

A Syntax of Substance: a *précis*

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(What follows is a lightly edited version of Chapter 1 of Adger 2013)

1 The theoretical system

The aim of *A Syntax of Substance* (aSoS) is to develop a syntactic system that entirely separates structure building from the labeling of structure and to examine the theoretical, and some of the empirical, consequences of this idea.

The primary reason to explore such a system comes from a number of problems that arise in the Bare Phrase Structure approach to syntactic representation (Chomsky 1995). In Bare Phrase Structure, labeling is a side effect of the structure building operation Merge: when two elements X and Y are Merged, creating a new syntactic object, one of these elements is chosen to be the label.

However, this raises the question of how to choose the label. There are a number of possible approaches in the literature, but none of these is entirely satisfactory. I argue in chapter two of the book that they all have problems in providing a unified labeling algorithm, especially when specifier-head structures are considered.

The alternative solution I propose builds on the idea that there are actually no true functional heads qua lexical items. Rather structure is always built from lexical roots via Self Merge or standard binary Merge, where Self Merge is just the sub case of binary Merge where both inputs to the operation are token identical. The structures so built are directly labeled on the basis of a (set of) universal sequences of functional categories (roughly equivalent to the extended projections of Grimshaw 1991). That is, Self Merged roots are labeled with the start of some extended projection, and then that structure undergoes further structure-building operations. Each new structure is built from the previous one and is labeled on the basis of the labels of its immediate constituents and the relevant extended projection.

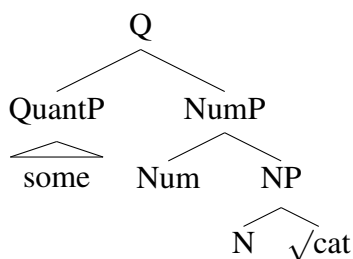
For example, take the root of the word *cat*, $\sqrt{\text{cat}}$. It has no category, but may Self Merge, giving the set $\{\sqrt{\text{cat}}\}$, a syntactic object distinct from the root it contains. Now this object needs a label. That label can be any category that can start an extended projection. We could choose N, in which case each further structure building operation will elaborate

a nominal extended projection, or we could choose V, or A, depending in part on the root's categorial flexibility.

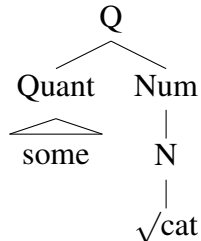
Let's say we take the label of $\{\sqrt{\text{cat}}\}$ to be N. Now we can either Self Merge this, giving $\{\{\sqrt{\text{cat}}\}\}$, or we could Merge, say, (the extended projection of) some quantifier with it, giving $\{\{\sqrt{\text{some}}\}\{\sqrt{\text{cat}}\}\}$. In either case the new object needs a label, and in both cases that label will be a function of the labels of the constituent(s) that the object contains and the sequence of categories in the independently given extended projection of N. For example, in the binary case, the label will be some category in the extended projection of N whose specifier can be a quantifier (say Q). In the unary case, it will be a further category in the semantic development of the nominal (for example, a category Num, marking number).

The structures that emerge from a system like this are what Brody (2000) calls 'telescoped' (see also Starke 2004). There is no independent head for any category except the root. Thus, rather than (1), we have (2):

(1)



(2)



I argue that this way of labeling structure is simpler than the standard Bare Phrase Structure system. In either system one anyway needs to state both the order of categories in an extended projection/functional sequence (see Starke 2001, Adger 2003, Williams 2003) and to provide categories for roots. Bare Phrase Structure just adds to that an extra notion of endocentricity that arises because functional categories are taken to be lexical items. I reject that assumption.

Within this new system, the labeling problems do not arise, and as I argue in chapter two, a unified labeling algorithm can be given.

This then is the basic architecture of the system I propose for separating off structure building from structure labeling. There are some immediate properties of this system that need comment.

First, Self Merge (Guimaraes 2000, Kayne 2010) is a fundamental operation. I argue that this operation comes for 'free' by removing a stipulation in the standard version of Merge, thus simplifying the definition of Merge.

