Introduction

In the history of science, the eighteenth century is sometimes called Newton’s century because of the far-reaching way Newton’s ideas influenced thinking in the one hundred years after his work. Newton’s way of studying nature, and the conclusions he reached, not only influenced every branch of science, they profoundly altered humans’ sense of themselves. In our own time updated versions of the evolutionary theories of Charles Darwin are having the same impact. Many people, in America as elsewhere, continue to find Darwin’s ideas unsettling for religious reasons. Others fear that applications of Darwinian thought in any form to human history will tend to legitimize racist, colonialist, and sexist thinking. But neo-Darwinian thought of recent decades is a far cry from Social Darwinism of the late 19th century. The insights it offers into human nature and social development are vastly more nuanced. New evolutionary thinking tied to advances in genetic research, game theory, and computer applications has had a tremendous impact on the social and biological sciences in the last decade. More historians should consider the explanatory value of the neo-Darwinians work.

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1 Delivered at the April 2, 2004 meeting of the GAH. Significant portions of this paper were first presented as a guest lecture for the Faculty of Social Sciences, University of Lagos, Nigeria on February 24, 2004.
Darwin’s Core Ideas

Charles Darwin was far from being the first advocate of the idea of living species developing through an evolutionary process. What set Darwin’s ideas apart, what gave them great explanatory power, was the clarity with which he specified the evolutionary process. To understand the later impact of Darwinian thought it is vital for us also to be completely clear on his core ideas.

Darwin believed biological evolution occurred in two stages, (1) random variation and (2) natural selection. For Darwin, variations -- what we today sometimes call mutations - occur only occasionally between generations. These variations have no direction, no goal. They are random. Most do not persist. The reason they do not is the process Darwin called natural selection. Most major variations actually weaken the individual organism, reducing its chances of reproducing. So such variations quickly disappear. But a few changes, or packages of changes, make the individual organism stronger -- that is, better adapted to current conditions. Such variations enhance its chances of surviving and successfully reproducing. Because the survival rates are better for the improved version of the organism, over time the variations spread throughout the species as a whole.

A third component of Darwin’s model was species divergence. Divergence explains how the process of variation and selection, which began with single-celled organisms, has resulted in such a profusion of organisms, many highly complex. Species survive by finding a niche in the mixture of life forms among which they live. Variations that permit
some individuals to occupy a new, less competitive niche, or a more specialized version of an old one, are highly advantageous. Over time organisms filling new, more specialized niches may become new species altogether. That is, species diverge toward greater specialization. Each round of new species, in turn creates a more complex ecology with ever more opportunities for further specialization. It is true that a sudden and catastrophic change in the climate can sharply reverse the tendency to specialization. But during the long intervals between such catastrophes, for hundreds of thousand of years on the earth, Darwinian divergence has slowly built up more and more specialized environments. Thus the operation of the three-part system (variation, selection and divergence) has produced the complex ecosystems we see today.

The most outspoken critics of Darwin’s ideas were of course those who objected that the process he described made no mention of God. Indeed, almost 150 years after the publication of The Origin of the Species, that discussion continues, not least in my home state in the U. S., where there was a public furor over the teaching of evolution just in recent weeks. But that is a subject for another day. We are here concerned, not with Darwin’s critics, but rather with those who enthusiastically embraced his ideas, or at least a simplified version of them.

**Social Darwinism**

It is scarcely surprising that Darwin’s ideas were quickly applied to human social development, for that was where Darwin got them in the first place. Like most scientists in every age, Darwin drew his models from the intellectual currents of his time. He was
deeply influenced by liberal economists like Adam Smith and David Ricardo, with their ideas about forces weeding out inefficient enterprises. Darwin gave particular credit to Thomas Malthus’ argument that human population increases tended to outstrip the expansion in food supply, thus setting cruel limits to demographic growth. Darwin simply applied this way of thinking to understand change in the natural world. But popularizers of Darwin’s work, like Herbert Spencer, went beyond merely connecting biological and human development. They used evolutionary thinking to explain Europe’s ascendancy in the late 19th century world. Spencer was enormously popular. He coined the phrase “survival of the fittest,” and even popularized the word *evolution*, which Darwin rarely used. In innumerable lectures and many popular books Spencer argued that evolution provided a clear and scientific explanation for the superiority of European culture, and the white race.  

