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ASPECTS AND BEYOND: THE CASE FOR GENERALIZED CONSTRUAL

JAN KOSTER
University of Groningen

1 *Aspects* and the Panglossian Fallacy

When *Aspects* appeared in 1965, it was naturally seen against the backdrop of issues raised by *Syntactic Structures* (Chomsky 1957). For those who entered the field in the late 1960s, like myself, the two classics were studied more or less in tandem. *Syntactic Structures* was widely seen as the founding document of the revolution and *Aspects* was optimistically received as the next great leap forward. *Aspects* added an exciting philosophical-historical dimension by situating generative grammar in the tradition of rationalistic epistemology. At the same time, empiricists like Skinner and Quine were attacked, giving the whole discussion a dimension of contemporary urgency. This was true even for Europe, where often phenomenologists were targeted instead of behaviorists (as in Staal 1967) because it was hard to find a living behaviorist. The philosophical critique also had a biological dimension, with approving references to ethology (Chomsky 1959). This field, created by Konrad Lorenz and Niko Tinbergen, was later seen as a precursor of sociobiology.

At a more technical level, the appearance of *Aspects* was hailed as meeting the widely felt need for more semantics. A lexical component was added to generative grammars, with a discussion of selection restrictions that explored the scope of features as made popular by Katz and Fodor (1963). The "strings underlying kernel sentences" of *Syntactic Structures*, together with some other adjustments, were re-baptized as "deep structures." This suggestive term gave the field an enormous public appeal at the time. This is especially true as the notion was further explored along the lines of Katz and Postal (1964), who had claimed that Deep Structure was the level at which all grammatical meaning was represented. The Katz/Postal hypothesis gave soon rise to Generative Semantics and related "linguistic wars" (Harris 1993), which is a topic that I will leave gladly aside.

Instead, I would like to focus on the consequences of *Aspects*' all-import addition of a lexicon to generative grammars. It is my claim that there is a serious tension—unresolved up until the present day—between the psycho-biological perspective introduced in chapter 1 of

Aspects and the lexicalism that followed from chapter 2. The basic conflict is very simple: lexical items, with whatever properties they have, are ultimately invented socio-cultural objects, rather than something individual-psychological or biological. As invented cultural objects, lexical items belong to what Saussure called a "trésor commun." For lexical items (and their properties) to qualify as non-individual cultural objects, it is irrelevant that they depend on our individual psycho-biological capacities, for the elementary reason that all cultural objects are dependent on these capacities. A musical composition, for instance, can only function as such thanks to capacities (or a combination of capacities) that are unique to our species. In other words, *Aspects* introduced a deep confusion into our field by failing to make the obvious distinction between biology and *applied* biology. Failing to make this distinction was named "panglossianism" by Gould and Lewontin (1979), in a context of similar discussions about sociobiology.

The panglossian fallacy in combinatorial syntax can only be avoided by abstracting away from cultural objects and their properties as found in the lexicon. This is precisely what is done in *Syntactic Structures* (pre-*Aspects*) and in most current forms of Minimalism (post-*Aspects*). In *Syntactic Structures*, a lexicon is simply missing. In minimalist grammars, the operation Merge generates structures independently of lexical properties as part of a "Galilean-style" interaction between abstract perfections (like Merge) and the "disturbing" imperfections as found in the lexicon (and more generally, at the "interfaces").

2 The Redundancy Problem and Generalized Construal

Another persistent problem caused by *Aspects*' introduction of a lexicon is known as "the redundancy problem." Compare an *Aspects*-style PS-rule (1) and an *Aspects*-style lexical entry (2):

(1) VP → V NP

(2) *catch* : [+V, --NP]

It appears that the lexical specification of a transitive verb like *catch* mimics the PS-rule (1), making the latter superfluous. It is more economical to "project" a structure like $[_{VP}$ V NP] directly from the lexical entry (2), as it eliminates the need for (1). This was, in fact, one of the rationales behind the development of X-bar theory since Chomsky (1970), which was explicitly motivated by the redundancy problem (see Chomsky 1981: 31ff).

Actually, (2) is a very minimal specification of the structure entailed by a verb. In an extended sense, the verb is the lexical head of an entire clause, with the functional domains as completely predictable additions. In accordance with current theories, a verb like *catch* entails the following structure:

(3) *catch* : [+V, $[_{CP}$ (DP) [C $[_{TP}$ DP [T $[_{vP}$ v $[_{VP}$ -- DP]]]]]]]

Since a sentence structure is entirely predictable from the verb, the only economical way to generate a sentence is by spelling out the structural potential of the verb (as in (3)) together with the selection of the verb itself. The same can be said about other lexical categories and we must conclude at this point that syntactic structures are the spelled out properties ("templates") of the cultural objects known as lexical items.

