. I propose that the whole structure in (24c) constitute an adjunction structure, with the embedded clause as the complement of the abstract Adj(unction) head and the matrix clause (or possibly some smaller portion of it that the complement modifies in some sense) as its spec (see below for some reanalysis and discussion). Note that Felser (2004: 549) observes that the wh-copying construction seems to be the preferred way of asking long wh-questions in comparison with the long-distance extraction one. The numbers of PGP operations in regard to wh-phrase copy deletion rule operation in (24a,b) (3 vs. 4 times) might suggest a way of measuring economy across construction types (one may try to implement and examine all PGP applications across the three construction types here, measuring economy in each case in terms of the number of such operation applications).

7. Reanalysis of adjunction structure

First let us take up a typical CED example and see how our framework fares in accounting for it:

(25)   *Who did Jeong-Shik make a pie before he met?

I assume that the adjunct *before he met* modifies the matrix vP and that an adjunct phrase constitutes a PP structure taking a CP complement (Nunes and Uriagereka, 2000). At the completion of the adjunct PP phase, we have the structure '[$_{PP}$ before [$_{CP1}$ who C [$_{TP1}$ ϕ]]].' Note that the wh-phrase is in [Spec, C1] at this stage. Assuming as above that the null Adj(unction) head takes the adjunct PP as its complement

and the matrix vP as its spec and also that AdjP lacks edge positions (López and Winkler, 2004), we obtain the adjunction structure '[$_{AdjP}$[$_{vP2}$ Jeong-Shik make [$_{VP2}$ ϕ]][$_{Adj'}$ Adj [$_{PP}$ before [$_{CP1}$ who C [$_{TP1}$ ϕ]]]]],' the AdjP becoming the complement of the matrix T. Under the assumption that AdjP constitutes a strong phase, we see here TRANSFER of PP (the complement of Adj) over to other interfacing components. At the completion of the matrix strong CP phase, we obtain the structure '[$_{CP2}$ did [$_{TP2}$ Jeong-Shik T [$_{AdjP}$[$_{vP2}$ Jeong-Shik make [$_{VP2}$ ϕ]][$_{Adj'}$ Adj [$_{PP}$ ϕ]]]]],' TP2 being subject to TRANSFER. We already see clearly here that (25) cannot possibly be generated, it being quite impossible for the wh-phrase to appear in [Spec, C2], for example. Let us then compare an example with an adjunct phrase with one with a complement:

(26) a. *Which picture of John2 did he2 like?

b. Which picture that John2 bought did he2 like?

The linking of *he* to *John* in (26a; the complement case) induces a Principle C violation, whereas nothing of the sort takes place in (26b; the adjunct case). Let us see (part of) their derivations, starting with (26a). At the completion of the strong vP phase in (26a), we obtain the structure '[$_{vP}$ wh-DP he like [$_{VP}$ like [$_{wh-DP}$ which picture of John]]],' VP being subject to TRANSFER. Notice that we have '[$_{VP}$ like which picture of John]' at LF at this stage (for the purposes of the binding theory; abstracting away from LF-specific terminology). At the completion of the next higher strong CP phase, we get the structure '[$_{CP}$ wh-DP did [$_{TP}$ he T [$_{vP}$ wh-DP he like [$_{VP}$ ϕ]]]],' TP being sent to other interfacing components. At LF we may have '[$_{TP}$ he T [$_{vP}$ wh-DP he like

[$_{VP}$ like which picture of John]]]' (for binding theoretic purposes), VP being reactivated (at LF) for the latter purposes by the PGP. Assuming with Chomsky (1995: 211) that "if α is an r-expression, interpret it as disjoint from every c-commanding phrase" (Principle C of the binding theory), we see that *John* in VP should be disjoint both from he in vP and from he in TP, establishing that *he* is disjoint from *John* in (26a) and thus predicting its ungrammaticality. Let us then turn to (26b), where the linking of *he* to *John* does not lead to a Principle C violation. Before getting to the analysis of (26b) itself, some remarks on some assumptions concerning constructions containing adjunction structure may be in order. First, I follow Chomsky (2004: 118; contra the fairly influential 'late merger' hypothesis) in assuming that adjunction applies cyclically, the adjunct phrase being merged in the same minimal phase as the 'modifiee.' Departing somewhat, though, from Chomsky (2004), I assume that the adjunction pair $< \alpha$, $\beta >$ (pair Merge) *is* a simple structure ($\{ \alpha$, $\beta \}$, set Merge) from the beginning, introducing into the analysis a new head and its projection (Adj(unction) Phrase) and postulating the strong phase status of AdjP. And I claim that AdjP built on the basis of the standard X'-schema can sufficiently provide an operation of predicate composition, as required by the SMT as long as the C-I-system needs such an operation. Then we would no longer need Chomsky's (2004) operation of SIMPL, which converts pair-Merged elements to set-Merged ones, or his very notion of 'pair Merge.' With this background in mind, let us see how our set of assumptions fares in accounting for (26b). At the completion of the strong vP phase associated with *bought,* we obtain the structure '[$_{vP1}$ wh John bought [$_{VP1}$ bought wh]],' VP1 being subject to TRANS-FER (assuming Chomsky's, 1977, wh-movement analysis of the

