Learning at the interfaces: Tense and Agreement in early grammars in a variability model of morphosyntactic acquisition. A biolinguistic perspective

The generative grammar enterprise has rarely attempted to explain performance-based language production and processing—and with them—*variability*, a notion that has been at the heart of more behaviorist "learning" or "stage" theories, based on (more) probabilistic models of language processing and acquisition (Redington & Chater 1997). This study shows how variability, cross-linguistic gradient distribution, and acquisition that resembles "stage learning" with respect to the acquisition of tense and agreement (cf. Legate & Yang to appear) can be captured in the Chomskian paradigm by (a) taking seriously the most recent agenda about the language faculty and its role in language development (Chomsky 2005; Hauser, Chomsky, and Fitch 2002), by crucially distinguishing narrow syntax from a broader language faculty, and (b) being supplemented and informed by the evidence from other cognitive sciences, particularly by evoking learning at the interfaces.

I adopt a "syntax before morphology" perspective of development (Blom & Wijnen submitted; Dye et al. 2004), a bottom-up generation of lexical and functional categories, and a view that children have a complete set of functional categories (given by UG), but nevertheless spell them out with less success at higher branches due to the computational load—in line with the Inflectional Hierarchy Hypothesis (IHH) (cf. Izvorski & Ullman 1999). The IHH proposes impairment with respect to *Merge*, a widely-assumed concatenation operation in modern linguistic theories (e.g., Chomsky 1995 ff.). IHH and its similar instantiations (e.g., Friedmann & Grodzinsky 1997; Hagiwara 1995) were originally proposed for agrammatic interior aphasics and other impaired populations with brain damage (mainly) in Broca's area, which regulates the concatenation in the domains of morphology and syntax. Though the proposed hypothesis differ with respect to technology and details of linguistic theory, they all suggest a hierarchy of difficulty for both production and comprehension, namely Ø (Unmarked/Bare Verb Stem) > Aspect (-en, -ing) > Tense (-ed)/Agreement (-s) > Complementizer. I restate the IHH from a developmental perspective (cf. Brown 1973) as a problem of morphology-syntax mapping, proposing that the morphological spell out of features is more difficult at higher branches of phrase structure and emerges later in language development. I also show that this model can be extended to several other child languages and I present an additional piece of evidence for the proposed hierarchy of difficulty from language modeling (Kazman 1991a,b). Hence I argue that early unmarked forms are computationally less costly and represent exactly the class of verb forms that linguists have generally termed default/unmarked (e.g., Bybee 1985), even though these may at first resemble adult-like finite forms with zero morphology (Pine et al. 2005; Davidiak & Grinstead 2002). Under the present model, such forms are viewed as non-adult (early root nonfinite, ERN) forms that appear first in the course of development and are computed at lower branches of phrase structure with no or very little morphology (e.g., 3 sg pres forms in early Italian, Slovenian, Spanish, etc. with zero tense/agreement markers; -en Root Infinitives in early German, Dutch, etc.).

This model thus places all early languages on the same continuum rather than (superficially) distinguishes between languages that go through an ERN stage and those that don't. Furthermore, the outcome of this model may not always be an all-or-nothing one since children at this early stage are still segmenting morphologically complex verbs, extracting the right stems, and learning morphophonological exceptions (Blom & Wijnen submitted; Peters 1982; Pinker 1984, 1999).

I conclude by arguing that early non-adult morphosyntactic forms do not arise due to some lack of knowledge of syntax or some central syntactic deficit or immature syntactic processes—as most accounts have proposed—but (mainly) due to the morphology-syntax mapping operating on different 'levels' at linguistic interfaces.

References

Aguado-Orea, J. and J. Pine. 2006. Testing Wexler's Unique Checking Constraint with data from early child Spanish. Presented at *BUCLD30: 30th Boston University Conference on Language Development*. Handout/Ms., University of Liverpool.

Blom, E. and F. Wijnen. Submitted. Development need not be embarrassing. The demise of the Root Infinitive and related changes in Dutch child language. [http://www.let.uu.nl/~Frank.Wijnen/personal/BlomWijnen_LI_OIpaper_oct2006.pdf]

Brown, R. 1973. *A First Language: the Early Stages*. Cambridge, MA: Harvard University Press.

Bybee, J. 1985. *Morphology: A Study of the Relation between Meaning and Form.* Amsterdam: John Benjamins.

Chomsky, N. 2005. Three factors in language design. *Linguistic Inquiry* 36:1-22.

Davidiak, E. and J. Grinstead. 2004. Root non-finite forms in child Spanish. Poster presented at *Generative Approaches to Language Acquisition* 1 at the University of Hawaii.

Dye, C., Foley, C., Blume, M, and B. Lust. 2004. Mismatches between morphology and syntax in first language acquisition suggest a 'Syntax-First' Model. *Online Proceedings of the 28th Boston University Conference on Language Development.*

Friedmann, N. and Y. Grodzinsky. 1997. Tense and agreement in agrammatic production: Pruning the syntactic tree. *Brain and Language* 56: 397-425.

Hagiwara, H. 1995. The breakdown of functional categories and the economy of derivation. *Brain and Language* 50: 92-116.

Hauser, M., N. Chomsky, and W. Fitch. 2002. The Faculty of Language: What Is It, Who Has It, and How Did It Evolve? *Science* 298: 1569-1579.

Izvorski, R. and M. Ullman. 1999. Verb inflection and the hierarchy of functional categories in agrammatic anterior aphasia. *Brain and Language* 69: 288-291.

Legate, J. and C. Yang. To appear. Morphosyntactic learning and the development of tense. To appear in *Language Acquisition*.

Peters, A. 1982. *The Units of Language Acquisition*. Cambridge UK: Cambridge University Press.

Pine, J., C. Rowland, E. Lieven, and A. Theakston. 2005. Testing the Agreement/Tense Omission Model: Why the data on children's use of non-nominative 3psg subjects count against the ATOM. *Journal of Child Language* 32: 269-289.

Pinker, S. 1984. *Language Learnability and Language Development*. Cambridge MA: Harvard University Press.

Pinker, S. 1999. *Words and Rules: The Ingredients of Language*. New York: Basic Books.

Redington, M. and N. Chater. 1997. Probabilistic and distributional approaches to language acquisition. *Trends in Cognitive Sciences* 1:273-281.