As in the case of the panglossian fallacy, we should ask ourselves now to what extent the redundancy problem is still with us in minimalist syntax. One goal of minimalism is to isolate the more abstract, less stipulative fundamentals hidden in the web of stipulations coming with lexical templates like (3). So far, the operation Merge is seen as the Galilean Grail of this enterprise. Binary Merge takes two linguistic objects, X and Y, and combines them to the set {X, Y}. As lexical items not only include morphemes and words but also the results of earlier applications of Merge, the operation is recursive. In short, Merge creates binary, hierarchical structures with recursion but without the stipulated linear order we assumed for lexical templates like (3).

Obviously, the redundancy remains if Merge is seen as a structure-generating operation. Like the PS-rules in *Aspects*, Merge introduces the hierarchical structure with recursion that is also represented by lexical templates like (3). In a system with Merge, the redundancy can only be avoided by denying properties like in (3) to lexical items, an assumption that would be at variance with the empirical facts. I therefore conclude that Merge (as a structure-generating operation) must be rejected, particularly on the basis of the redundancy problem. As in pre-minimalist days, the only known non-redundant procedure of sentence generation is by spelling out lexical templates directly. Thus, when a verb like *catch* is selected from the lexicon, the template structure in (3) comes along automatically. Further lexicalization of the template may conclude the sentence generation process.

In an important sense, my negative conclusion about Merge is unfortunate, as Merge seems to implement some of what I see as the right properties. Apart from hierarchical structure with recursion, Merge also involves binarity and locality. Consider the most commonly accepted output of Merge, with X and Y as the terms merged and Z a label:

(4) {Z {X, Y}}

The structure is binary in that it involves exactly two merged terms, X and Y. It is strictly local in the sense that it does not involve variables: X and Y are "sisters" exhausting their hierarchical level. The label Z is one level up and exhausting the next level together with the complex object {X, Y}. If binarity and strict locality are desirable properties, how can we preserve these "good" properties of Merge without falling back into the redundancy trap of *Aspects*?

Luckily, there is a very simple solution to this problem. The problematic redundancy can be avoided by generating sentences not by Merge but by lexical templates like (3). The relevant properties of Merge can be preserved by giving up its status as a sentence-generating vehicle and *reinterpret (4) as a meta-theoretical constraint on possible syntactic structures (including lexical templates)*. This constraint-based approach neatly accounts for the hierarchical structure, the possible recursion and the binary character of structures like (3). More about locality in what follows.

In contrast with Merge, the constraint-based approach not only solves the redundancy problem, it also happens to have unexpected unifying potential with respect to the rest of syntax. It is my claim that (4), adjusted and reformulated as a constraint, unifies the properties of base rules (i.e., template activations), traditional movement rules and rules of construal (agreement, anaphoric binding, etc.).

Consider a typical construal like anaphor binding:

(5) John saw himself.

This construal happens to be binary in the sense of (4), with *John* as the X-term and *himself* as the Y-term. A *prima facie* complication is that X and Y are "sisters" in (4) but not in (5), as (5) has the following structure:

(6) [$_Z$ X [saw Y]]

X is not adjacent to Y but separated from it by *saw*, and more generally, by a structural segment of variable size. The VP [saw *himself*], however, is in full agreement with (4), with *saw* as X-term and *himsel*f as the Y-term. In general, construals have the following format (X the antecedent of Y in some local domain Z):

(7) [$_Z$ … X …Y …]

The output of traditional (binary) PS-rules (or the corresponding parts of X-bar schemata) is as follows (with (4) as its minimalist set-based translation):

(8) [$_Z$ X Y]

The formats (7) and (8) are close enough to try a full-fledged unification. The main difference is that (7), unlike (8), contains variables (as indicated by the dots (…)). Elimination of the variables in (7) appears to be surprisingly simple, as I will show shortly. I will claim that not Merge but the triadic structure (8) is the Galilean Grail we are looking for in language. Interpreted as a meta-constraint on possible structures, (8) preserves some of the crucial properties of Merge but has a scope far beyond it, as suggested above. It not only constrains base structures, but also the traditional construals and movement rules. I will refer to this theory as Generalized Construal.

