the categoriality of the theory without nullifying it. No doubt it provides the model with enough flexibility for a faithful synchronic account of a language: Make as many constructions as needed, with as many inheritance links as needed. But the prediction is that it will resist explaining language change and acquisition because the process of modifying a lattice of constructions – to say nothing of just establishing it – can only be a complicated one. The prediction turns out to be true: In pages 189–90, Jackendoff addresses learnability issues; he makes a fair summary of the data on acquisition which is available and concludes that "the gap is still not yet bridged" and that he has not "provided a thorough account of language acquisition." I come back to this point below.

The issue of reducing categoriality is also at stake, in a way, with the proposition "to blur the distinction between lexical items and what have traditionally been regarded as rules of grammar" (p. 180). I have not evaluated to what degree this is workable, but it may well be, and if it is, it certainly reduces categoriality in an interesting way: It is a valuable step in the direction of the much-wanted reconciliation of *data* (the static face of linguistic knowledge) and *processes* (its dynamic face).

To view the matter simplistically, connectionist modelling is where an alternative to categoric accounts is most likely to obtain, ultimately. Yet, Markus (2001) showed that connectionist models have not yet provided three base mechanisms which are mandatory to account for cognition in general, and language in particular – this point is very well recalled in *Foundations,* pp. 62–64. So, today, it is not possible to simply abandon symbolic accounts for connectionist accounts.

In my doctoral dissertation, *Le Locuteur Analogique* (*The Analogical Speaker,* Lavie 2003), I provide a ruleless and category-free account of language productivity. It is residually symbolic, and willingly so. It greatly alleviates the problem of binding as stated in *Foundations,* pages 58–60. In effect, among the several causes generating a need for binding, *Foundations* includes the need to bind instances and types (i.e., categories) together. Jackendoff identifies this as the main cause of "the massiveness of the binding problem." The model I propose posits no categories (and, as a corollary, no rules); all the computation takes place among exemplars and occurrences. This alone suppresses the need to bind instances to types. Therefore, there is still a certain amount of binding required, but it ceases to be as *massive* as deemed by Jackendoff. Reducing the want for binding in this way makes a step toward plausibility.

On page 186, Jackendoff writes:

> I am [*sic*] must admit to being uneasy with claiming that the pressure on lexical items from regular l-rules plus historical contingency are together enough to account for the overwhelming syntactic regularity of idioms. Historical contingencies surely are responsible for some *ir*regular idioms . . . evidence from lexical memory can now be brought to bear on the properties of general categorization. I take such potential unification to be a reason for optimism, as it draws a principled connection between two pre-existing robust lines of research.

I think that there is not that much about which to be uneasy. If rules and categories are excluded from the explanation, and contingency (historical and otherwise) is re-acknowledged as underlying all language dynamics, then it becomes possible to see lexical items, far from undergoing "pressure from regular l-rules," rather, as actively participating in productive processes that are mixed in the sense that they will produce outcomes that sometimes exhibit regularities and sometimes irregularities (as perceived from a given analytical standpoint). The way to achieve this is perhaps through recognition of inheritance, but not by installing inheritance hierarchies explicitly in the theory (Jackendoff himself claims [pp. 185–86] that "there are no overt inheritance hierarchies in the brain"). On the contrary, lexical contingency and the empowerment of the lexicon are achieved by obtaining inheritance effects (along with categorization effects, regularization effects, etc.) and by founding the base inscriptions (I do not write "representations") and base dynamics on something antecedent:

analogy. The latter has to be backed by contingent, exemplarist paradigmatic links, exerting exemplarist co-positionings of terms, and by abductive movements, the combination of which produces the overall language effects we are seeking. Doing so does indeed "draw principled connections between pre-existing robust lines of research," one of them being analogy, a respectable, bimillenary theme in linguistics (e.g., studied by Varro, Paul, Brugmann, Saussure, Bloomfield, etc.; cf. also Householder [1971]; Itkonen & Haukioja [1997]), which has been despised and unfortunately ruled out by other influential theoreticians of linguistics through most of the twentieth century. It also connects interestingly with more recent work in neighboring fields (cf. Gentner et al. 2001; Choe 2003; for the latter, one important function of the thalamus is to process analogies).

