Designed to be free[*]

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1 Introduction

Biolinguistics takes the natural place of human language (or to put it more specifically, a generative procedure) as being within an individual human being, in fact a part of nature. Hence language may well be expected to be organized and governed in accordance with the natural principles or laws of nature. Along the line of the Galilean interpretation and characterization of nature, linguistics has taken a similar view of its target of inquiry.

The Galilean view of the natural world entertains the idea that nature is simple and optimal, and in fact perfect, and hence it is expressible by mathematics, in effect by an intensional model, even though the model does not cover all the phenomena: multum non multa. (For certain intuitive ideas behind the shift of interest and inquiry, see some 'dialogues' by Salviatus and Sagredus on the 1st day, Sagredus on the 3rd Day, Salviatus on the 2nd and 3rd Days, among many.) A natural phenomenon is then attributed to the interactions, or conspiracies, of mathematically defined properties. In this sense the mathematical explanation, eliminating internal, arbitrary as well, stipulations, tries to show that the properties of a natural object (or explanandum), e.g. its form and mechanisms, do satisfy the 'conditions' imposed externally by nature itself on them, in accord with the natural principles, much like argued and shown insightfully in Thompson (1942). Being designed to be in conformity with the natural principles entails that the object meets those external conditions in a 'principled', simple, optimal and perfect way.

To make a claim about language is to put forward it about nature. If we keep to the biolinguistic inquiry, assuming human language is a natural object with a principled design, we are well justified in regarding the language as being studied from the Galilean, or normal, view of science, as the methodological naturalism argues. The Strong Minimalist Thesis (SMT) claims that language is perfect in satisfying the external conditions externally imposed on it, and it is an attempt to show that such natural principles are actually at work in every aspect of its design and functioning, exploring the extent to which the thesis holds. In this regard, human language is supposed to be an 'optimal' system and to provide the 'optimal' solution to the conditions imposed both as a natural object and as a generative system embedded in

relevant performance systems. As a natural object, human language must employ minimal, or simple, and hence quick, computation mechanisms (e.g. free Merge) on the one hand, and the syntactic object that the system generates must be interpretable at least at two performance systems (e.g., availability of relevant labels) on the other. Imposing on the generative system any further conditions other than these, such as a condition on applicability, input, or output of a generative procedure Free Merge, would be an easier way in some cases, as argued in Larson (2015) and Goto (2015) for example, but it is no more than an arbitrary stipulation, and it would make up another different game if we assume an easy stipulation while keeping to SMT. The so-called minimalism is an attempt to answer SMT, not to complex the system by adding arbitrary stipulations, at the current stage of inquiry.

Free Merge is designed to have two eventual functions. One is structure building (External Merge), whereas the other is "displacement" (Internal Merge). The generative mechanism takes on the flavor of absolute simplicity and when it fails to define some structure, a reasonable venue to pursue is an attempt to reanalyze, or look at, the structure, in terms of the general operation, but not to employ unprincipled subsidiary conditions which are often introduced and induced just for descriptive adequacy: Tinkering method, or "modification" of free Merge as often alleged, is not what we want.

A tinkering, or alleged "explanation" with recourse to such extraneous, and hence unprincipled, mechanisms falls outside of the minimalism or ordinary science of language, a step forward to a mere description as well as a departure from a real explanation of nature. As a case against such alleged conditional addition to the Galilean simple interpretation of a single linguistic operation, I would like to take a brief look at the nature of the simplest Merge as proposed in Chomsky's POP(+) system (Chomsky, 2014; Chomsky, 2015), putting the focus on its N-ary.

2 No Condition on Free Merge

The POP(+) system proposes that Merge is all free:

(1)   Merge:
  a.   (Set-)Merge, forming $\{X, Y\}$, where $X = X, XP$, and $Y = Y, YP$.
  b.   (Pair-)Merge, forming $\langle X, Y \rangle$.

Merge takes two (discrete) syntactic objects X, Y, forming a single two-membered set $\{X, Y\}$, (1a), externally (External Merge) or internally (Internal Merge), where X, Y can be a simplex or a complex. Merge also generates the so-called adjunction structures (1b).

The system has opened a principled way to introduce many interesting (re-)analyses to familiar cases. Take for example an NP modified with a genitivized NP (John's book). Under the standard X-bar theory it has a shape where the genitivized NP is dominated by an entire NP or a maximal projection of head N and it is a sister to an intermediate projection of the head: [$_{N^{max}}$ John's [$_{N'}$ book]]. Notice, however, that this analysis will not hold under the POP(+) system. The absolute genitives in English have been supposed to have a genitive NP in SPEC of the whole NP and an empty element, say PRO, in its head position: [$_{N^{max}}$ John's [$_{N'}$ PRO]]. Here the PRO cannot be a maximal projection, as seen in the "John's

book" above: it is an intermediate projection. Then this particular element PRO cannot be the same projection as the pronominal anaphor in control constructions, which is surely a weird situation. The intuition will be readily reconciled with if we follow the notion of free Merge, as suggested in Oishi (2015b) and Oishi (2015a). In fact we can now reanalyze the absolute genitive NP as falling under case (1b) above if it involves pair-Merge: Free Merge (John's, PRO) = ⟨John's, PRO⟩, where PRO in the SO is now all the same as the one in control constructions. Since it is a case of the so-called adjunction structure, the label of this SO will be either that of genitivized NP or PRO, but PRO is chosen as a label (at a stage where the label of the SO is necessary) for selectional reason.

