

brother). Clearly, goes the argument, the idiosyncrasies of imagery or other mental processes we each indulge in are irrelevant to the issue of semantics – the word-world relation that specifies, somehow, the set of objects in the world correctly referred to by “uncle,” “sue,” and “stockbroker.” So, we cancel out all the conflicting and irrelevant mental states and processes and leave the messy minds out of semantics altogether. In any case, since we semanticists have to get all the way to the world in the end, it won’t do to stop short in the mind (or the brain), so why tarry?

This is strikingly like the justification that has been offered by evolutionists for habitually ignoring developmental biology: We choose to go from the gene directly to the adaptation, the phenotypic structure or behavior that is actually selected for, because that is, in evolution, where the rubber meets the road. A gene for *x*, a gene for *y*, and we can postpone indefinitely the tricky job of charting the winding path from gene transcription to operational phenotypic asset. This is in fact a very valuable simplification, but it can be overdone. Reacting against it – today’s “evo-devo” bandwagon – can overshoot, too.

Jackendoff says, in italics, “*it is necessary to thoroughly psychologize not just language, but also ‘the world’*” (p. 294) and adds: “*the perceptual world is reality for us*” (p. 308). As he recognizes, this looks as if he’s stopping semantics in the brain, saddling his brilliant view of language with some weird sort of materialistic idealism. Let me try to put the matter more mundanely. Most people go through life without ever giving semantics any thought. You don’t have to figure out the semantics of your own language to use it, but if you do try to, you soon discover the set of issues that exercise Jackendoff. It helps keep the quandaries at bay to go *hetero-*, to do the semantics of some other guy’s language (and mind). Like this:

The words of his language refer to things. We mustn’t presuppose that his semantic system matches ours – the meta-language we use to *describe* his psychology. If we want to say what his words refer to, we have to see how his brain is designed by evolution (including cultural evolution) and by individual learning, to parse out his perceptual and conceptual world. Once we’ve done this we can ask: Do his terms refer to things in the world *as we parse it*, or “just” to things in the world as he experiences it (and as his conspecifics and companions experience it)? (For if there is a language, there is a shared system even if it isn’t *our* shared system.) If the former is true, then we share the world with him; our *manifest image* (Sellars 1963) is (roughly) the same as his, and theirs. If not, then we have to maintain something like scare-quotes when we refer to the “things” in his world. But either way, we eventually get all the way out to the world – where the rubber meets the road. What we can’t *express* in our terms, we can *describe* in our terms.

Jackendoff insists, rightly in my opinion, that it is only by taking this indirect path that analyzes the manifest image implicit in the language-users’ brains that we can complete the task of linguistics. For most purposes, however, we can continue using the traditional semantical talk about the word-world relation, just as biologists can continue to talk about genes for myopia or even dyslexia (Dawkins 1982; Dennett 1995), because we know how to take the longer, more complicated path when necessary.

A conceptuocentric shift in the characterization of language

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Abstract: Recognizing limitations of the “syntactocentric” perspective, Jackendoff proposes a model in which phonology, syntax, and conceptual systems are each independently combinatorial. We can ask, however, whether he has taken this issue to its logical conclusion. The fundamental

question that is not fully addressed is whether the combinatorial aspect of syntax originated in, and derives from, the indeed “far richer” conceptual system, a question to be discussed.

In *Foundations of Language*, Jackendoff (2002) has undertaken what is finally a rather profound reconfiguration of the generative framework in a manner that allows a potentially much more interesting interaction with related aspects of the other cognitive sciences. Recognizing limitations of the “syntactocentric” perspective, in which the free combinatoriality of language is attributed to syntax alone, Jackendoff proposes to correct the situation by promoting a model in which phonology, syntax, and the conceptual system are each independently combinatorial.

Of particular interest is the status of the conceptual system as a “combinatorial system independent of, and far richer than, syntactic structure” (p. 123) in the parallel architecture, and the resulting questions concerning the functional relation between the conceptual and the syntactic components. In this aspect, Jackendoff has initiated an interesting debate, but in a certain sense he has failed to take his position to its logical conclusion. The fundamental question that is not fully addressed is whether the combinatorial capability originated in the indeed “far richer” conceptual system. This is consistent with the consideration that language arose primarily to enhance communication (p. 236) of thoughts, which assumes the precondition of a combinatorial conceptual structure system (p. 238).

