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Review of "Symmetry Breaking in Syntax" by Hubert Haider

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1. Introduction

Hubert Haider' primary goal in his latest book is to establish a universal constraint on the branching structure of Language: there are only right branching structures and their mirror image—left branching ones—do not exist at all. Through this strong proposal, Haider seeks to shed light on what he considers a universal, inviolable aspect of the architecture of grammar, thus contributing to the debate on the core properties of human language. According to Haider, cross linguistic variation between VO, OV and "Type III" languages follows directly from the interaction between this unchangeable "basic branching constraint" (BBC) and a directionality parameter that defines the identification relation between heads and their dependents. Apart from offering ample evidence through the use of a wide array of diagnostics between primarily Germanic OV and VO languages, Haider provides evolutionary justification for the existence of the BBC, along with a historical explanation for the split in the Germanic family between VO and OV. This review provides a summary of each chapter and assesses the strengths of Haider's proposal.

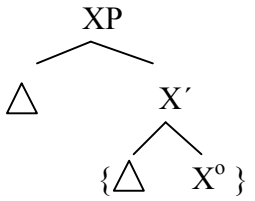
2. What breaks the symmetry in syntactic structuring

In this chapter, Haider sets out to describe how the basic assumptions of his model account for the diversity in syntactic behavior between VO and OV languages. Most importantly, he proposes the following property of phrase structures, which he calls the "basic branching constraint" (BBC):

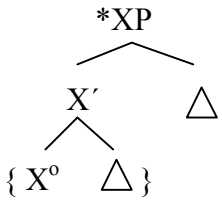
(1) *Basic Branching Constraint (BBC)*
The structural build-up (merger) of phrases (and their functional extensions) is universally right-branching.

Through the BBC, Haider requires that branching structures be universally *asymmetric*—that is, there exists no mirror image of a right branching projection in any language (in contrast, having both right and left branching projections would allow for symmetrical structure). The BBC requires merged phrases to precede their target and bans derived positions from following the phrases they merge with. Therefore, under Haider's approach, only the structure observed below in (2) is licit, while (3) does not exist:

(2) **right**- branching



(3) **left**-branching



According to Haider, surface headedness is independent from the hierarchical architecture of the grammar. The curly brackets in the trees above indicate that the branching restriction is *independent* of the linearization between a head and its complements that results in surface head-final or head-initial structures.

Therefore, Haider must account for the existence of head-initial and head-final languages without recurring to symmetrical branching structures. He proposes the following identification requirement between a head and its dependants:

(4) *Directional identification*
Merged positions in the projection of a head of a phrase need to be properly identified by the head under *canonical directionality.*

This canonical directionality is the parametric factor that results in head-final (identifying to the left or *regressive licensing*) or head-initial (identifying to the right or *progressive licensing*) structures. In addition, he argues that a third type of directionality, an *underspecified* one, results in Type III languages (discussed in Chapters 3 & 5). Haider proposes this parameter based on the "Principle of Directional Identification" shown below:

(5) *Principle of Directional Identification (PDI)*
A merged phrase P must be properly identified.
Def.: A merged phrase P is properly identified by the heads of the host phrase h^o iff
a. P is in the canonical directionality domain of h^o, and
b. P and (an extension of) h^o minimally, mutually c-command each other.
(Extension of h^o = $_{def}$ projection of h^o [- maximal])

Under Haider's view, a contrast in surface headedness is not a result of symmetrical branching structures, but follows from the choice of linearization options of head and complement. These choices are provided by the PDI and its options for the canonical directionality.

Also in this chapter, Haider provides evidence that complex phrases show that the only difference in word order between head-initial and head-final languages is the positioning of the head in relation to its complements. Additionally, Haider criticizes models that take VO to be the universal unmarked word order, primarily through the argument that deriving OV from VO through massive movement is unjustified. Finally, he lists a set of surface properties that differ between VO and OV (for example, the requirement of a functional subject position in SVO vs. the absence of one in SOV).