The output of Merge is always a singleton with two members: $\{X, Y\} = |SO|$. In the case of External Merge, such a derived singleton is seen in the condition on the left element (the one to be rewritten) of a classical device of PSRs. The very nature of the output of Merge, whether Internal or External, can be a realization of what Merge effects in syntactic derivation, namely it may be regarded as a manifestation of minimizing syntactic derivations generally, which must be at work for 'quick computation'.

It should be noted that Internal Merge does not take a single SO as its input, in the same way as External Merge takes care of two SOs in an obvious fashion. In this respect, one might stipulate that Merge, whether internal or external, must always be binary. This move, however, is not a desirable stipulation because the situation in question is a general case where Merge just cannot do anything when it has a singleton as its input and the derivation terminates at the stage. (Even a self-adjunction cannot be singulary.) If (External) Merge takes a single SO as its input, the derivation terminates at the very point, and the rest is silence; or the derivation has reached a root. Then Merge with a single SO as its input is not a matter of a terminological oxymoron.

One might suggest that a logically possible ternary structure would be the so-called across-the-board (ATB) cases, $[X \ldots Y \ldots Z]$, where X is the moved element, and Y, Z are its traces. Notice here that the derived ATB structure, unless it is generated multi-dimensionally, should be of the form $\{X, \{\ldots, \{\ldots Y, \{\ldots, Z\}\}\}\}$, which represents a binary structure which falls under case (1a). As far as an operation involves two 'positions' (one locus Y and the other target X), which in fact are now understood as two 'SOs', the operation is binary even if a relevant structure looks like involving ternary SOs: N-ary is just a combination of binary relations. (This might imply that there would be no such thing as Form Chain, or Inside-Operations, in principle.)

If External Merge is designed to be free to process multiple (i.e. more than three) SOs as its inputs, such a version of Merge has the larger strong generative capacity (C_S), with multiple/flat branching structures included, meaning that a language displays a hierarchical structure in one domain and a flat, non-hierarchical, structure in the other. Notice that their weak generative capacities (C_W) are all the same (cf. Oishi, 1990).

(2)   Weak/Strong Generative Capacities:

    a. $C_{S(\text{Free Merge})} < C_{S(\text{Conditioned Merge})}$
    b. $C_{W(\text{Free Merge})} = C_{W(\text{Conditioned Merge})}$

Indeed, whether this case exists or not is an empirical question, but it must be noted that if External Merge takes more than three SOs as its inputs and generates flat structures, along with hierarchical ones, it certainly puts a heavier burden on language acquisition. Note that this is a question of how the generative system is organized as a whole, since 'flat' structures are in fact generated by 'first' Merge. And interesting is that such flat structures are later modified and incorporated into a hierarchical structure somehow through derivation actually. So an optimal strategy is to go with a version of free Merge, a null hypothesis, unless otherwise supported, continuing to assume that our language is simple and minimal.

In this context we may note two cases with an apparent multiple branching, flat, structure. One is a double object construction, or three-place predicate construction generally. If a double object construction is surely analyzed as a multi-layered (hence hierarchical) shell structure with a single object for each layer, External Merge is eventually binary here too. This implies that the dative construction in German, as seen in Bayer et al. (2001) and Bayer (2008), must be different phenomena even though it is referred to as such with the same terminology. Another suspicious, or more interesting, case would relate to a structural co-ordination with two conjuncts, of the form, "X & Y", as discussed in Chomsky (2014) and Chomsky (2015). Such structures have been reanalyzed as originating from a set with two conjuncts that is initially flat. The structure is then converted into a hierarchical structure: External Merge of the initial two-membered set and a coordinate conjunction feeds Internal Merge of one conjunct for labeling. This line might be extended to a coordination with three conjuncts, with no extraneous condition on the number of the SOs that Merge can take care of. Suppose that External Merge happens to take three SOs as its inputs. As a first Merge, the operation defines a single set with those ternary SOs, which is inevitably flat, but this set undergoes successive application of Merge for labeling, resulting in two-membered sets. Even in this case Merge is likely to be free again.

3 Summary

To recapitulate what we have seen here, we may suppose that for any applications of Merge, the number N of its inputs and output need not be stipulated, which may be two surprising properties in a sense. In the case of output, it may be that the property relates to a kind of minimal, and quick, computation. We leave open the exact characterization of the nature of the concept quick computation, just mentioning that the concept may be more provably a part of the 3rd factor principles and less provably a part of UG. As for its inputs, it just follows from free Merge, and other aspects of syntax. If this is a tenable reasoning, language need not refer to the value of N-ary, whether on its input or output, in fact it should not, naturally. Such a reference is superfluous, a departure from perfection, like gilding the lily. These speculations will suggest that Merge is designed to be free.

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