THE RETURN OF SCIENCE

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Historians may find this issue full of novel, unsettling, but intriguing ideas, Darwin's influential progeny. In the past and in our common mythology, versions of evolutionary thinking have sometimes been attempts to separate people from each other, race from race, culture from culture, leaving smugness and resentment as the noxious exhaust of theoretical musings. Even if this were true of the new scientific impact on the humanities and history, the growth of such research and speculation should be sufficient to compel historians' attention. There may indeed be a devil or two in the shadows that needs an inkwell tossed in its direction.

In recent years the newspapers and the general intellectual press (and other media) have increasingly reported scientific results bearing on culture and history. Genetic discoveries touching on disease and ethnic identity, the evolutionary shaping of ethics, and natural historical speculations on order and catastrophe have found their way into general discussion.[1] Apparently, science now has something to say of general interest, and yet for a long time this wasn't so, which is odd since the twentieth century has been science and technology's greatest period. Commitment to scientific research is massive and growing. Nevertheless science's voice in the conversation of civilization is muffled and has been frequently suspect.

Without question, exuberant optimism about what science offered in the earlier part of the century faded away as the drawbacks to modern pharmacology, state-of-the-art laboratories, and potent weapons emerged. Things might always go wrong: cancer, contamination, and error seemed inevitable, yet inscrutable. Green and peace movements publicized how frequently technological change came with distinct loss. It seemed that science was against nature rather than of it; that scientists were narrowly wise, but otherwise misguided in a manner typical of experts. Science remained ambiguous and segregated from broader intellectual debates and assumptions.

Ever cynical historians had known that there were other dangers in treating science as too central or essential to understanding the full range of human life.

1. Stephen J. Gould is the best known American proponent of science in culture, known by such popular books as *The Mismeasure of Man* (New York, 1996); *Time's Arrow, Time's Cycle: Myth and Metaphor in the Discovery of Geological Time* (Cambridge, Mass.,1987); and his monthly column in widely distributed *Natural History*. Other examples are Richard Dawkins*, Unweaving the Rainbow: Science, Delusion, and the Appetite for Wonder* (Boston, 1998); Matt Ridley, *The Origins of Virtue: Human Instincts and the Evolution of Cooperation* (New York, 1997); L. L. and F. Cavalli-Sforza, *The Great Human Diasporas: The History of Diversity and Evolution*, transl. Sarah Thorne (Reading, Mass., 1995). See also *Issues in Evolutionary Ethics,* ed. Paul Thompson (Albany, 1995.)

For various reasons, therefore, in the study of history especially, science has had particularly little relevance or appeal. To be sure, there was some limited technical adjustment within subdisciplines such as social and economic history which were influenced by social-scientific practices and techniques, but the scientific way did not significantly change historiography. Science and objectivity may have been a rallying cry and an ideal for early academic historians but this was in reality nothing more than an under-theorized scientism, a tad of self-satisfying ideology.[2]

Evolutionary science has had an especially bad reputation within history. It is associated historically with Spencer's social Darwinism. His insights into the possible interconnection of humanity's evolutionary descent and its cultural ascent took the form of judgment for some peoples and against others, some kinds of individuals and not others. Imperial and ascendant nations received further justification as the theory of evolution could be used to explain why some cultures were "inferior" and defeated while others were justified in their greatness.[3] Building on well-developed notions of race and racism, the new theory seemed to offer, with a startling finality, a nearly religious vindication of the hierarchy of peoples long assumed by educated Europeans and the superiority of elites demanded by class systems. In America and Europe in this century, evolutionary thought helped to breed a nasty fascination with eugenics as social policy.[4] Evolutionary theory had arrived as a metaphor or guiding structure for understanding human life and its history. But the empirical basis was omitted or unavailable, and the elite imagination ran amok, using its settled categories with sometimes disastrous effects. In fact, Spencerian ideas preceded Darwinian evolutionary notions and simply adapted them. The fear remains today that adoption of similar ideas by those equally prejudiced is possible.[5]

Over time, more and more historians and humanists became wary of evolutionary theory's potential for illiberal and ideological exploitation. Moreover, evolutionary theory was tainted for historians by its insecure empirical basis and its predilection for speculation. It tended to speak more of high order historical change than the nitty-gritty of details and archives. Furthermore, for most of this century, academic history was moving in the opposite direction. Aside from a few historians who successfully worked broadly, the generalist historian has been

2. Peter Novick, *That Noble Dream: The "Objectivity Question" and the American Historical Profession* (Cambridge, Eng., 1988), 21-46.

