

Massimo Piatelli-Palmarini, Juan Uriagereka and Pello Salaburu, eds.

Of Minds and Language: A Dialogue with Noam Chomsky in the Basque Country.

Oxford: Oxford University Press 2009.

472 pages

US\$50.00 (cloth ISBN 978-0-19-954466-0);

US\$35.00 (paper ISBN 978-0-19-954467-7)

This book stems from a 2006 conference at the University of the Basque Country and takes as its central theme, ‘biological perspectives on language and related cognitive functions’ (1). It is comprised of twenty-three papers and amounts to a snapshot of the issues and problems currently animating the field of biolinguistics, where language is understood as a biological system of the human mind/brain.

The contributors to the volume hail from a wide range of intellectual backgrounds including linguistics, neuroscience, philosophy, evolutionary biology and developmental psychology. The language is generally kept non-technical. Each paper is followed by interesting excerpts of the discussion that followed its conference presentation. Rather than summarize all twenty three papers, I shall try to do justice to this totem of interdisciplinary research by tracing some of the key themes that run throughout it.

Of great significance is what *Of Minds and Language* reveals about Universal Grammar (UG) in contemporary biolinguistics. In particular, the idea of UG as a rich repository of language-specific principles, for so long the most interesting and contentious component of the ‘Chomskyan view’ of language, simply does not feature in an explanatory role in any of the papers. The reasons for this are complex, but to simplify matters somewhat the basic difficulty seems to be that it is not clear how such a genetic endowment could be explained in evolutionary terms. The importance of this problem is evident in the opening paper, in which Noam Chomsky provides an overview of the current state of biolinguistics. He claims that the challenge is now to determine ‘how *little* can be attributed to UG while still accounting for the variety of languages attained’ (25, my italics).

A minimal account of UG is offered by Cedric Boeckx in ‘The Nature of Merge’. According to Boeckx, language may be cognitively unique only insofar as it involves the cooperation of two operations, grouping and copying (48-9). Grouping is an operation that puts two syntactic objects, X and Y, together (and so is essentially set formation). Copying ‘reselects’ either X or Y and recombines it with something else. Copying explains the headedness of language. For example, if you group ‘eat’ and ‘bread’, the verb is the head of the phrase ‘eat bread’, making it a verb phrase.

Of course, ‘grouping’ and ‘copying’ may characterize linguistic operations at a very high level of abstraction, but they say little about the detail of language design. A persistent theme in many of the papers is to show how language design can be rationalized in terms of principles not specific to language. In the roundtable paper on linguistic universals, the familiar observation that heads are either to the right or the left of their complement (the distinction between head-first and head-last languages) receives attention. It is argued that this derives from the interface of language with the sensory-motor systems responsible for externalization. Quite simply, these systems require that a complex syntactic object, composed of X and Y, be linearized: either X precedes Y or vice versa. No language-specific ‘head parameter’ is necessary (198). Similarly, it is hypothesized that the fixed hierarchy of functional heads in syntax, influentially postulated by Cinque as a linguistic universal, can be explained by the requirements of semantic compositionality (218-20). In other words, language design is shaped by the structure of external system(s) responsible for semantic interpretation and externalization in a communicative medium respectively.

The other kind of non-linguistic principle utilized to account for language design is that of general computational efficiency; language is expected to adhere to restrictions on computational resources. The most obvious application of this idea is to movement, the subject of Luigi Rizzi’s paper. The movement of constituents is a ubiquitous feature of natural language and is fundamental to operator-variable readings, e.g., Which book should I read? Here the constituent ‘which book’ is analyzed as moving from its base position as the complement of ‘read’ to a position in the left periphery of the clause. However, the distance that a constituent can move is limited; there is no long-range dependency in language. According to Chomsky, the rules which constrain possible movement may be reducible to ‘minimal search conditions of optimal computations, perhaps not coded in UG but more general laws of nature’ (21).

