

# Evolutionary Training in Relation to Human Affairs is Sorely Lacking in Higher Education

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## ABSTRACT

EvoS (Evolutionary Studies) is premised on the idea that evolution is a powerful intellectual tool for understanding all phenomena related to life. Evolution has famously run into resistance from opponents across the political spectrum. Here, we provide evidence that evolution also runs into dramatic levels of resistance within the academy. To assess this situation, the authors of evolution-themed articles from the journal *Behavioral and Brain Sciences* between the years 2001 and 2004 were surveyed regarding the state of evolutionary training at their previous and current institutions. The respondents indicated, on the whole, that their graduate school education had focused little on general evolution and even less on evolution as applied to human behavior. Further, much of their own evolutionary knowledge was self-taught and self-initiated – and they generally believed that students or faculty at their current institutions would have difficulty receiving evolutionary training. Cross-disciplinary evolution programs at the university level, EvoS in particular, are suggested as a solution to this systematic problem. With the advent of the international EvoS Consortium, sponsored by the National Science Foundation and reaching more than 40 institutions of higher education across the globe, reason exists for optimism regarding the future of evolution in higher education.

## KEYWORDS

EvoS, Evolution Education, Evolution Training

Evolutionary theory is now being applied to virtually every human-related subject area. To document this trend, one of us (Wilson, 2007) conducted an analysis of the journal *Behavioral and Brain Sciences (BBS)*, which was chosen for two reasons: a) It is one of the most rigorously peer-reviewed and influential journals, with a Thomson Reuters (formerly ISI) impact factor that is ranked first among behavioral sciences journals and 3<sup>rd</sup> among neuroscience journals (Journal

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Citation Reports, 2010), and in the 99<sup>th</sup> percentile overall in Article Influence™ score (Eigenfactor.org, n.d.); and b) Its coverage of subject areas is exceptionally diverse, from neuroscience to cultural anthropology. *BBS* therefore serves as a microcosm for contemporary research in the human behavioral and social sciences.

During the period 2000-2004, 31.5% of the target articles in *BBS* 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 (Wilson, 2007). This fact by itself demonstrates that studying our own species from an evolutionary perspective is not fringe science (as often portrayed in the public media) or future science, but has already arrived. *Any college or university that fails to teach evolution in relation to human affairs is out of touch with current scientific research.*

This all said, evolutionary approaches that step outside the bounds of evolutionary biology often encounter strong opposition (see Pinker, 2002; Geher, 2006). Evolution applied to human affairs, in particular, has met great resistance; interestingly, this resistance often comes from within the academic realm (Geher & Gambacorta, 2010). In the confines of academia, scholars are often wary of evolutionary approaches, seeing such approaches as overly deterministic and as attempting to provide scientific justification for existing social inequities. On the contrary, given the powerful nature of evolution in explaining phenomena far and wide, evolution can, and should, be used as a tool for helping us understand and solve important issues of humanity; for example, the evolutionary lens can help us understand the basic nature of religion and the role it plays in shaping our world (Wilson, 2007).

The current research examines this problem directly: how well do our universities train young scholars in the principles of evolution? How well-integrated is evolution into the humanities? And how comfortable are scholars of human affairs with learning about evolution in their efforts to best understand who we are?

### METHODS

In addition to tallying the proportion of target articles that rely upon evolutionary theory, a survey was e-mailed to the first authors to gauge their evolutionary training and their assessment of their current institutions (N=27 of 46 authors contacted). The authors were asked to respond to each of seven questions using a scale of 1 to 10. The questions were as follows: 1) How much *general* evolutionary training did you have in graduate school (1=none, 10=extensive)? 2) How much *human-related* evolutionary training did you have in graduate school (1=none, 10=extensive)? 3) How much of your self-training in evolution occurred before, as opposed to after, receiving your PhD (1=entire before, 10=entirely after)? 4) To what extent was your self-training in evolution discouraged or facilitated by your institution (1=discouraged, 10=facilitated). 5) How connected to or isolated from other evolutionary intellectual connections do you feel at your current institution (1=very isolated, 10=very connected)? 6) How easy it is for the average graduate student to receive evolutionary training at your current institution (1=very difficult,

10=very easy)? 7) How easy it is for the average faculty member to receive evolutionary training at your current institution (1=very difficult, 10=very easy)?

