

Evolutionary Theory Has Arrived in the Human Behavioral Sciences—But
Not The Structure of Higher Education

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Abstract

Evolutionary theory has been restricted to the biological sciences and avoided for most human-related subjects for most of the 20th century. This situation is rapidly changing, resulting in a mismatch between current research and the structure of higher education. Using the journal *Behavioral and Brain Sciences* as a microcosm, I show that a large fraction of target articles are written from an evolutionary perspective across a diversity of subject areas. Since BBS is one of the premier journals in the human behavioral sciences, this demonstrates that the evolutionary perspective is not fringe science (as often portrayed), or future science, but has already arrived. Nevertheless, a survey sent to the authors of these articles reveals that a) most did not receive formal evolutionary training during their own higher education and acquired their expertise on their own; b) many feel isolated within their own departments and universities, despite being at the forefront of research nationally and internationally; and c) most estimate that the situation at their current institution is little different for today's graduate students than when they were graduate students. In short, a major theoretical perspective in the human behavioral sciences is not yet reflected in the structure of higher education.

Evolutionary theory has already unified the biological sciences, enabling Theodosius Dobzhansky to make his famous remark in 1973 that “nothing in biology makes sense except in the light of evolution.” It is common for evolutionary biologists to switch from one organism to another (e.g. from primates to birds) or from one subject to another (e.g., social behavior to speciation) during the course of their scientific careers. This kind of integration is remarkable, given the extreme specialization that characterizes so much of the rest of science. It is possible because all organisms and subjects are being approached from a single theoretical perspective.

For most of the 20th century, however, evolutionary theory has been *confined* to the biological sciences and a few specialized human-related subjects, such as biological anthropology and human genetics. For most other human-related subjects—which means most departments on a college campus—evolutionary theory is virtually absent from the college curriculum, as political scientist Ian Lustick (2005) notes in a recent article:

Of course social scientists have no objection to applying evolutionary theory in the life sciences—biology, zoology, botany, etc. Nevertheless, the idea of applying evolutionary thinking to social science problems commonly evokes strong negative reactions. In effect, social scientists treat the life sciences as enclosed within a kind of impermeable wall. Inside the wall, evolutionary thinking is deemed capable of producing powerful and astonishing truths. Outside the wall, in the realm of human behavior, applications of evolutionary thinking are typically treated as irrelevant at best; usually as pernicious, wrong, and downright dangerous.

Skepticism about evolution in relation to human affairs is so old that it is embedded in the very fabric of disciplines such as cultural anthropology, economics, political science, psychology, and sociology. Even when members of these disciplines become highly scientific, their perspectives are likely to be based on theoretical frameworks such as rational choice theory, complex systems theory, general learning theory, or micro-theories that are designed for the study of specific subjects without extending beyond them. These theoretical frameworks are assumed to be *consistent* with evolutionary theory, in a way that does not require much detailed *knowledge* of evolutionary theory. A common formulation is that biology sets broad limits on how people behave, such as the desire to eat and mate, while learning and culture determine what people do within these broad limits—about which evolution has nothing to say.

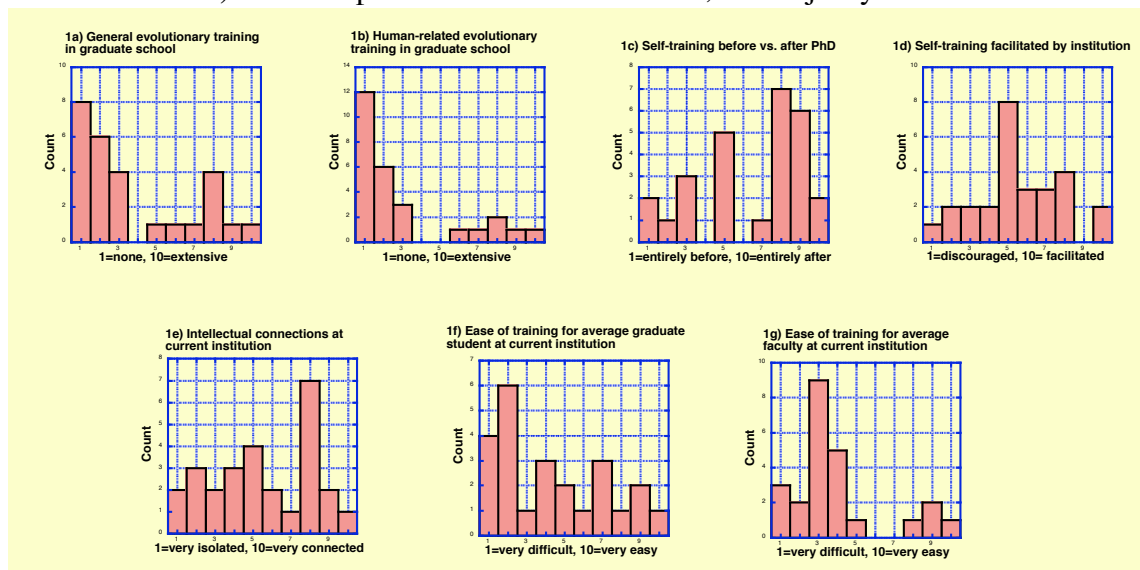
This situation is rapidly changing. The December 8, 2006 issue of *Science* alone included three articles on human social evolution (Bowles 2006, Boyd 2006, Nowak 2006). In this note, I use the journal *Behavioral and Brain Sciences (BBS)* as a microcosm to make two important points about the status of evolutionary theory in the human behavioral sciences. First, evolutionary theory should no longer be regarded as fringe science (as it is commonly portrayed) or future science as far as contemporary research in the human behavioral sciences is concerned. Second, the current status of

