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Deriving the functional hierarchy☆

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ABSTRACT

There is a tension between Chomsky's recent Minimalist theory and the cartographic program initiated by Cinque. Cinque's cartography argues for a large number of fine-grained categories organized in one or more universal Rich Functional Hierarchies (RFH). The subtlety of the evidence and the richness of the inventory virtually force an innatist approach.

In contrast, Chomsky argues for a minimal role for UG (MUG), shifting the burden to extralinguistic cognition, learning, and what he calls third factor principles such as principles of efficient computation. In this paper we reconcile the austere MUG vision of Chomsky with the impressive empirical evidence that Cinque and others have presented for RFH.

We argue (building on previous work) that some Cartographic work overstates the universality of the orders observed, and furthermore conflates several different sources of ordering. Ordering sources include scope, polarity, and semantic category.

Once these factors are properly understood, there remains an irreducible universal functional hierarchy, for example that which orders epistemic modality and tense over root modality and aspect, and that which orders the latter over argument structure and Aktionsart (as discussed in much previous work).

This residual core functional hierarchy (CFH) is unexplained so far by work which follows MUG. Rather than simply stipulating the CFH as part of UG, we reconcile CFH with MUG by detailing what nonlinguistic cognition must look like in order for MUG to derive the CFH. We furthermore show how an individual language develops a language-specific RFH which is consistent with the universal CFH, illustrating with a detailed account of the English auxiliary system.

1. Introduction

1.1. The problem

The Minimalist Program strives to go beyond "explanatory adequacy" (an explanation of how language can be learned) to develop a plausible account for how human linguistic ability could have evolved (Chomsky, 2005, inter alia). In this context

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it is conjectured that UG is sparse and minimal. Phase heads (e.g. C and *v*) are the locus of important features driving derivations, and non-phase heads (e.g. T and V) are necessary for their operation. Anything else is, according to one interpretation of the Minimalist Program, unlikely to be due to UG, but must instead be due to external factors (e.g. 'general cognition').

The Cartographic enterprise, on the other hand, proposes to map the actually occurring functional heads in the world's languages, discovering extraordinarily rich structures in every extended projection, in every language (Cinque, 1999). The impressive uniformity (variation seems to be largely restricted to the inventory of features, not their hierarchy) leads to the conclusion that the hierarchy must be based on innate factors. The hierarchy is furthermore restricted to a specific subdomain of cognition (e.g. diminutives, not 'dangerous things'), which suggests that it is part of UG.

1.2. Why it matters

1.2.1. Why minimalism needs cartography

Minimalists ignore the cartographic enterprise at their peril. It is common practice for minimalist work to posit an occasional Voice or Applicative or Focus head as needed, and to continue to assume that the sparse C–T–*v*–V architecture is sufficient, with minor modifications.

> Chomsky (2008: 9): "C is shorthand for the region that Rizzi (1997) calls the "left periphery," possibly involving feature spread from fewer functional heads (maybe only one), …"

But in a theory based on Minimalist principles, the flapping of butterfly wings in one place can cause a typhoon in another: When mechanisms are pared down to a minimum, each has tremendous consequences. Therefore it is vital to know what mechanisms regulate the combinations of heads beyond the phase–non-phase pairs C–T and *v*–V. How are features arranged at the edge? Are they contained in one or several heads? Does this arrangement bear on the order of operations? What are the properties of non-phase heads? And so on.[1]

1.2.2. Why cartography needs minimalism

Linguistic theory cannot rest on its maps. Cartography is in desperate need of a theory of the functional hierarchy. Although the data is quite rich, it seriously underdetermines the possible analyses. Are there categories which are ordered and others which are not (e.g. negation, agreement)? For those which are ordered, is there a total order or only a partial order? Can categories be missing from the middle of a sequence, or are they always present in some guise? What is the relationship among functional hierarchies in distinct extended projections? These questions cannot be answered by simple examination of the data, and require a theory.[2]

1.3. The solution

We adopt (as working hypothesis) the Minimalist conjecture that a fine-grained hierarchy of functional heads cannot be part of UG; that is, it cannot be innate and specific to language.

We are persuaded that Cartographic work shows that there are fine-grained hierarchies of functional heads in each language, and that they are similar to each other (i.e. the clausal hierarchy of English is similar to those of Japanese, Navajo, Kîîtharaka, etc.)

We conclude that these hierarchies emerge in some highly constrained way. In this paper we offer a proposed account of how this happens.

Our approach is three-pronged. First, we adopt a fundamental tripartition of the clause into a V-domain, a T-domain, and a C-domain (Platzack, 2000, 2010; Grohmann, 2003)[3] and provide this with a formal semantic grounding on a conceptual backdrop; we take events (e), situations (s), and propositions (p) to be conceptual primitives recruited by the language faculty, and we take the hierarchy of C > T > V to follow from the interaction of (i) the way these conceptual primitives are organized in the wetware and (ii) the way they are harnessed by the syntactico-semantic system.

Second, we show that in some cases, the hierarchy is not in fact fixed; in other cases, there are independent factors giving rise to hierarchical effects.

Finally, we are left with a residue: Strict hierarchy which does not follow from the e–s–p tripartition, nor from independent factors. For these cases we posit selectional restrictions, for example when a functor like the progressive is restricted to combining with dynamic eventualities.

To illustrate the general approach, we apply our starting assumptions and methodology to one concrete empirical domain where ordering is rich and rigid in English—–classic auxiliary ordering, as treated in Chomsky (1957) and illustrated in (1).

[1] See Shlonsky (2010) and Cinque and Rizzi (2010) for discussion of this point.

[2] Cartography is usually associated with an atomistic approach to features, where each syntactic head carries only one semantically interpretable feature (see Cinque and Rizzi, 2010), but the same questions we pose here apply to feature 'geometries' of the type proposed, for example, by Harley and Ritter (2002) and Cowper (2005), when those are construed as constraints on feature bundles.

[3] Wiltschko (forthcoming) proposes four domains: discourse linking, anchoring, point of view, and classification, lining these up approximately with C, T, Asp, and V respectively. In §3 we discuss the relationship between Wiltschko's domains and the ones we propose.