In fact, Spencer’s theories of social development were not purely Darwinian, but rather an amalgam of Darwin’s ideas and those of Jean-Baptist Lamarck. Across Europe, major scholars like Emile Durkheim and Max Weber soon discredited such thinking. They argued human cultures were discrete entities that entirely transcended human biological origins. Despite this, well into the twentieth century, long after the scholarly dismissals, so-called Social Darwinist thought continued to be widely accepted. Nowhere were such

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3 Bowler, 297.
ideas more influential than in America, where they were routinely used to justify inhumane industrial and colonial policies.  

At the beginning of the twentieth century in America, non-scientist supporters typically saw evolution as God’s way of engineering progress. Advocates ranged from semi-literate, racist Social Darwinists to well-educated, perfectly humane clergymen. Evolution and progress, they believed, went hand in hand, whether the progress be material or moral. But by the 1920s, breakthroughs in physics and genetics provided compelling evidence for an evolutionary process such as Darwin had originally envisioned, without the Lamarckian elements -- that is, a model featuring much randomness and quite without direction. “Classical” non-progressivist Darwinism was fully confirmed in the scientific community. The idea of evolution as God’s way of engineering a progressive world was now difficult to sustain. Social Darwinism began to lose its following.

Great events also played a role. During the First World War, citizens of the supposedly advanced nations slaughtered one another by the hundreds of thousands. Then in quick succession the Depression, Totalitarianism, World War II and the Jewish Holocaust knocked for a loop all but the sturdiest historical optimists. Nazi and fascist use of crude Social Darwinist arguments underlined the dangers of applying notions of Darwinian struggle to human affairs. Meanwhile on the totalitarian left, Stalin’s clumsy effort to

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4 There was considerable acceptance even in the American South. See Ronald L. Numbers, *Darwinism Comes to America* (Cambridge, MA, 1998), Ch. 3.

5 Bowler, 298.
revive a Lamarckian view of biological evolution only served further to discredit any linking of biological and human history. Evolution and politics was evidently a toxic combination. For a decade or more after the Second World War a strong anti-positivist streak ran through the social sciences. Darwinian evolution was strictly reserved for the biology department. Any thinking that suggested a biological influence on human society was quickly dismissed.  

The Primacy of Genes

Yet by the mid-1960s a new generation of zoologists began to discern Darwinian processes not only in the physiological history of animals, but in their social adaptations as well. The start came when William Hamilton noted the adaptational advantages of altruistic behavior at the cellular level. Genetically identical cells often sacrificed themselves to benefit mates. Hamilton applied this thinking to studies of insects and birds, concluding that apparently altruistic behavior wasn’t so selfless after all. Both in sexual selection and in parenting, seemingly suicidal behavior had clear adaptational advantages. It strengthened the survival chances of offspring. Hamilton’s concept of kin-directed altruism is the foundation of neo-Darwinian thinking. Before long, Robert Trivers, a more combative personality than Hamilton, publicly argued for a genetic explanation of even the most intimate and culturally charged human affairs: romantic love, parental affection and even marital infidelity.  

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6 Bowler, Ch. 9.

7 Robert Trivers, “Parental Investment and Sexual Selection,” in Sexual Selection and the Decent of Man, ed. By Bernard Campbell (Chicago, 1972)
Hamilton’s and Trivers’ key contribution was their suggestion that the crucial unit in Darwinian adaptation was not the individual organism, but rather individual genes. Whether a particular characteristic proves adaptive, they demonstrated, was a function not of the survival of an individual organism, but of the survival of a particular gene, or bundle of genes. That mothers instinctively sacrifice their lives for their children is not an adaptational advantage for the mother, who may die prematurely as a direct result of the instinct. Nor need it promote the survival of her daughters; having inherited the instinct, they may also sacrifice themselves for their children. It is however plainly an advantage for the genes that the mother and children share.

