Proto-combinatorics

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Jackendoff (2002) identifies certain linguistic "fossils" -- features or forms at some remove from the logic and structure of language as it is now, but interpretable as traces of innovations that appeared along the path from primate calls to modern language. In this sense "defective" lexical items such as *Ouch!* or *Dammit!* may be fossils of an ancient one-word stage. Here we propose a different sort of linguistic fossil. A key question about language origins concerns how humans attained a compositional view of utterances, routinely expecting to find discrete elements falling into integrated groups, with each element qualifying the interpretation of the whole. Various authors (Bickerton, 2010; Jackendoff, 2002) have suggested that the first step toward modern syntax was concatenation. We argue, however, that concatenation has limitations in this role, especially relative to perception. The concatenation concept can ascribe succession to elements, but it can divide a string only if supplemented by some further criterion for finding cut points. We propose as an alternative a set-like aggregation function (cf., Burge, 1977). This is seen as a derivative or exaptation of the set-forming capacity critical to the Approximate Number System (see literature review in Carey, 2009), an evolutionarily ancient system present in a wide range of species. An aggregation function based on this source would be an innovation in a protolanguage otherwise capable only of one-word utterances by allowing listeners to recognize small assortments of items as related to each other in conceptual terms. Useable criteria of relatedness might include notions like being produced in response to some particular stimulus, being items connected with the same theme (as in properties of a certain predator), etc. We argue that by merely recognizing relatedness of these sorts and asserting connectedness among utterance units, an aggregation function could extract information otherwise unavailable to the listener. By being insensitive to order (in the sense that sets are unordered), it could capture information without depending upon speakers to be exploiting order in forming their utterances. If these suggestions have merit we expect evidence of the aggregating function in modern language. We propose that there is such evidence in coordinate structures. It is now widely (not universally) assumed that syntactic theories should
not incorporate construction-specific rules. Yet in the half century of generative work on coordination, there is a notable lack of consensus as to how this principle can be applied with these very common structures, though they seem to be the simplest and most straight-forward of structures. Coordinates seem to be far more transparent than are relations among referring expressions in binding theory. We propose that the source of these difficulties is that coordinates to a limited but significant degree are not products of a hierarchical syntax as pursued in frameworks such as the Minimalist Program, Lexical-Functional Grammar, HPSG, or various others. We propose that while each member of a set of coordinated constituents is organized by the syntax, the relation among the conjuncts is not, and is instead established by a modern derivative of the aggregating function described above. Likewise the link between a collection of conjuncts and the containing sentence is established by a further application of the aggregating function.

We review typological, neurological, and developmental evidence in support of this proposal. Further, we report on various results from ongoing behavioral studies that support the claim that coordinates do not enter into hierarchical relations among the conjuncts, in contrast to various proposals within the Minimalist framework. We show that by comparison closely matched and uncontroversially hierarchical control cases do show strong evidence that the language processing system sees them as though they are laid out in terms of a hierarchical data structure that is evident in both apparently grammatical effects, as well as in processing issues such as attraction effects. These studies suggest that some properties of the coordinates we examine are treated conceptually as aggregates in ways that are inconsistent with standard assumptions.

References


