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# Why We Need to Teach the Evolution of Morality

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Abstract. This 4-part work: (1) presents the case that the topic of the evolution of human morality is essential to any complete introductory biology course; (2) surveys recent scientific and general literature on the topic, as background for any teacher; (3) sketches possible strategies for approaching this topic in the classroom; and (4) identifies supporting resources.

*"Any animal whatever, endowed with well-marked social instincts, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well developed . . . as in man."*

—Charles Darwin, *Descent of Man*

Ironically, evolutionists and their creationist critics often seem to agree on one thing: that evolution implies moral relativism (Brem, Ranney and Schindel 2003). What a dismal prospect for human society, if true! But if Darwin's claim in *Descent of Man* (above) is even vaguely correct, such dire conclusions seem unwarranted. Indeed, substantial scientific research in the past several decades now greatly informs our understanding of the natural history of morality, perhaps the quintessential question of human evolution. While science cannot dictate specific values or moral principles, it can, nonetheless, explain several dimensions of morality as a form of behavior. A naturalized context can inform moral discourse and choice. Not least, perhaps, such knowledge is critical to rescuing Darwinism (as science) from the awful shadow of the political ideology of Herbert Spencer, often called, inappropriately, "Social Darwinism."

Here, I provide a simple framework for teaching this central topic: the evolution of morality (Allchin 1999, 2006). The approach is informed by recent science across many disciplines, as well as by philosophy and history of science. In four parts, I address a suite of distinct needs from educators in various contexts.

! First (below), I address the role of this topic in a general biology curriculum, presenting the case that no introductory course can now be considered complete without touching upon a handful of central concepts and some illustrative cases. A suite of concerns motivates the topic: the need to address perhaps the most significant cultural dimension of evolution, itself the most central biological concept; the need to demythologize the presumed biological determinism in structuring human society; and, finally, as a partial but key antidote to the onslaught of creationist criticism.

- ! Second, I address the need of many science teachers to familiarize themselves with our relatively newfound knowledge, which also has yet to be fully consolidated at an introductory level (Allchin 2008). While some examples from research in the past several decades now appear occasionally in introductory textbooks—notably, to illustrate kin selection or inclusive fitness—there is yet no general framework for addressing them as an ensemble, nor for integrating them with the rich heritage of philosophers of ethics. Here I provide a survey of the content that needs to be taught, especially for the teacher with no specialized background.
- ! Third, I sketch some approaches for presenting this topic in the biology classroom. While all instruction is ideally contextualized and local, models and experience can valuably scaffold initial efforts.
- ! Finally, I identify a repertoire of resources that may prove helpful for instructors in various teaching contexts.

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### *A Central Topic in Evolution—and Biology*

Why teach biology? Why teach evolution? Primary among the reasons are that they inform human existence and deepen a personal understanding of oneself. Darwin's theory of evolution (or descent with modification, as he phrased it) was revolutionary. But even in Darwin's time, no one regarded it as just a theory of "the origin of species" (divergent speciation), or a handy new way to organize facts about biogeography, taxonomy, embryology and morphology (from apparently "perfect structures" to vestigial organs) — even though it explained all these things. The major issue — conspicuously understated in the closing of Darwin's 1859 publication — was the implication for the organic identity of humans (Ellegård 1958). At one level, richly caricatured and lampooned, we are cousins to apes. But deeper awareness arose by considering humans' apparently distinctive mental traits and behaviors. Darwin himself lost no time in acknowledging and musing on them. Within months of documenting his first thoughts about branching lineages, in late spring of 1838, he had begun a new private notebook, cryptically labeled 'M': for man? metaphysics? mind? morality? — all are recorded in his reflections. Within three months he had filled all 156 pages — still *before* he had arrived at his insight on natural selection. One entry is especially vivid and telling:

May not moral sense arise from our enlarged capacity acting, yet being obscurely guided or strong instinctive sexual, parental & social instincts, giving rise "do unto others as yourself". "love thy neighbor as thyself". Analyse this out.— bearing in mind many new relations from language.— the social instinct more than mere love,— fear for others acting in unison.— active assistance &c &c. [*M Notebook* 150-51]

Darwin was as aware as anybody of the import of his thinking for morality as a human feature (Allchin 2007a). There, penned already in 1838, was an outline of an explanation for the origin of the "moral sense" as a feeling. He would present that very same theory, publicly and more fully developed, three decades later in Chapter 3 of *The Descent of Man*. In opening that chapter, he boldly asserted:

I fully subscribe to the judgment of those writers who maintain that of all the differences between man and the lower animals, the moral sense or conscience is by far the most important. . . . It is the most noble of all the attributes of man, leading him without a

moment's hesitation to risk his life for that of a fellow-creature; or after due deliberation, impelled simply by the deep feeling of right or duty, to sacrifice it in some great cause. (1871, p. 70)

Strictly within a biological context, the natural origin of morality is central to teaching the basics of evolution as a whole.