A theory based on exemplarist inscriptions (and therefore, rejecting rules, templates, constructions, etc.) has another important benefit. Above I quoted Jackendoff refraining from pretending to have filled the gap of language acquisition. As he summarizes acquisition data (pp. 189–90), he rightly mentions results, notably Tomasello's, which show that the emergence of a new construction happens one word at a time instead of "popping into place." This constitutes a strong push to dismiss rules and abstract constructions, favoring instead mechanisms based on exemplars, such as the ones I propose. Doing so also provides a straightforward explanation of the sigmoid curve (or logistic curve), which governs the appearance, spreading, and generalization of a new "structure" in the observed productions of young speakers.

The good news with *Foundations* is that, except for a timid "perhaps" (p. 57), it makes no claim that probabilities would play an explanatory role in linguistic theory – *contra* a number of authors who called on probabilities over the last decade, in a desperate effort to cope with variety and variation after realizing that categorical theories fall short on this count.

Finally, if I have sounded negative in my critique, this is because I chose to concentrate solely on categoricity. This must not hide a global esteem for *Foundations.* In particular, the idea (after Selkirk [1984], van Vallin [2001], and Sadock [1991]) that linguistic structure is multidimensional – that is, that it is made up of several complementary, simple hierarchical structures – is certainly a very sound and important one. It deserves being fleshed out in a noncategorical manner.

"Parallel architecture" as a variety of stratificationalism

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Abstract: The model of parallel architecture for language presented by Jackendoff is a kind of stratificational model in the spirit of Sydney Lamb. It differs from the more usual stratificationalism most importantly in its clear commitment to nativism, though the variety of nativism is greatly modified from what is more usual among Chomskyans. The revised model presents a potential for fruitful discussion with proponents of stratificationalism, and the potential for enrichment via a relational implementation.

The striking thing about Jackendoff's *Foundations of Language: Brain, Meaning, Grammar, Evolution* (2002), from my viewpoint, is its similarity to the work of Sydney Lamb – to such a point that dialogue between supporters of the respective views becomes much more feasible than in the past. It can honestly be said that the "parallel architecture" model that Jackendoff proposes amounts to a variety of stratificational theory.

The only citation of Lamb's work in the book, however, is Lamb

1966, mentioned (p. 128) as an early model outside the tradition of generative grammar, sharing Jackendoff's current view of parallel architecture for different structural components. But apart from this fundamental similarity, several other important points of similarity emerge in this work:

1. Retreat from the insistence on derivational/transformational rules in recognition of their lack of realism.

2. Serious attention to the need for a model of linguistic competence to be made usable as the basis for a model of performance.

3. Adoption of a more constrained view of Universal Grammar falling far short of the innateness of abstract grammatical categories, as envisioned in the Principles and Parameters model. Besides being constrained, Jackendoff's view is much more articulated, and is presented with a scenario explaining how it might have developed incrementally in human evolution, rather than appearing suddenly and mysteriously as a whole.

4. Conclusion that the distinction between "rules" of language and lexical items does not have to be seen as so fundamental, as in more orthodox Chomskyan models.

5. A view of the lexical item more like Lamb's version of the lexeme, including the consideration of a possible separate internal syntax for the word (morphotactics).

6. A view of semantics that includes many aspects treated as syntactic in more orthodox generativism and sees the possibility of going beyond single sentences to take discourse relations into account.

7. Serious attention to the relation of language to other matters of neural functioning like visual perception.

There is no indication that Jackendoff is aware of Lamb's more recent work (as summarized in Lamb 1999). Lamb's interest in relating his model of language to the brain began in classroom presentations and public lectures in the late 1960s. It took about 30 years, however, before Lamb was sufficiently satisfied to publish the results, though his product is a textbook introduction to what he now terms "neuro-cognitive linguistics," rather than a research monograph. The neuro-cognitive model is a development of the stratificational which "uses mainly linguistic evidence but attempts also to integrate the findings from psycholinguistics and neurolinguistics" (1999, pp. 7–8).

Lamb's relational networks are more sophisticated and less limited than those of the connectionists cited by Jackendoff. In discussing recent attacks against this form of connectionism, Lamb states: "We shall see that some of them are based on misunderstanding of connectionism – or at least, of what connectionism ought to be – while some of them, along with additional evidence, oblige us to refine the theory" (1999, p. 4).