## RESULTS

In terms of their own education, the majority of respondents reported that they received little training in general evolution (Figure 1). To explicate this point, we conducted a one-sample *t* test, comparing the mean score for the authors (3.74, *SD* = 3.02, *Mode* = 1) with the midpoint of the scale (5). Higher scores on this scale indicate reporting having received strong training in evolution during graduate training. The mean for participants in this sample was significantly lower than the midpoint,  $t(26) = 2.17$ ,  $p = .04$ ,  $d = .42$ . Reported levels of evolutionary training oriented toward human-related topics, assessed on the same ten-point scale, were even lower (Figure 2;  $M = 3$ ,  $SD = 2.87$ , *Mode* = 1),  $t(26) = 2.69$ ,  $p = .001$ ,  $d = .70$ .

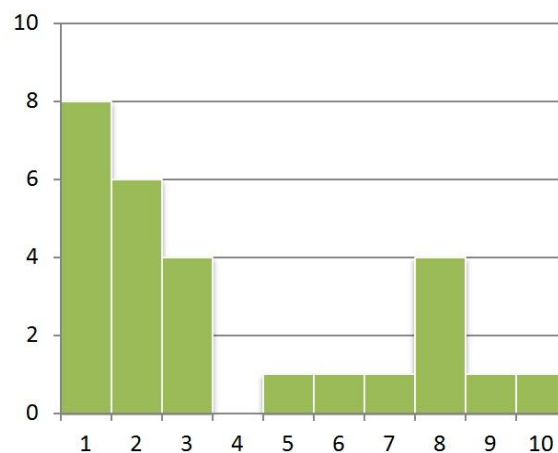


Figure 1. General evolutionary training in graduate school (1=none, 10=extensive).

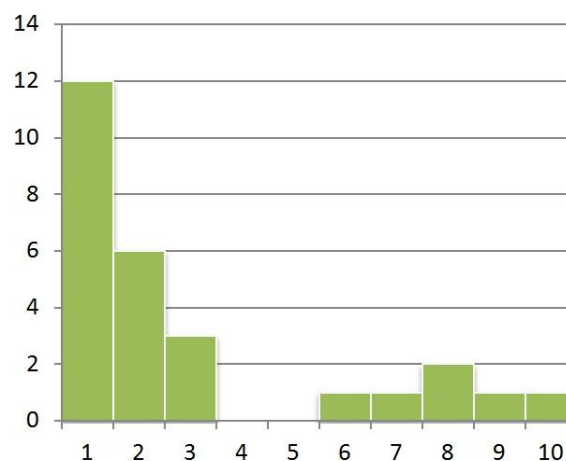


Figure 2. Human-related evolutionary training in graduate school (1=none, 10=extensive).

The respondents reported that much of their personal effort to learn about evolution took place *after* they had received their PhDs (Figure 3;  $M = 6.48$ ,  $SD = 2.82$ ,  $Mode = 8$ ), where 1 indicates self-training occurring entirely before receiving a doctorate and 10 indicates self-training occurring entirely afterward. The mean of this response was significantly higher than the midpoint,  $t(26) = 2.73$ ,  $p = .01$ ,  $d = .53$ . Most respondents regarded their academic institutions as neutral with respect to facilitating their personal efforts (Figure 4;  $M = 5.70$ ,  $SD = 2.29$ ,  $Mode = 5$ ); higher scores on this scale represent high institutional facilitation of evolutionary training, while low scores represent institutional attempts to discourage such training. There was no significant difference between the mean and the midpoint,  $t(26) = 1.26$ ,  $p = .22$ , indicating that while institutions generally did not discourage evolutionary self-training, they did not tend to facilitate it either. Note that three respondents skipped this question, resulting in an N of 24 for this item.