Second, it is, in this system, impossible to Merge a root with a syntactic object distinct from that root. This is because roots on their own are not in the domain of the labeling algorithm (only labeled structures are). It follows that arguments cannot be introduced as sisters to lexical roots and that the semantic relation between a root and an argument must be negotiated by functional structure. Of course, this is no surprise, given the huge range of work that has argued for just this conclusion, on mainly empirical ground, in the last decade (Hale and Keyser 2002, Kratzer 1996, Borer 2005, Ramchand 2003, Bowers 2010, among many others). However, in the theory I develop here, this conclusion is a consequence of the computational system, rather than an empirical claim. This property of the system also highlights the stipulative nature of the notion of a special local domain for the introduction of arguments: there is no theoretically sound reason to take arguments to be local to their apparent root. In fact, the phrase structure system forces a divorce between a root and its arguments.

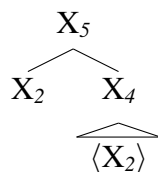
Third, if there are no functional heads, what are we to make of functional morphemes, both bound and free? I propose that bound morphemes are just pronunciations of functional categories attached to roots via extended projections (in a way that is similar to Brody 2000 or more particularly to the notion of ‘spanning’ developed in Williams 2003) while at least some free functional morphemes are spellouts of these categories which are not so attached (that is, they are spellouts of fragments of extended projections). Other free, apparently functional, morphemes, like auxiliaries, are spellouts of structures built up from lexical roots, as described above for $\sqrt{\text{cat}}$.

Finally, in a binary structure like the uppermost branches in (2), given that the label is dependent on both daughters, there is no way of defining the classical notion of specifier or complement (as, say, second and first Merge respectively). The structure is, as far as the syntactic operations are concerned, entirely symmetrical. However, asymmetrical interpretations need to be imposed by the semantic interface for identification of function-argument structure, and by the articulatory/acoustic interface for identification of linear order. I define new notions of complement and specifier that read these asymmetries off of the extended projection information in the tree. If a mother and daughter are in the same extended projection, and the daughter is lower in that projection, then the daughter is a complement of the mother; otherwise, the daughter is a specifier of the mother. So in (2), above, because Num and Q are in the same extended projection, and Num is lower than Q, Num is the complement of Q. Because Quant and Q are not in the same extended projection, Quant is a specifier of Q. These relations are then treated asymmetrically by both the semantics (where complements are composed before specifiers) and by the linearization systems (where complements are linearized after specifiers).

This last point has an important consequence, probably the most important of the entire system. It makes roll-up (and hence remnant roll-up) derivations impossible. To see why, consider a structure like (3). In this structure, suppose that all nodes labeled X are in the same extended projection, and that the subscripted numbers indicate the ‘height’ of the label in that extended projection. In (3), where X_2 has moved from inside X_4 , both daughters of X_5 are in the same extended projection, and both are lower in that extended projection than their mother. In such a configuration, it is impossible to determine which

is the complement, no asymmetry can be imposed by the interfaces, and the structure is uninterpretable.

(3)



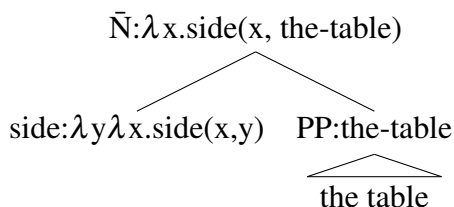
This system then rules out roll-up derivations as a matter of the computational system and therefore provides a more restrictive theory of syntax than that currently supposed. I argue for a different way of capturing apparent roll-up effects in chapter three of aSoS which replaces them with base generated structures (see also Brody and Szabolcsi 2003, Adger et al. 2009).

2 A case study in relational nominals

I explore these various consequences of the theory in chapters four to six, concentrating on the syntax of relational nominals, which provides a strong argument for the non-existence of a notion of a locality domain for argument structure satisfaction. I also show that there is surprising evidence for a base generation over a roll-up movement approach to the ordering and hierarchy of the constituents of the noun phrase. I provide a brief summary here.