3 Triads and Their Functions

In biological and cultural structures a common distinction is made between form and function. Formally speaking, the triad (8) defines the configurational matrix of *strict locality*, which I consider the abstract formal core of syntax. Strict locality (in (8)) means that X and Y can only be directly related to Z or to each other. Relatedness beyond the confinement of the triad is only possible by mediation of Z, which can be the sister of some X or Y in the next triad up:

(9) [$_{Z'}$ X' [$_Z$ X Y]]

Thus, X and Y cannot be directly related to X' but only through the "sister" Z of X'. A syntactic structure in natural language consists of one or more triads, where the latter define the strictly local paths (of one or more links) required for syntactic interaction. Following Jan-Wouter Zwart (2011) and basing myself on the pervasive asymmetry of syntactic relations, I tend to assume that X and Y do not form a set (as in Merge) but an ordered pair. Formally, then, triadic constraints like (8) are labeled ordered pairs. It should be emphasized that labels (Z) are absolutely essential in this conception, as they mediate between successive triads. Labels, once more, are the "escape hatches" that make strict locality compatible with relations over some distance.

So far the formal aspects of triads. As for how they function, we have to look at the content of lexical elements. It appears that all local syntactic activity involves construal of the same type, namely "action" driven by incompleteness. Consider again a construal as in (5), repeated here as (10):

(10) John saw himself.

The anaphor *himself* is incomplete in that it misses what is traditionally called a referential index i. This problem can be remedied by *sharing* the referential index of *John*. This kind of property sharing in a local domain, I consider the essence of construal (see Koster 1987: 8ff), which functions within the formal limits set by the triadic configurational matrix (8). In terms of (8), *John* is X and *himself* is Y. Since the X and Y in question are not sisters, we have a violation of (8) at first sight. Here, however, comes *percolation* to the rescue. Percolation is the traditional umbrella term for "upward" projection phenomena, which might subsume the labeling algorithms discussed in the current minimalist literature. These algorithms are mainly concerned with headedness and endocentricity issues, but it is clear that there is a wider range of cases in which structures from below determine the character of structures above them. An example that comes to mind is the formation of complex Wh-phases, as in Pied Piping: [*which*], [*which* man], [of *which* man], [the father of *which* man], [with the father of *which* man], etc. In such examples, the Wh-feature is inherited by ever more inclusive structures.

The key idea leading to unification in terms of strict locality is the assumption that "incompleteness" is an inheritable feature under percolation. Thus, we do not need special stipulations to establish that a VP that contains an incomplete category is itself also incomplete in some sense. Let us assume that /F is a notation indicating that a category is incomplete with respect to feature(s) F (notation inspired by Gazdar 1981). Then, without instantaneous satisfaction, the following holds:

(11) $[_{/F} \ldots /F \ldots]$

Applied to (10), that leads to the following representation:

(12) [John$_i$ $[_{VP/i}$ saw himself/i]]

This representation says that himself/i is incomplete with respect to referential index i. This incompleteness is inherited by the VP, written as VP/i. The incomplete VP/i can be completed by sharing the index i of its sister John$_i$. In other words, completion by property sharing can be "postponed" by the presence of a path made up from strictly local steps, in accordance with (8) (with the path theory not only inspired by Gazdar but also by Kayne 1984). As demonstrated by this example, strict locality means that variables are eliminated from construals.

4 External and Internal Merge as Construals

In standard minimalist theories, base structures and displacement ("movement") constructions are formed by *ad hoc* stipulations, formerly known as Merge and Move and currently referred to as "External Merge" (EM) and "Internal Merge" (IM). Both are *ad hoc*, but IM is even less convincing than EM, as it leads to the utterly problematic "copying theory of movement." A copying theory would be exceptional in that it would involve the interaction of equally (in)complete categories, while, as we have seen, syntactic interaction in general is driven by the relative incompleteness of one of the two interacting categories. At least as bad is the further complication that copies must be distinguished from unrelated, accidental repetitions of the same category. One can wishfully think that the damage of further stipulations is limited by the fact that the interacting categories are in the same "phase", but that does not seem to bring the desired Galilean perfection as close as one might hope for.