restrictive relative construction, and 'wh' indicating the null relative operator). Then at the next higher strong CP phase, we get the structure '[$_{CP1}$ wh that [$_{TP1}$ John T [$_{vP1}$ wh John bought [$_{VP1}$ ϕ]]]],' TP1 being sent to other interfacing components. Notice here that the PGP reactivates VP1 for the purposes of the PF which-copy-to-pronounce rule, VP1 continuing to be accessible until the completion of the strong phase two steps up from the current CP1 phase. At the completion of the strong AdjP phase, then, we merge the independently obtained NP, *picture,* with CP1 to get '[$_{AdjP}$[$_{NP}$ picture][$_{Adj'}$ Adj [$_{CP1}$ wh that [$_{TP1}$ ϕ]]]],' CP1 being subject to TRANSFER. Note that at this stage the PGP reactivates TP1, which has just been subject to TRANSFER and thus made inaccessible, for the purposes of the PF which-copy-to-pronounce rule, TP1 (and perhaps, VP1 as well, as part of it) continuing to be accessible until the completion of the strong phase two stairs up from the current AdjP phase. Then at the next higher strong matrix vP phase, we have the structure '[$_{vP2}$ wh-DP he like [$_{VP2}$ like [$_{wh-DP}$ which [$_{AdjP}$[$_{NP}$ picture][$_{Adj'}$ Adj [$_{CP1}$ ϕ]]]]]],' VP2 being subject to TRANSFER. Notice that since the wh-DP in vP2 contains the frozen CP1, the PGP kicks in to make CP1 in VP2 accessible, the CP1 portion of the wh-DP in vP2 also coming to be accessible due to the same-chain-link status of the two wh-DPs. At the completion of the strong matrix CP phase, we obtain the structure '[$_{CP2}$ wh-DP did [$_{TP2}$ he T [$_{vP2}$ wh-DP he like [$_{VP2}$ ϕ]]]],' TP2 being sent other external modules. The PGP makes VP2 accessible (at PF) for the PF which-copy-to-pronounce rule to apply to the wh-DP in VP2 and that in vP2, deleting the former. For the purposes of the LF component, we have '[$_{TP2}$ he T [$_{vP2}$ wh-DP ('which picture ϕ ') he like [$_{VP2}$ ϕ]]],' where we can only see instances of the pronoun. Actually, we find no instances of *John* already at the vP2

stage, where we begin to see an instance of *he,* there being no point of the LF derivation for (26b) when there is any configuration in which the pronoun c-commands the r-expression. Notice that the PGP has never kicked in during the whole (LF) derivation for LF interpretation purposes, which I do not presume to be strange, because the PGP only functions subject to economy, the LF module somehow having had no need for its operation in the present case. Finally, as for the deletion of the wh-DP in vP2, at the 'root-clause' TRANSFER the PGP makes TP2 accessible at PF and the which-copy-to-pronounce rule will delete the wh-DP in vP2, that in CP2 remaining for pronunciation, a default copy deletion case.

Let us then examine (18), as to which I have left the question of the exact timing of adjunction unsolved, repeated here as (27):

(27)   [Which of the papers that he_2 wrote for Mrs. $Brown_3$] did every $student_2$ get her_3 to grade?

Note that among the set of assumptions above for the analysis of the adjunct case (26b) is the adoption of Chomsky's (2004) proposal that adjunction apply cyclically, which leads us to reject the 'late merger' hypothesis in favor of the assumption that the adjunct phrase enters the derivation at the same minimal phase as the 'modifiee.' With this background in mind, let us see how our set of assumptions fares in accounting for (27) (with only relevant PGP and other operations indicated in the exposition). At the completion of the strong vP phase associated with *wrote,* we get the structure '$[_{vP1}$ wh he wrote $[_{VP1}$ wrote wh for Mrs. Brown]],' VP1 being subject to TRANSFER. Then we obtain the structure '$[_{CP1}$ wh that $[_{TP1}$ he T $[_{vP1}$ wh he wrote $[_{VP1} \phi]]]]$,' TP1 being

sent to other interfacing modules. Here the PGP kicks in to reactivate VP1 (at PF) for the purposes of the PF which-copy-to-pronounce rule concerning the wh-phrase, VP1 presumably continuing to be accessible until the completion of the strong phase two stairs up from the current CP1 phase. We then merge the independently obtained NP, *papers,* with CP1, producing the structure '[$_{AdjP}$[$_{NP}$ papers][$_{Adj'}$ Adj [$_{CP1}$ wh that [$_{TP1}$ ϕ]]]]' (with AdjP a strong phase, and the adjunct phrase CP1 as the complement of the null Adj head and the relative head NP as its spec), CP1 being subject to TRANSFER.The PGP again comes in to reactivate TP1 for the purposes of the PF which-copy-to-pronounce rule, TP1 (and perhaps, VP1 as well, as part of it) continuing to be visible until the completion of the strong phase two stairs up from the current AdjP phase. At the completion of the strong vP phase associated with *grade,* we have the structure '[$_{vP2}$ wh-DP her grade [$_{VP2}$ grade [$_{wh-DP}$ which of the [$_{AdjP}$[$_{NP}$ papers][$_{Adj'}$ Adj [$_{CP1}$ ϕ]]]]]],' VP2 being sent to other external components (I abstract away from the minute structural details of the DP portion of the wh-phrase). Notice that since the wh-DP in vP2 contains the frozen CP1, the PGP kicks in to make CP1 in VP2 accessible, the CP1 portion of the wh-DP in vP2 also coming to be visible due to the same-chain-link status of the two wh-DPs. Then at the completion of the next higher strong vP phase associated with *get,* we obtain the structure '[$_{vP3}$ wh-DP every student get [$_{VP3}$ get [$_{TP2}$ her to [$_{vP2}$ wh-DP her grade [$_{VP2}$ ϕ]]]]],' VP3 being subject to TRANSFER, the PGP reactivating VP2 for PF purposes, and, finally, the PF which-copy-to-pronounce rule deleting the wh-DP in VP2, that in vP2 remaining for further operations, a default copy deletion case. At the completion of the matrix strong CP phase, we get the structure '[$_{CP3}$ wh-DP did [$_{TP3}$ every student T [$_{vP3}$ wh-DP every student get

[$_{\text{VP3}}$ ϕ]]]],' TP3 being sent to other external modules (subject to economy), the PGP kicking in to reactivate VP3 for PF purposes, and the PF which-copy-to-pronounce rule deleting the wh-DP in vP2, that in vP3 remaining for further operations, a default case. Finally, at the 'root-clause' TRANSFER, CP3 is subject to TRANSFER, the PGP reactivating TP3 for PF purposes, and the PF which-copy-to-pronounce rule deleting the wh-DP in vP3, that in CP3 remaining for pronunciation, again a default copy deletion case. Then turn to LF interpretation in (27). Recall that LF derivation (and the derivation of any other component interfacing the computational system as well, for that matter) proceeds in parallel ('phase-wise,' a la Chomsky, 2000, 2001, 2004) with narrow syntax. Notice that all the content of the wh-DP ('which of the papers that he wrote for Mrs. Brown'; actually, what is needed here would only be the adjunct phrase portion, but the whole wh-DP may somehow have to raise for some structural reason) must be dragged along at least as high as where the intended interpretation (the bound status for *he* and the avoidance of a Principle C violation) can be obtained. And note that we have seen above how the content of wh-DP has been kept visible throughout the whole PF derivation for the purposes of the which-copy-to-pronounce rule, with TRANSFER freezing the complements of various heads and the PGP reactivating the same portions soon after that for these PF purposes. Since we have here the same necessity to preserve the content of wh-DP at least until a certain point of the LF derivation, we should find exactly the same TRANSFER-PGP interactions during the derivation on the LF side (so I do not repeat these interactions for LF-interpretation purposes, only touching what is happening at crucial stages). At the completion of the strong matrix vP phase (only the relevant portions given), we have

