Peering Up Above the Malthusian Abyss

Werner Callebaut

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“Evolutionary everything” is even hotter today than when David Hull (1998a, p. 513) ironized about it 15 years ago. Evolutionary ethics has been joined by evolutionary aesthetics, and, more generally, evolutionary approaches to art (see Verpooten, this issue). Whereas evolutionary epistemology *qua* epistemology seems to have died along with its major proponents, viz., Konrad Lorenz (1903–1989), Donald Campbell (1916–1996), and Rupert Riedl (1925–2005), the *scientific* study of the origins and evolution of animal cognition is thriving under new labels such as “cognitive biology” and, most recently, “biocognition.”¹ We now have Darwinian medicine (e.g., Nesse and Williams 1994) and evolutionary psychiatry (e.g., Adriaens and De Block 2011). Anthropologists, archeologists, biologists, economists, game theorists, political scientists, psychologists, sociologists, and others are separately and jointly investigating human and animal cultural evolution, often in a framework of “generalized Darwinism” (after Dawkins’s “universal Darwinism”); see, e.g., Hodgson and Knudsen (2010) and Mesoudi (2011), both with many references; see also Heintz et al. (2011) for critical discussion.

A recurrent problem with many of these transfers of evolutionary thinking to domains that did not originally identify themselves as dealing with issues biological (and that sometimes, as in the case of evolutionary economics, continue to heftily resist “biologization”) is that they often rely on a one-sided and rather shallow picture of the evolutionary process—typically, the “selfish gene” view

popularized by Dawkins, with its connotations (whether intended or not) of competition (“struggle for life,” “nature red in tooth and claw,” “Red Queen,” etc.) This competitive view of life is very British indeed. As physical anthropologist Ken Weiss et al. (2011, p. 3) reminds us, “We have got our modern view of life from a railroad baron, a gentleman of the privileged gentry whose ancestors had helped launch the privately owned industrial revolution.” The gentleman’s name was Charles Darwin. In fact, as Marjorie Grene once keenly remarked, a good case can be made

... for the existence of something about the Victorian state of mind that makes “utility,” whether in Bentham’s social thought or in the adaptationist bent of selection theory, seem self-explanatory. Adaptations, like utility generally, are means and explain what they explain not in themselves but in relation to ends. But is the end of survival really adequate for human as well as organic history? Whatever the answer, the point here is just: there is something teasing about the way in which both utilitarianism and selection theory

This title is an allusion to King and Yi Wang (2006).

W. Callebaut (✉)
Konrad Lorenz Institute for Evolution and Cognition Research,
Altenberg, Austria
e-mail: werner.callebaut@kli.ac.at

¹ As far as I know, the case for a “cognitive biology” was first made by Margaret Boden (1980), who circumscribed it hypothetically as a biology “in which biological phenomena were conceptualized for theoretical purposes in terms of categories whose primary application is in the domain of knowledge” (p. 25). Boden listed Claude Bernard and Conrad Waddington among its forerunners. Meanwhile there is a Department of Cognitive Biology at the University of Vienna, Austria, and a Cognitive Biology Group at the University of Magdeburg, Germany; and similar work is done in biology and psychology departments all over the world. The term “biocognition,” referring to “the broad spectrum of extant and extinct biological forms of cognition,” is explicated in van Duijn (2012, pp. 122–131), who affiliates it with adaptive behavior, normativity (homeostatic processes sustaining life), and sensorimotor coordination (which he controversially links to motile behavior, thus excluding plants).

(in the strictest, or perhaps most reductive form) appeal to thinkers of a certain cast of mind. (Grene 1983, pp. 3–4)

But wasn't science supposed to be "universal" (Merton 1973)?

It is therefore refreshing to be reminded that "not only is life not the same as evolution, though the two are often confused, but life is not all about competition—"nor, indeed, are organisms always on the brink of the Malthusian abyss" (Weiss et al. 2011, p. 3). Nobody denies that competition is real, but it may be more profitable "to understand life in terms of its various time dimensions rather than as a relentless long-term evolutionary struggle."

Cooperation through interaction of many entities is the rule rather than the exception; Weiss et al. discuss a number of principles by which this works using a computer simulation of the development of the human head. Their work embraces EvoDevo (evolutionary developmental) and ecological, developmental, and evolutionary (Eco-DevoEvo) considerations. Niche construction theory (e.g., Odling-Smee et al. 2003; Laland and O'Brien 2011) points to another way of avoiding fierce competition with other creatures, viz., "to find a wholly unoccupied niche, or to alter and specialize itself in order to be able to occupy efficiently (fitly) a niche that is not now occupied effectively by anyone else" (Simon 1983, p. 44).² Last but not least, cooperation is the key to the major transitions in evolution (Maynard Smith and Szathmáry 1997; Calcott and Sterelny 2011); or as Brian Goodwin (2001, p. 180) put it: "Why not argue that cooperation is the great source of innovation in evolution, as in the enormous step of producing a eukaryotic cell, one with a true nucleus, by the cooperative union of two or three prokaryotes, cells without nuclei?"