At the time, one wag put the new argument this way: “The chicken is just the eggs way of reproducing itself.” That got students’ attention, but was not quite the point. Both the chicken and the eggs are, in a sense, merely elements in the reproductive strategy of their shared genes.

E. O. Wilson, a student of insect behavior, pulled together much of this work in his 1975 synthesis Sociobiology. Wilson was widely criticized, even though he was extremely guarded in his applications to human society. Only when thus baited, did Wilson publish On Human Nature, a more explicit discussion of sociobiology’s implications for humans. Richard Dawkins, a British zoologist with a flair for popular writing, and for controversy, had none of Wilson’s reticence. Dawkins’ The Selfish Gene was a best seller and, together with Wilson’s work, provoked powerful opponents.
Steven Jay Gould, a Harvard paleontologist and perhaps America’s most popular science writer, led the attack on sociobiology. Gould had no doubt that the emergence of human reasoning and language abilities meant a complete break with biological Darwinian evolution. Natural history is ruled by chance and is without direction, while human history is a matter of conscious choice and purposeful striving. Gould’s point of view was fully in accord with American liberal tastes. First, the hand of God is kept at a distance and the fundamentalists are held at bay. Second, human history is about rational and moral choices; biology is emphatically not destiny.

But despite Gould’s brilliant dismissals, the neo-Darwinists continued to push into once forbidden territory. During the 1980s and early 90s, the Darwinists gained powerful new analytical tools: greatly improved computer modeling techniques, breakthroughs in genetics, and an explosion in the use of game theory. By the mid-90s a new, if still contested, paradigm emerged that argued for a significant Darwinian role in our understanding of human society.

The new thinking has come on two fronts. First, many studies demonstrate that a wide range of behaviors that previously seemed to be culturally driven have a biological basis. An influential example is the fifteen-year study of child abuse and pedocide by Martin Daly and Margo Wilson. Their study revealed that in households with a step-father (that is, an unrelated male), children were from 10 to 100 times more likely to suffer serious physical abuse, including injuries that result in death, than in households with a

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8 Martin Daly and Margo Wilson, *Homicide* (Hawthorne, NY, 1988).
biological father. This was true in all five societies they studied. David Buss and others
have likewise shown that some sexual selection preferences are universal, and thus
apparently have a biological basis. In every culture, males place greater value on
physical appearance, while females are more attracted to wealth and status. A related
conclusion from a recent study will come as no surprise to advertisers, nor perhaps to
many women. The mere sight of beautiful women, it seems, makes men markedly more
inclined to spend money. In his book *The Blank Slate: The Modern Denial of Human
Nature*, Steven Pinker surveys a large and persuasive list of studies along these lines.
He demonstrates that, contrary to John Locke’s idea of a *tabula rasa*, biology retains a
significant impact on human behavior.

**Social Applications**

The neo-Darwinists’ second claim involves the assertion that the new evolutionary
thinking could profitably be used to examine interaction within social groups, and by
extension, to analyze human history. A major problem with efforts to apply Darwinian
thinking to social development is the lack of any distinct unit of transmission like the
gene. The British sociologist W. G. Runciman picked up on Richard Dawkins’
suggestion of the term *meme*, for a unit of cultural transmission. For example Runciman
identified four memes, or “bundles of instruction and obligation,” that supported the
bonding and the code of honor among hoplite warriors in classical Greece:

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9 David Buss, “Mate Preference Mechanisms: Consequences for Partner Choice and Intrasexual
Competition,” in *The Adapted Mind: Evolutionary Psychology and the Generation of Culture* . J. Barkow
et. al. eds. (New York, 1992).


1. The ‘always be ready to go to war’ meme.
2. The ‘commemorate the fallen’ meme.
3. The ‘dedicate the spoils to the gods’ meme.
4. The ‘avoid shame and guilt’ meme.