'[$_{vP3}$ [which of the papers that he wrote for Mrs. Brown] every student get [$_{VP3}$ ... [$_{TP2}$ her to [$_{vP2}$ ...]]]]' (abstracting away again here from LF-specific terminology), VP3 being subject to TRANSFER (subject to economy). Let us then see the LF structure at the completion of the matrix CP phase: i.e., '[$_{CP3}$ [which of the papers that he wrote for Mrs. Brown] did [$_{TP3}$ every student T [$_{vP3}$ [which of the papers that he wrote for Mrs. Brown] every student get [$_{VP3}$ ... [$_{TP2}$ her to [$_{vP2}$ ...]]]]]],' TP3 being sent to the LF module (and, perhaps, to other modules, subject to economy). At LF, then, we see by looking at TP3 that the pronoun, *he,* in vP3 is successfully bound by the quantifier phrase, *every student,* in TP3 and that there is no Principle C violation (between *Mrs. Brown* and *her*), establishing that wh-DP is LF-interpreted in outer [Spec, v] of the matrix clause. Moreover, it may presumably be possible to see that there is nothing further up in the LF derivation that would incur a Principle C violation since the subarray responsible for the strong matrix CP phase may be visible at this stage, subarrays interfacing with the computational system as well.

8. Semantics-epistemology association (Minkoff, 2003)

We have been discussing interfacing between the computational system of human language and other external modules interfacing with it, calling the present version of interfacing 'invasive' after the fashion of Epstein et al. (1998) and López (2003), but departing from them in a number of important respects. What Minkoff (2003) presents may be a bit different from the cases treated above in terms of the notion 'invasion' (in our sense) in that the relevant association does not appear to involve narrow syntax. Recall that our hypothesis here has

been firmly based on the presence of Chomsky's (2000, 2001, 2004) SMT, the latter thesis only being concerned about the usability of the computational system/narrow syntax/language for the purposes of a number of external components interfacing with it. Since the association in the case of Minkoff (2003) is between epistemology and semantics (i.e., (non-)consciousness and (non-)coreference), it may somehow have to be established in some other fashion. Let us then see how Minkoff's (2003) case can be treated, given the discussion above.

By way of illustrating how language mirrors external human situations, Minkoff's (2003) following remarks may be quite instructive:

(28)   Further, if Universal Grammar is indeed responsible for the prohibition on coreference, then the semantic distinction, or continuum, involving consciousness and non-consciousness must itself represent part of what one might call a "Universal Epistemology" —— that is, an innate knowledge that humans possess about the structure of their universe. I hope that this research contributes to efforts to use findings about grammar to illuminate other realms of human conceptual experience. (p.61)

On the assumption that UG/FL (the faculty of language)/ language is responsible for the prohibition on coreference in the sense of Minkoff (2003) and that pragmatics (see López (2003) for a position that pragmatics may be an interpretive module, a submodule of the cognitive-intentional system) is responsible for epistemology/world knowledge of Minkoff (2003), I interpret (1) as claiming that UG/FL/language

must be usable (in this way) on the part of the pragmatics interface (in addition to the LF and PF interfaces). That is, UG/FL/language somehow reflects in terms of (non-)coreference (semantically) the relevant situation concerning the structure of the universe, supporting strongly what the strong minimalist thesis (SMT) has to say.

It seems that what may correspond to 'legibility conditions' of the SMT in the sense of Chomsky (2000, 2001, 2004) must itself be innate in its own individual domain (e.g., semantics, pragmatics, phonology). Extending this reasoning to every other relevant domain, I propose the following 'strongest' version of the SMT:

(29)   Strong Minimalist Thesis ('strongest version'):
        Every piece of innate linguistic knowledge reflects some innate knowledge in some other domain.

(29) may subsume Minkoff's (2003) case above under it. Notice that it might be possible to strengthen (29) to a bi-conditional (i.e., (29) and the proposition that "every piece of innate non-linguistic knowledge is associated with some innate linguistic knowledge") on the somewhat forced assumption that the 'human walking abilities,' for example, might be reflected in some form or other of 'locality' pervasively observable in many languages that has standardly been established in the UG literature. (See Grohmann, 2003, for an interesting implementation of locality in terms of the notion of anti-locality as well as that of standard locality; i.e., "not too far apart, not too close.") Every walking step of the human individual's (regulated by some innate specification) covers roughly the same distance, not too long and not too short. So I assume that it may be sufficiently plausible to have a bi-

conditional along the lines above in this case, but my further discussion will be seen to keep to (29) in most cases for the obvious reason that almost anything could be said at the current level of understanding (on my part) in the relevant domains in terms of connections between innate linguistic and non-linguistic knowledge, particularly in the reverse direction. (Of course, caution must be taken when dealing with (29) as well.)

It may, however, be possible to further argue in favor of the bi-conditional mentioned above. You may conjecture that what the child's innate linguistic knowledge reflecting some aspect of the structure of the universe can be derived from must necessarily be itself innate for the simple and obvious reason that it is totally impossible for any unborn human being to have access to anything that could be encountered only after birth. So, overall, the bi-conditional involving (29) should be true. But one might object that it could be possible to have your innate linguistic knowledge even without associating it with what it reflects at the innate level, that is, before birth in temporal terms, the relevant association being established on exposure to aspects of the actual world after birth.

