prosperity. Therefore, one may hold that there is no moral difference between a paedophile and a bird-watcher, in that they both act on the basis of their preferences, yet the paedophile does something wrong in an obvious and shared sense.

This is not to deny that nihilism is in need of justification. In general, the assumption that one has a belief as a result of a causal process due to historical, biological or sociological circumstances does not prevent the belief from being evaluable as true or false on the basis of criteria that are external to that process. Suppose that one believes that snow is white and that whales are fish simply because one is determined to do so by one's personal history. This fact is compatible with the first belief being true and the second false: snow is white, but whales are not fish. Nihilism as Marconi describes it amounts to the view that the case of beliefs concerning moral matters is unlike this case in that in addition to the fact that we are determined to have those beliefs, there is no way to evaluate them as true or false. Or at least, in the case of actions there is no external criterion like that of truth and falsity. So the question is how this disanalogy can be motivated. Unless some justification is provided, nihilism is just a consistent hypothesis. However, this question is not directly addressed in the book.

Andrea Iacona
Università dell'Aquila
Italy

Anne Reboul, *Langage et cognition humaine*, Grenoble: Presses Universitaires de Grenoble, 2007, 392 pp., €30, ISBN 978-2-7061-1414-4.

In this rich work at the boundaries of philosophy, psychology and linguistics (not to mention some excursions into neuroscience), Anne Reboul (from now on, R.) offers an evolutionary account of human cognition and communication. Different domains such as animal cognition, evolution, modularity, perception, categorization and concepts, communication, semantics and pragmatics of natural language are dealt with impressively as part of a comprehensive picture. The underlying theme of R.'s synthesis is her fundamental thesis according to which the distinctiveness of both human cognition and communication rests upon the *global character of human perception* (specifically, of visual perception) – an idea we shall explain below.

The book includes four chapters, plus an introduction and a conclusion.

The first chapter is devoted to a comparison between animal and human communication. The main thesis defended in this chapter is that – in a neo-Gricean (*à la* Sperber-Wilson) vein – human communication requires a fourth-order intentionality. That is, only human beings are able to entertain mental states such as:

> the speaker intends [$_1$ that the hearer recognizes [$_2$ that the speaker intends [$_3$ that the hearer believes [$_4$ that *P*]]]].

Or, a bit more lightly:

> the speaker X intends that the hearer Y recognizes his [= of X] intention of making Y believe that *P*.

Since this higher-order metarepresentational ability is not found in animals, the difference between human and non-human communication turns out to be qualitative rather than merely quantitative; it is a difference in *nature*. However, as we shall see later, this does not mean that there is a dramatic cleavage between non-human animals and humans. What makes our cognition distinctive is just a difference in perceptual 'styles', which however engenders a chain of consequences for several aspects of human cognition.

The second chapter is about perception, categorization and concepts. Here the author puts forward and justifies her fundamental thesis according to which human cognition is shaped by the global nature of perception. By 'global' R. means that the human perceptual system is built in such a way that we are more sensitive to the global or more general features of things, rather than to the local ones. In other words global perception is the propensity to focus on the properties of the whole object – paradigmatically, its shape – neglecting the details, even if at least some of these can be accessed when it is required by some particular task. I shall comment later on this thesis and its crucial role in the book.

The subject matter of the third chapter is evolution, both in its phylogenetical and ontogenetical aspects. Here R. offers a very useful survey of the different theses concerning language evolution on the market, and suggests that language emerged as a self-organization principle triggered by the complexity of our conceptual system. This view, which is an original development of the quite vague and indeterminate Chomsky's claim that language is an 'exaptation' – that is, a casual by-product of a different adaptation – overturns the currently influential thesis of Tomasello according to which language is a *cultural* adaptation: according to R., it is not true that we have a sophisticated conceptual system because we are social animals. Rather we have a very rich and complex social life *because* we have a sophisticated conceptual system.

The last chapter tells us what the relation between language and thought is. R.'s thesis is that language, far from being merely a communication device, is a cognition-structuring principle. The idea is that language plays a crucial role in the organization of categories in a *structure*, in a system. In fact, as many psychological experiments show, words are an excellent tool to create new categories and to adjust the previous ones, i.e. to correct the initial taxonomies – children tend to build, initially, superordinate categories with respect to the correct ones. Moreover, before entering into syntactic structures, words and concepts are detached and

relatively indeterminate signs for classes of things. Syntax is the glue that links them in a very flexible way, giving them a role, i.e. making them nouns, rather than verbs etc. In sum, without language, we would have a poorer and much less flexible categorial system.

The thesis that language constrains significantly cognition, taken *per se*, is not unexpected. It becomes far more interesting, however, when linked to the above-mentioned accounts of evolution and global perception. On the one hand, global perception is the causal factor explaining the complexity of the conceptual system. In fact it is global perception that fosters the creation of many categories, as we shall see below.[1] When the number of categories reaches a critical threshold (when there are too many of them to deal with), categories are organized in a structure, that is, taxonomic trees are created. On the other hand, R. suggests that it is conceptual complexity that has, from an evolutionary point of view, triggered language. Indeed recursion and hierarchies are features common to syntax and taxonomic structures. Therefore, global perception determines the distinctive human style of cognition (including language), for it is the cause of the complexity of the conceptual system, which, in turn, triggers, by a self-organization principle, language. As R. puts it, 'language emerges as an indirect consequence of global perception'.

In this way she combines her claim that perception is global with two other important insights: (*i*) the emergence of language as a product of a self-organizing process acting on the conceptual system, and (*ii*) the crucial role played by language (both lexicon and syntax) in structuring our conceptual system.