3. Linearizations are public, structures are private

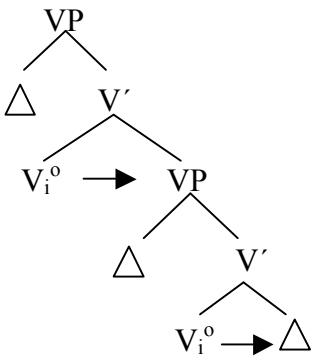
Haider provides his view on the accurate definition of *grammar*. He considers *grammar* to be two sided: production wise, it is an algorithm that maps a two dimensional hierarchical organization onto a pronounceable one dimensional linearization; reception wise, it is an algorithm that unfolds a one dimensional linear array back into its hierarchical form—as such, different grammars arose as solutions to this dimension management problem. Haider seeks to justify both the importance of linearization in syntax and the reasons why right-branching structures were chosen over left-branching ones throughout the evolution of human cognition. He claims that only grammars that are learnable from the surface linearizations (the input to the learner) can survive the blind selection process of cognitive evolution. According to him, right-branching structures are the most optimal fit for the parser, since the processing system prefers less complex structures that minimize processing time. Grammars that follow the BBC are 'friendly', since they provide structures for which the parser can apply simultaneous top-down and bottom-up strategies. Haider defines top-down strategies as those that make predictions on the whole structure of a phrase before it is uttered completely; bottom-up ones result in immediate processing of the first item presented in a string. One advantage of right-branching structures is that precedence coincides with c-command, in contrast with left-branching structures. In comparing VO and OV languages, Haider argues that each provide complementary advantages and disadvantages to the parser upon language acquisition. For instance, while presenting the head first in VO is an advantage for the

parser, VO also requires the formation of a structurally more complex VP shell to fulfill the PDI. The latter characteristic of VO becomes a processing disadvantage that is inexistent in OV languages. Therefore, Haider seeks to justify the existence of VO and OV as possible results of the BBC, given that each provide a balanced set of pros and cons for the parser.

4. BBC—asymmetry in phrase structuring

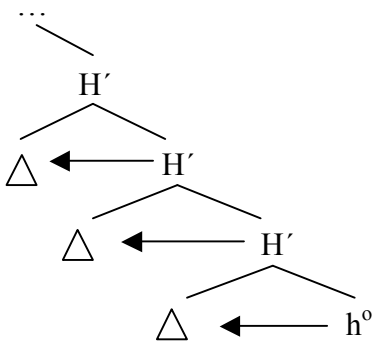
Haider begins this chapter by discussing the syntax of double object constructions, since they provide evidence for the existence of the BBC. According to him, the surface structure of ditransitives cross-linguistically differs only in the placement of the head—all other elements follow the same ordering. Haider provides an array of c-command diagnostics of ditransitives that provide similar results for OV and VO languages. Therefore, Haider argues that they must have the same hierarchical right-branching structure, even if there exist surface differences with regards to the placement of the head. He then justifies the existence of VP shells in VO languages as a solution for the conflict that arises between the BBC and progressive licensing from the head. This is illustrated below in (6). It can be observed that the head-complement pattern is reiterated as many times as necessary as a result of the BBC and a VP-shell structure arises to fulfill the PDI:

(6) head-initial VP



Progressive licensing of any projection, not just VPs, result in a shell structure. As a result of VP shells in VO as well, the spec-position of a necessary functional head above V triggers the EPP feature in SVO that results in obligatory subjects. In contrast, there is no conflict between regressive licensing by the head and the BBC, so no shell structure is necessary for head-final projections. This is illustrated below in (7):

(7) head-final structure



Haider then criticizes some of the components of competing models, such as the existence of little-*v* in the Minimalist Program. He considers that the arguments for this second V-position arose from evidence exclusive to VO languages that does not hold up for OV languages. According to his approach, *v* cannot be a language universal, since no *v* would be needed in OV languages, given that the verb remains VP internal and no VP shells arise (since there is no conflict between the BBC and regressive directional licensing, see 7 above). He also notes that the role assigned to *v* as a ɵ-assigner for the external argument also seems incompatible with the function of other non-lexical heads. Furthermore, evidence for *v* from the availability of stranding particles solely in VO casts doubt on a universal *v* position. If *v* were universal, this should allow for particle stranding in OV as well, but Haider argues that no OV language shows particle stranding. He argues that the existence of a VP shell in VO languages allows for stranding as observed in (8), whereas OV languages do not allow for stranding since there is no VP-shell or *v*, as seen in (9):