Indeed it may be true that FL/UG/language does reflect aspects of the world/the universe, but it has been pointed out in the literature that the syntax is independent of the semantics, for example (the submodule of syntax, the autonomy of syntax, etc.; recall the autonomy thesis, now reformulated in terms of the notion of modularity), which situation I assume can be extended to the present case; that is, FL/UG/language should be independent of the semantics, phonology, and pragmatics, on the assumption that FL/UG/language (presumably, in the technical sense here) corresponds roughly to the (human language)

computational system ('narrow syntax,' including overt and covert syntax; Chomsky, 2000: 99-100). Suppose as in Minkoff (2003) that the universal prohibition on coreference (perhaps parametrized; Monkoff, 2003: 53ff.) reflects the relevant part of universal epistemology. And note that Minkoff (2003: 52) has shown that children are by and large error-free in this domain. If the child should somehow associate the relevant innate universal linguistic knowledge (prohibition on coreference) with the corresponding innate universal epistemological knowledge (distinction between consciousness and non-consciousness) *after birth,* the overall correct performance on the part of children could not be accounted for. This would call for the assumption that the association between the two (the linguistic and epistemological knowledge) is established at the innate level, that is, *before birth.* This assumption may have interesting theoretical implications for the whole human knowledge structure and interaction among different (sub-)modules, specifically at the innate level, calling for the reconsideration of the notion 'emergent properties,' for example (Jenkins, 2000: 102ff.; see below for this notion).

Basically, there might be two proposals concerning the innate association above: (i) both (semantic) linguistic and epistemological knowledge have the relevant dichotomy ('consciousness vs. non-consciousness' in the epistemology, corresponding to the semantic notions of coreference vs. non-coreference, respectively) from the outset of pregnancy; and (ii) linguistic knowledge lacks the relevant dichotomy at first, (gradually) coming to have it through the interaction with the epistemology during the pregnancy period. Notice that the computational system of human language exists throughout these pregnancy periods. Although the system plays a major role as the core organ in

regard to interfacing in generating linguistic expressions *after the child's birth* (due to the SMT), I assume that it does not play a similar role during the pregnancy period since its major function is to generate derivations in cooperation with other external modules interfacing with it, but not to associate one such interfacing module with another.

Given the possibilities above then, what new things can we say about the notion of 'emergent property,' which is manifested only by a sufficiently large and complex system by virtue of that size and complexity (Jenkins, 2000: 103; a representative example of this in the case of language being parameter setting)? According to P. W. Anderson cited in Jenkins (2000: 102ff.) (see the Anderson hierarchy which deals with elements/phenomena from 'elementary particle physics' to 'social sciences'), entirely new properties appear at each level of complexity in spite of the fact that a science higher up in the hierarchy obeys the laws of a science lower down, and entirely new laws, concepts, and generalizations are necessary at each stage, psychology not being applied biology and biology not being applied chemistry. Turning to the two possibilities above concerning the innate connection between (semantic) linguistic and epistemological knowledge, I opt for assumption (ii), taking it for granted that things/elements/phenomena during the pregnancy period should also be subsumed under the Anderson hierarchy since they are also strictly part of the natural world. Assumption (ii) might illustrate a linguistic case that shows how an 'emergent property' is created during the before-birth pregnancy period, the system after the interaction in (ii) presumably being larger and more complex than that before it.

Some clarification of my present standpoint in terms of recent nativism debate may be in order here. Note that it goes without saying

that my discussion largely relies on the Chomskian nativism, which is primarily a thesis about knowledge and belief and so continues the tradition of rationalist epistemology (Fodor, 2000). Continuing and drawing on the discussion in Fodor (1983), most or part of Fodor (2000) is an attempt to compare Pinker's (1997) and Henry Plotkin's computational nativism, which is primarily about the nature of mental processes (like thinking, for example) and so continues the tradition of rationalist psychology, with Chomsky's epistemological nativism, and to defend the latter in spite of his long-standing claim that the computational theory of mind is by far the best theory of cognition that we have. According to Fodor (2000), computational nativism is clearly the best theory of the cognitive mind that anyone has thought of so far (vastly better than, for example, associationistic empiricism), but it is quite plausible that computational nativism is largely not true. The standard pretheoretical taxonomy of mental states/cognition since Freud has pointed to the following two quite different natural kinds: (i) the intrinsically *intentional* ones: beliefs, desires, and the like; and (ii) the intrinsically conscious ones: sensations, feelings, and the like. And the classical Turing account of computation has shown that we need a comparably fundamental dichotomy between mental processes that are *local* and ones that are not. A characteristic cluster of properties that local mental processes reliably share with one another but not with global ones includes the following three features: (i) local mental processes appear to be quite compatible with Turing's theory that thinking is computation; (ii) they appear to be largely modular; (iii) much of their architecture (specifically, the domain specific part) appears to be innately specified. As for global cognition, Fodor (2000) observes that it is different from the local kind in all the three respects above, our

current understanding of it being light years from being satisfactory. Although one of the background assumptions in our discussion should be commitment to Turing's syntactic account of mental processes, Fodor (2000) goes on to claim that the syntactic theory of mental processes may not be the whole truth about cognition. Pinker's (1997) and Henry Plotkin's account depends specifically on the syntactic/computational theory of thought, but, according to Fodor, this may only hold for cognitive processes in general if the architecture of the mind is mostly modular, which, however, it may not. (Fodor (2000) observes that we urgently need some theory of mental processes or other, which Chomsky rather clearly does not have, and that if computational nativism (Pinker's and Plotkin's approach) is untenable, Chomskian nativism (epistemological nativism) is also incomplete.) In short, according to Fodor (2000), the computational model is implausible as an account of global cognition, and modular cognition is where Turing's computational story about mental processes is most likely to be true.

While the discussion can continue forever, I here would like to try making a distinction between Chomsky's epistemological nativism and Pinker's and Plotkin's computational nativism in terms of the well-known dichotomy between substantive and formal universals in the sense of Chomsky (1965). In very simple terms (see Suzuki, 2003), it seems to be the case that substantive universals may constitute the whole vocabulary necessary for the description of the mind/language, while formal universals may correspond to the mathematical properties ubiquitous in the natural world (so, in the mind and language as well). While it might be the case that the functioning of the mind and language can be captured in terms of computational nativism, we definitely need the vocabulary in terms of which we express human

situations, which can only be accomplished through the aid of epistemological nativism. As for the case of the semantics-epistemology association in Minkoff (2003), what is involved is clearly an instance of substantive universals/epistemological nativism, the problem here not being one of the functioning of language, but one of a concrete instantiation of a vocabulary item across external (to the computational system)modules.