Though excluding Lamb's more recent work, Jackendoff nevertheless attempts to synthesize a remarkable breadth of research areas from different disciplines. More attention to Lamb's work, however, would not only open up possibilities of an enriched dialogue among scholars, it would provide a potential for bringing in an implementation of the model in a way that has a chance to ultimately relate to the neural connections involved in the brain. The parallel architecture model has justifiably retreated from the old model of derivational rules, which constituted more a mathematical abstraction than a realistic way to look at language as a system acquired and used by humans. Lamb's more recent model, however, provides a way to relate language modeling more positively to neural facts, and it would be well worth examining how relational networks of the Lambian sort could be used to implement this model.

The most fundamental difference between Jackendoff's stratificational model and Lamb's concerns nativism. Lamb has always been skeptical of claims of innate universal grammar, while Jackendoff sees nativism as the most essential feature of the older Chomskyism to be retained. Still, he presents a modified and articulated variety of the latter, and Lamb has always been more concerned with questions of language structure than with language acquisition, meaning that his model is not totally incom-patible with nativism in general. Dialogue based on this model is much more feasible than with relation to older, more monolithic forms of nativism.

Cartesian and empirical linguistics: The growing gulf

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Abstract: Jackendoff's *Foundations of Language: Brain, Meaning, Grammar, Evolution* (2002) achieves a major shift in the focus and methods of Generative Linguistics (GL). Yet some of the original restrictive features of GL, cognitivism and Cartesianism in particular, remain intact in the new work and take on a more extreme form with the addition of a phenomenalist ontology.

Jackendoff's *Foundations* presents a striking new view of language as a component in a general theory of mind. By taking a more piecemeal interpretation of the traditional formalisms of Generative Linguistics (GL) and supplementing them with a new semantics, it opens up GL to a wide range of research areas in cognitive science. Since *Foundations* is also a true product of the GL tradition, certain of its chapters (notably Chs. 3, 5, 6, 11, and 12) also make an excellent introduction to state-of-the-art GL for language researchers in other disciplines.

But some traditional principles of GL, strongly at variance with the objectives of interdisciplinarity, have passed unchanged into *Foundations.* The first is "cognitivism" (Keijzer & Bem 1996; MacAogáin 1999), the practice of referring to all linguistic competences as "knowledge" or "cognition," including those that are unconscious. The difficulty with cognitivism is that it leaves us with only one form of activation, regardless of how levels and interfaces were ascribed to the structure so activated. All we ever have is the whole lot "running off" as a unit in f-mind. But in order to model the most elementary of behaviour systems, we already need several forms of activation that are irreducibly different; two at the very least to correspond to perceptions and wants. In addition, we need a separation between forms of activation that are belief-forming or want-forming from those that merely determine content. In spite of the mentalistic idiom, these distinctions are well established in neurology, down to the invertebrates, and are separable also in psychological models of cognition, inference, learning, and decision-making, which embody notions of reinforcement and adaptation.

While cognitivism can be defended in a lot of cognitive science, wherever truth, value, and reinforcement are well-defined in the task environment, in GL, where grammaticality is all we have, its effect is to split language off irretrievably from behaviour and the environment, as is acknowledged by the f-prefixes of *Foundations.* The cognitive linguist can claim to be already working on the physicalist account, in conjunction with the brain sciences. But adding neurological glosses to the cognitivist account leaves it just as isolated as it was before from the quantitative study of language as a form of response to the environment.

The isolation is compounded in *Foundations* by the addition of a phenomenalist or "conceptualist" ontology, most explicitly in the attack on the notion of external object (Ch. 10). Phenomenalism retreats from the external world to the world as perceived by individuals, or in the language of *Foundations,* it pushes the world back into the mind (p. 303). This is necessary, according to Jackendoff, to open up the border between GL and psychology and thus to "integrate semantics with the other human sciences" (p. 329).

The suggestion is that psychology, and perhaps other human sciences, are phenomenalist in nature. "Psychological" (as opposed to "philosophical" or "truth conditional") is Jackendoff's