Let us discuss the core thesis of the book and some corollaries. First of all: is human perception global? If the thesis were that only human beings are able to perceive 'globally', it would need more robust empirical evidence than R. provides. The discussion of the empirical evidence is mostly based on experiments where subjects are exposed to geometrical stimuli, such as squares and circles whose contours are constituted by very small squares and circles (in all the combinations: big squares made by small squares; big squares made by small circles etc.). Moreover, since the most important global property is shape, it is hard to believe that other animals are incapable of identifying shapes. Grasping an object or avoiding an obstacle seem to be based on the ability to individuate shapes. R.'s claim, however, is a bit weaker: she says that only human beings have a *strong preference* for global perception. This does not rule out either that other animals (i.e. chimps) are sometimes able to perceive globally, or that human beings are not able at all to perceive locally. I think there is at least some plausibility in this weaker formulation, even if the human ability to recover local features should not be underestimated

[1] For instance, according to R., the ability to classify one and the same object under different categories depends on the degree of granularity of global perception, as if to classify something as a setter rather than a dog rather than a mammalian depends on the fineness of the visual system.

and the lack of details can significantly undermine recognitional abilities, as, for example, Irving Biederman's experiments have showed.

Now, the crucial step: why is preference for global perception so important for human cognition? The idea is that global perception is relevant to our categorization abilities insofar as it allows us to ignore – to 'not-see' – some differences that are detected at the earlier levels of perceptual processing. It is precisely this feature that fosters the detection of similarities among particulars belonging to a class.

The link seems to be very apparent indeed. To categorize is to abstract from details, and to abstract from details is exactly what global perception does. There is more than an analogy here; indeed the argument is convincing, perhaps too convincing. Since, on R.'s view, categorization and perception overlap to a large extent – at least in the sense that the final stage of perception, and its cognitive goal as well, is recognition – the global nature of human perception and the human style of categorization seem to be two faces of the same coin. One could also simply turn the argument round: categorization is, or at least implies, recognition; recognition is mostly based on shape; shape is a perceptual primitive or, at any rate, the individuation of shape is a perceptual function. Then, since shape is a global property of objects, perception is global.

One could query the categorization/perception overlap by denying what R. takes for granted, namely, that the process of abstraction from details is itself perceptual. Perhaps neglecting irrelevant local features is part of post-perceptual processing. Whether or not this is right, a more important question for R.'s argument is: if perception were *not* global, how would human cognition be?

R.'s idea is clearly that our categories would then be quite coarse, like animal categories. Yet it is certainly conceivable that our recognitional performances might be achieved through an analysis of the object's local features. After all, we are able to do that, and neural nets work this way.

Against this possibility R. deploys a battery of philosophical guns. She rejects any theory that identifies concepts with a collection of features – the so-called 'conceptionist' view of categorization and concepts. In particular R. endorses the Fodorean theory of concepts, informational atomism, and its correlate causal model of concept acquisition as well. Concepts are mental symbols nomologically linked to classes of things, or to properties, in the world. Like Fodor, R. thinks that this model is forced on us by the failure of the empiricist-inferentialist model of concept acquisition, according to which the processes of categorization and construction of conceptual hierarchies are based on detection of multiple features. Since this model is exposed to an infinite regress[2] and is charged with the hard task of defining similarity condition, R. buys informational atomism. Now, as Fodor

[2] According to R., since a feature of a concept is still a concept, to resolve a concept into a collection of features merely shifts the problem onto some *primitive* concepts or leads to an infinite regress.

suggests,[3] concept acquisition is a causal-perceptual mechanism. The most plausible interpretation of this thesis, at any rate R.'s interpretation, is that a concept, say DOG, is triggered and fixed fundamentally in virtue of the individuation of the shape of dogs. Notice that, on this view, although concepts are strictly speaking (linguistic) symbols, the idea that categorization and perception tend to coincide is fostered by the consideration that categories are perceptual classes.

In sum, it seems to me that the core of R.'s view on human cognition can be captured by the following three theses: (*i*) human perception is global (humans have a strong preference for global perception); (*ii*) categorization/recognition is mostly based on shape; (*iii*) inferential properties and features are not part of a concept. As we saw, these three theses are – in R.'s view – strictly connected with each other. Yet, the link among them is not necessary. In particular, the thesis (*iii*) can be rejected or endorsed independently of theses (*i*) and (*ii*). The real point about (*iii*) is whether one regards the discrimination/recognition abilities as sufficient for the identity of concepts, and this does not depend on either (*i*) or (*ii*).

I have just scratched the surface of this impressive work. I have not mentioned many interesting sections, such as the discussion of Hagit Borer's 'eso-skeleptal' view of the lexicon,[4] the argument for the relevance of global perception to human communication, or the discussion of metaphor and fiction. Indeed, if there is a flaw in this work, I would say that it lies in its encyclopedic bent. In any domain she discusses, R. aims at completeness, and provides an enormous amount of information. As a consequence, although the author often repeats herself and makes explicit the links among her most important theses, sometimes some sections appear not to be strictly relevant to the subject matter of the chapter, making it hard to follow the core arguments. On the other hand, there is much to learn here.

Alfredo Paternoster
Università di Sassari
Italy

[3] In *Concepts. Where Cognitive Science Goes Wrong*, Oxford: Oxford University Press, 1998.

[4] See e.g. her *Stucturing Sense*, 2 vols., Oxford: Oxford University Press, 2005.