(8) $[_{VP}$ Subject $[V^{o}_{i}$ IO $[e_i$ DO$]]]$ (head-initial VP)
(9) $[_{VP}$ Subject [IO [DO $V^{o}]]]$ (head-final VP)

Haider finishes the chapter by introducing Type III languages. He defines these languages as those for which the directionality parameter is underspecified. This means that the directionality of licensing is free. As a result, they exhibit a mix of properties of head-initial and head-final languages, but also exhibit structures that are ungrammatical for both VO and OV. Haider provides interesting evidence related to scrambling and other properties to propose that the Slavic family is a clear candidate for his Type III label.

5. The cross-linguistic impact of the BBC

In this chapter, Haider explores in great detail whether a set of the predictions made by the BBC are empirically sustained cross-linguistically. In particular, he asserts that the

properties "earlier is higher" and "later is deeper" which follow from the BBC result in the following:

- Invariable leftward V-movement and head-movement: if movement targets a clausal edge, it will be a *clause-initial* position.

- Leftward phrasal-movement: wh-movement targets clause-initial position. Supposed evidence for wh-movement targeting clause-final position has been analyzed incorrectly, since there exist no clause-final spec positions.

- Leftward V-movement + phrasal movement (the V2 property): there are languages that exhibit V-movement and phrasal movement targeting clause initial positions. However, there does not exist a single language with a *V-penultimate* property, which would be the mirror image of V2.

- The unavailability of rightward movement in any scenario (in his view, extraposition and scrambling to the right are better analyzed as leftward V-movement).

Haider holds that the BBC bans clause-final head movement and clause-final specs, which results in the failure to find wh-movement to the right or languages with a V-penultimate property. However, the BBC only bans final non-lexical functional heads, whereas elements such as clause-final lexical complementizers are allowed, since these would be base generated structures that are head-final (meaning that they employ regressive licensing). Additionally, he notes that lexical heads within a single language need not be uniform in their directionality. For instance, German has mixed directionality: V^o and A^o are final (employing regressive licensing), whereas P^o and N^o are initial (employing progressive licensing). Haider then compares data from languages beyond the Germanic family (Japanese, Italian, Tangale, Turkish, etc.) in order to provide empirical coverage to back up his claim that rightward movement is nonexistent. He finishes the chapter by providing an explanation for the existence of verb clustering in OV languages. In his view, clustering is a solution to avoid multiple center-embedded clauses which would be problematic for the parser.

6. The Germanic OV/VO split

This chapter provides a diachronic account for the split in the Germanic family between OV and VO languages. Haider attributes this to two things. First, he provides evidence that the languages from which the modern Germanic languages split were unspecified in their directionality parameter (Type III languages). This resulted in a choice for the daughter languages in setting the directionality as either rigidly progressive (VO) or

rigidly regressive (OV). Second, the simultaneous arising of the V2 property made OV be on par with VO as an equally accessible daughter of a Type III language.

Haider focuses on ample evidence from Yiddish to prove his point. Yiddish is the only modern Germanic language that should be classified as Type III, so he uses it as an illustration for the Old Germanic languages from which the OV/VO split came about. Given that Yiddish has underspecified head directionality, it shares some of the properties of VO and some of OV, but has some innovative properties of its own. For instance, compare the three possible Yiddish sentences below. Notice that (12) is exclusive to Type III languages:

(10) Max hot [Rifken [dos buch gegebn]]$_{VP}$ **OV**
Max has Rebecca the book given
(11) Max hot [gegebn$_i$ Rifken [e$_i$ dos buch]]$_{VP}$ **VO**
(12) Max hot [Rifken [gegebn dos buch]]$_{VP}$ **Type III Exclusively**

According to Haider, the change from Type III came about as a result of the variable positioning of the verb that Type III languages allow. Due to this variable input, the choice between the two possible directionalities gave rise to OV and VO in nearly equal quantities. Haider compares and provides counter arguments against alternative accounts for the split, including the hypothesis of competing grammars in a bilingual situation (Kroch 1994 and Pintzuk 1991, 2002) and the excessive movement model which considers all non SVO orders as deriving from it through syntactic movement (Roberts 1997 and Biberauer & Roberts 2005).