Each of these bundles was itself a complex of ideas and norms. Taken together, Runciman argued, they constituted a powerful basis for the hoplites’ code of honor. They could be transmitted severally or as a package, as conditions warranted. New memes could be generated continuously during day-to-day life. Most memes, like most biological variations, do not prove adaptive. But a few survive the historical selection process and help to transform society, thus creating a new social context in which still more memes will be generated.¹²

Runciman also took up the crucial question of self-awareness and intentionality. Critics contend that the Darwinian model became irrelevant when humans became self-aware and approached problem-solving with conscious intent. For Homo sapiens, they argue, new variations are not random, they are rationally conceived. The selection process is also much impacted by conscious choice; it is not just an external process. While granting that self-awareness does give an added dimension to the evolutionary process, Runciman contends the significance of intentionality is less than meets the eye. First, few human choices are fully intentional. We are programmed by our language, our culture and our situation – by the memes we share with those around us.

Moreover, in those rare instances where truly creative, original thought takes place, the process is far less intentional than is supposed. Creative people generate tremendous numbers of ideas, not in any particular order or drawing much on their reasoning powers. That is why we make a distinction between analytical and creative thinking. Creative people use their reasoning ability, rather, to project the possible consequences of each idea, discarding those that do not work, and selecting the few that may. Reason gives humans the ability to conduct quick thought experiments so they do not have to test all ideas in the real world. Nonetheless, the human creative process closely parallels Darwin’s model of random variation followed by natural selection.¹³

Other neo-Darwinist thinkers argue that no social equivalent of the biological gene is necessary, in part because biology has wired humans to certain social tendencies. Robert Trivers’ concept of reciprocal altruism is the foundation of their thinking. Building on his own and William Hamilton’s idea of kin selected altruism, Trivers showed that a slow build-up of trust and cooperation was a key element in many complex animal societies. Individuals with a predisposition to trust and cooperate with others had adaptational advantages over loners and misanthropes. But they could not trust uncritically, for undetected cheaters would make out best of all freelading in a general atmosphere of trust. An inclination to trust must be matched with sharp eye for cheaters and ruthless punishment of them when detected.

¹³ Dean Keith Simonton, Origins of Genius: Darwinian Perspectives on Creativity (New York, 1999), 137
Trivers’ thinking was supported by Robert Axelrod’s early work in game theory. Axelrod became intrigued with the Prisoner’s Dilemma and other games that turned on choices of trust and betrayal, or, if you will, altruistic cooperation or selfish cheating. Axelrod set up a number of computer programs that sought to simulate evolution, and invited other game theorists to submit programs that represented adaptational strategies. The study was thus a kind of tournament of strategies for evolution as simulated by Axelrod’s various programs.

The winner of this competition was Anatol Rapaport’s strategy called “Tit for Tat.” Like many good ideas, Rapaport’s strategy was simple but elegant. On the first encounter with any opposing program it would cooperate. On every future encounter it would whatever the opposing program had done on the immediately previous encounter. It rewarded cooperation with cooperation and punish cheating with cheating. Informed the Tit for Tat was the strategy to beat, opponents specifically designed programs to beat it. Rapaport still won. Not only did Rapaport’s program win the competition but, the longer simulations ran, the more it tended to build up a network of stable, trusting cooperative relationships that were beneficial to all involved. 14

Robert Wright, a respected science writer, drew from the recent neo-Darwinian scholarship to produce two popular books that synthesized the impact of the new thinking. In his first book, The Moral Animal, Wright made extensive use of Trivers concept of reciprocal altruism to explain how social animals, including humans,

Neo-Darwinian Thought and Human History

developed patterns of mutually beneficial cooperation. He concluded that human
“conscience and sympathy and even love, [are] all grounded ultimately in genetic self-
interest.”  

Wright next turned to human history.

Zero and Nonzero

In *Nonzero and the Logic of Human Destiny*, Wright offered a synthesis of the neo-
Darwinians’ work and its application to human history. At the heart of the book are two
arguments: First, Wright noted recent work that asserted, contrary to classical
Darwinism, that biological evolution in fact has a direction. It has no particular goal, to
be sure, but does have a general direction, which grows out of Darwin’s principle of
divergence. That principle, it will be recalled, notes the tendency to greater specialization
in life-forms because more specialized forms are often better adapted to particular
conditions. Each new more specialized life form in turn creates a more complex
ecosystem and opportunities for still more specialization. And so on. The direction of
biological evolution, Wright noted, was the same as in the evolution of human societies;
that is, persistent, if often interrupted, movement toward higher levels of social
specialization.

