

Some Contemporary Elaborations of Darwinian Themes

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Published online: 7 August 2014
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Evolutionary biology is intrinsically historical. Evolutionary theorists tend to be much more interested in both historical and conceptual/philosophical issues than their counterparts in most other disciplines. Invoking the authority of “patron saint” Darwin is part of their standard repertoire. Historians and philosophers, including ethical theorists, have major stakes in the “Darwin industry”—although, somewhat disturbingly, most biomedical and environmental ethicists go about their business without much concern for recent advances in the philosophy of biology.

Discussing ethics in *The Descent of Man*, Darwin (1871) referred to the writings of moral philosophers including Hume, Kant, and John Stuart Mill. In this issue, **John Mizzoni** argues that Darwin’s views did not lead him to an unfamiliar and eccentric view about the nature and content of ethics, but fitted rather well with the most representative (past and contemporary) normative ethical theories: virtue ethics, natural law ethics, social contract ethics, utilitarian ethics, deontological ethics, and care ethics.

Robin Owen’s historical essay on Ronald Fisher and social insects deals with an issue that Darwin had avoided discussing in detail: the evolution of (“harmonious”) social insect colonies (in contrast to human societies that exhibit intra-communal conflict). In *The Genetical Theory of Natural Selection*, Fisher (1930) developed a verbal model of the evolution of eusociality by connecting selection acting on fecundity with the sterility of workers. Owen shows that Fisher’s development of the model was strongly influenced by Major Leonard Darwin, one of Charles Darwin’s sons, and argues that the Fisher-Darwin model

“presages almost exactly” the independently derived mathematical model recently proposed by Martin Nowak, E. O. Wilson, and others. Still on the subject of eusociality, **Klaus Stiefel** proposes that a dishonest signaling system can be evolutionarily stable in eusocial animal societies if the amount of dishonesty is balanced by the chance of non-reproductive workers to advance to the reproductive caste in the future. He expresses this trade-off in a modified form of Hamilton’s rule, distinguishing between the real and the perceived cost of an altruistic act, and between the real and the perceived genetic relatedness between colony members. He also argues that the vertebrate neuromodulator oxytocin (likely integrated with a number of other functions related to social bonding) could serve as an internal representation of the perceived cost of an altruistic act and of perceived relatedness, and concludes with a discussion of honesty in signaling and a comparison between vertebrate and insect eusociality.

Two other articles deal with different aspects of collaboration. **Frans Roes** discusses female inheritance and the “male retention hypothesis.” Permanent groups (groups with no inherent limit on group longevity) exist in several species because over generations members share important interests. Given the association between cooperation and degree of relatedness (Hamilton), he suggests that a collective interest is more likely to be achieved when members show a higher degree of relatedness. He then argues that if membership is inherited by only one sex, and this is the female sex, this results in a higher degree of relatedness between group members than when membership is inherited by both sexes, or by males only (as indeed found in the overwhelming majority of insects, fish, birds, and mammals living in permanent groups). Regarding humans, Roes also ponders whether moralizing Gods raise paternity confidence, without reaching firm conclusions in

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this case. According to Herbert Simon's "docility hypothesis," human social learning produces genuinely altruistic behaviors as a maladaptive by-product. **Olivier Morin** considers five possible sources of such altruistic errors (the "smoke-detector" principle, the cost-accuracy tradeoff, cultural adoption of altruistic norms selected at the group level, "informational dumping," and calibration errors), and holds the view that they are unlikely to lead to important amounts of altruism toward non-kin.

Two articles concern the EvoDevo of language. Taking referentiality to offer a poor point of quantitative comparison across language and animal communication in the wild, **Kim Oller and Ulrike Griebel** argue that an "infrastructural approach" to development and evolution incorporating an extended interpretation of the distinctions among illocution, perlocution, and meaning can help place the relevant issues in perspective. They also delineate examples of infrastructural communicative capabilities that should be particularly amenable to direct quantitative comparison across humans and our closest relatives. Focusing on language disorders, **Antonio Benítez-Burraco and Cedric Boeckx** qualify the common claim that they can serve as "windows" onto language evolution. They propose instead that language disorders should be construed as conditions for which canalization has failed to cope fully with developmental perturbations, and argue for the existence of a robust link between developmental disturbances and evolutionary history.

Andrea Polonioli's article is a contribution to the "rationality debate" that was ignited by Kahneman and Tversky's work on heuristics and biases. In this debate, psychological evidence suggesting that people's reasoning is largely inaccurate has been countered by an evolutionary argument for rationality (EAR). Polonioli argues that a distinction between coherence and correspondence criteria of rationality due to Kenneth Hammond may shed new light on what he takes to be an apparent conflict: EAR can be interpreted in two different ways; EAR and psychological evidence may both be correct if they appeal to different criteria of accurate reasoning. The short article by **Daniel Kraemer** deals with a different aspect of normativity. In the ongoing debate on the nature of biological function, "organizational theorists" such as Mark Bickhard

and Wayne Christensen have proposed that a self-maintenance/self-reproduction view of function suggests an accompanying notion of normativity. However, according to Polonioli, extant organizational theories of function cannot adequately account for systems' malfunctioning, and therefore cannot capture their normativity adequately either.

Following Ernst Mayr's lead, philosophers of biology never tire of repeating that what, until three or four decades ago, presented itself as "philosophy of science" was really a philosophy of physics only. One could say that quite similarly, "philosophy of perception" past and present has been mostly centered on vision. **Ann-Sophie Barwich's** article aims to correct this bias by drawing on the underexplored case of olfaction, challenging the standard categories through which the debate has been framed so far, and showing how the details of the perception process determine the modalities of sensory experiences. Aiming for a process view of the understanding of perception rather than one pertaining to objects and their properties, she specifically examines how measurement influences the characterization of perceptions in olfaction.

Barwich's article is a fine example of contemporary work in the philosophy of biology that is no longer primarily focused on "theory" (or "method," for that matter) but fully takes into account experimental practices in their historicity. In stark contrast to such an approach, physicist and museologist **Jorge Wagensberg** has not given up the aspiration to define a big picture for understanding the workings of science, proposing positive answers to the questions, "Is there a method for acquiring new scientific knowledge?" and "Is this method unique and universal?" It will be interesting to see how professional philosophers of biology will react to this provocation.

References

- Darwin C (1871) *The descent of man, and selection in relation to sex*. John Murray, London
- Fisher RA (1930) *The genetical theory of natural selection*. Oxford University Press, Oxford