7. Adverbial positions in VO and in OV

This chapter focuses on the syntax of adverbials and how the BBC restricts their structural placement in VO and OV. Haider delves into the syntax-semantics interface and the positioning of adverbials in OV languages to rebuke proposals that assign adverbials to spec positions of adverbial functional heads in order to account for an apparent universal fixed ordering of adverbs (Cinque 1999). Haider shows that the existence of an edge effect for adverbials is proof that they are not in spec position and that they should be considered either as adjoined or embedded. Additionally, he claims that adverb ordering is semantically conditioned and does not follow from rigid syntactic structuring.

8. Elements of the third kind—resultative predicates and particles in VO and OV

Haider discusses the grammar of secondary predicates in order to compare the BBC model with other approaches to verb positioning. The fact that result predicates have two

possible positions in VO (due to the VP shell) and a single position in OV follows directly from the BBC and the PDI, which in turn provides support to the idea that VO structures are more complex than OV ones. Haider's proposal that VO is structurally more complex than OV becomes a direct challenge to approaches that consider OV more complex, since under such approaches, OV must be derived through massive movement from a base VO ordering. A particularly convincing argument is that of particle stranding. Haider expands on the evidence he presented earlier on the availability of two V positions solely in VO in order to back his claim on the more complex structure of VO versus OV. He also touches upon small clauses and how he prefers a complex-predicates analysis of result predicates, since it is empirically more adequate. He notes that a small clause analysis falls apart when looking at OV languages: some of the diagnostics he uses to support this claim deal with the ungrammaticality of topicalizing small clauses and the possible pied piping of result predicates.

9. Asymmetry in nominal structures—word and phrase structure

In this chapter, Haider contends that the BBC constraint applies to word structure as well: "word structure is right-branching (for the immediately merged items)". He first analyzes fully productive noun-noun compounds in OV languages as being universally right branching. According to him, there exist no recursive head initial compounds in any language. Haider uses data from Romance to argue that head-initial compounds are always composed of two nouns and cannot be compounded further, given the restriction on embedded branching nodes that follows from the BBC (for example, *[[[[N+N] +N] +N] +N] is ruled out). Using data from Vietnamese, Haider argues that apparently recursive head-initial compounding is the product of compounding lexically compounded nouns ($[[N+N]_N\ [N+N]_N]_N$) and does not rebuke his generalization on the application of the BBC to word structure. In regards to competing theories of linearization that follow the *linear correspondence axiom* which consider head-final structures as derived from head-initial ones through phrasal movement (LCA; Kayne 1994 and subsequent work), Haider argues that they wrongly predict that head-initial compounds should be ideal, whereas head-final ones would be derived from massive word-internal movement. Recurring to word-internal movement to obey the LCA and account for head-final recursive compounding seems undesirable to him.

Haider continues the chapter by discussing the existence of head-initial and head-final phrases within a single language. For example German employs both kinds of phrases: NPs are head-initial and VPs are head-final, but they both exhibit the predicted syntactic behavior that follows from the BBC and the PDI. He finishes this section by claiming that the nominalization of verbal clusters in OV languages provides evidence against an analysis of V clusters as stacked full VPs, given that XPs should never feed word formation processes.

10. BBC or LCA?—fact finding and evaluation

In the last chapter, Haider compares his BBC model for asymmetry and linearization to the *linear correspondence axiom* (LCA). He highlights that his approach considers head positioning as the basic quality that distinguishes OV and VO, whereas the LCA uses phrasal movement to derive OV from VO. Given the different assumptions and predictions of the two models regarding the basic foundation of grammar itself, Haider provides a very detailed comparison by highlighting how his model is better when analyzing the different syntactic behavior of VO and OV languages.