Luckily, we do not have to answer question as to the relative perfection of EM and IM, because there is no reason to assume that Merge exists in the first place. Both EM and IM refer to facts that are to be seen as entirely straightforward instances of Generalized Construal as explored in this article. Consider a Verb-Object construction (I use Dutch OV order for reasons of exposition):

(13) $[_{VP}$ DP V]

You can see this structure as the result of a derivation involving Merge of DP and V, with label V:

(14) Merge (DP, V) = {V {DP, V}}

However, such a rule is entirely superfluous. Not only are syntactic structures generated by spelling out lexical templates, moreover these templates owe their properties to the general constraint on construals (8), which has a much broader scope than Merge. A structure like (13) just shows a regular construal, with DP as the X-term and V as the Y-term. A transitive verb is incomplete with respect to an object DP, represented as V/DP:

(15) $[_{VP}$ DP V/DP]

The incomplete V/DP is completed by its sister DP. This procedure not only makes phrase structure a regular instance of construal, it also makes the non-trivial prediction that completion by complements can be postponed in principle. The ubiquitous scrambling in many SOV languages fits the bill. Thus in Dutch, an object can be separated from its verb by an arbitrary number of adverbials, including adverbials that are traditionally seen as being higher than the VP:

(16) dat Jan [het boek [waarschijnlijk [-- [gisteren $[_{VP}$ -- las]]]]]
that John the book probably yesterday read
"that John probably read the book, yesterday"

The object (*het boek*) can also occupy both positions indicated by --. Since the verb is transitive, it is incomplete (V/DP). Completion can be immediate, as in (15), or it can be postponed, as the result of the percolation of the incompleteness feature /DP:

(17) [DP $[_{/DP}$ waarschijnlijk $[_{/DP}$ gisteren $[_{V/DP}$ las]]]]

Completion of /DP is done in exactly the same way in (15) as in (17), namely by a DP sister and in accordance with (8). Note that scrambling in Dutch does not create A-bar positions (as one would expect under "movement"). It has been recognized for a long time that scrambled DPs have the properties of A-positions in Dutch, confirming their status as base-positions (see Vanden Wyngaerd 1989 for discussion).

One of the biggest obstacles for unification along the lines of Generalized Construal has been Chomsky's early rejection of it (see Chomsky 1973: 284). The attempts to let dislocation ("movement") stand out as something special has led to influential but superfluous *ad hoc* extensions of grammar, as manifested by concepts like "Move Alpha" and "Internal Merge." It is easy to see, however, that movement constructions are regular instances of Generalized Construal. Consider the following sentence:

(18) What did Mary catch DP?

This sentence can be generated as follows. Selection of the verb *catch* activates its lexical template (3):

(19) [$_{CP}$ (DP) [C [$_{TP}$ DP [T [$_{vP}$ v [$_{VP}$ catch DP]]]]]]

Further lexicalization involves some non-trivial problems, such as the general requirement that there must be a one-one match between functional elements (such as argument DPs) and their corresponding lexical contents. Ignoring these problems here, (19) can be further lexicalized, for instance resulting into the structure underlying (18):

(20) [$_{CP}$ what [did [$_{TP}$ Mary [T [$_{vP}$ v [$_{VP}$ catch DP]]]]]]

This structure is incomplete at first sight in that the rightmost DP is not directly lexicalized. As in the other cases we have discussed, incompleteness is upwardly inherited (percolated from label to label), eventually leading to completion by the leftmost lexical content, i.e., the DP *what*. The percolation structure is as follows (with /DP standing for incompleteness with respect to some lexical content DP):

(21) [$_{CP}$ [$_{DP}$ what] [$_{/DP}$ did [$_{TP/DP}$ Mary [$_{/DP}$ T [$_{vP/DP}$ v [$_{VP/DP}$ catch DP]]]]]]

Like all "movements", this is an entirely regular case of postponed completion. The lexical content of the DP *what* is shared by the object of *catch* and the two positions are connected by a completely regular path permitted by a sequence of triads with the form specified by (8).

In short, the Generalized Construal approach makes "movement" an ordinary, regular case of postponed completion, while the approach based on Internal Merge and copying let it stand out as something anomalous. With IM and copying, displacement would be the only grammatical dependency based on identity (of the two copies) rather than on the non-identity that usually determines the need for completion.

5 Formal and Lexical Locality

In conclusion, I would like to make a few remarks about the difference between triadic ("strict") locality and other forms of locality, like those found in Ross's island conditions (Ross 1967), c-command (Reinhart 1976), the classical binding theory (Chomsky 1981) and phase theory

(Chomsky 2008). It has received little or no attention that c-command is crucially different from the other locality principles. C-command is formulated in purely formal terms, while the other conditions refer to specific, lexically-based categories, like CP, DP, vP, etc. From a "Galilean" perspective, then, c-command points in the direction of a structural level deeper than that covered by the other locality principles, as the latter are not purely formal but the result of application to lexical material. Applications always involve human culture, while the purely formal is pre-application and therefore providing a window on an older and deeper layer of structure.