Morality as a topic is all the more important given popular interpretations of Darwin's concept of adaptation through natural selection. Natural selection functions through differential survival and reproduction, preserving only some individuals' traits for the next generation. The process may appear competitive and selfish. It seems to preclude any prospect for cooperation, whether intentional or not. For example, in an imagined community of sharers (where sharing is deemed heritable), cheaters can take advantage of the situation, proliferate at the expense of others, and soon replace the sharers. According to natural selection — narrowly construed — cooperation seems self-defeating. The principles of evolution *seem* to imply that selfishness is *inherent* in nature — hence, "natural," or perhaps an inescapable part of "human nature." Of course, mutualisms between species abound — most notably in pollination and seed dispersal, and in the endosymbiosis of mitochondria and chloroplasts. Cooperation can be adaptive. It can foster mutual survival. The same can apply within species. The contexts whereby natural selection can promote mutual benefit, while still being "selfish," are not difficult to understand (Part 2). But the pervasive rhetoric in our society supporting the ideologies of individualism and of economic and academic competition tends to subvert any deeper understanding of selection developing on its own. To be a "Survivor®," we are told, we must "Outwit. Outplay. Outlast.®" In our culture, no one needs a biology class to learn how natural selection works. But they likely do need instruction to *unlearn* its oversimplifications and the misleading impression that morality could never evolve.

### *The Challenges of Biological Determinism*

The problem posed by misinterpreting selfishness as "natural" is compounded by a widespread — although unjustified — tendency to view society reductionistically, as a simple extension of biology. In this perspective, commonly attributed to science, selfish Nature (at the biological level) seems to inevitably dictate a selfish culture (at the social level). Science can thereby easily be perceived (mistakenly) as justifying conclusions about moral relativism and political anarchy (Toumey 1997, pp. 112-127). Such conclusions are easily reached, even for staunch Darwinians. Both Thomas Henry Huxley, "Darwin's bulldog" in the 19th century, and Michael Ruse, the most strident defender of evolution in the late 20th century, each imagined that evolution itself leaves a moral vacuum and, accordingly, they appealed to their fellow humans to affirm their "humanity" by rising above an otherwise brutish nature (Huxley 1894/1989, Ruse 1986). Such views about the relationship of evolution and morality are neither uncommon, nor inconsequential. But they are ill informed. For this reason alone, biology teachers responsible for developing well informed citizens need to address this widespread and deep misconception: about how selection as a process relates to morality as a product.

The popular misconception has two parts. First is the fallacy of biological determinism, or the direct mapping of behavior and social interactions onto genetics and organismal biology (Lewontin