9. Some remarks on the cartography project

Despite the tremendous amount of contribution to the proper and important understanding of the sentential and nominal phase structure of human language made by the cartographic works since Rizzi's (1997) seminal work, it should be the case that if there is one cause for concern to us in the project, it is most explicitly stated in the following observation made in Belletti (2004: 17): "The relation between syntax and the interpretative interface (LF) is expressed in an optimally simple way: the interpretation is read off the syntactic configuration." We are concerned because Belletti presumably means here that all the interpretations will be distributed among (and hence, can be read off) the specific positions of phrase structure derived *only* by virtue of the applications of the syntactic structure building operations such as Merge and Move, among which positions should be included Topic and Focus. Indeed, Topic and Focus will eventually appear in a syntactic position (alternatively, the places they occupy will constitute syntactic positions), but what position they should appear in may not be determined solely on the basis of narrow syntactic derivation.

Part of the reason that the cartography project cannot be on the

right track may be found in the standard interpretation of the long-standing assumption of the "autonomy of syntax" in the generative tradition. According to the standard assumption, syntax must be independent of semantics or phonology, let alone pragmatics or the knowledge of the world. Then you immediately doubt the validity of Rizzi's (1997) fine (syntactic) structure of the left periphery involving such discoursal notions as Topic and Focus.

But what do you do with Chomsky's SMT to the effect that language/FL/narrow syntax/the computational system of human language is an optimal solution to legibility conditions? You evidently see that Rizzi's (1997) cartography framework goes in the direction of satisfying the SMT in a most straightforward fashion. It enables narrow syntax to quite easily reflect concepts from other modules. But, then, why do we say that Rizzi's (1997) system may be wrong?

Recall Chomsky's (2002) observation that FL/the computational system of human language was inserted into the already existing system involving at least a PF and LF interfaces (external to language/-FL/the computational system of human language and internal to the human system) which had presumably reached a sufficient/ripe enough stage of human/biological development as a result of evolution. Notice also that Suzuki (2003) points out concerning Chomsky's (2004) 'strongest minimalist thesis' that the part of FL that does not derive from interface conditions ('general properties,' 'general principles of efficiency' in the sense of Chomsky (2004)) must all consist of mathematical properties (as in other domains of the natural world). Actually, on the assumption that interfaces are 'invasive' in the sense of Epstein et al. (1998) (see López, 2003; and subsequent modification of the notion throughout the present paper), that part of FL that does de-

rive from interface conditions must have been nonexistent in narrow syntax at first, but have entered it thanks to the invasion of interfacing modules at the time of spell-out; that is, what these interfacing modules have brought into narrow syntax due to their invasion property at the time of (multiple) spell-out may define the factual content of the FL part that derives from interface conditions in the sense of Chomsky (2004), although what comes in must presumably be linguistic features (e.g., [±presuppositional], [±focus] as in López, 2003). Then it must be the case that if nothing should come in, the whole empirical content of FL would be mathematical in nature.

It may follow from the above then that what Chomsky's SMT aims to describe should be that FL/the computational system of human language, a mathematical system, is flexible enough to allow interfacing modules to bring into it a variety of (linguistic) features to take part in narrow syntactic computational operations (now and, possibly, subsequent to their introduction; see López, 2003), the notion of 'flexibility' in this case presumably corresponding to Chomsky's (1995, 2000, 2001, 2004) terminology involving the term 'usable.'

10. Conclusion

In connection with López's (2003) framework, where FocP and TopP are dispensed with in favor of making use of stacked specs of Fin to accommodate wh-phrases, focus-phrases, and dislocated phrases, the problem of how to ensure the observed order among the accommodated elements may arise, with López (2003: 210) only stipulating the 'CLLD → FF/wh' order. Gill and Tsoulas (2004) should give a promising and viable way of accounting for the observed order of the relevant ele-

ments in this connection. While Gill and Tsoulas (2004: 124, 135) observe that they base their argument on Chomsky's (2001) suggestion, according to which these interpretive effects result from the superimposition of global phonological properties on the outcome of the cyclic operation of the semantic component, I make a bit different proposal (or suggest an instance of the implementation of their observation to the effect) that the observed effects result from the association between the two relevant external components, the phonology (specifically, prosody) and the pragmatics. Capitalizing on the case of the semantics-epistemology association (Minkoff, 2003), I assume that the association here between the phonology and the pragmatics should take place as part of the creation of emergent properties before birth (see 0.00). According Gill and Tsoulas (2004), who discuss the left periphery in Korean, the sentence initial position (whether or not the element in it is -(n)un marked) and the second position (with a -(n)un marked phrase in it) receive the highest pitch accent (i.e., the first accentual phrase high tone) and the accentual phrase high tone (whose value is higher than the expected one, but not higher than the first accentual phrase high tone), respectively. Notice that these prosodic properties are interpretive by superimposing themselves on relevant syntactic structure (see Chomsky's, 2001, suggestion above) and that since the first accentual phrase high tone and the second accentual phrase high tone are associated with the pragmatic notions of topic and contrastive focus, respectively, as part of the creation process of emergent properties before birth, the pragmatic interpretation of the sentence initial position and the second position (with a -(n)un marked phrase) is immediately obtained. The observed order above between TopP and FocP in the absence of the corresponding syntactic positions for them can thus

be ensured. I leave to further research the question of how to accommodate in our framework the necessary presence of a *-(n)un* marked phrase in the second position.