The configuration matrix (8), then, is a generalization of the purely formal c-command pattern and not the result of lexical application, like the other locality principles. To clarify this, let us repeat (8) here as (22):

(22) $[_Z$ X Y]

C-command is usually seen as an asymmetrical relation. The configurational matrix (22), however, is completely symmetrical with respect to c-command: X c-commands Y and Y c-commands X. However, at the less abstract, applied level there is a functional asymmetry between X and Y. One of them, for instance Y, can be incomplete (dependent) while X is the completing (independent) term:

(23) $[_Z$ X Y/X]

This is the asymmetry that was briefly discussed above, with reference to Zwart (2011). In actual languages, this leads to a left-right asymmetry: in the majority of "real life" cases, the completing term X is to the left of the dependent, incomplete term Y/X. From a minimalist perspective, this symmetry-breaking result is an imperfection, probably due to the performance factors that determine the left-right organization of speech. Consider, for instance, "filler-gap" constructions. In principle, the filler could be on either side of the gap, but in practice the filler is usually to the left of the gap. A gap-first configuration would probably be more costly from a memory point of view, as the appearance of the gap would involve a postponed resolution by the filler. A filler-first configuration, however, allows instantaneous resolution as soon as the gap appears. These performance factors presumably lead to the apparent asymmetry with respect to c-command. At the deepest level, however, locality (as expressed by (22)), can be kept completely symmetrical.

For reasons of space, I will not say much here about the other locality principles (islands, binding domains, etc.). From the present perspective, the main issue is as follows. Although triads limit possible syntactic interactions to the strictly local configurations specified by (22), "escape" via Z and the construction of percolation paths makes it in principle possible to have paths of unlimited length. This, then, must be true for the deepest, purely formal level. At the application level, however, where (22) is implemented via lexical categories, paths appear to be of limited length. For most construals (binding, agreement, etc.) paths are limited to some clause type. For displacements, with some marked exceptions, the islands appear to be extended maximal phrases (see Koster 1978, 1987). Once more, this *lexical locality* seems to be an imperfection due to memory organization, as purely *formal locality* (22) allows unlimited paths by the iteration of strictly local percolation steps.

Whatever will turn out to be the correct theory of lexical locality, the existence of a deeper level of strict, purely formal locality has an interesting consequence: it radically eliminates variables in the sense of Ross's title Constraints on Variables in Syntax (1967). Each stretch of structure separating two terms X and Y must be reducible to a chain of one or more, variable-free triads. This allows us to eliminate the dots from (7) and completes the full unification of all construals in accordance with the format of (8) (= (22)).

6 Conclusion

Of the rich legacy of *Aspects*, I have highlighted its most important innovation, namely the addition of a lexicon to generative grammars. The introduction of a lexicon led to two issues that are unresolved until the present day. The first problem is that lexical items, no matter their biological basis, are humanly invented cultural objects that, as such, belong to what Saussure called a "trésor commun." It is therefore an error to see language, even in the narrowest sense, in purely biological or individual-psychological terms. In abstraction from the invented lexicon, the underlying faculties, no matter how innate, have no proven linguistic function. Language is not a set of biological structures but the *application*, among other things, of a set of biological structures. Application means function assignment by human agency, the functionality to be preserved in a common, public culture. So far, talk about an individual "faculty of language" has not appeared to be more than a misleading panglossian way of speaking.

Another consequence of *Aspects*' introduction of a lexicon was the growing insight that syntactic structures are properties of lexical items, best projected directly from the lexicon rather than by redundant phrase structure rules. This was well-understood in Chomsky (1981) but somehow the insight got lost in minimalism. Up until the present day, it is unclear how Merge can be formulated without introducing properties that already "exist" as properties of the elements to be merged. I therefore propose to maintain the GB idea that sentence generation is the spelling out of lexical properties. Merge does not exist under this proposal.

In order to maintain the "good" properties of Merge, I propose to reformulate it as a meta-constraint on possible syntactic structures (including lexical templates). Functionally, this establishes a configurational matrix for syntactic interactions under the operations "share" and "percolate." The resulting triadic structure of syntactic interaction entirely eliminates Ross's variables from the rules of syntax. Most important of all, the proposed theory of Generalized Construal unifies base rules (Merge), movements and various other construals under a common set of properties.

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