1992, Rose 1997). Mental and social structures that shape interactions and "emergent properties" on a higher level of organization are completely disregarded (Murphy and Brown 2007). Second is the failure to understand or apply the fact/value distinction (often called "the naturalistic fallacy" in ethics). Each is a major error. When combined together, however, these two flawed doctrines form a potent nemesis to the public understanding of evolution: what is typically called "Social Darwinism." Even the label is mistaken and misleading. The view was most prominently developed by Herbert Spencer, a self-styled philosopher who interpreted evolution loosely in applying it to the emerging disciplines of psychology and sociology. He popularized unfounded views about the relationship of biology and society, while transforming them into an ideology under the seductive rubric of "progress" (Hofstadter 1955, pp.31-50; Richards 1987, 243-294; Farber 1994, pp.38-57). In the late 1800s, Spencer's works were read far more widely than Darwin. Indeed, it was Spencer — not Darwin — who coined the phrase "survival of the fittest" (Spencer 1864b, p. 444; Darwin 1868, p. 21; 1869, p.101). The catchwords reflected Spencer's extreme laissez-faire (anti-poor law) political ideology and helped persuade others that his social doctrine expressed a natural law (Spencer 1851, 1852a, 1852b, 1864a). The pseudoscientific doctrine that human society follows — and benefits from — a presumed war of nature, is thus more aptly called Spencerism (or possibly, based on even earlier precedents, Malthusianism or Hobbism; Allchin 2007b). Historian Richard Hofstadter (1955) originally coined the phrase 'Social Darwinism' to describe a handful of late 19th and early 20th century American industrialists who strongly endorsed Spencer's principles. Most had never read Darwin. Yet, based on Spencer's writing, they nonetheless appealed to Darwin's fame and used unsubstantiated analogies in trying to rationalize unregulated business and thereby legitimate their privileged status in society. Hofstadter could hardly have guessed in 1944 how his historical label would ultimately adopt a life of its own. The name helps perpetuate Spencer's now discredited ideas, by apparently linking them to the accepted science of Darwinism. Students need to learn that Spencerism is a social ideology, not supported by biology or evolutionary understanding of either organisms or human society. In teaching the science fully and responsibly, we must disentangle Darwinism proper from the perniciously named "Social Darwinism."

The second main reason for teaching about the biology of morality, then, largely amplifies the first. In the absence of instruction, profound misconceptions develop over the evolutionary context of ethics and, in a sense, pollute the science. Worse, perhaps, Spencerian pseudoscience may become a guide for interpreting culture. Responsible biology teachers will thus address the misconceptions, profile how the reasoning is mistaken, and then articulate how science, fully understood, provides a more informed alternative.

### *Addressing Critics of Evolution*

There is yet a third important reason for teaching about the natural history of ethics: prevalent politically empowered (but religiously cloaked) criticism of evolution. For many, the ghastly specter of Spencerism, construed as an inevitable consequence of evolutionary principles, is unacceptable on religious grounds (Ellegård 1958, 321-329; for samples, see Koukl 1998, Bergman 2001a, 2001b, Wiker and Demski 2002, Ramsey 2004, West 2007). Evolution seems to threaten the moral precepts and guidance integral to their religious convictions. They fear the absence of a moral compass. For

them, Darwinism is ultimately "secular humanism," a doctrine that will, unchecked, supplant religion with a dangerous moral void (Toumey 1997). Striving to defend morality and its religious foundations, these persons dismiss the problematic science. The desire for moral security as a motivation for much anti-evolutionism has, in my view, been woefully underappreciated.

Such grounds for rejecting evolution and science are ill informed, of course. (Not least is the failure to distinguish evidential and values-based reasoning.) Yet current educational practice may bear some responsibility. Basic knowledge about the relation of evolution and morality is not part of standard science curricula. How can anyone then justly feign despair when such impressions become widely believed? Science cannot answer purely religious questions, nor dictate personal beliefs. But for those truly concerned with the status of morality in the context of evolution, contemporary science can certainly prove informative. In particular, it may be important to show explicitly how science does not force a harsh either-or choice between a moral society or evolutionary biology. Morality can be a product of human evolution. Where, alternatively, anti-evolutionism is more political than religious (Forrest and Gross 2004), the same facts about the biology of moral behavior may provide important counterarguments to deflect or weaken anti-evolution rhetoric. Teaching the biology of morality may well be useful politically, as well as in personal and cultural contexts.