Second, Wright contended that, in natural as in human history, cooperative, win-win
strategies have persistently had adaptational advantages. Cooperation works. Hence the
title of his book. A zero-sum game is one in which all participants fight for a portion of

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16 Wright, *Nonzero*.
fixed sum of money. Each participant’s gain is the others’ loss, for it removes a portion of the prize from the table. That is how much competition works. But, Wright concluded, life is not purely a zero sum game. Despite much competition, both in nature and in human society, cooperation is frequent and highly adaptive. Life is not a fight over a fixed sum, because cooperation can increase overall wealth so there is more for everyone. Beginning as single cells, genetically distinct organisms joined in ever more intricate symbiotic relationships to form the complex organisms that populate today’s natural world. In the same way, in human history simple social structures gave way to more complex ones because of the overwhelming advantages of cooperation and specialization. Increased social complexity develops because historical selection rewards groups that accept the social restraint necessary for cooperation while simultaneously using efficient communication methods (like literacy) to negotiate and enforce mutually beneficial compromises. On the other hand, historical selection tends to punish individuals and groups that are unable to establish the communication and trust necessary to cooperate with and learn from their neighbors.

I believe that in the *Moral Animal* and *Nonzero* Wright got the significance of neo-Darwinian thinking on human social development about right. I have also been much influenced by the works of Jared Diamond, 17 Steven Pinker, 18 and Frank Sulloway. 19 Before proceeding to elaborate these views and to apply them to the current scene, I

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18 Steven Pinker, *The Blank Slate*.
would be remiss if I did not mention that all do not share my enthusiasm for neo-Darwinian thinking. In addition to methodological doubts, objections have come from both left and right on the political spectrum. In both cases the critics argue from an admirably moral point of view, for which I have the deepest respect. On the right, critics influenced by traditional religious beliefs reject the very idea of Darwinian evolution, even if it is not applied to humans. They find it quite inconceivable that human emotions like love and compassion could have their origin in the material biological world. There must be something else. Meanwhile, on the left, many critics fear any argument that even implies support for biological determinism will strengthen the hand of racist and reactionary forces. They think the case is weak, and that it is dangerous and unwise to treat it as respectable. Steven Jay Gould, who had challenged the sociobiologists in the 1970s, continued fighting on this line right up to his all too premature death 2002.

Not The 19th Century Version

Despite his brilliant contributions in many areas, I believe Steven Jay Gould overestimated the danger that neo-Darwinist thinking poses. Take the example of colonialism. Early Social Darwinists saw colonialism as simply the introduction of Europe’s superior social arrangements into a new situation. This was historically moral, the White Man’s Burden. But in light of neo-Darwinian thinking their analysis looks wildly over-simple. It does not take into account how disruptive colonial arrangements were to functioning societies, or how psychologically traumatic the process was for millions of people. Valuable new ideas were doubtless introduced into colonies. But

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elaborate arrangements of reciprocal altruism and nonzero behaviors that had been built up over many centuries suffered tremendous damage. Assessing colonialism is thus a complex calculus, to neo-Darwinists as to other thoughtful observers.

In short, this is not 19th century Social Darwinism. The political implications of the new Darwinist ideas are almost the opposite of the old. The early social evolutionists believed that the laws of history, like the laws of Newtonian physics, were highly deterministic. Modern European society, they were sure, was the inevitable outcome of a predetermined plan for mankind. We now appreciate that the evolutionary process is highly contingent, that is to say it is a historical process. It is messy, often ironic, and always unpredictable. While there may be a broad movement toward greater complexity and specialization, the exact form that complexity takes is quite unpredictable.