Some remarks on the notion 'economy' may be in order here, especially in connection with parametric variation across languages. You may recall another notion 'last resort' when you talk about 'economy.' Actually, these two notions could be considered to be two instances of the single notion applying in two different domains: narrow syntax per se ('last resort') and external modules (specifically, PF and LF, thus far) interfacing with the computational system ('economy'). The necessary 'outcome' in the last resort case may be changes in feature composition in some heads and that in the economy case creation of new entities in terms of the vocabulary of relevant external interfacing modules. Let us see some examples of the definition of these notions in the literature. Chomsky (1995: 280) gives the definition of 'last resort' of the following sort: "Move F raises F to target K only if F enters into a checking relation with a sublabel of K." I would presume that checking operations are optional and that they can apply only if they have an effect on outcome after the fashion of 'optional rules' in the sense of Reinhart (1997), Fox (2000), and Chomsky (2001) below, the representative example of an 'effect on outcome' here being changes in feature composition in some heads with a usual result of deleting uninterpretable features and hence of allowing those elements deprived of such features to continue to survive in various interpretive modules such as PF and LF. Notice that Chomsky (2001: 34-35) proposes a general economy principle based on ideas of Reinhart (1997) and of Fox (2000) that "an optional rule can apply only when necessary to yield a new outcome," the guiding intuition here being that "optional operations can apply

only if they have an effect on outcome" and a concrete example of the economy principle of the sort being that " v* is assigned an EPP-feature only if that has an effect on outcome." And Pesetsky and Torrego (2001) observes that "the hypothesis that movement is 'triggered' amounts to the claim that an element Y moves *only* when attracted by a feature (of some head X) with the EPP property. More generally, heads enter into Agree and Move relations only to the extent necessary. We can summarize this as the Economy Condition: 'A head H triggers the minimum number of operations necessary to satisfy the properties (including EPP) of its uninterpretable features.'" It is interesting to note here that Pesetsky and Torrego (2001) partly treats under the name of 'economy condition' what Chomsky (1995) deals with under the name of 'last resort.' Only their constant mention of the EPP property may suggest that they are assuming that outcome of a sort similar to that appearing in Chomsky's guiding intuition above, for example, may be necessary if relevant operations hope to apply. Pesetsky and Torrego's (2001) definition also contains something of what may be called 'methodological minimalism' in the sense of Martin and Uriagereka (2000), economy of derivation and of representation being representative examples of such minimalism especially in the early days of the Minimalist Program. It is simply undeniable that the study of language has gained much from methodological minimalism (i.e., Occam's razor) by seeking simple and nonredundant theories, but Martin and Uriagereka (2000) go on to point out that Chomsky (2004) is primarily concerned with the question why language/FL is that way, leading us to the necessity of considering the importance of what they call 'ontological minimalism' (i.e., SMT). Note that the notion of 'effect on outcome/new outcome' can best be captured in the form of

'addition' of something to the already existing entity or of 'extending' the existing entity; in terms of enlarging the pronounced part in the case of PF, in terms of increasing the variety of interpretation in the case of LF, and in terms of allowing elements to continue to survive in external components interfacing the computational system in the case of narrow syntactic feature checking. I would presume that it is addition/extension of this sort that resides at the core of the functioning of language, which may lead us to assume that the original notion of 'economy' in the sense of Reinhart (1997) and Fox (2000) precisely means this kind of addition/extension when it talks of the operation of optional rules. These 'economy' considerations may obtain much conceptual support from the simple linguistic fact that the fundamental task of such basic narrow syntactic operations as Merge, Agree, and Move should be structure building, whose fashion of existence in languages must define the so-called parametric variation across languages, both diachronically and synchronically, and perhaps, modality-wise as well. (See Suzuki, 2002: 19-22, albeit within some version of the cartography framework, for the notion of 'EPP-parametrization,' which is concerned with the possibility of the PF realization of various functional positions, both heads and XPs, in terms of Suzuki's, 2001, economy condition to the effect that you must minimize the effects of the EPP-feature in terms of the amount of pied-piping parameter.) I would claim that all rules of language are optional, that is, subject to economy, the latter notion being ubiquitous in language. Chomsky's (2000: 96) original SMT to the effect that "language is an optimal solution to legibility conditions" can be interpreted in our terms as follows.[6] On the assumption that "the only linguistically significant levels are the interface levels" (Chomsky, 2000: 113) and that the initial

conditions on language acquisition must consist of (i) interface condition and (ii) general properties (Chomsky, 2004: 106), all that language does is to satisfy legibility/interface conditions and, moreover, it has to do this in an optimal way, which should mean that all linguistic operations are subject to economy in accordance with Chomsky's (2001) guiding intuition above on the basis of ideas of Reinhart (1997) and Fox (2000). Notice that all that the SMT is concerned with is satisfying legibility/interface conditions in an optimal/economy-consistent fashion, simply excluding the universally given 'general properties' portion, which does strongly point to how the grasping of the raw situation of every language (see Chomky's, 2004, question above of "why language/FL is that way") should be the primary problem of general linguistic/scientific interest.

Footnotes

1   See López (2003) for the assumption that *pragmatics* (a sub-module of the cognitive-intentional system) can have access to narrow syntactic computation/FL during the course of derivation. This may amount to claiming that "FL is an optimal solution to the pragmatics interface (as well)."

2   When López (2003) uses the term 'invasion/invasive' in the sense of Epstein et al. (1998), he somehow appears to literally mean it as if the pragmatics extended its arm into narrow syntax, assigning its feature to a syntactic structure. My interpretation of 'invasion' may be somewhat different from López's (2003), but I continue to use the term in my analysis as well, because it should be appropriate to use it in describing interfacing in my terms in that (linguistic) features that have entered the syntax from external components interfacing narrow syntax continue to be present as part of the syntactic structure throughout the derivation.

3   Phase-Impenetrability Condition (PIC):
    (i)   In 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.

(Chomsky, 2000: 108)

(ii) The domain of H is not accessible to operations at ZP; only H and its edge are accessible to such operations. (Chomsky, 2001: 14)

4   LCA (Linear Correspondence Axiom):

d(A) is a linear ordering of T. (Kayne, 1994: 6)

5   Notice that the PGP account seems to restrict the range of reconstruction to the immediately downstairs phase, but the exploration of the validity of this prediction is beyond the scope of this paper.

6   Note that it might be the case that it is the very presence of the SMT that makes it possible for such things as cognitive grammar, semantic grammar, functional grammar, and so forth, to be formulated at all, specifically its present implementation, which allows of ample association at points of spell-out between the computational system and other external modules interfacing with it, permitting the description of sentential (interpretive) derivations in the semantic component proceeding cyclically in parallel with corresponding generative narrow syntactic derivations in the computational system, for example.