### *Prospects*

Many strong reasons thus support teaching the evolution of morality. Until relatively recently, however, one might well have considered the prospect bleak, simply for want of enough relevant science. Of course, reflections on biology and ethics have hardly been scarce since 1859 (Farber 1994) — or even before! (Maienschein and Ruse 1999). Darwin presented his own theory of how moral sense could evolve in 1871, while his oft-time defender Thomas Huxley offered a contrary view, of humans cast in a world of inherent competition. Herbert Spencer promoted evolution as an engine of progress and thus a "natural" value, prompting philosopher G.E. Moore in harsh criticism to articulate the naturalistic fallacy in 1903. Many great evolutionary biologists in the century following Darwin — Julian Huxley, C.H. Waddington, Theodius Dobzhansky, G.G. Simpson, among others — weighed in on the subject of ethics. In the 1960s, focus shifted to the individual: George C. Williams (1966) issued a potent critique of "the good of the species" and William Hamilton (1964) formalized the notion of inclusive fitness and kin selection. They reflected in part the dire outlook of the Cold War era (expressed, too, in Ardrey's *The Territorial Imperative*) (just as Petr Kropotkin's 1902 *Mutual Aid* and 1924 *Ethics: Origin and Development* had been shaped by Tsarist oppression and communism in Russia). Still, they introduced important benchmarks for thinking critically about natural selection and social behavior. (A more tempered alternative, reciprocal altruism, introduced by Robert Trivers in 1971, was mostly overshadowed for the next two decades.) In 1975 E.O. Wilson largely echoed the prevalent genocentric bias in his *Sociobiology*, but now tied to substantive field studies (especially on insects). Wilson's provocative (though brief) comments on humans sparked considerable debate. Richard Dawkins took Wilson's stance to an extreme in his popular 1976 *The Selfish Gene*, while others profiled the poverty of genetic determinism and its political contexts (Lewontin, Rose and Kamin 1984). Wilson's book also motivated a Dahlem Conference that brought together experts from primatology, psychology, child moral development, cultural and social anthropology, neurobiology, legal

philosophy, and other fields (Stent 1978), a model for further interdisciplinary discourse (still much needed again today). Ultimately, questions about sociobiology helped motivate a generation of fruitful new research. More research yielded more understanding. For example, Florida scrub jays appeared to exhibit kin selection by helping to raise siblings even when reproductively mature. Woolfenden and Fitzpatrick (1978) soon discovered a more complex (and more interesting) scenario of social costs and benefits (Part 2). Such studies over the past three decades — of chimps and bonobos, macaques and meerkats, bees, wasps and ants, crows and rooks, Belding ground squirrels and sticklebacks, vampire bats and naked mole rats, and more — have greatly enhanced our knowledge of the biology and evolutionary contexts of ethics. Research has emerged in complementary fields: neurobiology, cognitive development, social psychology, cultural anthropology, economics, etc. The science is now fairly robust (although far from complete!). In addition, there are ample cases to illustrate a handful of significant core concepts in the classroom.

Understanding has been further enriched since the late 1980s by contributions from the history and philosophy of biology. In 1981 philosopher Michael Ruse testified on the nature of science at the Arkansas trial on teaching creationism. He continued to debate creationism publicly and on one occasion (in a television make-up room) creationist Duane Gish asked him how any self-respecting evolutionist could believe in a moral society. As a response, Ruse wrote *Taking Darwin Seriously* (1986), a philosophical reappraisal of Darwin's, Huxley's and others' views. Shortly thereafter (in 1990), the Field Museum in Chicago devoted its renowned annual spring systematics symposium to evolution and ethics (Nitecki and Nitecki 1993). In 1987 historian Robert Richards published an award-winning volume, *Darwin and the Emergence of Evolutionary Theories of Mind and Behavior*. Since these benchmarks, historians and philosophers of science have given increasing focus to ethics as an evolutionary issue. For example, Brian Skyrms (1996) extended John Maynard Smith's framework of game theory in a detailed analysis of the evolutionary dynamics of cooperation. In the last decade, biologists and philosophers have deepened their dialogue. Philosopher Elliot Sober and biologist David Sloan Wilson (1998) collaborated in an insightful analysis of altruism and group selection. Similarly, primatologist Frans de Waal has opened his interpretations of primate behavior to critique by philosophers (de Waal 2006; Katz 2004). The field of the biology of morality is thus also developing and benefitting from greater philosophical sophistication.

On the occasion of Darwin's 200th birthday (and the sesquicentennial of the *Origin of Species*), we might find some newfound confidence about the outlines of the evolution of morality, echoing Darwin's concerns — yet also updated with modern research. If we tend to teach the way we were taught ourselves, then venturing into this new topic may be challenging indeed and require deliberate effort — and perhaps a little extra homework for educators. What does someone need to know to understand the evolution and biology of morality effectively? Not that much, really. Many basic concepts and examples are already available in standard textbooks (at the introductory college level)(Allchin 2008). That information needs to be highlighted, extended and further synthesized. In Part II, therefore, I provide in textbook style a quick synopsis and organizational framework of this rapidly growing field, and in Parts III and IV, I discuss teaching strategies and resources. Through these strategies we may teach more fully what evolution means — not just as a unifying principle of biology, but as a great insight into what it means to be humans with a deep organic history.

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