A famous episode in historiography illustrates the difference in the two ways of thinking. In the 1930s Herbert Butterfield criticized the so-called Whig historians because they presented their heroes in British history, the Protestant opponents of the Stuart kings, in terms that mostly resembled the British present. The tradition of religious freedom was well established in late Victorian Britain. Whig historians credited their Protestant forebears with bringing that about. But many of the Protestants who fought Charles I and James II did not actually want freedom of religion; they wanted to impose their religious and social views on everyone else. It was only because they, like the Stuarts, failed in their quest that they settled, not entirely happily, on the principle of freedom of religion. The end result was less due to the farsightedness and genius of Protestant Whig
statesmen than to a haphazard process set in motion by people whose aims were quite different than the ultimate outcome.\textsuperscript{21}

**Spandrels, Irony and Progress**

It is hard to sustain a Newtonian deterministic view of history in the face of such irony and complexity. But this course of events is perfectly in keeping with the neo-Darwinian perspective, which emphasizes that evolution often takes crooked path. We now have a far more complex picture of biological evolution. We understand, for instance, that every modification that survives the selection process will not be an adaptational advantage. Particular variations that are neutral, or even disadvantageous may persist if they are part of a larger package that enhances survival. And so it is in human history as well. Steven Jay Gould used the term *spandrel* to illustrate these non-adaptive byproducts. In architecture spandrels are the two roughly triangular spaces left between an arch and the lintel it supports. The arch has considerable architectural value; the “left over” spandrels to each side of it have none. It is even a bit of a nuisance for builders to fill these awkward spaces. You might discover, Gould notes, that an exposed spandrel in the doorway to your living room is a fine place to display the souvenir boomerang you bought in Australia. But that does not mean the spandrel was created in order to display your boomerang. Instead, in a small, but typical bit of evolutionary irony, a thing with no value at its origin turned out to have a use in a subsequent environment.\textsuperscript{22}


All complex organisms, and complex social arrangements, are replete with spandrels. Far from being pre-determined by Newton-like laws, history is filled with chance, coincidence, irony, and oddity – even as it develops in a general direction toward greater social specialization.

Other recent studies place interesting spins on reciprocal altruism and its relation to humans’, and female capuchin monkeys’ sense of fairness. Sarah Bosnan and Frans deWaal tested the monkeys by departing from an established system of rewards. The monkeys were trained to give researchers pebbles and were rewarded with a piece of cucumber. The discord began when Bosnan gave some monkeys a sweet and tasty grape instead of the bland cucumber slice. The slighted monkeys often refused to eat their cucumber; a significant number stopped trading entirely. That is, the offended monkeys denied themselves a desirable reward rather than continue to cooperate with the researchers who had betrayed them.\(^\text{23}\) Samuel Bowles and Herbert Gintis studied the commitment to fairness and equality in many human societies, from the simplest to the most complex. They concluded that the inclination to cooperation and to assist those denied basic needs is universal. But so is a strong disposition to punish cheating, even to the point of hurting oneself. “What accounts for our moral dispositions?” they ask. “The answer is some combination of genes and culture. Though neither is immutable, neither is amenable to arbitrary reconstructions.”\(^\text{24}\) Boles and Gintis concluded that these insights into humans’ moral sense should be taken into account in designing programs in


a welfare state. As many polls show, people are overwhelmingly willing to help those denied basic needs through no fault of their own. But they must be assured that assistance programs do not permit, and certainly do not encourage, significant cheating. Public policy would benefit, in other words, if we designed those policies taking into account the clearer understanding we have of ourselves as a result of neo-Darwinian thinking.\textsuperscript{25}

To my mind the study of history will also benefit from the new insights. Take macro-history first. The new social Darwinism is subtler than earlier versions, but for Wright, for Jared Diamond, and for me, the overall view of history remains broadly progressive. A progressive view of course assumes that no catastrophic climate event impacts human history, like a large meteor striking the earth and dropping average temperatures fifty degrees. In an environmental catastrophe, natural or man-made, nature could trump human ingenuity permanently. But until such a catastrophe, history is broadly progressive, even though particular episodes are alternately tragic, ironic, and farcical. The achievement of the amazing levels of specialization in today’s advanced societies (i.e., modernization) is indeed the culmination of the historical process to date. That is the master narrative of human history, a narrative of great, though not always glorious, achievement. But this narrative is far different than Herbert Spencer’s. We are now well aware that modernization is not the achievement of any one culture, but a product of the interaction of people and ideas from many cultures. Competence is a necessary but not a sufficient condition for success. Contingent factors like luck and coincidence are also