References

Béjar, S., Rezac, M., 2003. Person licensing and the derivation of PCC effects. In: Perez-Leroux, A.T., Roberge, Y. (Eds.), Romance Linguistics: Theory and Acquisition. John Benjamins, Amsterdam, pp.49-62.

Belletti, A., 2004. Aspects of the low IP area. In: Rizzi, L. (Ed.), 2004.

Belletti, A., 2004. Introduction. In: Belletti, A. (Ed.), 2004.

Belletti, A. (Ed.), 2004. Structures and Beyond: The Cartography of Syntactic Structures, Volume 3. Oxford University Press, Oxford.

Bhatt, R., Pancheva, R., 2004. Late merger of degree clauses. Linguistic Inquiry 35, 1-45.

Bobaljik, J., 1994. What does adjacency do? In: Harley, H., Phillips, C. (Eds.), MIT Working Papers in Linguistics 22. MITWPL, Department of Linguistics and Philosophy, MIT, Cambridge, MA. pp.1-32.

Bobaljik, J., 1995. Morphosyntax: The Syntax of Verbal Inflection. Doctoral

dissertation, MIT, Cambridge, MA.

Boeckx, C., Hornstein, N., 2004. Movement under control. Linguistic Inquiry 35, 431-452.

Borer, H., 1984. Parametric Syntax. Foris, Dordrecht.

Bošković, Z., 1997. The Syntax of Nonfinite Complementation: An Economy Approach. MIT Press, Cambridge, MA.

Bošković, Z., 2001. On the Nature of the Syntax-Phonology Interface. Elsevier, Amsterdam.

Bruening, B., 2004. Two types of wh-scope marking in Passamaquoddy. Natural Language & Linguistic Theory 22, 229-305.

Cecchetto, C., Zucchi, S., 2004. Why is SPEC,CP on the right in sign languages? Glow Newsletter #52, 30-31.

Chierchia, G., 2004. A semantics for unaccusatives and its syntactic consequences. In: Alexiadou, A., Anagnostopoulou, E., Everaert, M. (Eds.), The Unaccusativity Puzzle: Explorations of the Syntax-Lexicon Interface. Oxford University Press, Oxford, pp.22-59.

Chomsky, N., 1965. Aspects of the Theory of Syntax. MIT Press, Cambridge, MA.

Chomsky, N., 1977. On *wh*-movement. In: Culicover, P.W., Wasow, T., Akmajian, A. (Eds.), Formal Syntax. Academic Press, New York, pp.71-132.

Chomsky, N., 1995. The Minimalist Program. MIT Press, Cambridge, MA.

Chomsky, N., 2000. Minimalist inquiries: The framework. In: Martin, R., Michaels, D., Uriagereka, J. (Eds.), Step by step: Essays on Minimalist Syntax in Honor of Howard Lasnik. MIT Press, Cambridge, MA, pp.89-155.

Chomsky, N., 2001. Derivation by phase. In: Kenstowicz, M. (Ed.), Ken Hale: A Life in Language. MIT Press, Cambridge, MA, pp.1-52.

Chomsky, N., 2002. On Nature and Language. Belletti, A., Rizzi, L. (Eds.). Cambridge University Press, Cambridge.

Chomsky, N., 2004. Beyond explanatory adequacy. In: Belletti, A. (Ed.), 2004.

Cinque, G., 1999. Adverbs and Functional Heads. Oxford University Press, Oxford.

Cinque, G. (Ed.), 2002. Functional Structure in DP and IP: The Cartography of Syntactic Structures, Volume 1. Oxford University Press, Oxford.

Diesing, M., 1996. Semantic variables and object shift. In: Thráinsson, H., Epstein, S.D., Peter, S. (Eds.), Studies in Comparative Germanic Syntax Vol.2. Kluwer, Dordrect, pp.66-84.

Epstein, S.D., Groat, E.M., Kawashima, R., Kitahara, H., 1998. A Derivational Approach to Syntactic Relations. Oxford University Press, Oxford.

Epstein, S.D., Seely, T.D., 1999. SPEC-ifying the GF "subject;" eliminating A-chains and the EPP within a derivational model. Ms. [Draft for Grammatical Function Workshop, LSA Institute 1999]

Epstein, S.D., Seely, T.D., 2002. Rule applications as cycles in a level-free syntax. In: Epstein, S.D., Seely, T.D. (Eds.), Derivation and Explanation in the Minimalist Program. Blackwell, Oxford, pp.65-89.

Felser, C., 2004. *Wh*-copying, phases, and successive cyclicity. Lingua 114, 543-574.

Fodor, J.A., 1983. The Modularity of Mind. MIT Press, Cambridge, MA.

Fodor, J.A., 2000. The Mind Doesn't Work That Way. MIT Press, Cambridge, MA.

Fodor, J.D., 1998. Unambiguous triggers. Linguistic Inquiry 29, 1-36.

Fox, D., 2000. Economy and Semantic Interpretation. MIT Press, Cambridge, MA.

Fox, D., 2002. Antecedent-contained deletion and the copy theory of movement. Linguistic Inquiry 33, 63-96.

Franks, S., Bošković, Ž., 2001. An argument for multiple spell-out. Linguistic Inquiry 32, 174-183.

Freidin, R., Vergnaud, J.-R., 2001. Exquisite connections: some remarks on the evolution of linguistic theory. Lingua 111, 639-666.

Gibson, E., Wexler, K., 1994. Triggers. Linguistic Inquiry 25, 407-454.

Gill, J.H., 1997. If a Chimpanzee Could Talk: and Other Reflections on Language Acquisition. The University of Arizona Press, Tucson.

Gill, K.-H., Tsoulas, G., 2004. Peripheral effects without peripheral syntax: The left periphery in Korean. In: Adger, D., De Cat, C., Tsoulas, G. (Eds.), Peripheries: Syntactic Edges and their Effects. Kluwer, Dordrecht, pp.121-141.

Grohmann, K.K., 2003. Successive cyclicity under (anti-)local considerations. Syntax 6, 260-312.

Holmberg, A., 1999. Remarks on Holmberg's generalization. Studia Linguistica 53, 1-39.