3. Herbert Spencer, *Illustrations of Universal Progress: A Series of Discussions* (New York, 1864). Spencer was in fact a very complex thinker. See also Mike Hawkins, *Social Darwinism in European and American Thought, 1860–1945: Nature as Model and Nature as Threat* (Cambridge, Eng., 1997).

4. See for discussion, Mathew Thomson, *The Problem of Mental Deficiency: Eugenics, Democracy, and Social Policy in Britain, c.1870–1959* (Oxford, 1998); and *Keeping America Sane: Psychiatry and Eugenics in the United States and Canada, 1880–1940,* ed. Ian Dowbiggin (Ithaca, 1997).

5. Doyne Dawson discusses Spencer below, 81; here I am only speaking of the myth of Spencer among historians and humanists; for further discussion of other social Darwinists, see David Paul Crook, *Benjamin Kidd: Portrait of a Social Darwinist* Cambridge, Eng., 1984); Joseph Fracchia and Richard Lewontin, below, 52-78, articulate the ongoing concern about this kind of "metaphorical" Darwinism.

a rare and not particularly admired member of the profession. In the great age of archival history, evolutionary theory had the smallest of niches. It was both a practical and an ideological misfit. Evolutionary theory had failed to be sufficiently historical or empirical in method—a strange fate for such a *historical* science. Added, therefore, to history's resistance to science in general as a preferred mode of understanding humanity was the suspicion that evolutionary theory was a means of trumping history with pre-historical and non-empirical prejudice. Ultimately, evolution seemed a form of teleological determinism.

Wilhelm Dilthey developed a related and theoretically richer line of resistance to science in history. He believed in the essential separateness of the scientific and humanistic domains, and the need to approach each subject matter distinctively.[6] Able as science was at unlocking the material world, he believed it faded into irrelevance and error when faced by the hermeneutical sphere of the human sciences. At the crudest level, a CAT scan or the most sophisticated brain-state analysis conceivable is not a useful translation of a thought or a human action. The most precise of sciences seems to fail before the hurdle of meaning. While some of the social sciences and especially psychology for a long time pursued the dream that this kind of science could guide their practices, historians have never warmed to it, remaining almost naturally rooted in an interpretive approach.[7] While philosophers now challenge this boundary once again, seeing at least a continuous epistemology between the scientific and humanistic, it is because they see science as more interpretive and contingent than has usually been supposed, not that history or the humanities is more scientific or objective.

Notwithstanding these accumulated prejudices and theoretical concerns, however, a rapprochement of historians and evolutionary ideas and findings may be in the offing. Indeed, this collection of articles is a kind of prolegomenon to future work of a radically interdisciplinary sort, which would bridge the great divide in understanding. Science itself has changed, and is very different from the analogical musing of imitators of Spencer. As contributors to this field of study are eager to argue, the science of evolution shouldn't make us afraid, for its conclusions and interests unify humankind more fully than ever. Genetics and paleontology have not validated racism but proved by contrast that humans are an unusually compact species, each of us genetically closely related to the other, narrowly descended, and crucially the same. We look more diverse than we are.[8]

Looking beyond this anxiety, however, historians need to know how evolutionary discoveries and paradigms can help them conceive of human history.

6. Wilhelm Dilthey, *Introduction to the Human Sciences*, ed. Rudolf A. Makkreel and Frithjof Rodi (Princeton, 1989), 56-66.There were many precursors in the medieval and early modern periods, notably Giambattista Vico, *The New Science,* transl. T. G. Bergen and M. H. Fisch (Ithaca, 1968*).*

7. See Charles Taylor, "Interpretation and the Sciences of Man," in *Philosophy and The Human Sciences* (Cambridge, Eng., 1985); Alonso Peña's article below, 101-120, can be seen as a subtle and pragmatic reinforcement of the separation of the two domains, for he sees that scientific techniques can help with structural social processes but not with the analyses focused on agents themselves, who must be treated hermeneutically.

8. See L. L. Cavalli-Sforza, Paolo Menozzi, and Alberto Piazza, *The History and Geography of Human Genes* (Princeton, 1994).

Most of the questions and concerns historians have don't seem immediately amenable to scientific illumination. As articles by Alonso Peña and Stephan Berry indicate, however, the problem is partly in how we historians expect science to look and act. Peña provides a case for how science may have a new role to play as an adjunct to documentary analysis, rather than as a dominator or final arbiter of the meaning of history. For the most part, even social historians have gone no further than simple statistical analyses in their work, but Peña shows that mathematical biology can re-orient masses of otherwise familiar but intractable evidence, thereby suggesting new lines of argument for traditional historical analysis. His discussion of the European witch craze gives a simple but compelling example of how historians may use new techniques to find complex facts that have so far eluded them. The way of science here is highly practical, motivated by that interdisciplinary charity which is the hallmark of much current scientific work, reaching beyond one field to illuminate another. History can benefit from this kind of help.