Haider commences by discussing how the conception of grammar itself in the BBC model differs from the most popular ones in the Generative camp: for him, grammar is a "string-to-structure or structure-to-string mapping algorithm", as opposed to the more mainstream generativists who take a "structure-on-structure mapping algorithm approach" and consider grammar a "generation algorithm". Haider contests that the Generative approach fails to capture the observation that grammars are put to use and that their shape is the result of cognitive evolution that selected grammars that were simple to process (right branching ones). Haider argues that a child could never acquire language using a "production algorithm" that starts with the generation process on the speaker's side; instead, the child uses a "mapping algorithm" that starts with the phonetic linearization provided as input (the public part) and results in the child's deciphering of the hierarchical phrase structure (the hidden part).

Other criticisms of the LCA include the fact that the model primarily accounts for VO grammars. According to Haider, the LCA fails to capture the syntactic behavior of OV, since it must recur to movements that lack a trigger and over generate in order to account for the surface order. For Haider, being able to model a surface word order through a high degree of derivational flexibility is not enough to count as a solid theory—in his view, the differing behaviors between VO and OV should follow directly from theoretical principles such as the BBC and the PDI. Additionally, the LCA's prediction that OV is structurally more complex than VO (given that OV it is derived through massive movement) is not empirically supported. Haider discusses in detail how the BBC approach accounts for the following ten OV-VO properties more satisfactorily than the LCA: functional subject positions and the EPP, quirky subjects, opacity for extraction, scrambling versus object shift, particle—verb order, stacked VP's and VP clustering, participle agreement, word structure, diachronic history of OV and VO, and verb clustering and verb-order variation. Haider then argues that directionality should be given the status of a primitive in syntactic theory and concludes that the BBC model is comparatively more adequate than the LCA model to provide "insight to the principal relations that differentiate OV and VO… without an excessive and hitherto largely unmotivated derivational machinery…" Haider finishes the chapter by challenging the motivations for the arising of the Minimalist Program on both theoretical and empirical grounds.

11. Discussion

"Symmetry Breaking in Syntax" is an ambitious book that condenses decades of research related to the existence of a universal right-branching constraint (BBC) in language that limits the architecture of syntactic structures. This constraint's interaction with a parameter that defines head-initial, head-final or mixed directionality seems to account for the difference in syntactic behavior cross-linguistically that Haider analyzes. He uses a wide array of diagnostics on data from the Germanic family (primarily German) to highlight the predictions made by his model and how they are indeed fulfilled. Rather than relying solely on syntactic arguments, it is commendable that Haider provides evolutionary justification for the arising of the BBC, since it adds weight to his rebuttal of other models that become problematic when discussing language acquisition and parsing. Additionally, his description of the historical account of the VO/OV split in Germanic as arising from the logical split of Type III Old Germanic languages into either of the options of fixed directionality (VO or OV) is intriguing and adds to the big picture conclusions that derive from the predictions made by the BBC model.

Haider does not shy away from assessing possible problems for the BBC, nor does he ignore possible advantages from the competition (which are not many in his view). For every argument in favor of the BBC, he also provides plenty of evidence against competing models, thus challenging not only their empirical coverage, but also the long held assumptions that underlie them. In doing so, Haider challenges researchers to reflect deeply on his claims in order to reassess the basic assumptions and derivational tools used in all models. Additionally, Haider's approach opens the door for detailed syntactic analyses in other languages beyond the Germanic family.

A clear prediction from Haider's proposal is that if the BBC is indeed a universal, inviolable constraint on the possible architecture of syntactic structures, no language should provide solid evidence for left-branching structures at all. The fact that Haider's claim is so strong is an advantage, since this prediction and others that derive from his model can be tested through the fine grained diagnostics he puts forth in the book. Of particular interest seems the necessity for a detailed description of the properties of Type III languages, since it remains an open question how many VO and OV properties these languages share, and the degree of variability which could arise in their typology. Haider points out that the Slavic family in particular needs much research, since historically these languages have been considered as strange VO or OV languages—a claim that seems to fall apart under close scrutiny.

All in all, Haider's structuring of his argumentation and his writing style both deserve praise. He has written a book that successfully presents complex theoretical syntax discussion, a large amount of data to back the theoretical claims, and detailed descriptions of the consequences of his proposal for several sub-fields of linguistics. Even though the book suffers from some degree of repetition, the depth of Haider's

research deserves careful consideration. He has written a book that should interest not only syntacticians and typologists, but all linguists who wish to debate the basic components that underlie the architecture of grammar.

References

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