If the combinatoriality of language serves the purpose of transmitting messages constructed from an equally combinatorial system of thoughts (p. 272, and Ch. 3), then the precedence for combinatoriality appears to lie in the thought or conceptual system. In this case, it would have been more interesting to see Chapter 3 on combinatoriality organized around the combinatoriality of the conceptual system, with an analysis of the extent to which the combinatoriality of syntax derives from that of its predecessor.

In any event, Jackendoff’s view of the conceptual system invites one to consider things from a more conceptuocentric perspective. Indeed, Jackendoff notes that (p. 417) “languages differ in their syntactic strategies for expressing phrasal semantics; but the organization of what is to be expressed seems universal,” again suggesting that the origin of the universal combinatorial capacity lies more in the independent combinatorial capability of the conceptual system than in syntax. In this context, one could consider the syntactic integrative processor as an algorithm for reading or traversing the conceptual structure data structure in order to generate a linear string that would be processed in parallel by the phonological integrative processor. In this sense, the observed generative component of syntax would derive from that of the conceptual system. Indeed, on page 417 Jackendoff indicates that “what is part of Universal Grammar, of course, is the architecture of the interface components that allow conceptual structures to be expressed in syntactic and phonological structures.” The interesting part of what is universal then, is the conceptual system and its interfaces.

If this were the case, then the syntactic integrative processor would perform an interface between conceptual and phonological structures. This perspective focuses on the relation between the structure of language and the structure of meaning, more than the syntactocentric approach does. In this context, one would expect a certain degree of isomorphism between conceptual structures and the linguistic structures that communicate them. Jackendoff thus notes that for “simple compositional” structure based on argument satisfaction, modification, and lambda extraction and variable binding, there is a “close correspondence between the configurations of lexical items in syntax and conceptual structure” (p. 387). Enriched composition such as the reference transfer depicted in Nunberg’s (1979) sentence “The ham sandwich over in the corner wants more coffee” manifests situations in which this iconicity is claimed to break down. Indeed, the development and use of this type of “verbal shorthand” will lead to the development of grammatical constructions that partially circumvent iconicity, here simply referring to an individual by his or her most contex-

tually salient property, his or her restaurant order. Still, from a developmental perspective, we should explore how far the infant can go with the “close correspondence” hypothesis.

The issue of the source of compositionality in the conceptual system or in syntax is not a trivial issue, as it has massive impact on learnability. Learnability issues generally evoked in the “poverty of stimulus” framework focus largely on the complexity of inducing regularities derived from syntactic compositionality. This complexity could be significantly reduced if the compositionality were already present in the conceptual system. In this context, acquisition does not necessarily imply that the child perform a (demonstrably impossible) task of grammar induction on reduced input (see target article, sect. 4.6). Rather, it implies that the child learns how to interpret the meaning of sentences by any method. In his discussion of lexical storage versus online construction (p. 188) Jackendoff outlines an approach in which the infant initially is “storing everything,” and begins to generalize regular patterns “and extract explicit patterns containing typed variables;” allowing the system to “go productive,” via variable-based structures similar to those discussed by Marcus (2001). The resulting lexical construction-based developmental trajectory described in section 6.9 makes interesting contact with the usage-based account of language acquisition as developed by Tomasello (1999b; 2003). In making this connection, Jackendoff has quietly performed a remarkable stunt in theoretical diplomacy, by (at least partially) integrating the construction grammar framework into the parallel architecture.

What becomes interesting from this dual perspective of (1) the combinatorial precedence of the conceptual system, and (2) the use of a construction grammar style approach as suggested in Chapter 6, is the potential reduction in the processing complexity associated with language acquisition. Across languages, meaning is encoded by individual words, word order, grammatical marking, and prosody (Bates & MacWhinney 1982). Within a language, grammatical constructions will be identifiable based on their characteristic configurations of these cues. These grammatical constructions will each have their respective form-to-meaning correspondences – which the learner is expected to acquire. Thus, the mappings can be learned and subsequently accessed, based on the configuration of grammatical cues that serves as an index into the lexicon of stored constructions. A model based on these principles made interesting predictions concerning the neural bases of these operations (Dominey et al. 2003), and has also been effective in miniature language acquisition contexts, in which grammatical constructions are learned and productively generalized to new sentences (Dominey 2000; 2003). This suggests that when the brunt of the compositional load is put on the conceptual representation, a reliable scaffolding is thus in place, upon which syntactic compositionality may naturally repose.

Generative grammar with a human face?