evolutionary theory as an important research perspective is not yet reflected in the structure of higher education.

BBS was chosen as a microcosm for two reasons: a) It is one of the most rigorously peer-reviewed and influential journals, with an ISI impact factor that is ranked first among 40 behavioral sciences journals and 7th among 198 neurosciences journals; b) its coverage of subject areas is exceptionally diverse, from neuroscience to cultural anthropology. *BBS* therefore serves as perhaps the best single journal for assessing contemporary research in the human behavioral sciences.

A tally of the target articles during the period 2000-2004 shows that 31.5% were based upon evolutionary theory, for topics as diverse as religion, schizophrenia, infant crying, language, food transfer in hunter-gatherer societies, facial expression, empathy, vision, brain evolution, decision-making, phobias, mating, cultural evolution, and dreams. This fact by itself demonstrates that evolutionary theory has “arrived” as an important theoretical framework guiding research in the human behavioral sciences. *Any college or university that fails to teach evolution in relation to human affairs is out of touch with current scientific research.*

In addition to tallying the proportion of target articles that rely upon evolutionary theory, a survey was e-mailed to the authors to find out about their evolutionary training and their assessment of their current institutions, as shown in Figure 1 (N=28 out of 46 authors e-mailed). With respect to their own education, the majority received little



training in general evolution (Figure 1a) and even less that was oriented toward human-related topics (Figure 1b). Their personal efforts to learn about evolution took place largely after they received their PhDs (Figure 1c). Most regarded their academic institutions as neutral with respect to facilitating their personal efforts (Figure 1d). With respect to their own current academic environment, they span the range from feeling highly isolated to highly connected (Figure 1e). The last two graphs are most informative: Apart from their *own* intellectual environment (which might be confined to a small group of faculty and students), most *BBS* authors estimated that the *average* graduate student in

a human-related subject at their current institution would have a very difficult time learning about evolution (Figure 1f) and that the average faculty member would fare only slightly better (Figure 1g). Even though *BBS* is not a perfect microcosm of the human behavioral sciences, I am confident that the results would be confirmed by a similar analysis of journals such as *Science*, *Nature*, *PNAS*, *Journal of Personality and Social Psychology*, or *Current Anthropology*.

To summarize, evolutionary theory has been confined to the biological sciences and a few human-related subject areas for most of the 20th century. The situation is rapidly changing as far as current scientific research is concerned, *but these changes are not yet reflected in the structure of higher education*. The *BBS* authors who responded to the survey are at the forefront of human-related evolutionary research. If *they* are largely self-trained, sometimes feel isolated within their own institutions, and anticipate difficulties for the average student and faculty member at their institutions, then the situation at other colleges and universities is probably even more bleak.

I and my colleagues at Binghamton University are attempting to comprehensively solve this problem with a campus-wide evolutionary studies program called EvoS (<http://evolution.binghamton.edu/evolution/>). A second program has already been established at SUNY New Paltz under the direction of Dr. Glenn Geher (<http://www.newpaltz.edu/evos/>). We encourage our colleagues elsewhere to contact us for advice about how to create similar programs at their institutions, resulting in a nationwide consortium to address the current mismatch between research and higher education in the human behavioral sciences.

Literature Cited

- Bowles, S., 2006. Group competition, reproductive leveling, and the evolution of altruism: *Science*, v. 314, p. 1569-1572.
- Boyd, R., 2006. The puzzle of human sociality: *Science*, p. 1555-1556.
- Dobzhansky, T., 1973. Nothing in biology makes sense except in the light of evolution: *American Biology Teacher*, v. 35, p. 125-129.
- Lustick, I. S. (2005). "Daniel Dennett, Comparative Politics, and the Dangerous Idea of Evolution." *APSA-CP Newsletter* **16**(2): 1-8.
- Nowak, M. A., 2006. Five rules for the evolution of cooperation: *Science*, v. 314, p. 1560-1563.
- Wilson, D. S. (2005). "Evolution for Everyone: How to increase acceptance of, interest in, and knowledge about evolution." *Public Library of Science (PLoS) Biology* **3**: 1001-1008.
- Wilson, D. S. (2007). *Evolution for Everyone: How Darwin's Theory Can Change the Way We Think About Our Lives*. Bantam Press, New York.