To see the science here is partly to appreciate that the self-conception of science and its rules and findings has undergone a great shift since the middle part of the century. The attempts of Dilthey and others to defend the human from the scientific has turned into a positive offensive against science's standing as a stable, progressive, and non-hermeneutical field. From both within science and beyond the onslaught has culminated in a decentered philosophy of science.[9] Some features of this are relevant to the way historians should approach science's possible contribution. Understanding science as a form of physics and anything scientific as reducible or translatable into that discipline's once hegemonic idiom is no longer appropriate. Stephan Berry makes these points in his article, while illuminating the nature of this new science and its pragmatic laws in ways that show that the gap between science and history is less than historians instinctively believe. Like everyone else, science has gone historical; its paradigms have shifted, and this is nowhere truer than in evolutionary biology.

This still leaves the argument far short of demonstrating that history is a science, ought to be one, or should link itself to one. Nevertheless, part of the allure of many of the articles in this issue is that they work towards a unification of knowledge, in which evolutionary science and history border on each other. This is one of the grand ideas of intellectual history and the history of scientific thought. In various periods, scientists and their theorists have been especially eager to find a way, a code, or a master discipline that would allow full translatability from one domain of knowledge to the other. In the days when Carl Hempel was trying to make history fit the physics paradigm, the dream was especially vital in science.[10] His bold reach into history was a very logical, even sen-

9. T. S. Kuhn, *Structures of Scientific Revolution* (Chicago, 1962); Joseph Rouse, *Engaging Science: How to Understand its Practices Philosophically* (Ithaca, 1996).

10. See his "The Function of General Laws in History," *Journal of Philosophy* 39 (1942), 35-48; and "Explanation in Science and in History," in *Philosophical Analysis and History*, ed. W. H. Dray (New York, 1966), 95-126.

sible attempt, given the assumptions and aspirations of the time. History produced knowledge and as such it should have translated into terms similar to those operative within physics. Hempel's notorious failure represents a minor aspect of a broader transition in science's own self-image from a simple, unitary one to the diversity that Berry analyzes. Still, a more egalitarian dream of a unity of knowledge is alive again.

Within such a paradigm of diversity, however, history can become a source of interdisciplinary help rather than a mere importer of methods and ideas. Anthropologist Donald Brown's article on human nature and evolutionary psychology is in part an invitation to historians to contribute evidence and argument to the development of our understanding of human nature. History, he argues, can help develop the science of human nature for which it has so much underused evidence. Historians working interdisciplinarily can directly contribute to another field's knowledge, in the way that Peña shows mathematical biology can aid history. Evolutionary science encourages this kind of cross-pollination and shows up the typically self-centered focus of most historical work. The science on offer here is a communitarian helper, eager to reciprocate, and free of physics' former autocratic ways.

These articles also raise the question of the unity of knowledge in another form. They see that it is the porosity between the "historical" sciences and the humanities, especially history, which logically allows a single lens to see them both, a single narrative to capture the zoological, prehistorical, and historical human moments. Furthermore, however, the facts of science, especially those guided by evolutionary theory, begin to show how history and science fit into one story. This is a fundamentally historical approach, impressively told in Albert Naccache's vision of the whole of history from the beginning.[11] History and evolution find their place together in a chain of evolutionary being and in the power of the historical narrative to relate such modes of evolution to each other. Naccache, Doyne Dawson, and Martin Stuart-Fox are each trying to see how the blatant power of cultural change ties into the now indisputable relevance of our hard-wiring, how our phenotypes and genotypes interact.

In their accounts, then, the grand story of human history is about the interaction of biology and culture. From the realization that important biological differences are structured by phenotypes, the question emerges whether there is a trajectory of development that has taken human beings away from genotypic advance and towards the autonomy of phenotype and culture. And while Berry reminds us that physical evolution has not stopped, Donald Brown and others correctly remark that our bodies and genes have developed much more slowly than since the age when humans first became hunter gatherers, in what Albert Naccache calls the Sociocultural Mode of Evolution.[12] Beyond that, one might conclude that evolution was more or less dormant, irrelevant aside from the adjustments made by micro-parasites, none recently achieving significant impact

11. See below, 10-32.
12. See below, 23.

on the basic nature of the species. The future may hold further chapters in the story of physical evolution, but little has lately occurred. Perhaps we are awaiting the next punctuation of our equilibrium.