The standard view of relational nominals emerges from a combination of the syntactic analysis proposed in Chomsky 1970 combined with the idea that relational nominals are parallel to transitive verbs semantically in being two-place predicates:

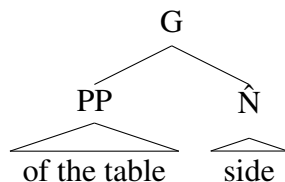
(4)



However, a major problem with this approach is that, across languages, the presence of the internal argument of the relational nominal is systematically optional, while for verbs it is (at least descriptively speaking) lexically determined.

I argue that the evidence for true argument structure in relational nominals is lacking (cf. Higginbotham 1983, Zubizarreta 1987, Grimshaw 1990). Further, connected to this lexico-semantic claim, the theoretical system developed in aSoS makes (4) an impossible representation since the PP cannot be a complement of a lexical head. Instead, the closest representation is (5), where \hat{N} and G are categories in the extended projection of the nominal:

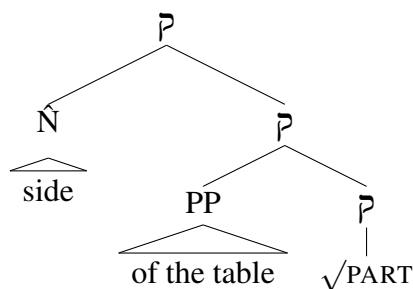
(5)



This representation itself raises two problems: one of the ordering of the constituents, and one of the etiology of the relational semantics. Since the PP is a specifier of G, why is the order not *of the table side* and how is the semantics of *side* appropriately ‘projected’ through its extended projection to the point where it can take *of the table* as an argument?

I show, however, that the representation in (5) should be replaced by (6), where *side* is not relational (that is, it just means $\lambda x.side(x)$), and where the type of the relation (in this case it is a *part* type of relation) is introduced by a ‘light’ root. The structure built from Self Merge of this root is labeled with a category I dub \mathfrak{P} , which is responsible for the function-argument structure that encodes relationality and for the introduction of the prepositional case marking morphology.¹

(6)



The semantics of \mathfrak{P} is a relation whose type is identified by the root, in this case $\lambda y \lambda x.part(x,y)$. This directly combines with its specifier *the table* to give a meaning of $\lambda x.part(x,the-table)$. Morphosyntactically, \mathfrak{P} values the case feature on *the table* and this valued case feature is realized as *of*. Once \mathfrak{P} and *of the table* have Merged, the new constituent is then of the correct semantic type to combine with *side* as a predicate modifier giving:

(7) $\lambda x.side(x) \wedge part(x,the-table)$

This approach provides a solution for the ordering problem in that the projection of the relational nominal (understanding this phrase as now being purely descriptive) is in a specifier of \mathfrak{P} . The category \mathfrak{P} combines first with its argument PP, which is a specifier and which linearizes to the left of the projection line, assuming a standard view that takes specifiers to linearize to the left of their complement, Kayne 1994, Brody 2000. The \hat{N} containing *side* is then also specifier of the \mathfrak{P} category that has a complement that contains the PP. Continuing to assume the standard view of linearization, the \hat{N} containing *side* will, perforce, appear to the left of the PP. The etiology of the relationality is in a functional category \mathfrak{P} , whose relation is named by the root it contains (in this case \sqrt{PART}) and

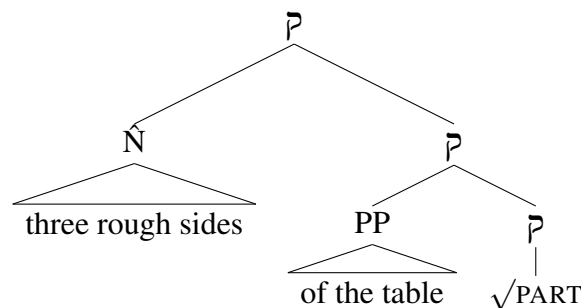
¹Thanks to Daniel Harbour for the suggestion to use the Hebrew letter \mathfrak{P} , which sounds like a K but looks like a P, thus neatly capturing the prepositional but also case (K) marking properties of the head.

whose semantics projects through the structure as is standard.

