Commentary on O'Grady

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O'Grady has presented an analysis of the acquisition of scope patterns in English and Korean that argues forcefully for an emergentist approach to language acquisition (O'Grady 2005). Instead of relying on abstract syntactic patterns and parameters, he shows that learning can arise as a by-product of successful operations of the processor. In constructing his analysis, he relies on four principles — all derived from outside of linguistics.

1. The first principle is the idea that the processor is capable of producing all sorts of interpretations. This is the linguistic counterpart of Darwin's mechanism of species variation, as it arises from mutation and independent assortment. As O'Grady notes, given a sentence such as "the dog chases the cat", the processor might initially create both OVS and SVO interpretations.
2. The second principle is that incremental processing favors some interpretations initially over others. In particular, the incremental nature of sentence comprehension favors the "all the cookies" interpretation in Korean, because local attachment and immediate interpretation of nominals in the dominant SOV order lighten the load on the processor. In English, there is no such pressure, because the verb appears before the nominal. Presumably, these incremental processing constraints emerge from real-time pressures on language processing in the brain.
3. The third principle is Darwinian selection. Given the generation of multiple possible scopal interpretations, at least in English, the question is which will survive. Here, natural selection favors those interpretations that match up with intended message, as indicated in the conversational setting. The encoding of the results of selection is explained by the neurophysiological dynamics of memory consolidation (McClelland, McNaughton et al. 1995).
4. Finally, to account for L2 learning of scope, O'Grady must invoke the idea that L2 learners transfer routines from their L1 to the L2. Here, he argues that it is the dominant routines that transfer. This is equivalent to the Competition Model claim (MacWhinney 2012) that L2 learners focus on the transfer of unmarked patterns, rather than marked patterns.

Linguistic Approaches to Bilingualism 3:3 (2013), **321–323**. DOI 10.1075/lab.3.3.09mac
ISSN 1879–9264 / E-ISSN 1879–9272

O'Grady's analysis aligns itself well with the Competition Model (Bates and MacWhinney 1989). That model emphasizes these same four principles. Like O'Grady, we have also assumed that comprehension relies on item-based patterns (MacWhinney 1975) that are eventually generalized into constructions (MacWhinney 1982; MacWhinney in press). O'Grady (2005) presents a fuller account of this approach and additional computational detail can be found in Hausser (1999).

The importance of O'Grady's analysis of the learning of scopal patterns should not be underemphasized. Along with c-command patterns and structural dependency, scope has been identified by Crain (1991) and others as the clearest evidence for the importance of an abstract exclusively linguistic cognitive module. In effect, accounting for the acquisition of scope is the major linguistic challenge currently facing emergentist accounts of language learning.

Given the success of O'Grady's current analysis, one may wonder why the field continues to discuss accounts based on special purpose mechanisms such as parameters, special-purpose modules, triggers, and phases. Following Fodor (1978:470), one could argue that it is now up to the generative tradition to show some "signs of life" by demonstrating the need for special purpose mechanisms and structures, when general emergentist principles seem to account for the data.

The availability of a coherent analysis of the learning of scope is a solid achievement, but I do not believe that emergentists can rest on these laurels. They also need to show their own "signs of life". In particular, I would like to see O'Grady's account linked up more tightly to the construction of mental models, as informed by the theory of embodied cognition (Klatzky, MacWhinney et al. 2008). There is a crucial step in the analysis of O'Grady's example (15) where we have to ask exactly what the Korean processor is doing with "all cookies". O'Grady tells us that the processor is doing immediate interpretation and that must be true. But what exactly does that mean? Interpretation is not just a matter of connecting lines in a dependency graph. Rather, it seems to me that the contrast between examples (15) and (14) focuses on the fact that, in Korean, "all cookies" is immediately entered into a mental model of the scene. In Korean, one envisions "Mike" and we take his viewpoint as the perspective of the utterance (MacWhinney 2008) on our mental model stage. Next, we place "all cookies" onto the stage and mark it as an object, even without yet having encountered any verb to link the object to the subject. We can do this because Korean obligingly marks this noun as the object. It is this ability to place role-labeled participants into a mental model without yet having encountered a verb that distinguishes left-branching SOV languages like Korean from languages like English. In a sense, the rest of the analysis follows from the way in which the human brain can configure alternative methods for populating mental models.

For the emergentist account to go all the way through, I believe we have to reinterpret both scope and c-command in terms of the construction of a mental model based on perspective taking. This additional analytic step will link linguistics to the rest of the cognitive sciences in a way that permits more completely articulated emergentist accounts.

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