Provocatively, however, many now believe that human evolution did not stop developing with the "end" of the process of speciation and significant genotypic development. Many of the authors writing here believe that it is possible to continue the story into the domain of cultural change. Again, Naccache's account introduces these concepts dynamically.[13] At this point, in other words, some have moved back towards some social-Darwinist questions, if not their answers. This time, however, they have done so with considerable attention to detail and a concern for theoretical precision. I should note here that this line of endeavor is quite distinct from the work on human nature exemplified by Brown. He is pursuing the legacy of evolution on our minds and practices, but does not assume that the continuing changes in culture are themselves the products of evolutionary or quasi-evolutionary forces.

This is exactly the concern, however, of Naccache, Stuart-Fox, and Dawson. With important differences among them, they see that over time culture and the phenotype have developed in close relation to physical evolution. Furthermore, they believe that this interaction has itself predisposed cultural development to obey "laws" or norms akin to those of purely biological (genotypic) evolution and to be susceptible to a similar form of analysis. Furthermore, they believe that cultural development is itself a form of evolutionary development. Evolution commands culture as well as nature, although its aims in the historical era may appear quite distinct from those active in prehistory. Naccache's short history of the world focuses on the behavioral differences ("life-cycle set-ups") and is able thereby to set out a plausible account of evolution, which in the end may have subtly got behind evolutionary theory to find an inner principle by which it could do more work than it supposed, accounting for all significant change morphologically and behaviorally.[14] He has dealt, however, only with the grand vision and its general, large-scale transformations.

The approach of Stuart-Fox and Dawson is quite different. They deal less with the shape of change than with the "causal mechanism" and analytic framework through which to see how culture may develop in a distinctly evolutionary way.[15] Though unwilling to commit fully to the sociobiological tenets that tightly link cultural and genetic evolution, both authors plainly expect that cultural evolution emerges from the biological evolutionary story.[16] Understandably, both start their accounts with at least some consideration of early humans. Stuart-Fox outlines the analytic basis for cultural evolution. He posits both gene-like cultural units (mentemes) and mechanisms of fitness by which the success of a partic-

13. See below, 10-32.

14. *Ibid*.

15. Here they are inspired plainly by Richard Dawkins's notion of the meme: *The Selfish Gene* (Oxford, 1989); the phrase is Stuart-Fox's, below, 34.

16. Such views are represented by E. O. Wilson, *On Human Nature* (Cambridge, Mass., 1978); and are discussed by Fracchia and Lewontin, Dawson, and Berry below.

ular menteme can be judged. Furthermore, and boldly, Stuart-Fox has realized the need to find an engine—a *logos*, one might say—which powers sociocultural evolution. He proposes the notion of psychological satisfaction, anchored on the individual human being but not necessarily entailing a purely selfish perspective.

Indeed, Dawson's central point is that cultural evolution, even if it turns out to be a continuation of physical evolution, is possible in great part because ideas and institutions can be replicated and passed on in a group situation. The group bears the variations. Nevertheless, as Dawson also points out, much of what survives in the cultural process of war is not at all adaptive, and the ability of cultural traits to be quickly assimilated has in most circumstances rapidly eliminated the adaptive advantage. Along with Naccache and Stuart-Fox, Dawson offers an insightful analysis of how evolution and culture may work together, and the possible ways that culture may answer to an evolutionary master that is not slavishly linked to the genotypic inheritance.

The study of cultural evolution is, however, in its infancy and several rival terminologies reflect the uncertainties and provisional quality of the field. The cultural units to be examined and the mechanisms of change are extraordinarily complicated and the task of adjusting theory to reality is daunting.[17] The intellectual task and its political and ethical consequences are so worrisome that Joseph Fracchia and Richard Lewontin advise us not to pursue cultural evolution at all. Notwithstanding the inclination of sociobiologists as well as writers like Stuart-Fox to link themselves to the venture of biological evolution, Fracchia and Lewontin see cultural evolution as fundamentally metaphorical and not much further ahead than the old, bad world of Spencer. It fails as science, as ideology, and as history, they argue. Culture surely has a history, but it does not evolve according to the actual tenets of biological evolution. As a result, they believe this entire venture is unlikely to stimulate good history. Stephan Berry joins them in seeing cultural evolution as fundamentally progressive, lacking the neutral ends of biological evolution. Detailed as the new cultural evolution is, these critics suggest that it is no more valuable or scientific than the old organic metaphors of the Toynbees and Spenglers.

