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Strict interface principles and the acquisition engine: from unlabeled to labeled and minimal modular contact

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ABSTRACT

The abstract nature of syntax and the open question of how interfaces function complicates considerably the traditional acquisition problem, by opening a large range of possible extra-linguistic influence. Therefore there must be constraints on interfaces. Three proposals are advanced: first, strict interfaces between phonology, syntax, and semantics constraining grammars exist. In addition, UG-stipulated interfaces may be quite substantive, for instance, Imperatives and Topicalization exhibit fixed syntactic, semantic, and phonological properties. Second it is argued that there is an internal acquisition engine which is capable of self-revision by replacing initial incomplete structures – which have unlabeled nodes that function as Expressives – with labeled nodes that have limited scope over defined constituents. Such self-correction is implicit in many theories. The shift from expressive sentential negation to logical constituent negation is an example. The path is repeated for tense, wh-movement, quantification and Point of View operators. Finally a principle of Minimal Modular Contact limits grammatical variation by requiring a single contact point between modules. The primary example is [lexical verb + its thematic roles] which projects thematic roles, like Agent, from one syntactic verb position onto subject position, morphology, and implicit arguments.

1. Background: primary linguistic data[1]

The language acquisition question is usually aimed at a middle point in language reception. The classic assumption is that the Primary Linguistic Data (PLD) is adequately represented before an analysis begins. This was an important idealization in the first phases of research in the 1960's, but the idealization was obviously false, though rarely discussed, and what is needed is a conception of the principles of UG that can *assist* in the analysis of PLD. This perspective engages not only the traditional acquisition problem, but what we can call the Instantiation Challenge:

How does the child structure input to feed further analysis with UG-defined analytic tools?

A common intuition is that the initial analysis is entirely one of phonology and segmentation. However, once segmented, the child must attempt to build syntactic structure. Does the child immediately impose a full phrasal category like NP, or a lexical

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[1] Thanks to the audience at the Durham conference for the Past and Future of Universal Grammar, members of the audience at the Rio Conference on Recursion, to L. Amaral, L. Bauke, N. Chomsky, J. de Villiers, W. Hinzen, Y. Oseki, A. Kidwei, A. Vainnikka, two reviewers and, as always, to the UMass Language Acquisition Resource Center community for helpful commentary.

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category like N, or is it more open, allowing Expressives like "no" which may or may not have a Negative element linked to them, just as "yes" does not obviously have a grammatical category. To obtain a comprehensive grasp of acquisition, we need to model stages in the emergence of structure that are not pure reflections of Target grammars and possibly reflect initial generalizations that are difficult to formulate in UG. Because Chomsky (1965) foresaw that assembling PLD might engage other principles, he initially posited a Language Acquisition Device which might convert or reject early representations, like dropping baby teeth before mature ones appear, on the path to adult grammars.

Since 1965 the effort has been to make UG itself a guide to acquisition by, for instance, asserting the Autonomy of Syntax, or positing Parametric choices within the innate schema, which restricts the domain of a child's hypotheses. At the outset of the 21st century, the entire grammar has shifted toward the articulation of Interfaces with other Cognitive-Intentional systems. If those interfaces entail a set of diverse semantic variables with intricate cognitive connections, like modality, specificity, definiteness, human, animate, negation and Event variables etc., then the set of new possible grammars increases exponentially from a classic learnability perspective. Therefore we must seek to find restrictive constraints elsewhere.

Thus the acquisition problem needs to be re-conceived. We argue that Minimalist concepts, precisely because of their greater abstraction, provide a way forward, and supply many tools needed to approach the PLD. Though it might seem surprising, the increased abstraction of fundamental operations of structure-building in Minimalism (Merge, Labeling, and Phases) is ideal for initial acquisition stages where data is partly underanalyzed. It can give us a microscopic account of how the child attacks the input data and projects representations which precede re-analysis and adult Phrase types. Rather than a re-writing rule or an X-bar system, the operation Merge leaves the created node under-identified, and partly open to the conceptual interface. We argue that an under-identified node may in fact enter the child's grammar as Unlabeled, hence needing revision before further structure can be built, and requiring application of a currently developing labeling algorithm which its role in acquisition should help to frame.

If a more abstract conception of phrase structure captures language acquisition, then it is strong evidence that such claims are both theoretically plausible and biologically real. These concepts need to be explored intuitively before one projects a deductive mathematical system. Therefore we will not proceed from definitions, but provide a pre-deductive overview which may extend minimalist concepts beyond technical definitions found in the literature. In that vein, we introduce two other broad concepts that are critical to a reconception of the acquisition problem which we elaborate below: Strict Interfaces and Minimal Modular Contact.

1.1. Strict interfaces

Strict Interfaces are intuitively presumed by most theories. This is an elaboration of a general intuition: all theories assume that there is a Sound-Meaning correspondence, but to differentiate human language from animal language, we need to articulate the fact that there must be a biologically stipulated Strict Interface that forces all human beings to interpret language referentially and not simply as emotional expressions or birdsongs. We propose that one can achieve restrictiveness by allowing connections between different dimensions of mind, called the Conceptual–Intentional structure and syntax, which is an example of a Strict Interface that is not open, at first blush, to language variation.

Beyond that original intuition, we envision Strict Interfaces that have a number of quite substantive characteristics, as we discuss in terms of Imperatives and Topicalization below, but this remains a programmatic suggestion.

1.2. Minimal modular contact (MMC)

Another way to achieve restrictiveness and therefore learnability is to state a principled limitation on how different Modules interact. We use the older term Modularity, for convenience, to capture the coherence of some parts of the Conceptual–Intentional Interface, for instance that there are Events that are composed of Thematic Roles. In the ideal case:

Two modules will intersect at a single point.

We focus on the central role of the Verb in diverse projections of Thematic Roles. This broad principle could be called a "Leading Idea" that cannot be fully implemented until we see how far it applies. Another example is Lexical Insertion. It fulfills the MMC by limiting lexical insertion to the bottom last step of tree construction. Current theories, however, suggest that Lexical Insertion can appear at many points of a derivation. Our perspective does not rule out such substantive proposals, but points out that one form of acquisition restrictiveness is now lost and needs to be replaced to maintain the restrictiveness that in turn explains the speed of acquisition. In a word, we have created a forbidding forest for ourselves through the introduction of Interfaces and we need some principles to guide us, and the child, through it. Two allied questions are paramount:

(1) a. What constrains Interfaces?
b. How can a theory of Interfaces reduce rather than expand the acquisition problem?