LABELS AS ANCHORS

1. GOAL: One of the topics under constant discussion in minimalism is phrase structure. While none questions the conceptual advantages of Merge (Chomsky 1995), things are more controversial in the case of labels (Collins 2002, Hornstein 2003, Kayne 2008). The goal of this paper is to reduce Chomsky’s (2008) labeling algorithm and address the questions in (1), for which we suggest these answers: (1a) Lexical Items / heads, (1b) elements drawn from the Lexicon, and (1c) due to interface requirements. Notice that question (1c)—perhaps the most interesting one—is like asking why syntax forms objects like “(γ, [α, β])”, and not “(α, β)”. We argue that labels are a residue of the role played by endocentricity in X-bar theory (Chomsky 2011), and should be dispensed with. We propose that the necessity for syntactic objects to be labeled (=endocentric) is not narrow syntactic, but interface driven. From this perspective, labels can be seen as anchors that allow the interfaces to establish the relevant asymmetries.

2. CHOMSKY’S (2008) ALGORITHM: Chomsky (2008) puts forward an algorithm according to which labels are determined through minimal search (cf. (2)), which is regarded as a general principle of efficient computation: more precisely, minimal search locates the most accessible element in a syntactic object (SO) Σ, where ‘accessibility’ is defined terms of complexity, assuming that Lexical Items (LIs) are less complex than phrases.

3. PROBLEMS OF THE ALGORITHM: The first problem of (2) concerns its second clause, (2b), which should be eliminated, not only because it introduces a residue of X-bar theory (the target projects; cf. Chomsky 1995:256 and ff., Hornstein & Uriagereka 2002; Donati 2006), but also because it makes an undesirable distinction between external and internal Merge (undesirable because both are just Merge), (2b) is also problematic because it cannot be derived from minimal search. A third—and as it turns out paramount—problem is the following: At the heart of (2) lies the non-innocent assumption that there is a designated class of units that can be identified as minimal, namely, LIs / heads. The problem with this is that there is no way to determine what an LI / head is. Chomsky (1995:245 and ff.) put forward a technical strategy to establish the minimal (head) vs. maximal (phrase) distinction, but it had to rely on labels / projections (cf. (3)). Clearly, if X-bar theoretic projections are dispensed with, it is not clear how to determine whether a SO is simple or complex. Things are even worse if LIs are regarded as “complexes of features” (Chomsky 1995:243 anb sub. work): if LIs are bundles of features, and “feature bundling” operates through Merge, then even LIs may be complex (that is, formally indistinguishable from phrases).

4. LABELS AS ANCHORS: In this paper we put forward a version of (2) that evades the problems just noted. We assume that only (2a) is to be kept, and we further propose that the ‘minimal (=head)’ status of SOs is determined upon selection from the Lexicon, by means of (4). To be sure, (4) follows from nothing we have said so far, but at least makes explicit the hidden assumption behind (2). The next question is WHY SOs must be labeled. As noted at the outset, this seems to be a residue of X-bar theory, which adopted a restrictive view of compositionality, “endocentric compositionality:” composition as successive attachment to a head (yielding endocentricity, comp-spec distinction, etc.). Once X-bar theory is dispensed with, there is no reason for Merge to impose such constraint. Merge just says that any two objects can be joined. Chomsky (2007, 2011) however speculates that a SO Σ should be labeled if and only if Σ enters into further computation (the label encoding the relevant information of Σ for subsequent applications of Merge/Agree). This is not immediately obvious, though: both (α, β) and ([α, β]) are unlabeled under (2), but they can (and, in some cases, must) enter into further computation (cf. (5)). Chomsky’s conjecture is also problematic, as we do not know how labels encode the relevant information. Are labels “feature structures” (as in HPSG)? If so, how are the features arranged and accessed? The alternative we would like to pursue here is that labels are needed at the interface, but not in narrow syntax. We take it that it is a defining property of the interfaces (not the computational system) that the relations established there are inherently asymmetric. At LF/SEM, α is the binder and β the bindée, α is the predicate and β its argument, α is an operator and β its variable, etc.; likewise, at PF/P Phon, α precedes β (or vice-versa), α is an affix and β its host, α is inflected and β is not, etc. We thus suggest that labeling satisfies the Strong Minimalist Thesis (SMT), creating objects that the interfaces can ‘digest’ (read, interpret, use, manipulate, etc.). From this perspective, labels are syntactic anchors that the interfaces use for the relevant (LF and PF) interpretations to be established.