Quite a few articles in this issue deal with aspects of cooperation. Modern economies require a great deal of trust and trustworthy behavior in order to function adequately—a condition that caught economists' attention after Richard Titmuss (1970) published his now classic comparative study of British and U.S. blood transfusion systems, the former relying on donations, the latter to a much greater extent on payments. Paul Seabright's (2010) *The Company of Strangers* asks how relations of trust and trustworthiness among strangers may have arisen from our tribal evolutionary past. Geoffrey Brennan, Ben Fraser, and Kim Sterelny offer three critical perspectives on

Seabright's theses. In his reply, Seabright concentrates on six questions concerning the transition from foraging to agriculture, including, "Was Pleistocene life transparent enough for prudent calculation based on self-regarding preferences to support cooperation?" and "How does the psychology we inherited from the Pleistocene continue to shape the way we interact with strangers in modern societies?" This colloquium is part of an ongoing exchange between economists and biologists (among others), which is quite likely going to be focused next on the "strong reciprocity" hypothesis favored by several prominent economists, but rejected by most biologists (Ross 2012; see also Rosas, this issue, on "persistent doubts" concerning strong reciprocity). Cooperation also occupies central stage in Alejandro Rosas' essay review of economists Bowles' and Gintis' (2011) *A Cooperative Species*. And from another essay review, Jan Verpooten's discussion of Brian Boyd's (2009) *On the Origin of Stories*, we learn (among other things) that... singing lowers men's testosterone levels, indicating, according to Boyd, that music may contribute to cooperation rather than competition.

Hull (1988b, p. 7) ascribed an important positive function to conceptual plasticity in science: "I find that ... equivocation in science is not in the least evil but a powerful method of conceptual improvement." Scientific terms are generally far more stable than the various meanings associated with them over time. "Weasel words," as Hull dubbed them, "buy time while the scientists develop their positions." In her article, "Genes, Genomes, and Genomics" (this issue), Evelyn Fox Keller focuses on the flipside of this phenomenon: scientific terms tend to carry older meanings/conceptions alongside those more recently acquired, "thereby exerting a certain drag against conceptual change."

Other contributions to this issue deal with homology concepts in comparative perspective (Miles MacLeod), pitfalls in using the statistical-significance rule (Kristin Shrader-Frechette), and the role of Hugo Dingler in the German synthesis of evolutionary theory that developed out of opposition to idealistic morphology (Olivier Rieppel). We round off with a book review and a meeting report.

References

- Adriaens PR, De Block A (eds) (2011) *Maladapting minds: philosophy, psychiatry, and evolutionary theory*. Oxford University Press, Oxford
- Boden MA (1980) The case for a cognitive biology. *Proc Aristot Soc Suppl Vol* 54:25–49
- Bowles S, Gintis H (2011) *A cooperative species: human reciprocity and its evolution*. Princeton University Press, Princeton
- Boyd B (2009) *On the origin of stories: evolution, cognition, and fiction*. Belknap Press of Harvard University Press, Cambridge

² Simon considered two directions evolutionary theory can take in the future: "A more restricted form of the theory can focus, as the classical theory has, on fitness—on the problem of competition for a single niche or a fixed system of niches. But there is need for a much broader theory, in which the system of niches itself changes and develops simultaneously with the development of niche-filling creatures" (p. 46).

- Calcott B, Sterelny K (eds) (2011) The major transitions in evolution revisited. MIT Press, Cambridge
- Goodwin B (2001) How the leopard changed its spots: the evolution of complexity. Princeton University Press, Princeton
- Greene M (1983) Introduction. In: Greene M (ed) Dimensions of Darwinism. Cambridge University Press, Cambridge, pp 1–15
- Heintz C, Callebaut W, Marengo L, eds (2011) How evolutionary is evolutionary economics? *Biol Theory* 6(4) (in press)
- Hodgson GM, Knudsen T (2010) Darwin's conjecture: the search for general principles of social and economic evolution. University of Chicago Press, Chicago
- Hull DL (1988) Science as a process: an evolutionary account of the social and conceptual development of science. University of Chicago Press, Chicago
- Hull DL (1998) Review of Anthony O'Hear, beyond evolution: human nature and the limits of evolutionary explanation (Oxford: Clarendon Press, 1997). *Brit J Phil Sci* 49:511–514
- King M, Yi Wang E (2006) Looking into the Malthusian abyss. *Lancet* 367:730
- Laland KN, O'Brien MJ, eds (2011) Cultural niche construction. *Biol Theory* 6(3) (in press)
- Maynard Smith J, Szathmáry E (1997) The major transitions in evolution. Oxford University Press, Oxford
- Merton RK (1973) The normative structure of science. In: Storer NW (ed) The sociology of science: theoretical and empirical investigations. University of Chicago Press, Chicago, pp 267–278
- Mesoudi A (2011) Cultural evolution: how Darwinian theory can explain human culture and synthesize the social sciences. University of Chicago Press, Chicago
- Nesse RM, Williams GC (1994) Why we get sick: the new science of Darwinian medicine. Times Books, New York
- Odling-Smee J, Laland KN, Feldman MW (2003) Niche construction: the neglected process in evolution. Princeton University Press, Princeton
- Ross D (2012) What can economics contribute to the study of human evolution? *Biol Phil* 27:287–297
- Seabright P (2010) The company of strangers: a natural history of economic life. Rev. edn. Princeton University Press, Princeton
- Simon HA (1983) Reason in human affairs. Stanford University Press, Stanford
- Titmus R (1970) The gift relationship: from human blood to social policy. Allen and Unwin, London
- Van Duijn M (2012) The biocognitive spectrum: biological cognition as variations on sensorimotor coordination. PhD Thesis, University of Groningen, the Netherlands
- Weiss KM, Buchanan AV, Lambert BW (2011) The red queen and her king: cooperation at all levels of life. *Yearb Phys Anthropol* 54:3–18