Despite their significant disagreements, however, all of these articles share a breadth of interest born of interdisciplinarity and the broad sympathies that characterize this field of inquiry. Without question, they raise matters of great human significance. It is typical of evolutionary theory to force history back towards large questions, just those from which historians often shy. Evolutionary theory asks: why *is* there a human history, how is it fundamentally constrained, and how can historical practice be regenerated by thinking on a meta-level (even when it is examining detailed and specific cultural traits)? Such questions are intriguing a great number of people outside history and increasing numbers within the profession. That such questions are flourishing suggests doubts about some of his-

17. Stuart-Fox discusses some of these, below, 41f.; as do Fracchia and Lewontin, see below, 71-72, especially notes 29 and 30.

toriography's social and cultural assumptions, including history's autonomy from evolutionary history and science. Whether or not there is an organized science of cultural evolution in the offing, the fact of biological evolution, the limits on culture, and the relevance of scientific ideas and methods to the study of meaningful human life is much harder to deny than it was. Historians have lately been poor synthesizers and may soon find that others are doing their synthesizing and paradigm-establishing for them. Whether they like evolution or not, an informed reaction would probably be timely.

What does all this offer to the historian? At the minimum, these articles provide a stimulating theoretical context for working historians who can better see how historiography fits into a variety of analytic and temporal frameworks focused on evolution and human nature. The stuff of history—the past and culture—is not exhausted by the prevailing interests and analytical terms of the historical profession. There is reason to enrich our perspective. Evolutionary insights and genetic facts should at least be background assumptions of the historical record and keys to realizing how the small elements historians typically examine can be integrated into very long-term structures.

Furthermore, the insights of evolutionary theory and science allow historians to read the significance of their materials in a different way. Often enough, historical phenomena that seem to be purely local turn out to be more common and almost universal. This is not only the argument of the evolutionists, but also of other historians. Carlo Ginzburg has embraced human nature as a fact for just such reasons.[18] Psycho-historians have long seen the advantage in believing in the universality of the human psychological mechanism. The explanation for this commonality is traced not to historical causes, but evolutionary ones. Simply recognizing the evolutionary element is unlikely to change the practice of historians but it certainly will affect their guiding concepts, the framing of their answers, and the scope of the intellectual endeavor to which they can contribute.

For other historians, evolutionary theory may offer a methodology. For even if it may be more metaphor than a function of biological evolution, cultural evolution is an analytic tool of considerable complexity and great potential. Its greatest challenge, however, is that historians have never been willing to adopt theories in the form intended by their authors, let alone precise analytic systems. In history, every case calls for a tweaking of the theory. Whether historians could agree on when they have identified a cultural trait and instances thereof in a text is hard to imagine. But any significant agreement on the terms of discussion could give history a more portable language of comparison and analysis than it currently has. It is fair to say, however, that the hermeneutical challenge has not yet come into focus among evolutionary thinkers, although scientists like Peña and Berry suspect that the methods of science and evolution will fall short of providing a means for fully analyzing the historical record. The way in which historians frame their questions, the tight relation of most historical work—notwith-

18. Carlo Ginzburg *Ecstasies: Deciphering the Witches' Sabbath*, transl. Raymond Rosenthal (New York, 1991), 22-23.

standing its narrow scope—to ordinary life and language, suggests that the adoption of a universal analytical language of culture is likely to spawn a discipline significantly different from the history we now know. It seems as likely, however, that success or failure for cultural evolution will come in the usual way, when historians fit their models to the details in such a way that impresses others enough to make them want to adopt the model. Even then, the successful replication of the methodology of a book in other books is rare: variation immediately ensues. For history to move in this direction might actually be proof that it has achieved a method and become significantly scientific, but none of this seems very probable in the short term.

Science is pressing on history, and the challenges it presents to our interests and settled ways cannot be fully imagined. In a time when history is loosening its links to the social sciences, it's no surprise that many have turned to the new historical sciences for inspiration. As the articles in this collection demonstrate, there is a lot worth talking about here, and our very understanding of what history is and is for is at stake in these encounters at the porous points in the discipline, the very places we go out to meet others and their ideas. How most historians will greet these neighbors and Darwin's "dangerous ideas" is a question it is too early to answer.

The writers in this theme issue live on four different continents and operate in as many departments or disciplines as there are individuals. That is itself testimony to the breadth of interest among intellectuals of many stripes, all intrigued, committed, or concerned by this project. If history is one of the few academic disciplines that continues routinely to make its presence felt among the general intellectual public, it is a question of some concern whether it ought to appropriate more evolutionary ideas for itself. Whether or not they can find an explicit place in historical work, they may now be a necessary component of a historian's "common sense" knowledge. If so, this theme issue is a good place to start developing that sense.

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