It is evident that non-linguists will have more to contribute to a debate that is driven by the discovery of relevant non-linguistic principles than to one that is framed in terms linguistically specific. An excellent case in point is Chris Cherniak’s discussion of efficiency principles in relation to neuroanatomy. In particular, he asks to what extent neural organization realizes the ‘save wire’ principle. This refers to the minimization of connection costs between interconnected components of a system. Cherniak has investigated the extent to which the connections between local synaptic sites accord with this principle. Using neural arbors—2-dimensional models of the tree connecting a set of loci—it turns out that the positioning of junctions linking neural nodes minimizes total wire cost to within five percent of the optimal solution (110). The lesson drawn from this is that for some aspects of biological organization ‘physics suffices’, supporting the idea that language can be understood in terms of efficiency principles.

There are two papers on animal cognition, both of which aim to highlight the richness of non-human cognition. In his essay, Charles Gallistel seeks to show how

impressive the representational capacities of birds and bees are. In one of the cited experiments, jays are trained to learn that cached mealworms (a desired food) will rot within 28 hours, but that peanuts (less desirable than mealworms) will be still be fresh. To oversimplify, in trials where a delay of 28 hours is imposed between caching and recovery, the jays will opt for the peanuts. This and similar experiments suggest that the jays compare elapsed time intervals to knowledge of how long it takes food to rot: they reason about time. Marc Hauser presents evidence that rhesus monkeys distinguish between singular and plural in a way that goes beyond the numerical competencies normally attributed to them. On this basis, it is suggested that the linguistic distinction between singular and plural may derive from non-linguistic conceptual resources (81-2). Again, language design is *rationalized* by recourse to non-linguistic factors.

The importance of non-linguistic principles in explaining language design knits together the wide ranging papers in *Of Minds and Language* and so underpins its interdisciplinary nature. The sheer empirical reach of the book makes it essential reading for anyone interested in human cognition (not just language!). However, while the book marks how interwoven biolinguistics has become with other natural sciences, there is little evidence that it is any closer to paradigmatically philosophical topics such as the mind-world relation or the possibility of normativity. In ‘Two Interfaces’ James Higginbotham announces that he will talk about ‘philosophical questions about semantics’ (142). For Higginbotham, semantic theory cannot be detached from ontological commitment. So, if the correct semantic analysis of ‘John walked quickly’ includes a (Davidsonian) variable ranging over events, then it will not do to deny that events *actually exist*. Nevertheless, Higginbotham concedes that such issues are probably ‘philosophical’ and not of relevance to research (148)—presumably meaning that they have no bearing upon the core topics of biolinguistics.

Not only is this disappointing from a philosophical point of view, it is a little puzzling as well. If the architecture of language is to be understood in terms of non-linguistic factors, such as the constraints imposed by non-linguistic systems of thought, it might well be considered that the intentional and normative nature of thought should be of relevance to biolinguistics. Consider this point in light of Wolfram Hinzen’s thesis. Hinzen asks how we can make sense of propositional thought in naturalistic terms and advances the ‘radical view’ that semantic forms (including propositions) fall out directly from the inherent organization of syntax itself. Rather than postulate a separate realm of semantic structures to which syntactic forms are mapped, syntax alone suffices. In support of this, he draws attention to how systematic the correspondences are between syntactic form and semantic category: noun phrases correspond to kinds, determiner phrases correspond to objects, tense phrases correspond to events, etc. (139). Given that there seems to be no way of accessing these semantic categories in the absence of the relevant syntactic form, he concludes that there is no reason to suppose their distinct existence at all.

This is clearly opposed to the philosophical tradition that has generally characterized propositions as language-independent, if not non-psychological altogether. If Hinzen is correct though, language does not generate merely formal objects that receive their interpretation elsewhere, but objects bearing intentional and normative force. This makes it far less plausible that biolinguistics can be conducted in abstraction from these issues.

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