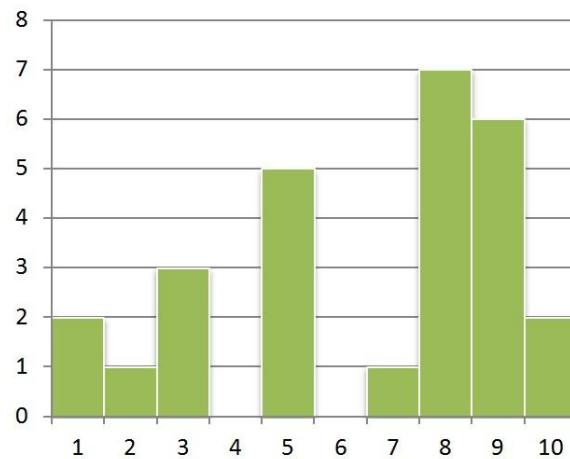


Figure 3. Self-training before vs. after PhD (1=entirely before, 10=entirely after).

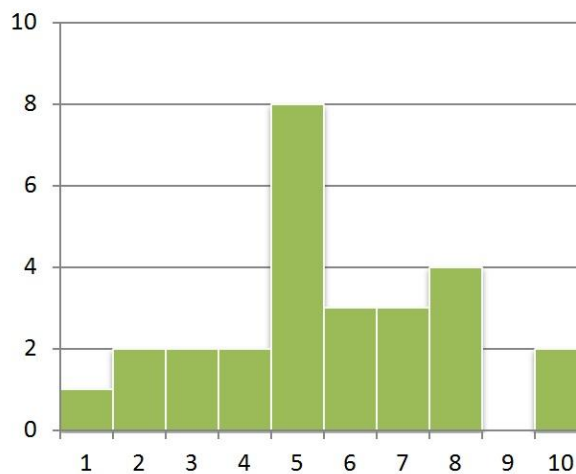


Figure 4. Self-training facilitated by institution (1=discouraged, 10=facilitated).

With respect to their current academic environments, the respondents spanned the range from feeling highly isolated to highly connected (Figure 5;  $M = 5.51$ ,  $SD = 2.69$ ,  $Mode = 8$ ), where higher scores represent higher levels of intellectual connection with fellow faculty. The mean was not significantly different from the scale's midpoint,  $t(26) = 1$ ,  $p = .32$ .

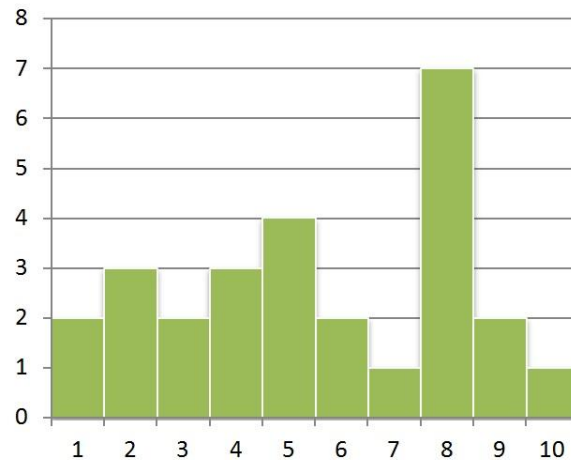


Figure 5. Intellectual connections at current institution (1=very isolated, 10=very connected).

The last two graphs are most informative from the standpoint of evolution in relation to higher education; apart from their *own* intellectual environment – which might be confined to a small group of faculty and students – most of the *BBS* authors surveyed 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 6;  $M = 4.33$ ,  $SD = 2.9$ ,  $Mode = 2$ ) and that the average faculty member would fare only slightly better (Figure 7;  $M = 3.96$ ,  $SD = 2.53$ ,  $Mode = 3$ ) (higher scores represent ease of training, and low scores represent difficulty). While the mean level of difficulty for the average student was not significantly different from the midpoint,  $t(23) = 1.13$ ,  $p = .27$ , Figure 6 shows that very few respondents believe their institutions offer accessible evolutionary training for students. A similar pattern is revealed in the ease of faculty training at the same institutions; the mean was below the midpoint, a difference that approached significance,  $t(23) = 2.02$ ,  $p = .056$ ,  $d = .41$ . Note that  $N = 24$  for questions 6 and 7; three respondents did not answer these two items.