\textsuperscript{25} Bowles and Gintis, 13 of 15.
part of the equation. Those who lag behind are frequently as bright and deserving as those who succeed. The race does not always go to the swift. Nor does progress come without costs, for in the crush of modernization much is lost. Often the losses are poignant and cruel. Above all there is no place in this version of the narrative of human history for expressions of the ultimate superiority of any one nationality, ethnic group, or religious tradition. There are only the cautionary tales of self-defeating cultural arrogance and parochialism.

The application to macro history of an evolutionary view with its origins in nature is fairly easy. Natural history is the ultimate Big History. But what of applying neo-Darwinian thinking to micro history, to the life of a specific individual in a particular cultural and historical context? In fact, one of the strengths of neo-Darwinian thinking is that it can help us understand some of those quirks and oddities of individual character and motivation. The work of Frank Sulloway is an example. Sulloway has used Darwinian theory to study family dynamics and the development of personality. In *Born to Rebel*, he examined the family background of many of the greatest intellectual and political revolutionaries of western culture. After having graduate students research the family lives of scores of these rebels and conservatives, Sulloway discovered that almost without exception the revolutionaries were younger siblings. Equally consistently the intellectual and political conservatives were first-borns. Sulloway concluded that the family functions something like an ecosystem, in which the thing mostly vied for by children is parental attention and approval. In a large family, the first-born child of each gender gains parental attention by a pleasing conformity and conventional ambition.
This leaves younger siblings to situate themselves psychologically in unconventional, often contrarian, ways. Thus, as is often stressed, the human family is a foundation for harmony and continuity in history, but is also an inexhaustible source of critical insights and what might be called productive alienation.

Human creative genius, the summit of human cultural achievement, would seem to be the aspect of culture least likely to operate according to biologically founded Darwinian principles. What can Darwin have to do with Mozart? Yet Dean Keith Simonton and others have shown that the Darwinian model of blind variation and selective retention has great explanatory value when applied to human genius. Simonton stresses the importance of the distinction between primary Darwinism, meaning purely the biological evolutionary process, and secondary Darwinism, which refers to use of the variation/selection model to explain growth, change and development in a wide range of areas, including human behavior and culture. Simonton considers the work of a wide rage of neo-Darwinists on human creativity and applies their models to the lives of many acknowledged geniuses, including Darwin himself. He concludes that “Darwinian theories can account not just for the origin of genius but for the origin of the Origin of Species besides.”

History is only rarely about genius and often about understanding individual’s motivation for day-to-day actions. Imaginative attempts at psychohistory have

\[\text{Simonton, 16}\]
\[\text{Simonton, 248.}\]
left many historians leary of attempting to probe too deeply into their subjects' motivation. But neo-Darwinian concepts like Hamilton’s kin-directed altruism and Trivers’ reciporical altruism provide us with exceptionally useful ways of thinking about ourselves as siblings, lovers, parents and citizens. Just as we can better understand our own intimate feelings and personal choices through neo-Darwinian thinking, we can also use the new thinking to gain insight into the people and cultures in our historical studies. In seeking to understand history and historical figures, as in trying to understand ourselves, we need all the help we can get.

Whether we are considering macro-history or micro-history, or the many levels in between, neo-Darwinism has valuable insights to contribute. All Darwinian thinking is historical in its very nature. It explains by tracing a narrative of slow change over time. Many natural and social scientists already use neo-Darwinian thought to make our world more comprehensible. Historians have been slow to do so. It is time to move beyond the notion that any application of Darwinian thinking to human history is the thin edge of racist or Western triumphalist thinking. Neo-Darwinian thought offers insights at every level of history. It is time we historians began to make better use of it.
Bibliography