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Abstract: The theoretical debate in linguistics during the past half-century bears an uncanny parallel to the politics of the (now defunct) Communist Bloc. The parallels are not so much in the revolutionary nature of Chomsky’s ideas as in the Bolshevik manner of his takeover of linguistics (Koerner 1994) and in the Trotskyist (“permanent revolution”) flavor of the subsequent development of the doctrine of Transformational Generative Grammar (TGG) (Townsend & Bever 2001, pp. 37–40). By those standards, Jackendoff is quite a party faithful (a Khrushchev or a Dubcek, rather than a Solzhenitsyn or a Sakharov) who questions some of the components of the dogma, yet stops far short of repudiating it.

In *Foundations of Language*, Jackendoff (2002) offers his version of TGG, in which the primacy of syntax (“an important mistake,”

p. 107) is abolished, the related notions of Deep Structure and Logical Form (“the broken promise,” cf. Précis, sect. 3) are set aside, the links to other domains of cognition are discussed, and a hand is extended in peace to psychologists and other cognitive scientists. *Foundations* is an enjoyable, thought-provoking and useful book that fulfills the promise of its title by presenting – and attempting to tackle – foundational issues in linguistics. It is an excellent overview of the ground that must be covered by any serious contender for a linguistic “theory of everything.” Its non-dogmatic style engages skeptical readers of cognitive and empiricist persuasions (“can my theory explain this set of facts better?”) instead of alienating them.

Among the more positive aspects of Jackendoff’s stance in *Foundations* are: the emancipation of semantics as one of the three equal-status components of the “parallel architecture” (p. 125); the realization that not all rules are fully productive (admitting constructions p. 189); and the construal of meaning as a system of conceptual structures (p. 306). The pervasiveness of TGG dogma is, however, very prominent throughout the book. On the most abstract level, the dogma manifests itself in the bizarre mentalistic nomenclature (*f-knowledge*, etc.) that Jackendoff uses instead of the standard explanatory machinery of representation found in all cognitive sciences. Jackendoff shuns a representational account of linguistic knowledge because of his (understandable) wish to avoid joining Fodor and Searle in the philosophical quagmire of intentionality. There exist, however, psychophysically and neurobiologically plausible accounts of symbolic representation that hinge on counterfactual causality and manage to stay clear of the Fodorian mire (Clark 2000; Edelman 1999).

The preponderance of Chomskian bricks in *Foundations* is revealed in Jackendoff’s official insistence, in the introductory chapters, on rule-based combinatoriality. His initial formulation of this concept (pp. 38–57) is so strong as to be incompatible with his own views on constructions (pp. 152–87) and on their graded entrenchment (p. 189), expressed later in the book. It is satisfying to observe that those latter views are on a convergence course with some of the best-known and most promising work in cognitive linguistics (Goldberg 1998; Langacker 1987). As such, they can stand on their own: Computationally explicit construction-based accounts of linguistic productivity need no extra propping (Solan et al. 2003). In any case, Jackendoff should not count on any help from TGG, a Protean theory that, despite decades of effort, has failed to garner empirical support for the psychological reality of the processes and entities postulated by its successive versions, such as movement and traces (Edelman, in press; Edelman & Christiansen 2003). In a recent attempt to obtain psycholinguistic evidence for traces, for example (Nakano et al. 2002), only 24 subjects out of the original 80 performed consistently with the predictions of a trace/movement theory, while 39 subjects exhibited the opposite behavior (the data from the rest of the subjects were discarded because their error rate was too high). Jackendoff’s continuing to cling to TGG (complete with movement and traces), despite its empirical bankruptcy and despite his self-proclaimed openness to reform, is difficult to explain.

Even Jackendoff’s highly commendable effort to treat semantics seriously may be undermined by his continuing commitment to TGG. Conceptualist semantics is an exciting idea, but to develop it fully one must listen to what cognitive psychologists have to say about the nature of concepts. Instead, Jackendoff erects his own theory of concepts around scaffolding left by the generative linguists, which, in turn, is only as sound as those decades-old intuitions of Chomsky and Fodor. In particular, incorporating Marr’s and Biederman’s respective theories of visual structure (pp. 346–47), themselves patterned on TGG-style syntax, into the foundations of semantics cannot be a good idea. Jackendoff’s acknowledgment, in a footnote 10 on p. 347, that Marr is “out of fashion” with the vision community holds a key to a resolution of this issue: Current perceptually grounded theories of vision (Edelman 1999; 2002) and symbol systems (Barsalou 1999) are a safe, additive-free alternative to TGG-style semantics.