This approach immediately captures the optionality of the ‘argument’ of a relational nominal. There is a perfectly well formed syntactic derivation for *side* which does not involve relational \bar{p} , in much the same way that there is a perfectly well formed syntactic derivation for *side* which does not involve a numeral, or an adjective, giving the ‘optionality’ of numerals and adjectives. Assuming that D is Merged higher than \bar{p} , and that there is a syntactic dependency between the structure projected by the root *side* and D, we rule out a structure with no ‘lexical’ root, containing only \bar{p} (so **the of the table*).

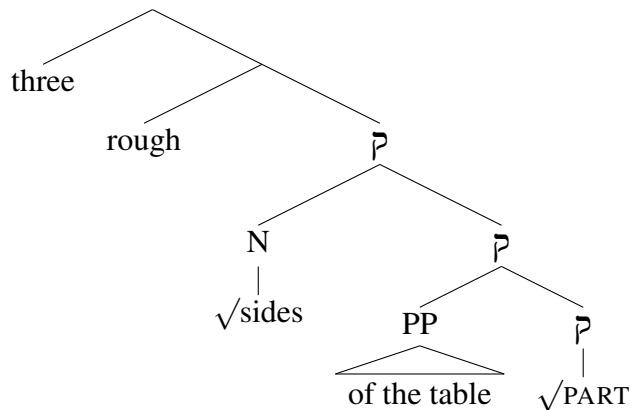
The next question that arises is the identity of \hat{N} . If \hat{N} is actually just N, then the resulting structure closely mimics the traditional view, with the PP being structurally separated from the N by a minimal layer of functional structures. However, unlike the standard approach, the perspective adopted here takes \hat{N} to be a specifier, so it is possible that \hat{N} is actually rather larger than just the root plus lexical category N. We therefore, unlike the classical approach, allow constituent structures where the PP is external to a constituent containing a fair amount of nominal material:

(8)



This contrasts with a structure which would be more similar to the classical view proposed and defended in Chomsky (1970):

(9)



It is then an empirical question as to which is superior.

I show in Chapter five that the correct view is the one allowed by the new system: the relational nominal projects sufficient structure to allow Merge of intersective APs, numerals and cardinal quantifiers, and some markers of definiteness before it is Merged with \bar{p} . The primary evidence for this is the interaction of the syntax of APs, PPs and N,

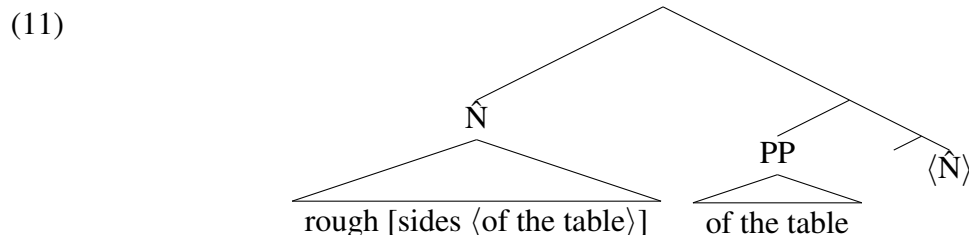
which I show is best captured by this new approach. The conclusions of this investigation also allow us an understanding of a new typological generalization which I call PP Peripherality:

- (10) **PP Peripherality:** When (intersective) AP modifiers and PP ‘complements’ both occur to one side of N inside a noun phrase, the PP is separated from the N by the AP

What (10) captures is the fact that, across languages, the PP complement appears further away from the head noun than most AP modifiers. This is entirely unexplained on the standard account, but is expected on the picture drawn here.

Chapter five also takes up the issue of the relations within the DP in more detail. It proposes that articles are actually the spellout of a definiteness projection ‘lower’ than \bar{p} , when that projection has moved to the specifier of D. Combined with a view of genitive possessors which takes them to be derived via movement from a \bar{p} like projection to the specifier of D for case reasons, this predicts the complementarity between articles and genitive possessors seen in many unrelated languages.

However, the empirical evidence presented in Chapter five for the order and constituency of AP and PP constituents of the noun phrase is actually also compatible with a movement account. That is, the structure in (9) can be mimicked by taking the PP to be generated in the standard complement of N position, and then raising to a higher specifier position, followed by movement of the remnant, as in Kayne 2004, Cinque 2006 and elsewhere:



Here the PP is Merged with the noun *side*, this constituent is then modified by an AP (*rough*), the PP is then moved leftwards, and the remnant raised yet further leftwards. The theory laid out in chapters two and three rules out such a derivation, creating a sharp contrast with a looser remnant movement approach.