Jenkins, L., 2000. Biolinguistics: Exploring the Biology of Language. Cambridge University Press, Cambridge.

Kayne, R.S., 1994. The Antisymmetry of Syntax. MIT Press, Cambridge, MA.

Larson,R.K., 1988. On the double object construction. Linguistic Inquiry 19, 335-391.

Legate, J.A., 2003. Some interface properties of the phase. Linguistic Inquiry 34, 506-516.

López, L., 2003. Steps for a well-adjusted dislocation. Studia Linguistica 57, 193-231.

López, L., Winkler, S., 2003. Variation at the syntax-semantics interface: Evidence from gapping. In: Schwabe, K., Winkler, S. (Eds.), The Interfaces: Deriving and Interpreting Omitted Structures. John Benjamins, Amsterdam, pp.227-248.

Martin, R., Uriagereka, J., 2000. Some possible foundations of the Minimalist Program. In: Martin, R., Michaels, D., Uriagereka, J. (Eds.), Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik. MIT Press, Cambridge, MA, pp.1-29.

Maruta, T., 2004. Review of Mark C. Baker's *Lexical Categories: Verbs, Nouns, and Adjectives* (Cambridge University Press, Cambridge, 2003). In: Studies in English Literature No.45, The English Literary Society of Japan, Tokyo, pp.248-258.

Minkoff, S., 2003. Syntax and epistemology in Guatemalan children's Spanish: The case of non-consciousness and non-coreference. Language Acquisition 11, 33-62.

Minkoff, S., 2004a. Consciousness, backward coreference, and logophoricity. Linguistic Inquiry 35, 485-494.

Minkoff, S., 2004b. The cyclic generation of interpretational semantic roles. Studia Linguistica 58, 135-174.

Musolino, J., 2004. The semantics and acquisition of number words: integrating linguistic and developmental perspectives. Cognition 93, 1-41.

Neeleman, A., Szendrői, K., 2004. Superman sentences. Linguistic Inquiry 35,

149-159.

Nissenbaum, J.W., 2000. Investigations of covert phrase movement. Doctoral dissertation, MIT, Cambridge, MA.

Nunes, J., 2004. Linearization of Chains and Sideward Movement. MIT Press, Cambridge, MA.

Nunes, J., Uriagereka, J., 2000. Cyclicity and extraction domains. Syntax 3, 20-43.

Pesetsky, D., Torrego, E., 2001. T-to-C movement: Causes and consequences. In: Kenstowicz, M. (Ed.), Ken Hale: A Life in Language. MIT Press, Cambridge, MA, pp. 355-426.

Pesetsky, D., Torrego, E., 2004. Tense, case, and the nature of syntactic categories. In: Gueron, J., Lecarme, J. (Eds.), The Syntax of Time. MIT Press, Cambridge, MA, pp.495-537.

Petitto, L.A., Holowska, S., Sergio, L.E., Levy, B., Ostry, D.J., 2004. Baby hands that move to the rhythm of language: hearing babies acquiring sign languages babble silently on the hands. Cognition 93, 43-73.

Pinker, S., 1997. How the Mind Works. Norton, New York.

Pollmann, T., 2003. Some principles involved in the acquisition of number words. Language Acquisition 11, 1-31.

Reinhart, T., 1997. *Wh*-in-situ in the framework of the Minimalist Program. Natural Language Semantics 6, 29-56.

Rezac, M., 2003. The fine structure of cyclic Agree. Syntax 6, 156-182.

Richards, N., 2004. Against bans on lowering. Linguistic Inquiry 35, 453-463.

Rizzi, L., 1997. The fine structure of the left periphery. In: Haegeman, L. (Ed.), Elements of Grammar. Kluwer, Dordrecht, pp.281-337.

Rizzi, L., 2004. On the cartography of syntactic structures. In: Rizzi, L. (Ed.), 2004.

Rizzi, L. (Ed.), 2004. The Structure of CP and IP: The Cartography of Syntactic Structures, Volume 2. Oxford University Press, Oxford.

Roberts, I., Roussou, A., 2002. The history of the future. In: Lightfoot, D. (Ed.), Syntactic Effects of Morphological Change. Oxford University Press, Oxford, pp.23-56.

Rosengren, I., 2002. EPP: A syntactic device in the service of semantics. Studia

Linguistica 56, 145-190.

Rullman, H., 2004. First and second person pronouns as bound variables. Linguistic Inquiry 35, 159-168.

Slabakova, R., Montrul, S., 2003. Genericity and aspect in L2 acquisition. Language Acquisition 11, 165-196.

Sugeno, T., 2004. Yubisashi-no Kigou-kinou-wa donoyouni Hassei-suruka: Aruiwa, Yuuchan-no Sinwa (How does the semiotic function of pointing emerge?: Alternatively, Yuuchan's myth). Gendai-Shisou (Revue de la Pensee d'Aujourd'hui) 7/2004, 152-165.

Suzuki, N., 2001. Minimalism and its implications for language acquisition and learnability. In: Kobe Shinwa Studies in English Linguistics and Literature No.21, Society of English Linguistics and Literature, Kobe Shinwa Women's University, Kobe, pp.14-43.

Suzuki, N., 2002. Triggers, minimalism, and learnability. In: Kobe Shinwa Studies in English Linguistics and Literature No.22, Society of English Linguistics and Literature, Kobe Shinwa Women's University, Kobe, pp.1-29.

Suzuki, N., 2003. Universals, Occam's razor, and the strong minimalist thesis. In: Kobe Shinwa Studies in English Linguistics and Literature No.23, Society of English Linguistics and Literature, Kobe Shinwa Women's University, Kobe, pp.1-17.

Takano, Y., 1998. Object shift and scrambling. Natural Language and Linguistic Theory 16, 817-889.

Uriagereka, J., 1999. Multiple spell-out. In: Epstein, S.D., Hornstein, N. (Eds.), Working Minimalism. MIT Press, Cambridge, MA, pp.251-282.

Vygotsky, L., 1986. Thought and Language. MIT Press, Cambridge, MA.

Yang, C.D., 2002. Knowledge and Learning in Natural Language. Oxford University Press, Oxford.