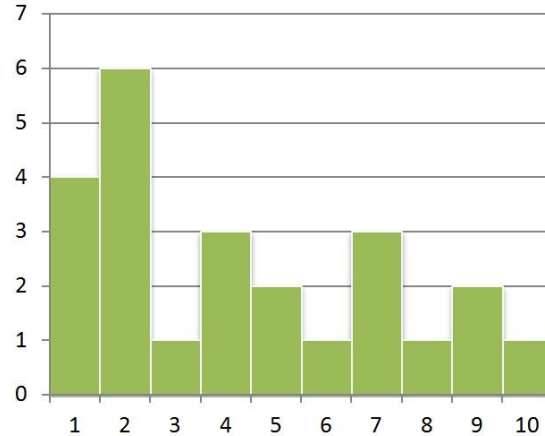


Figure 6. Ease of training for average graduate student at current institution (1=very difficult, 10=very easy).

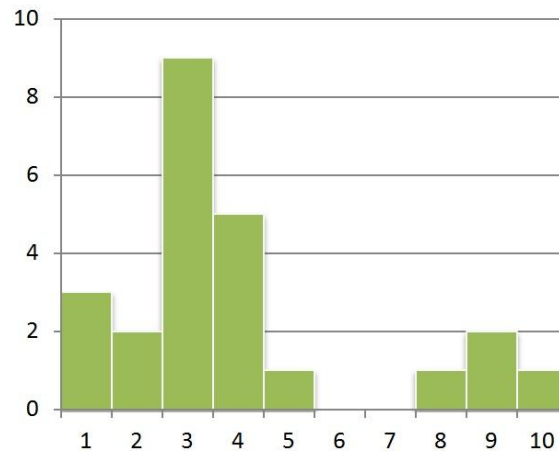


Figure 7. Ease of training for average faculty at current institution (1=very difficult, 10=very easy).

### DISCUSSION

Our simple survey illustrates that evolution has already become an important perspective in the human behavioral sciences as far as basic scientific research is concerned, based on the fact that more than 1/3 of the publications in *BBS* are informed by evolutionary themes. This same trend has been found in other important journals as well (e.g., the *Journal of Personality and Social Psychology*; see Webster, 2007). Evolutionary approaches to behavior are inherently interdisciplinary (Garcia et al., 2011) and the international Evolutionary Studies (EvoS) Consortium has been very successful in connecting scholars from across geographical and interdisciplinary boundaries (Geher, Crosier, Dillon, & Chang, 2011).

So on the one hand, the data here tell an optimistic story; evolution is being applied importantly in modern academia, and our understanding of life will surely

improve as a result. On the other hand, the current findings paint a picture of difficulty when it comes to receiving formal evolutionary training and support at the university level. Scholars who publish in *BBS* represent the cream of the crop in the behavioral sciences – but these same scholars report that they have found evolution education elusive within the halls of the academy. Evolutionarily informed scholars usually teach themselves about evolution – and they often feel isolated within their academic communities. Further, these same scholars report that it is difficult for faculty and students at their own institutions to receive education related to evolution.

This article partly has a practical purpose. The Evolutionary Studies curriculum, now offered at several colleges and universities across the world, has demonstrated its ability to teach basic principles of evolution and allow students opportunities to integrate this information across various academic disciplines. Expanding the EvoS program to more institutions should go a long way toward helping remedy the issues raised by the data presented here. Our survey demonstrates the need to teach evolution across the curriculum at all colleges and universities worldwide. The EvoS Consortium and *EvoS Journal* are designed to meet this demand and we look forward to their continuing growth in the future.

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