This issue is taken up in Chapter six, where I show that the system developed here makes superior predictions to those of a remnant roll-up analysis in the domain of the interaction of binding and linear order (cf. Pesetsky 1995, Cinque 2006). I argue that a simple surface binding algorithm is available in the representations predicted by the theory developed here, while the remnant movement analysis must appeal to selective reconstruction in a way that simply recapitulates the empirical observations.

Overall, on an empirical level, chapters four to six of aSoS argue that relational nominals are not relational, that relationality is negotiated at some structural distance from its apparent source, and that its true source is a light root that names a relation which is

semantically negotiated via functional structure. This leads to an explanation for the new (putative) universal mentioned above: PP ‘complements’ are more peripheral with respect to their apparent selector than intersective modifiers.

3 Conclusion

I propose in aSoS that labeling of syntactic structures is exocentric: structure is built by Merge and the labels of that structure are given by independently specified sequences of categories. This allows us to dispense with functional heads; functional structure is, however, alive and well. This functional structure is ‘telescoped’, as in Brody’s Mirror Theory. The theoretical advantages of this system over a Bare Phrase Structure type system are that it allows us to simplify Merge (removing the Distinctness Condition) and to provide a unified algorithm for labeling, without increasing the number of stipulations in the system. The system as further developed in the book, also imposes two constraints on analysis: roots cannot Merge with complements and roll-up structures are ungenerable.

The first constraint comports with a great deal of empirical work that has emerged in the last few years which suggests that arguments are, in general, introduced as specifiers rather than as complements. It also draws attention to the stipulative nature of the notion of a thematic domain in syntax: no such domain is definable in this system and I argue that this outcome is extremely clear for the apparent arguments of relational nominals. I have not explored its consequences for verbal structures where the presence of eventive functional structure seems to be relevant.

The second constraint answers two questions that have been begging since the rise of the remnant movement approach to dealing with base word order effects: the absence of reconstruction evidence for the underlying position, and the absence of semantic (or morphological) evidence for the target position. The system developed in aSoS posits no underlying position for constructions which have been analysed via remnant roll-up derivations and forces the existence of semantically interpreted structure in such constructions. I have then suggested how this structure is to be interpreted, generally via some ‘light’ root which names the function/relation denoted by the labeled structure containing it.

On the more empirical side, I have proposed that relational nominals are to be analysed as semantically non-relational specifiers of such a ‘light’ root, whose (extended) projection I give the category \bar{p} . Relational \bar{p} comes in a number of varieties the semantic flavours of which are derived from the particular meaning of the root: some denote kinds of abstract mereological relation ($\sqrt{\text{PART}}$, $\sqrt{\text{KIN}}$, $\sqrt{\text{ROLE}}$ etc.). I propose two other kinds of \bar{p} : a possessive \bar{p} denoting an abstract relation of association (akin to Barker’s π operator), and an intransitive \bar{p} whose content is identified by light roots with very general meanings (e.g. $\sqrt{\text{THING}}$). \bar{p} appears below D in the extended projection of the nominal, and has, as one of its specifiers, the extended projection of the nominal root, whose top-most category marks morphological definiteness. Relationality is negotiated entirely by the syntax in this system. The extended projection of the nominal root, in effect, becomes

a modifier of \bar{p} , its obligatoriness a side effect of a requirement that \bar{p} 's specifier is filled.

I argue that such an approach allows us to explain a number of empirical generalizations about 'ultra-nominal' relational nouns: why their arguments are systematically optional (when compared to verbs); why they combine with intersective modifiers and quantifiers before they combine with their apparent arguments; why the more rightwards arguments have scope over those to their left. It also gives us some traction on the analysis of the alternation between prepositional and genitive possessors across languages, on the particularities of the Semitic Construct Construction, and on the curious lack of PPs in N final structures. Many issues remain open, but the strict parallelism between nouns and verbs that has characterized work in the field since "Remarks" has to, I think, be reappraised.

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