5. LABELING CONFLICTS. Because of the inherent (and artificial) duality of Chomsky’s algorithm, the literature has focused on a limited set of scenarios where labels cannot be determined (cf. (6)), which cover different phenomena: cleftization (Uriagereka 2009), bare small clauses (Moró 2000), subjects (raising to subject/object positions; cf. Chomsky 2008), and internal arguments (Alexiadou & Anagnostopoulou 2007). In all those cases, one of the two Sos undergoing EM must move for labeling to be possible, as shown in (7). If we dispense with (2b), then unlabelable objects can also arise in movement (IM) scenarios too. This is precisely what Blümel (2011) argues, pointing out that successive cyclicity could be regarded as a labeling failure/indeterminacy. Blümel (2011) suggest that, e.g., wh-movement stops whenever the wh-phrase and the head are both endowed with a Q feature (Cable 2007, Cheng 1991) that acts as the label (cf. (8)) (the same reasoning is provided by Chomsky (2011) in order to account for the fact that the subject raises and stops at [Spec, TP]; since both the DP subject and T have a q-feature, there is a labeling: cf. (9)). Though appealing at first sight, we believe that this solution is also problematic; simply because neither (Q, WNP) nor ([Q, C], TP) are LIs. In order to overcome this problem, we suggest that embedded questions involve IM of the wh-phrase to C (in a tucking in fashion), whereas successive cyclic movement situations do IM of the wh-phrase to CP (cf. (10) vs. (11)). Being in a local relationship with C in (10), the wh-phrase can check the relevant feature with this head (taking ‘declarative C’ and ‘interrogative C’ to be featurally distinct). This analysis may also explain why wh-phrases freeze in their final landing site: since they become complements of C (after tucking in operates), they are cashed out when Transfer applies (assuming that Transfer applies to the complement of the phase level; this predicts that TP could move, but such possibility is precluded for independent reasons; cf. Abels 2003). Several questions arise at this point. One is why wh-phrases do not IM with v (cf.(12)); this is arguably impossible, since v is not sensitive to clausal typing.

6. CONCLUSIONS: This paper has argued that labeling is due to interface requirements, in accord with the SMT. Labels can thus be seen as anchors that the interfaces build on in order to manipulate syntactic outputs. If correct, this may suggest that compositionality is necessarily endocentric (as it was in X-bar theory, by stipulation). Such a scenario is not unexpected, since what we call “compositionality” is in fact “semantic (not syntactic) compositionality.” This nicely allows us to say that combination is blind (free) in narrow syntax, but must be endocentric (labeled, anchored) at the interfaces.
LABELS AS ANCHORS

(1) a. What are labels (under a Bare Phrase Structure, Inclusiveness abiding, formulation)?
b. How are LIs determined?
c. Why are labels necessary?

(2) MINIMAL SEARCH ALGORITHM
a. In \{H, α\}, H an LI, H is the label
b. If α is internally merged to β, forming \{α, β\}, then the label of β is the label of \{α, β\} [from Chomsky 2008:145]

(3) \[ X^{\text{max}} \]
   \[ X^{\text{min}} \]
\( Y^{\text{min}} \) (Chomsky 1995 notation, since X projects, then X must be minimal)

(4) LEXICON ASSUMPTION
   Objects taken from the lexicon have the \( X^{\text{min}} \) status

(5) a. \{α, β\} (first step of every derivation) Merge \((V, \text{him}) = \{V, \text{him}\}\)
b. \{αP, βP\} (small clauses or complex specifiers) Merge \(((\text{the}, \text{boy}), (\text{saw, her})) = ((\text{the boy}), (\text{saw,her}))\)

(6) a. External Merge of α and β (see (4a))
b. External Merge of αP and βP (see (4b))

(7) CLITICIZATION:
   a. \([\varphi, \text{Jean} [\text{v, la} \text{voit}] \text{see CL-her, hear CL} \text{la}] \text{Jean see CL-her see, hear CL}\text{la}\)
   b. \([\varphi, \text{Jean} [\text{v, la} \text{voit}] \text{t}] \text{Jean see CL-her see} \text{has CL-her see}\]

   SMALL CLAUSES:
   a. \("\text{Sono [sc le ragazze il problema]} \text{be the girls the problem}\"")
   b. \("\text{Le ragazze, T sono [sc ti il problema]} \text{be the girls be the problem}\"")

   INTERNAL ARGUMENTS:
   a. \("[\varphi, \text{pro [v nos v descrissero a nostros al policia]}]\"
   b. \("[\varphi, \text{pro [v nos v descrissero a nostros al policia]}]\"

(8) Q-FEATURE LABELING
   a. \(v^* \{\text{WhP, CP}\}\)
   b. \(V^* \{Q, \text{WhP}\}, \{Q, C, TP\} \) (label = Q)

(9) \(\varphi\)-FEATURE LABELING
   a. \(C \{\text{DP, TP} \ldots \text{t}\}\)
   b. \(C \{\varphi, \text{DP}, (\varphi, T) \ldots \text{t}\}\) (label = \(\varphi\))

(10) SUCCESSIVE CYCLIC MOVEMENT
   a. \(\{\text{WhP, CP}\}\) (labelable \{WhP, CP\})
   a. \(\{\text{WhP, CP, t}\}\) (unlabelable \{WhP, CP\})
   a. \(\{\varphi, \text{WhP}\}\)
   b. \(\{\varphi, \text{WhP}, (\varphi, T) \ldots \text{t}\}\) (labeable \{C, WHP\})

(11) EMBEDDED QUESTION
   a. \(\text{CP} \{\ldots \ldots \text{t}\}\)
   a. \(\text{CP} \{\ldots \ldots \text{t}\}\)

REFERENCES: