

24 Does Culture Evolve?

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The drive to describe cultural history as an evolutionary process has two sources. One from within social theory is part of the impetus to convert social studies into “social sciences” providing them with the status accorded to the natural sciences. The other comes from within biology and biological anthropology in the belief that the theory of evolution must be universal in its application to all functions of all living organisms. The social-scientific theory of cultural evolution is pre-Darwinian, employing a developmental model of unfolding characterized by intrinsic directionality, by definable stages that succeed each other, and by some criterion of progress. It is arbitrary in its definitions of progress, and has had the political problem that a diachronic claim of cultural progress implies a synchronic differential valuation of present-day cultures. The biological scheme creates an isomorphism between the Darwinian mechanism of evolution and cultural history, postulating rules of cultural “mutation,” cultural inheritance and some mechanism of natural selection among cultural alternatives. It uses simplistic ad hoc notions of individual acculturation and of the differential survival and reproduction of cultural elements. It is unclear what useful work is done by substituting the metaphor of evolution for history.

I Culture, the Two Cultures, and History

In his well-known “Two Cultures” essay C. P. Snow reported a gap between the literary and natural-scientific cultures. Acknowledging that “a good deal of the scientific feeling” is shared by some of his “American sociological friends,” Snow was well aware that there was a degree of artificiality in limiting the number of cultures to the “very dangerous” one of two. Yet, he based his binarist decision largely on the cohesion of the natural-scientific and literary communities that made of them cultures “not only in an intellectual but also in an anthropological sense.”¹ The intellectual division of labor and the development of disciplinary languages certainly seem to substantiate his reference to two incommensurate cultures. Anyone who has sat on a university committee reviewing grant proposals from, and consisting of citizens of, each of the

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cultures must have observed the pattern of who accuses whom of using jargon and be convinced that at least the academic version of Snow's gap, that between the humanities and the natural sciences, has widened into a seemingly unbridgeable abyss. It has become commonplace that the two cultures have nothing in common.

Perhaps, however, too much has been made of this abyss. Members of the literary culture, and of the humanities in general, may be appalled at the thought of scientists mucking around on cultural terrain and subjecting it to "scientific analysis." But natural scientists seem more irritated than intimidated by the apparent independence of human culture from scientific study. And social scientists expressing their discontent about being dangled over the abyss helped prompt Snow to take "A Second Look" and to acknowledge the "coming" of a "third" social-scientific culture with the potential to "soften" the communication difficulties between the other two.² Cultural anthropologists, moreover, at least those with a "scientific" rather than a "relativist" bent, could point to a long tradition in their discipline of attempting to bridge the abyss by subjecting culture and its "evolution" to scientific study.

The idea that culture evolves antedated the Darwinian theory of organic evolution and, indeed, Herbert Spencer argued in support of Darwin that, after all, everything else evolves.³ Of course, the validation of the theory of organic evolution has in no way depended on such argument by generalization. It is Darwinism that became the theory of evolution, and, standing Spencer on his head, one inspiration for theories of cultural evolution since 1859. There has been a long and bloody Hundred Years War among cultural anthropologists over whether human culture can be said to evolve, a war in which the contending parties alternate in their periods of hegemony over the contested territory. That struggle has, in part, been a philosophical consequence of a diversity in the understanding of what distinguishes an evolutionary from a "merely" historical process. In greater part, however, it can only be understood as a confrontation between the drive to scientize the study of culture and the political consequences that seemed to flow from an evolutionary understanding of cultural history.

Until the last decade of the nineteenth century, partly under the influence of Darwinism, but also as an extension of pre-Darwinian progressivist views that characterized a triumphant industrial capitalism, anthropological theory was built on an ideology of evolutionary progress. Lewis Henry Morgan's construal of the history of culture as the progress from savagery through barbarism to civilization was the model. In the 1890s Boas successfully challenged the racism and imperialism that seemed the inevitable consequences of Morgan's progressivist views and set an anti-evolutionist tone that characterized cultural anthropology until after the Second World War. Beginning with the celebration in 1959 of the hundredth anniversary of the publication of the *Origin of Species*, there was a demand from within anthropology to reintroduce an evolutionary perspective into cultural history from which it had been purged by the Boasites, a demand that was later given collateral support by the development within

biology of sociobiological theories of human nature. But again the implication that there were “higher” and “lower” stages of human culture, an implication that seemed built into any evolutionary theory, could not survive its political consequences, and so by 1980 cultural anthropology once again returned to its Boasian model of cultural change, cultural differentiation, and cultural history, but without cultural evolution.

In his Preface to the manifesto of cultural evolution *redivivus*, *Evolution and Culture*, Leslie White bitterly attacked the Boas tradition, conflating it with general creationist anti-evolutionism:

The repudiation of evolutionism in the United States is not easily explained. Many nonanthropological scientists find it incredible that a man who has been hailed as “the world’s greatest anthropologist” . . . , namely Franz Boas, a man who was a member of the National Academy of Sciences and President of the American Association for the Advancement of Science, should have devoted himself assiduously and with vigor for decades to this antiscientific and reactionary pursuit.⁴

But why does White insist, illogically and counterfactually, that a denial of cultural evolution is anti-evolutionism *tout court*? There is a hint in the word “antiscientific,” but all is explicitly revealed two pages later: “The return to evolutionism was, of course, inevitable *if . . . science was to embrace cultural anthropology*. The concept of evolution has proved itself to be too fundamental and fruitful to be ignored indefinitely by *anything calling itself a science*” (emphasis added).⁵ Thus, the demand for a theory of cultural evolution is really a demand that cultural anthropology be included in the grand twentieth-century movement to scientize all aspects of the study of society, to become validated as a part of “social science.” The issue was particularly pressing for cultural anthropologists because they were engaged in an institutional struggle for support of their research and academic prestige with members of their own academic departments who practiced the undoubtedly scientific activity of physical anthropology.

But the demand for a theory of cultural evolution also arose from among the natural sciences, particularly among evolutionary biologists for whom the ability to explain all properties of all living organisms, using a common evolutionary mechanism, is the ultimate test of the validity of their science. Ever scornful of what they acronymously dubbed the SSSM (the “standard social science model” based on Durkheim’s axiom), evolutionary biologists doubted not that the scientific analysis and understanding of the place and evolution of culture in the life history of *Homo sapiens* was properly the province of students of human evolution. The advent of culture was, after all, a biological adaptation and it must therefore be explicable by biological science. Yet a combination of two inhibiting factors kept the forays of evolutionary biologists into the cultural realm to a minimum at least from the end of World War II into the mid-1970s. These were: the close link between biologically based pseudoscientific social and cultural theories and genocide; and the lack of a properly comprehensive theory.

This latter problem, as most recent cultural evolutionists agree, was finally solved with the concluding chapter of E. O. Wilson's *Sociobiology* (1975) which provided the impetus for the latest round of attempts to subject human history to evolutionary explanation. There, Wilson sketched the certainty that, as he put it a few years later in *On Human Nature*, the appropriate instrument for closing the "famous gap between the two cultures" is "general sociobiology, which is simply the extension of population biology and evolutionary theory to social organization."⁶

While rather adamant about their scientific right to explain not just the evolution of human cultural capacities, but also cultural evolution, biologists are also rather uneasy about their self-imposed obligation to do so. For they wager the *raison d'être* of science on establishing the validity of the principle of reductionism: in order for science to remain tenable, it must have universal explanatory power; and this means "nesting" the human sciences in the great hierarchy of sciences. If evolutionary biology cannot explain human culture, then perhaps its explanations of other phenomena ought to be reexamined. Intrigued by the challenge, Wilson noted that reduction is "feared and resented"⁷ by too many in the human sciences and, in a bold Napoleonic metaphor, he sniffed "a not unpleasant whiff of grapeshot" in the thought that the applicability of sociobiology to human beings is a battle on which hangs the fate of "conventional evolutionary theory."⁸ Thrilled by the challenge and inspired by the apparent potential of the sociobiological synthesis, an increasing number of scientists attempted to build on Wilson's blueprint in order to bridge the abyss and lay claim to the territory on the other side.

Some members of the social sciences, those who preferred to be recognized as *bona fide* scientists and not just as members of a "third" culture, were meanwhile growing uneasy over the proliferation of opposing theories and models that had apparently brought the production of social-scientific knowledge to a standstill. Such social scientists began to question their own SSSM and turned increasingly to the new and seemingly infallible sociobiological synthesis for the models and explanatory mechanisms that would put their own disciplines on proper scientific footing. Alexander Rosenberg, for example, bemoans the inability of the social sciences to live up to John Stuart Mill's hope for them, namely, to be based on explanatory laws. In a telling formulation he claims that

the social sciences would be of only passing interest, only entertaining diversions, like an interesting novel or an exciting film, unless they too stood the chance of leading to the kind of technological achievements characteristic of natural science. For a social science conceived as anything less practical in ultimate application would simply not count as knowledge, on my view. And if it does not count as *knowledge*, disputes about its methods and concepts are no more important than learned literary criticism or film reviews are to our uninformed enjoyment of the books and movies we like.⁹

Rosenberg expects this to be rectified as soon as the social sciences are treated as life sciences; and he optimistically predicts that the study of human behavior, once set on a biological footing, “will admit of as much formally quantified and mathematical description as the most mathematical economist could hope for.” Against all claims for their uniqueness he insists that the traditional social sciences have been “superseded” by, and will only become truly scientific when subsumed under, sociobiology.¹⁰

More recently, anthropologist John Tooby and psychologist Leda Cosmides have also chastised the social sciences for their “self-conscious stance of intellectual autarky”; their “disconnection from the rest of science has left a hole in the fabric of our organized knowledge where the human sciences should be.” The lack of progress in the social sciences has been caused by their “failure to explore or accept their logical connections to the rest of the body of science—that is, to causally locate their objects of study inside the larger network of scientific knowledge.”¹¹

This desideratum is the cornerstone of the journal *Politics and the Life Sciences* whose editors and contributors insist that the social sciences must be nested within the life sciences. The hopes for a synthesis implicit in the journal’s name were expressed by Richard Shelly Hartigan in a flattering review of Richard D. Alexander’s *The Biology of Moral Systems* (1987). Predicting marital bliss, Hartigan confidently asserts that “the lengthy divorce of the natural from the human sciences is about to end with reunion. Though the nuptials may be delayed awhile, the parties are at least getting to know each other again more intimately.”¹² The reunion consists of articles devoted to the “Darwinian” explanation of such topics as social alienation, the nuclear arms race, the legal process, social stratification, oral argument in the supreme court, the relation between human intelligence and national power, and even feminism.¹³

These examples could be multiplied, but as this brief overview indicates, the biggest engineering project attempting to bridge the gap at least between the cultures of the natural and the human sciences over the last few decades has been initiated by natural scientists, anxious perhaps about having wagered their *raison d’être* on the success of their imperialist venture; and it has quickly drawn the participation of those social scientists optimistic about overcoming their inferiority complex and gaining respectability by grounding their own disciplines in the natural sciences. The bridge itself is the concept of “cultural evolution” whose scientific girders are the categories and explanatory laws either directly borrowed or derived from a narrowly selectionist approach to the study of biological evolution.

At the outset we must make clear what the issue of cultural evolution is *not* about. First, there is no question that culture as a phenomenon has evolved from the absence of culture as a consequence of biological change. Whether or not other primates have culture on some definition, the insectivores, from which the primates evolved, do not, so at some stage in biological evolution culture appeared as a novelty. Second, no one

challenges the evident fact that human cultures have changed since the first appearance of *Homo sapiens*, but not even the most biologicistic theory proposes that major changes within the phenomenon of culture—say the invention of an alphabet or of settled agriculture—was a consequence of genetic evolution of the human central nervous system. Human culture has had a history, but to say that culture is a consequence of a historical process is not the same as saying that it evolves. What constitutes an evolutionary process as opposed to a “merely” historical one? What explanatory work is done by claiming that culture has evolved?

Leslie White’s *cri de coeur* accusing the Boasians of aligning themselves with anti-evolutionist creationism confounds two quite different issues. The mid-nineteenth-century struggle against evolution, mirrored in modern Christian creationism, was not over whether the succession of life forms from earlier times to the present has some law-like properties that give some shape to that history. Rather it was, and remains, a denial that organismic forms have had a history at all, that there has been significant change in species and that present-day life forms arose from others quite unlike them. But on one denies that culture has had a history, that industrial production arose from societies that were at a previous time pastoralist and agricultural. Not even the most literal of fundamentalists thinks that God created the motor car on the sixth day. Ironically it is a form of traditional Christianity that simultaneously denies an intelligible history to organic life as a whole, while asserting a directionality to human history, the ascent toward final redemption from the depths of the Fall.

White’s identification of the struggle over cultural evolution with the struggle over organic evolution, if it is more than a deliberate piece of propaganda in a battle for academic legitimacy, is really a struggle over the nature of historical processes. At base, it is meant to be a rejection of the proposition that human cultural history is just one damn thing after another, claiming that, on the contrary, there is an underlying nomothetic process. But in asserting the claim that culture evolves White claimed more than what was necessary. History may indeed be law-like in some sense, but does that make a historical process evolutionary? There may be law-like constraints on historical change like Ibn Khaldun’s rule that “Bedouins can gain control only over flat territory,” but we do not therefore characterize the *Muqaddimah* as providing an “evolutionary” theory of history, any more than Hegel’s third kind of history, the Philosophical, is claimed to be a theory of evolution.¹⁴

It might be asserted that for theories to qualify as evolutionary they must consist of more than mere constraints and prohibitions; rather they must be characterized by generative laws or mechanisms whose operations produce the actual histories. But the *Muqaddimah* offers laws of the origin, transformation, differentiation, and eventual extinction of political formations: “Dynasties of wide power and large royal authority have their origin in religion based either on prophethood or truthful propaganda”; “The authority of the dynasty at first expands to its limit and then is narrowed down

in successive stages, until the dynasty dissolves and disappears"; "With regard to the amount of prosperity and business activity in them, cities and towns differ in accordance with the different size of their population."¹⁵ These are not simply empirical generalizations. Each is derived as the necessary consequence of basic properties of human motivation, just as the war of all against all is derived by Hobbes from the basic assumptions that human beings are, by nature, self-expanding in their demands and that the resources for their expansion are limited. The ease with which the concept of the "evolution of culture" has been employed in anthropology and human evolutionary biology finds no parallel in the discourse of contemporary historians. When François Furet and Mona Ozouf write, in their Preface to *A Critical Dictionary of the French Revolution*, that "ignoring the evolution of historiography means overlooking an important aspect of the event itself," they mean only that historiography has changed, that is, that it has had a history.¹⁶

It might be that "evolution" and "history" are meant to be separated by questions of scale and grain. Modes of production, familial and other group relationships, forms of political organization, levels of technology are seen as general properties of human social existence. They are also "culture" and they are said to "evolve" while spatio-temporally individualized sequences like the events in France from the Estates General to Thermidor are only instantiations of classes of cultural phenomena, schemata that are repeated in different places and at different times. So Leslie White makes the distinction between the particularity of micro (historical) events and the generality of macro (evolutionary events): "I should like to call the temporal particularizing process, in which events are considered significant in terms of their uniqueness and particularity, 'history' and call the temporal generalizing process which deals with the phenomena as classes rather than particular events, 'evolution.'"¹⁷ But if this is what is meant to discriminate evolution from mere history, then the cultural evolutionist departs radically from theories of evolution of the physical world. For Darwinism, not only organic life as a whole, but each species and each population in each species evolves. The standard model of organic evolution begins with the evolutionary forces that cause local populations to change over relatively short times, and derives the evolution of individual species in time from changes in populations that comprise them. Moreover, in its usual reductionist form, evolutionary theory explains the evolution of life as a whole as a mechanical consequence of the rise and fall of individual species. So why, if human culture evolves, has not Bedouin culture evolved, or the Middle East, or the state called Saudi Arabia?

The attempt to differentiate "cultural evolution" from "history" brings us to the edge of a different kind of abyss—one that is broader and older, though obscured by, the more visible one between the human and natural sciences. This abyss cuts across established disciplinary boundaries, and separates nomological and historical modes of explanation. Civil wars always inflict the deepest wounds. And the battles *within*

the human sciences (between historians emphasizing contingency and particularity and social scientists insisting on general laws and models) and *within* the natural sciences (between biologists who insist on the contingency, the historicity, of evolution and those who view evolution as a lawful process of selection and adaptation) are by virtue of the proximity of the antagonists frequent, intense, and have perhaps the longest lasting effects.

Snow's depiction of the abyss along disciplinary lines makes those battles appear as perhaps bitter, but nevertheless only intradisciplinary squabbles, as merely different perspectives on common problems. Yet, the cross-disciplinary affinities of "historians" versus "scientists" are nowhere more evident than in the issue that both claim as their own: that which appears to one group as "cultural evolution," to the other as "human histories." The ease, for example, with which confirmed selectionists among evolutionary biologists and those social scientists similarly concerned with explanatory laws have found common cause in the concept of cultural evolution indicates that on fundamental ontological and epistemological issues there is no abyss between them. That ease finds its counterpart in the ease with which the two authors of this essay, a historian and a geneticist, agree on a historical approach to cultural change. The differences between these two perspectives are incommensurable, not because of disciplinary boundaries, but because they involve different conceptions about the nature of "scientific" inquiry, different ontological and epistemological assumptions, and accordingly different modes of explanation.

Darwinian theorists of cultural evolution universally agree that selection is *the* explanatory law, the key to explaining all "evolutionary" or "historical" developments at any sociocultural and historical coordinates. In this way human history is reduced to a unitary process, its complex dynamics to a rather singular logic, and the particularity of historical time is reduced to "empty abstract time" (Walter Benjamin).¹⁸

We begin with different assumptions about historical objects and, accordingly, about historical time. We view historical phenomena as particulars embedded in particular sociocultural forms, each with its own systemic properties and discrete logic of production and reproduction, its own dynamics of stasis and change. Each sociocultural form therefore has, to borrow an appropriate phrase from Louis Althusser, its own time and history. Because every historical phenomenon has its own particular locus in a particular sociocultural constellation with its own concrete and particular time and history, there is no one transhistorical law or generality that can explain the dynamics of all historical change. Our contention, therefore, is that cultural evolutionary theories have not been (nor will be) able to meet even their own claims to explain the past and predict the future. And this is because of the problematic assumptions about the nature of culture and the problematic conflation of historical and evolutionary processes.

II The Forms of Evolutionary Theory

Models of the evolution of phenomena are traditionally models of the temporal change in the nature of ensembles of elements. The individual elements in the ensemble can be physical objects like organisms or stars or properties like size or chemical composition or syntactic structure. So when we speak of the “evolution of human beings” we mean a change in the composition of the ensemble of physical individuals that we identify individually as human, but we can as well consider the “evolution of European painting” as a change in the ensemble of materials, techniques, subjects, and design principles that characterize the production of that art. Whether it is physical objects or attributes or artifacts, it is not any individual element, but the composition of the ensemble that is at the center of interest.

Evolutionary theories as they have been constructed for the physical world and as they have been taken over into human social phenomena can be classified according to two properties. First, they may be either transformational or variational. In a transformational theory, the ensemble of elements changes in time because each of the elements in the ensemble undergoes roughly the same secular change during its individual history. That is, the evolution of the ensemble is a result of the developmental pattern of each individual. The transformational model characterized all evolutionary theories until Darwin, and has remained the model for the evolution of the physical universe since Kant and Laplace produced the Nebular Hypothesis for the origin of the Solar System. The collection of stars in the cosmos has been evolving because every star is individually undergoing an aging process from its birth at the Big Bang, through a sequence of nuclear reactions until it exhausts its nuclear fuel and then collapses into a dead mass. It is this model that is embodied in the very word “evolution,” an unfolding or unrolling of a history that is already immanent in the object. It is a model of evolution that takes as its cause the development (*desarollo*, *Entwicklung*), the unrolling or unfolding of the predetermined fate of each element in the ensemble.

The alternative, invented by Darwin to explain organic evolution, is a variational evolutionary scheme. In variational evolution, the history of the ensemble is not a consequence of the uniform unfolding of individual life histories. Rather, variational evolution through time is a consequence of variation among members of the ensemble at any instant of time. Different individuals have different properties and the ensemble is characterized by the collection of these properties and their statistical distribution. The evolution of the ensemble occurs because the different individual elements are eliminated from the ensemble or increase their numbers in the population at different rates. Thus, the statistical distribution of properties changes as some types become more common and others die out. Individual elements may indeed change during their lifetime, but if they do, these changes are in directions unrelated to the dynamic

of the collection as a whole and on a time scale much shorter than the evolutionary history of the group. So, the developmental changes that characterize the aging of every living organism are not mirrored in the evolution of the species. Every human being may become grayer and more wrinkled with age, but the species as whole has not become so in 5 million years of evolution from its common ancestor with other primates. Organic evolution is then a consequence of a twofold process: the production of some variation in properties among individual elements followed by the differential survival and propagation of elements of different types. Moreover, the production of the variation is causally independent of its eventual fate in the population. That is what is meant by the claim that organic evolution is based on "random" variation. It is not that the changes in individual properties are uncaused, or the consequence of some force outside of normal physical events. Rather it is that the forces of change internal to organisms, leading to the production of variant individuals, are causally random with respect to the external forces that influence the maintenance and spread to those variants in the population. Many are called, but few are chosen.

The invention of the variational scheme for organic evolution, with its rigorous separation of internal developmental forces from external culling forces, is the major epistemological break achieved by Darwin. All other evolutionary schemes that had been postulated until the appearance of the *Origin* in 1859, whether of the evolution of the cosmos, of organisms, of language, or of ideas, were transformational. The Darwinian variational scheme, with its denial of the causal role of individual developmental histories was, in fact, a negation of evolution as it had previously been understood. The retention of the term "evolution" by Darwinists, while stripping it utterly of its former structural implication, has led to a considerable confusion and ambiguity in subsequent arguments about cultural evolution, for there has been no agreement among cultural evolutionists about just what sort of evolution they mean.

The choice of a transformational, developmental theory of evolution implies properties of the process that are not integral to, although they may be present in, a variational theory: directionality and staging. In an unfolding process the possibility of each successive transformation is dependent on the completion of a previous step of transformation to provide the initial state for the next change. It is not necessary that the complete unfolding be predictable from the very origin of the system because successive steps may be contingent. There may be more than one local unfolding possible from a given state, and these alternatives may be chosen, contingent on various external circumstances. Transformational theories, nevertheless, usually assume a very restricted contingency, putting very strong constraints on which states may succeed each other, and in what order. Indeed the standard theory of embryonic development which provides a metaphorical basis for developmental theories of evolution assumes that there is one and only one possible succession of states. Thus, there is one direction, or at most a few alternative possible directions of change immanent in the nature

of the objects. Directionality does not in itself imply that change is monotone or that there is a repeated cycling among states along some simple axis, yet again and again transformational theories take the form of a "Law of Increase of . . ." complexity, efficiency, control over resources or energy, of Progress itself. The task of filling in the blanks we leave to later pages. A variational theory, in contrast, does not have directionality built into it because the variation on which the sorting process operates is not intrinsically directional, and changes in the statistical distribution of types in the ensemble are assumed to be the consequence of external circumstances that are causally independent of the variation. Nevertheless, one-way directionality has penetrated Darwinism by means of a claim about natural selection. If the differential numerical representation of different types in a species occurs not by chance events of life and death, but because the properties of some organisms confer on them greater ability to survive and reproduce in the environment in which they find themselves, might there not be some properties that would confer a general advantage over most or all environments? Such properties, then, ought to increase across the broad sweep of organisms and over the long duration of evolutionary history, putting aside any particularities of history. So, for example, it has been claimed that complexity has increased during organic evolution, since complex organisms are supposed somehow to be able to survive better the vagaries of an uncertain world. Unfortunately no agreement can be reached on how to measure complexity independent of the explanatory work it is supposed to do. It is, in fact, characteristic of directionality theories that organisms are first arrayed along an axis from lower to higher and then a search is instituted for some property that can be argued to show a similar ordering.

From directionality it is only a short step to a theory of stages. Transformational developmental theories are usually described as a movement from one stage to the next in the sequence, from savagery to barbarism to civilization, from artisanal production to competitive industrial capitalism to monopoly capital. Development begins by some triggering, starting the process from its germ, but there are thought to be a succession of ordered stages through which each entity must pass, the successful passage through one stage being the condition for moving on to the next. Variation among individual entities then arises because there is some variation in the speed of these transitions, but primarily because of arrested development, the failure to pass on to the next stage. Freudian and Piagetian theories are of this nature. It should be no surprise to anthropologists that transformational evolutionary theories of culture identify present-day hunters and gatherers as being in an arrested stage of cultural evolution.

The second property that distinguishes among evolutionary schemes is the mortality of the individual objects in the ensemble. Members of the ensemble may be either immortal, or at least have potential lifetimes that are of the same order as the ensemble as a whole, or they may be mortal or at least have lifetimes significantly shorter than the

duration of the entire collection whose evolution is to be explained. The lifetime of the material universe is the same as the lifetime of the longest lived of individual stars. Individual organisms, on the other hand, invariably have their entrances and their exits, but the species may persist. The classification of an evolutionary system as either mortal or immortal is independent of whether it is transformational or variational and the construction of an evolutionary theory for a domain of phenomena—culture, for example—will require model assumptions about both of these properties. Two of the schemata are illustrated by phenomena to which the concept of evolution is commonly applied. Stellar evolution is a transformational evolution of a system composed of immortal objects; organic evolution is variational and its objects, individual organisms, are mortal. Although we do not ordinarily think of it in such terms, an example of an evolutionary process that is variational, but whose objects are immortal, is any separation of a mixture of physical materials by sieving, as for example in panning for gold. The lighter particles are washed away, leaving the flakes of gold behind so that the concentration of gold becomes greater and greater as the process continues, yet the same bits of gold are present at the end of the process as at the beginning. Pre-Darwinian theories of organic evolution were transformational, the entire species evolving as a consequence of slow directional changes in individuals who were, nevertheless, mortal.

The mortality of the individual objects in an evolutionary process raises a fundamental problem, namely, how the changes in the composition of the ensemble that occur within the lifetime of short-lived elements are to be accumulated over the long-term evolution of the group. Whether the evolution is variational or transformational there must be some mechanism by which a new generation of successors retains some vestige of the changes that occurred in a previous time. In the classical vulgar example of Lamarckian transformational evolution, if the ancestors of giraffes slightly elongated their necks to reach up into trees, all the effort would have been wasted, for after their deaths their offspring would need to repeat the process *ab initio*. Nor does the variational scheme of Darwin solve the problem. Were slightly longer-necked variant giraffes to survive better or to leave more offspring than their short-necked companions, and so enrich the proportion of the longer variant in the species, no cumulative change would occur over generations unless the bias introduced by the sieving process in one generation were somehow felt in the composition of the next. That is, it demands some mechanism of inheritance of properties, in the broadest sense. Beyond the observation that offspring had some general resemblance to their parents, neither Darwin nor Lamarck had the benefit of a coherent theory of inheritance, so they had to content themselves with a variety of ad hoc notions about the passage of characteristics, all of which had in common that the properties of individual organisms were somehow directly influenced by the properties of their biological parents at the time of conception. Theorists of cultural evolution, conscious of the need for a theory of in-

heritance, yet deprived of any compelling evidence for particular law-like mechanisms for the transgenerational passage of cultural change, are in a much more difficult position, although they do not seem to have realized it, because they do not even know whether an actor-to-actor, not to speak of a parent-to-offspring, model of the passage of culture has any general applicability.

III.A The Paradigms of Cultural Evolutionary Theory: Transformational Theories of Cultural Evolution

A remarkable feature of the history of attempts to create a theory of cultural evolution is the disjuncture between the powerful impetus given to those attempts by the triumph of Darwinism, and the form that those essays have taken until recently. Darwin's substitution of the variational scheme of evolution for a transformational one eliminated the need for the postulation of intrinsic directional forces driving the process of change and consequently avoided the need for a theory of progress. If directionality and its special variant, progress, are claimed to be features of a variational evolutionary scheme, they must be imported by means of a force not inherent in the variational process itself. If there is directionality, it must come from outside of organisms, as a claim, for example, about the nature of environments and their histories. Differential reproduction and survival of randomly generated variants contains no intrinsic direction. Developmentalist, transformational theories of evolution, in contrast, are directional by necessity because the motive mechanism is some form of unfolding of an already immanent program.

Beginning with Edward Burnett Tylor's *Primitive Culture* (1871) and Lewis Henry Morgan's *Ancient Society* (1877), cultural evolutionary theory, called forth by the historical phenomenon of Darwinism, ignored the structure of Darwinian explanation, and remained transformational for nearly 100 years. Nearly all of the theories of cultural evolution have had more in common with Herbert Spencer's *Progress: Its Law and Cause* (1857) than with Darwin's *Origin*. First, they have been dominated by notions of progress and direction. This accent on direction and progress has even been used to characterize organic evolution itself. In the most important manifesto of cultural evolutionism since its revival after the Second World War, *Evolution and Culture*, Marshall Sahlins provides a diagram of the evolution, reproduced here, not of culture, but of all animal life. Superimposed on the upward trend along the axis of "Levels of General Progress," identified by Sahlins as "general evolution," are minor diversifications within a level of progress, symptomatic of "specific evolution" (mere history, perhaps).¹⁹ While diagrams like this were icons of nineteenth-century evolutionism, notions of general progress in biology have been expunged from current descriptions of organic evolution. In the modern practice of reconstructing phylogenetic relationships, the antonym of "primitive" is not "advanced," but "derived."

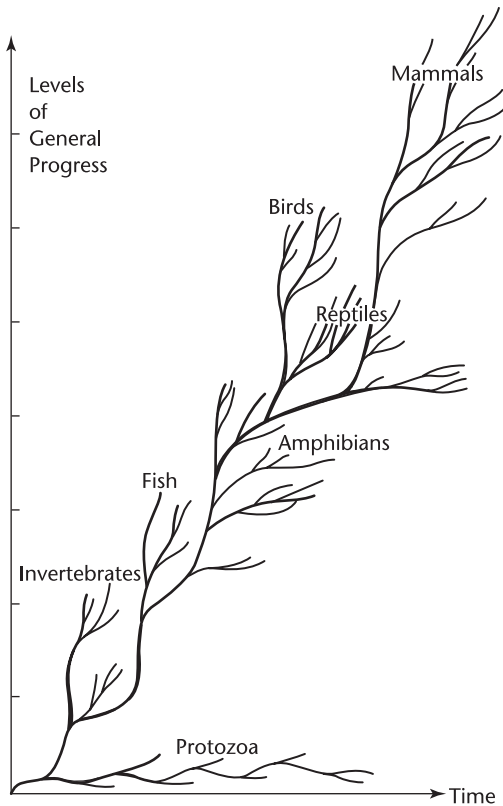


Figure 24.1

Diversity and progress among major lineages of animal life (schematized).

Second, given a commitment to directionality and progress, it then becomes necessary to decide what criteria should be used to determine progress aside from later as against earlier. In theories of organic evolution, recurrent attempts to use the notion of progress have foundered on this issue. It is clear from the fossil record that there has been no increase in the duration of species since the earliest record of multicellular organisms. Nor would anyone be so foolish as to predict that vertebrates will outlast the bacteria, should a major catastrophe overtake all of life on earth. Increasing complexity has been a favorite of progressivist theorists, both for organic evolution and for cultural and political structures, but there is no agreement among physical scientists no how complexity is to be measured and there is the recurrent danger that it will be conveniently defined, post hoc, to put *Homo sapiens* at the top. Sahlins dismisses that shibboleth of bourgeois economic theory, efficiency, as a measure on the grounds that “an organism can be more efficient than another and yet remain less

highly developed."²⁰ By more highly developed he means having more parts and subparts, more specialization of parts and more effective integration and, subserving these, the transformation of more total energy. Exactly how that cashes out in the great progress from fishes to reptiles in the diagram is not made clear. It is clear, however, what work is done in the domain of culture. Industrial capitalism certainly turns over more calories per capita than does the economy of the Yanamamo of the Orinoco rain forest, and almost any description of a European polity of 1999 will show it to have more parts and subparts with greater specialization than a fief in thirteenth-century Europe, although the question of the relative integration of feudal and bourgeois society as a whole can be debated. Nor can this characterization of an increasing level of cultural progress be attacked on the grounds that some earlier cultures, say Athenian democracy, as most would agree, were more progressive than Carolingian feudalism. The combination of general and specific evolution allows for local exceptions, especially if cultures in different parts of the world are undergoing independent evolutionary trajectories because accidents of geography prevent any effective contact between them or because catastrophic historical events have left a culture without a sufficient population to sustain it. It is only the long sweep of human cultural history that is meant to be progressive. The problem with such a theory is that it is hard to imagine any observation that could not be rationalized. The mere numerosity of the human species makes it impossible to return to feudal agricultural production, although a global nuclear war with a 95% mortality rate might do the trick. Would that be an example of specific or general cultural evolution?

Third, transformational evolution demands a mechanism, or at the very least, a set of empirical law-like regularities that are characteristic of all times and places, even if these cannot be generated from lower level mechanical principles. Transformational theories of cultural evolution, to the extent that they attempt to generate putative trends from some lower level principles at all, usually do so from middle level laws of the same ontological status as Ibn Khaldun's generative rules, rather than deriving them explicitly from properties of human beings and their consequent interactions in assemblages, as Hobbes did. *Evolution and Culture* provides a "Law of Cultural Dominance" that assures that more advanced cultures will spread and replace the less advanced when they come in contact, and a "Law of Evolutionary Potential" that asserts that the more specialized and adapted to local circumstances a culture is, the less likely it is to progress to a higher stage. Beyond appealing to the reasonable notion that cultures that control more energy are likely to take over those that control less, provided they do not destroy themselves in the meantime, and the rather more ideological prejudice that progress comes from struggle, no lower level mechanisms are adduced that generate these laws.

Although transformational theories do not have carefully articulated lower level mechanisms providing the mediation for the law-like higher level properties that are

claimed, there is general agreement on elements that would go into such a theory of mediation. Human beings have certain properties:

1. They have great physical power to alter their surrounding circumstances;
2. They have self-reflexive consciousness so they can assess and react to their own psychic states;
3. They can imagine and plan what does not yet exist, so they can invent novelties;
4. They have a recursive linguistic function that allows them to communicate complex hypothetical structures and causal assertions;
5. They are always born and develop psychically in group contexts.

These properties are sufficient to allow groups of human beings to generate a variety of artifacts, activities, and group relations, to decide how well these satisfy their physical and psychic desires, to consciously plan and alter their activities and beliefs, and to pass information about these activities and beliefs between individuals and across generational boundaries, and they generate the possibility of coercing or convincing other groups to adopt particular patterns of activity.

The problem with this list of properties of human beings and the powers that derive from them is that they contain no assertions about the nature of the transformation of individual properties into group properties and structures, or the way in which individuals are transformed by the group, or the manner in which group properties have their own dynamic relationships. That is, there is no social theory or psychosocial theory. Of course, a completely atomistic and reductionist evolutionary theory would not require such a social theory, but no transformational theory of cultural evolution denies the relevance of social and psychosocial causes. There is simply no agreement on what these are or how they would generate the “laws” of directionality and progress. It has remained for variational theories of cultural evolution to play the reductionist game.

III.B The Paradigms of Cultural Evolutionary Theory: Variational Theories of Cultural Evolution

Variational models for cultural evolution have appeared in the last twenty years as a concomitant of the invention of sociobiology and its transformation into evolutionary psychology. It was the intention of sociobiology to give an orthodox Darwinian explanation of the origin of major features of human culture like religion, warfare, family structure, and so on, as manifestations of the higher reproductive rate of individuals with certain behavioral properties, but not to explain changes that have occurred in the forms of those phenomena during the process of human history. Indeed, the chief evidence offered for the origin of these features through biological, genetic evolution was precisely that they were universal. All human cultures have religion, all engage in warfare, and E. O. Wilson claimed that male domination in society would persist indef-

initely.²¹ The ambition to extend classical Darwinism to the explanation of all aspects of species life, including species social behavior, resulted in an immense popularity of adaptive evolutionary thinking in fields like economics, political science, and psychology that were in search of more “scientific” explanatory schemes. One result of this intellectual fashion was, ironically, the creation of formal Darwinian models of differentiation and temporal change of social institutions, but without the biological genetic content of organic evolution. It is important to stress that Darwinian theories of the evolution of human cultural diversity in time and space are emphatically not theories that this diversity is based in genetic differences and that genetic evolution is at the base of the change from agricultural to industrial societies, or the development of the centralized state. Instead, a variety of theories of cultural evolution have been created that are *isomorphic* with the skeletal structure of Darwinian evolutionary theory, substituting for its various concrete biological elements analogical features from culture.

The skeletal structure of the Darwinian variational scheme for organic evolution consists of three assertions:

1. Individual organisms within populations vary from one another in their characteristics. This variation arises from causes within organisms that are orthogonal to their effects on the life of the organism (The Principle of Random Variation).
2. Offspring resemble their parents (and other relatives) on the average more than they resemble unrelated organisms (The Principle of Heredity).
3. Some organisms leave more offspring than others (The Principle of Differential Reproduction). The differential reproduction may be a direct causal consequence of the characteristics of the organism (natural selection), or it may be a statistical variation that arises from purely random differential survival. This latter possibility is often ignored in vulgar expositions of Darwinian evolution, and all changes are ascribed to natural selection, but it is now certain that a great deal of evolution, especially molecular evolution, is a consequence of stochastic variations in reproduction.

If there is no variation among organisms, then even if different individuals leave different numbers of offspring, nothing will change. If there were no heredity of characteristics, then even if different organisms left different numbers of offspring, there would be no effect on the characteristics of the next generation. Finally, if different organisms all left exactly the same number of offspring no change would be expected in the composition of the population. In order to produce a scheme of cultural evolution that is isomorphic with the Darwinian variational structure there must be analogs of its elements.

The production of those analogs has occupied a great many people in a variety of disciplines over the last few decades. With so many competing models produced, it is hardly surprising that there is a great deal of spirited debate among the authors of the

large and expanding literature on cultural evolution.²² But however full of sound and fury, this debate is essentially an intramural affair. For beneath all the differences in details, there is a paradigmatic unity among Darwinian theories of cultural evolution based on the assumption that cultural evolution can and must be explained in terms isomorphic with the three principles of Darwin's variational scheme. Before they can proceed with that explanation, however, cultural evolutionists undertake a clean-up project, accomplished through sleights of conceptual hand, that clears away anything between the "biological" and the "cultural" that might have a constitutive effect in the production and "evolution" of cultural forms. This entails first of all the disappearance of the social or, at least, depriving the social of causal efficacy, and then the neutralizing of culture.

The easiest way to make society disappear is simply to dissolve it by definitional fiat into a mere population. E. O. Wilson, for example, writes: "When societies are viewed strictly as populations, the relationship between culture and heredity can be defined more precisely."²³ Robert Boyd and Peter Richerson state rather categorically that "cultural evolution, like genetic evolution in a sexual species, is always a group or population phenomenon"; and in a later work: "because cultural change is a population process, it can be studied using Darwinian methods."²⁴ A more nuanced way of dissolving society into a collection of atomistic individuals is to create a choice between two extreme alternatives. Melvin Konner, for example, correctly rejects the society-as-organism metaphor by contrasting the cell that is devoted "entirely to the survival and reproduction of the organism" with "the purposes of the individual human [that] are wedded to the survival and reproduction of the society only transiently and skeptically." But he overdraws the consequences of this obvious insight and concludes that evolution "has designed the individual with a full complement of independence and a canny ability to subvert, or at least try to subvert, the purposes of society to its own. Every time a human being gets fed up with his or her society or church or club or even family, and voluntarily changes affiliation, we have another factual disproof of the central metaphor of social and political science."²⁵ Here he assumes that the repudiation of the obviously false metaphor of society as organism is a justification for an equally obviously false atomistic individualism that renders society a mere population.

However accomplished, the dissolution of societies into populations or, as in more nuanced approaches, the reduction of differential social power to the status of a subordinate variable,²⁶ precludes the possibility that social systems might have properties unique to them as organized systems, that is, that social relations might be characterized by structures of unequal power that affect individual social behavior and the fitness of cultural traits. This dissolution means, in turn, that social hierarchy and inequality are explained as just the consequence of the differential cultural fitness of individuals or of the cultural traits they bear, rather than, say, as a consequence of antagonistic and exploitative social relations.²⁷

Having taken the crucial preliminary step of dissolving society, the next step is, perhaps surprisingly, to neutralize culture as well. In order to qualify as an instance of a variational theory of evolution, culture must be proven to consist of isolatable, individual entities, and to be only the sum of its parts. It is thus necessary to refute any and all claims that cultures have unique and discrete properties and a system-specific logic that require them to be analyzed each on its own terms. This is sometimes done by definitional fiat aimed at another superorganismic straw man. E. O. Wilson, for example, insists that “cultures are not superorganisms that evolve by their own dynamics.” Culture, concurs Jerome Barkow, “is not a ‘thing,’ not a concrete, tangible object. It isn’t a cause of anything. To describe behaviour as ‘cultural’ tells us only that the action and its meaning are shared and not a matter of individual idiosyncrasy.”²⁸

The definitional fiats that posited population-like models of culture received at least two slight challenges. Discontent with an excessively atomistic view of culture, Bernardo Bernardi, for example, constructs a constellation of “anthropemes” consisting of “ethnemes,” themselves subdivided into “idioethnemes” and “socioethnemes”; and Martin Stuart-Fox divides memes into mentemes.²⁹ Though these attempts appear to reject the notion of isolated, individual memes and to aim at systematic complexity, they fall short. Tellingly, in suggesting the division of the meme into mentemes, Stuart-Fox quite consciously attempted to construct a categorial analogy with modern linguistic terminology. But he did not follow up this overture and consider Saussure’s fundamental insight on which modern linguistics is based, namely that meaning is system-specific, that each term (sign) acquires its historically-specific meaning by virtue of its place within a discrete set of differential relations. By neglecting this insight, attempts such as Stuart-Fox’s and Bernardi’s focus only on the aggregate rather than the systemic. Only additive in method, they treat memes as aggregates of smaller entities, as cultural molecules composed of cultural atoms—which effects only a slight displacement of their ontological individualism, reproducing it at the level of compounds.

Coevolutionists have also made overtures to the systemic character of culture by removing it from a tight genetic leash and insisting that culture evolves relatively autonomously on its own cultural track. But regardless of the number of evolutionary tracks advocated, all theories of cultural evolution pay only lip service to the complexity of culture: because they persist in treating culture as merely the sum total of individual cultural units at a given stage in the selection process, as a kind of “state of the ‘memes’” at a given point in time, they deny culture any system-specific characteristics; and this, in turn, allows all cultures to be explained according to the same (transhistorical and therefore ahistorical) selectionist logic.

With society and culture reduced to mere aggregates and deprived of any systemic and system-specific characteristics, the ground is prepared for the construction of a scheme of cultural evolution that is isomorphic with the Darwinian variational

structure. This, as mentioned above, requires the construction of cultural analogs to the three fundamental principles of the Darwinian variational scheme.

First, a decision has to be made about the Principle of Random Variation, about the identity of the objects that have variation, heredity, and differential reproduction. Are these objects individual human beings who are the bearers of different cultural characteristics and who pass on those characteristics to other human beings by various means of social and psychological communication, and who have differential numbers of cultural “offspring”? This is the approach generally favored by those focusing on behavior and defining cultural in behaviorist terms. Or are they the characteristics themselves with properties of heredity and differential reproduction? This is the more common approach in recent years, especially among the “coevolutionists” who have taken an “ideational” view of culture using so-called “trait-based” models of the evolutionary process. An example of the former is Cavalli-Sforza’s and Feldman’s theory of cultural transmission, while Dawkins’s “memes” are an example of the latter.³⁰

Either way, a fundamental problem results from the assumption that these cultural units, say the idea of monotheism, or the periphrastic “do,” somehow spread or disappear in human populations, namely: no theory of cultural evolution has provided the elementary properties of these abstract units. Presumably they are mortal and so need rules of heredity. But, for a variational theory, it must be possible to count up the number of times each variant is represented. What is the equivalent for memes of the number of gene copies in a population? Perhaps it is the number of individual human beings who embody them, but then the death of a human carrier means the loss of a meme copy and so memes do, after all, have the problem of heredity. A major problem of creating a variational theory of cultural evolution is that the task of building a detailed isomorphism has not been taken seriously enough.

Once the individual units are settled upon, little time is spent determining the sources of variation in those units, the “cultural analogs of the forces of natural selection, mutation, and drift that drive genetic evolution.”³¹ Following a quick definitional determination of the sources of variation—randomness and drift, selection, and perhaps the addition of a uniquely cultural source such as intentionality—the next step is to find the cultural analogs to the Principle of Heredity.

Most cultural evolutionists simply accept as given that culture is a system of heredity or at least of unidirectional transmission. Boyd and Richerson state axiomatically that “Darwinian methods are applicable to culture because culture, *like genes*, is information that is transmitted from one individual to another” (emphasis added). In a later essay they turn inheritance into the defining characteristic of cultural evolutionary theory: “The idea that unifies the Darwinian approach is that culture constitutes a system of inheritance”; and after a brief discussion that moves from inheritance through the “population-level properties” of culture that makes it “similar . . . to gene pools,” they

conclude that "because cultural change is a population process, it can be studied using Darwinian methods."³²

To be sure, however, Boyd and Richerson spoke a bit too inclusively. While some cultural evolutionists use "inheritance" and "transmission" interchangeably, others are uneasy about the genetic and parental overtones of "inheritance" and prefer "transmission." But both terms refer to a process of descent that occurs in the same unidirectional manner between an active donor and a passive recipient. The semantic advantage of "transmission" is that it drops the genetic connotational baggage of "inheritance" while preserving the portrayal of cultural change as a unidirectional process of descent with modification and selection.

Whether conceptualized as "heredity" or "transmission," however, the problematic issue is that both terms require the establishment of some laws of the heredity of units or their characteristics if human individuals are the units. We then require the details of the passage of culture to new individuals, by analogy with the Mendelian mechanism of the passage of genetic information from parent to offspring by way of DNA. In making this analogy, however, the biological model implies constraints that have not been apparent to cultural evolutionists. We say that parents "transmit" their genes (or at least copies of their genes) to their offspring, so models of cultural evolution begin with models of the "transmission" of cultural traits from one set of actors to others by analogy with the transmission of genes. Parents may transmit traits to their children, or teachers to their pupils, or siblings and other peers to each other by a variety of simple rules. The outcomes of evolutionary models of this kind turn out to be extremely sensitive to the postulated rules of transmission, and since there is no firm basis on which to choose the rules, almost anything is possible. But there is a deeper problem. Is culture "transmitted" at all? An alternative model, one that accords better with the actual experience of acculturation, is that culture is not "transmitted" but "acquired." Acculturation occurs through a process of constant immersion of each person in a sea of cultural phenomena, smells, tastes, postures, the appearance of buildings, the rise and fall of spoken utterances. But if the passage of culture cannot be contained in a simple model of transmission, but requires a complex mode of acquisition from family, social class, institutions, communications media, the work place, the streets, then all hope of a coherent theory of cultural evolution seems to disappear. Of course, it was simpler in the Neolithic, but there was still the family, the band, the legends, the artifacts, the natural environment.

Some dissenters present serious challenges to the inheritance/transmission model even though they remain faithful to its explanatory principle. Martin Daly questions the value of the inheritance model because he finds no cultural analog to the gene, because cultural traits "are not immutable" like genetic traits, because cultural "transmission need not be replicative," because the recipients are not "simply vessels to be

filled,” and because “social influence” makes the processes of cultural change less regular than is implied by the term “transmission.”³³ Though Daly and others raise perfectly legitimate and very important questions about inheritance and transmission analogies, they deprive their insights of real force by still maintaining that cultural change is a process that can and must be explained in terms isomorphic with “the evolutionary model of man.”³⁴

This assumption brings us to the third analogical element in theories of cultural evolution, the Principle of Differential Reproduction. Whether they define the units as cultural atoms or cultural molecules, whether they speak of cultural change as inheritance, or of transmission to passive recipients or to active acquirers, they all insist that cultural change is a process of *descent* with modification; and as such it has all the attributes of a variational evolutionary process eligible for Darwinian, that is, selectionist explanation. To all cultural evolutionists may be extended that which Martin Stuart-Fox said of himself, namely that they “*take for granted* (a) the scientific status of the synthetic theory of evolution and (b) that this theory provides *the most likely model* on which to base a theory of cultural evolution” (emphasis added).³⁵

However, the forces that cause the differential passage of culture across generations and between groups seem not to be encompassed by the reductionist model in which individual actors have more cultural offspring by virtue of their persuasiveness or power or the appeal of their ideas, or in which memes somehow outcompete others through their superior utility or psychic resonance. Atomistic models based on the characteristics of individual humans or individual memes can be made, but they appear as formal structures with no possibility of testing their claim to reality. How are we to explain the disappearance of German and French as the languages of international scientific discourse, and their universal replacement by English without terms like “Nazi persecution of Jews,” “industrial output,” “military power in the Cold War,” or “gross national product.” That is, no variational theory of cultural change can be adequate if it attempts to create a formal isomorphism with Darwinist individualism.

Historical, political, social, and economic phenomena, in short, must be dismantled in order to be molded into the raw material for selectionist theories of cultural evolution. This is effected through the dissolution of social systems with structural asymmetries of power into individuals; and through the reduction of cultural systems to eclectic aggregates of differentially reproduced memes. This dual process strips historical phenomena of their sociocultural particularity. Once transformed in this way, they may be subjected to nomological explanation as individual instances of the exogenous, because transhistorical, law of selection. Even the recognition given by William Durham and others to the systemic character of culture and to the possibility that social asymmetries of power might affect cultural transmission and fitness are drained of content by the fundamental assumptions of the cultural evolutionist paradigm: the definition of culture as an aggregate of individual, heritable units and the selectionist

explanation of its evolution. And in these assumptions lies the self-validating circularity of cultural evolutionary theories: selectionist explanation requires individual, heritable units of culture; and reduction of culture to an aggregate of such units renders it susceptible to selectionist explanation—whose scientific status had been taken for granted from the very beginning.

As its etymology suggests, any “theory” is a way of looking at the world, and what one sees is that which is visible through one’s particular set of theoretical lenses. Cultural evolutionary theories, however, base (and wager) their claim to break through all theoretical biases and to attain scientific status on their verifiability, their ability to postdict past and predict future cultural evolution. If, with the emergence of the hegemony of the physical sciences, the cornerstone of a scientific theory has been the elimination of the historical, its touchstone has been its predictive capacity—a matter that cultural evolutionists address with increasing confidence.

We have already encountered Alexander Rosenberg’s optimism about the use of mathematical models in the new sociobiologically based social sciences and his confidence in their predictive capacities.³⁶ The same optimism is prevalent among the contributors to *Politics and the Life Sciences* who are convinced that the predictive powers of the new evolutionary political science will render it capable of informing policy decisions. Certain that Darwinian models of cultural evolution can produce “a useful retrodiction of ethnography,” Lumsden and Wilson were somewhat circumspect, anticipating only predictions of “short term changes in the forms of ethnographic distributions.” Nevertheless, they remained—and Wilson has become ever more—optimistic that “the history of our own era can be explained more deeply and more rigorously with the aid of biological theory,” and that this approach might enable us to look “down the world-tube of possible future histories.”³⁷ Similarly, Boyd and Richerson quickly overcame their initial caution to assert that “Darwinian models can make useful predictions.”³⁸

Though they wager the validity of their theories on their predictive capacities, theorists of cultural evolution rig the explanatory game in a variety of ways. One is by covering all bets. This can be done by playing with probabilistic explanations. In the gambling hall, probabilities only provide the odds, but probabilistic predictions of cultural evolution are guaranteed winners, since they encompass all possibilities. Because, for example, of our evolved capacity to reason we could be soberly advancing down the road towards wisdom, courage, and compassion; or because of our innate capacity for aggression we could be headin’ for nuclear armageddon—or anything in between. Or it can be done by constructing a historical analog to random drift in theories of biological evolution—the catch-all explanation of that which cannot be subsumed under selection.

A second way to rig the game is with postdictive readjustment. The cultural evolutionist, like the economist, is “an expert who will know tomorrow why the things he

predicted yesterday didn't happen today."³⁹ The gambler's losses might be recouped in a later game, but cannot be undone. But in cultural evolutionary explanation and prediction, the game may be replayed indefinitely until the model is successfully readjusted. Combined with probabilistic explanations, postdictive readjustment renders the model invulnerable by disarming its weaknesses.

The irony here is that the constant recourse to postdictive readjustments brings the science of cultural evolution into the neighborhood of "just plain history"—almost. The difference is that the faith in the scientific status of the law of selection erects a third safeguard for theories of cultural evolution. This belief precludes as "not scientific" any non-evolutionary, that is, historical, explanation of cultural change. But because cultural evolutionary theories are based on a unitary, transhistorical principle, they produce explanations that are too broad to be either falsifiable or explanatory.

Historians, cultural evolutionists argue, are too close to the fray, and their time scales too short—which leads them into all kinds of unimportant detours and false starts that appear to the historical eye as enterprises of great pith and moment. To gain proper perspective, therefore, cultural evolutionists draw back, occasionally indulging in imaginary space travel, in order to attain a sufficiently distant viewpoint from which to view the human species as one among many and to avoid the "anthropocentrism" that would exempt culture (a biological adaptation) from biological explanation. But distance can also be deceiving.

From their distant viewpoint cultural evolutionists willingly see only the broad patterns of cultural evolution, and ignore the inconvenient and contingent details of history that do not fit into those patterns. This conscious oversight produces theories of cultural evolution that are explicitly or implicitly progressivist: since culture is a successful and cumulative adaptation that breaks free of natural selection, the more culture, the better for human welfare and survival. This linear logic points to the contemporary West with the most advanced level of science and technology (the ultimate cultural adaptations insuring human welfare and survival) as the current pinnacle of cultural evolution. But the road to modern Western civilization has taken a series of abrupt and thoroughly unpredictable turns. What general theory of cultural evolution could postdict the collapse of the Roman Empire and the "Dark Ages"? Or the emergence on a distant frontier of the Eurasian landmass of a new geo-cultural entity, a "continent" called Europe? Or that in a very brief historical time span this new culture would overtake much more advanced Asian cultures and establish itself as the most powerful and dominant in the world, with one of its tiny "populations," the English, having acquired an empire on which the sun never set? But the result of all those unpredictable turns, the late modern West, which should be the pinnacle of cultural evolution, has been the epitome of barbarism (which only a small group of *fin de siècle* artists and intellectuals, members of the "literary culture," suspected).

From their distant viewpoint, cultural evolutionists may ignore acts of barbarism in Western history like the genocide of Native Americans or the Nazi Holocaust as just specks of dust on the plain of history, momentary aberrations irrelevant to the question of cultural evolution. Alternatively, they may subject both to the same explanatory principle as just two examples of human aggression explained through some selectionist variation or combination of inclusive fitness, innate aggression, the stress of overpopulation, and/or the need for *Lebensraum*. But to explain the character, causes, and consequences of these two forms of genocide according to the same trans-historical principle would lead to a gross misunderstanding of each and would tell us little about their historically and politically significant differences. Such an approach, for example, is far too broad either to postdict the success of Nazism or to predict the ongoing consequences of the Nazi period, of the historical memory that continues to affect significantly the history not only of Germany and Europe, but also of the Middle East. Whether they forcibly subsume disparate historical phenomena under a trans-historical explanatory principle or write off as mere contingencies historically significant events that cannot be so subsumed, cultural evolutionary theories cannot answer the many crucial questions pertaining to the particularity, the uniqueness, of all historical phenomena. In failing to live up to their own claims to be able to explain history, including that of our own era, “more deeply and more rigorously,” cultural evolutionary theories also fail to live up to their further claim to explain history more “usefully”—to explain Nazism, for example, with sufficient precision to prevent its recurrence and to develop appropriate policies to deal with its consequences.

It is therefore no use to fall back on yet another safeguard, the claim that the field is still young, the models are still being built, and one day. . . . The problem is more serious than “not yet enough time.” Cultural evolutionary theories are carefully constructed, logically consistent, and very neat. Their neatness, however, is achieved either by dismissing as inessential to cultural evolution the contingencies that are so essential to historical change or by subsuming them to a single transhistorical principle of explanation. But this formulaic treatment is fully inappropriate to the labyrinthine pathways, the contingent complexity, the many nuances, and general messiness of history. And it results in linear explanations that approach closely enough to history to allow the distant observer to mistake proximity for causality. These analytical lines, however, are actually false tangents—briefly nearing, but never touching, the contours of history.

We conclude, finally, by returning to the question of whether any useful work is done by considering cultural evolution as distinct from the history of human societies. Transformational theories of cultural evolution have the virtue that they at least provide a framework of generality with which to give human long-term history the semblance of intelligibility. But the search for intelligibility should not be confused with the search for actual process. There is no end of ways to make history seem orderly.

Variational isomorphisms with Darwinian evolution suffer from the inverse problem. Rather than being so flexible as to accommodate any historical sequence, they are too rigid in structure to be even plausible. They attempt to mimic, for no reason beyond the desire to appear scientific, a theory from another domain, a theory whose structure is anchored in the concrete particularities of the phenomena that gave rise to it.

Notes

1. C. P. Snow, *The Two Cultures and a Second Look* (Cambridge, Eng., 1964), 8–9.
2. *Ibid.*, 70.
3. Herbert Spencer, *The Principles of Biology* [1867] (New York and London, 1914), 432–433.
4. Leslie White, Preface to *Evolution and Culture*, ed. Marshall Sahlins and Elman Service (Ann Arbor, 1960), v.
5. *Ibid.*, vii.
6. E. O. Wilson, *On Human Nature* (Cambridge Mass., 1978), x.
7. *Ibid.*, 13.
8. *Ibid.*, 34.
9. Alexander Rosenberg, *Sociobiology and the Preemption of Social Science* (Baltimore, 1980), 22–23.
10. *Ibid.*, 4, 158.
11. Leda Cosmides and John Tooby, “The Psychological Foundations of Culture,” in *The Adapted Mind*, ed. Jerome H. Barkow, Leda Cosmides, and John Tooby (Oxford, 1992), 22–23.
12. Richard Shelly Hartigan, “A Review of *The Biology of Moral Systems*” by Richard D. Alexander, in *Politics and the Life Sciences* 7, no. 1 (1988), 96.
13. See for example the following essays, all from *Politics and the Life Sciences*: Elliot White, “Self-selection and Social Life: The Neuropolitics of Alienation—The Trapped and the Overwhelmed” (vol. 7, no. 1, 1989); John H. Beckstrom, “Evolutionary Jurisprudence: Prospects and Limitations on the Use of Modern Darwinism Throughout the Legal Process” (vol. 9, no. 2, 1991); Lee Ellis, “A Biosocial Theory of Social Stratification Derived from the Concepts of Pro/Anti-sociality and r/K Selection” (vol. 10, no. 1, 1991); Hames N. Schubert *et al.*, “Observing Supreme Court Oral Argument: A Biosocial Approach” (vol. 11, no. 1, 1992); Larry Arnhart, “Feminism, Primatology, and Ethical Naturalism” (vol. 11, no. 2, 1992).
14. Ibn Khaldun, *The Muqaddimah* (Princeton, 1958), chapter 2: 24.
15. *Ibid.*, chapters 3: 3, 3: 46, 3: 11.
16. *A Critical Dictionary of the French Revolution*, ed. François Furet and Mona Ozouf (Cambridge, Mass., 1989), xvi.

17. Leslie White in *Social and Cultural Evolution*, volume III: *Issues in Evolution*, ed. S. Tax and C. Callender (Chicago, 1960), Panel 5.

18. In the introduction to a collection of essays on *History and Evolution*, ed. Matthew Nitecki and Doris Nitecki (Albany N.Y., 1992) Matthew Nitecki states categorically: “The common element of evolutionary biology and history is the concept of *change over time*” (6). Despite great differences in their definitions of the relation between biology and history, all authors included in the volume (and probably all cultural evolutionists) share Nitecki’s definition of history as change over time. This definition allows them to elevate history to scientific status and to subject history to evolutionary explanation, as do, for example, Boyd and Richerson in their categorical claim that “Darwinian theory is both scientific and historical” (in Nitecki, 179–180). While there are many problems with defining history simply as change over time, we will only make two comments here: this definition almost inevitably results in treating people living in societies in which change is not the norm as people without history; and once change is defined as a transhistorical constant, it is very likely, though not logically necessary, that the next step will be to seek a transhistorical explanatory law—which for cultural evolutionists is that of selection.

19. *Evolution and Culture* is the work of four authors, each of whom contributed a chapter to the volume: Thomas Harding, David Kaplan, Marshall Sahlins, and Elman Service. The most influential of these has been Sahlins’s “Evolution: Specific and General.” Sahlins’s approach to culture has, of course, evolved considerably since 1960.

20. M. Sahlins, “Evolution: Specific and General,” in *Evolution and Culture*, ed. Sahlins and Service, 20.

21. E. O. Wilson, “Human Decency Is Animal,” *New York Times Magazine* (October 12, 1975).

22. On the basis of the two questions he asks of each cultural evolutionary theory, William Durham in *Coevolution: Genes, Culture, and Human Diversity* (Stanford, 1991) is able thoroughly to survey the cultural evolutionist plain and, in so doing, he provides a sense of its paradigmatic unity. His questions are: “Is culture a second inheritance system? What are the best units to use in the study of cultural transmission?” (155). Based on the responses, he establishes in an “approximate[ly] chronological” order (155) a tripartite division of the cultural evolutionist terrain. The earliest theories of cultural evolution tended to be “models without dual inheritance.” These conceptualize culture not “as part of the phenotype”; and they explain “phenotypic change in human populations in terms of a single fitness principle, namely, reproductive fitness in one of its guises” (155–156). Examples include: both the stronger and weaker versions of sociobiology, David Barash’s “genetic determinism,” and the “genes on a leash” model of Wilson’s *On Human Nature*. The second type, “models with dual inheritance and trait units,” also conceptualizes culture “as part of the phenotype” but views it “as a second, nongenetic inheritance system whose units are defined as culturally heritable aspects of phenotype. These units are recognized as having their own measure of fitness within the cultural system [i.e. ‘cultural fitness’]. . . . The differential transmission of traits or behaviors within a population constitutes cultural evolution” (156). Examples are: Cavalli-Sforza’s and Feldman’s cultural transmission model, Richard Alexander’s social learning model, Lumsden’s and Wilson’s gene-culture transmission model, and his own early coevolution model. The third type is “models with dual inheritance and ideational units.” These

also treat culture “as a separate ‘track’ of informational inheritance,” but they focus not on phenotypical traits, but the differential transmission of ideas, values, and beliefs in a population” (156). Examples include: Albert G. Keller’s social selection model, H. Ronald Pulliam’s and Christopher Dunford’s “programmed learning model,” Boyd’s and Richerson’s “Darwinian culture theory,” and Durham’s own book, *Coevolution*. The “evolution” of theories of cultural evolution has, as Durham indicated, roughly followed the sequence of his types: from behavioral to (Clifford Geertzian) ideational definitions of culture and from single inheritance, culture-on-a-genetic-leash models to dual inheritance models. This evolution resulted from dissatisfaction with single inheritance models for tying culture to a short genetic leash, and with behavioral definitions of culture for their unreliability, the impossibility of knowing precisely which meme motivates a given behavior.

23. Wilson, *On Human Nature*, 78.

24. Robert Boyd and Peter Richerson, *Culture and the Evolutionary Process* (Chicago, 1985), 292; and “How Microevolutionary Processes Give Rise to History” in *History and Evolution*, ed. Nitecki and Nitecki, 181.

25. Melvin Konner, *The Tangled Wing: Biological Constraints on the Human Spirit* (New York, 1982), 414.

26. Unaware of the implications of their reduction of societies to populations, Boyd and Richerson, much to their surprise, found themselves criticized by David Rindos (“The Evolution of the Capacity for Culture: Sociobiology, Structuralism, and Cultural Selectionism,” *Current Anthropology* 27 [1986], 315–316) and William Durham (*Coevolution*, 179ff.) for not having adequately addressed the social. In their direct response to Rindos (included in Rindos, 327), Boyd and Richerson claim, correctly, that they spent an entire chapter of their *Culture and the Evolutionary Process* on “the scale of human social organization,” implying, incorrectly, that therewith the matter was resolved. That chapter first develops a taxonomy of biases (direct, indirect, and frequency dependent) and then constructs models to analyze how the frequency of these biases affects the transmission of culture. Though such biases certainly affect social behavior, their origins and persistence are nowhere discussed. Consequently, they end up explaining how social biases affect individual choice by transforming clichés into explanatory principles: “When in Rome, do as the Romans do” becomes the law of “frequency-dependent bias” (286) and “keeping up with the Joneses” the law of “indirect bias” (287). The questions of whether all Romans do as some Romans do or of whether keeping up with the Joneses makes sense in societies not based on commodity production and exchange are crucial questions that disappear in their biases.

Durham makes perhaps the most concerted effort to consider asymmetries of social power and the “imposition” of group values on individual “choice” (*Coevolution*, 198–199). He identifies “reference groups” within a given population, thereby acknowledging “the simple fact that cultural evolution is an intrinsically political process” (211). Because he does not ask the essential questions of why particular “reference groups” exist and what is the distinctly and discrete social logic behind particular asymmetries in group power, Durham can only treat any particular set of reference groups and social asymmetries of power as arbitrary and subordinate variable factors affecting individual choice, rather than as constitutive factors of social and cultural forms and their “evolution.”

27. The most perspicacious critic of theories that reduce societies to populations was Karl Marx. The hallmark of political economy and the source of its errors, Marx argued, was that it took as its starting point the population without having determined the components of the populations, its "subgroups" or classes *and* the logic of their internal relations. Such an approach would produce not "a rich totality of many determinations and relations," but "ever thinner abstractions" and "a chaotic conception of the whole" (*Marx-Engels Reader*, ed. Robert Tucker [New York, 1978], 237). Or as he later summarized it more succinctly: "[s]ociety does not consist of individuals, but expresses the sum of interrelations, the relations within which these individuals stand" (247). The analysis of a society reveals much about its population, but the converse is not necessarily true.
28. E. O. Wilson, *On Human Nature*, 78; Jerome Barkow, *Darwin, Sex, and Status: Biological Approaches to Mind and Culture* (Toronto, 1989), 142.
29. Bernardo Bernardi, "The Concept of Culture: A New Presentation" in *The Concepts and Dynamics of Culture*, ed. Bernardo Bernardi (The Hague, 1977); Martin Stuart-Fox, "The Unit of Replication in Socio-cultural Evolution," *Journal of Social and Biological Structures* 9 (1986), 67–90.
30. L. L. Cavalli-Sforza and M. W. Feldman, *Cultural Transmission and Evolution: A Quantitative Approach* (Princeton, 1981); Richard Dawkins, *The Selfish Gene* (New York, 1976).
31. See Cavalli-Sforza and Feldman, *Cultural Transmission and Evolution*, 10; Boyd and Richerson, *Culture and the Evolutionary Process*, 8ff, and "How Microevolutionary Processes Give Rise to History," 182.
32. Peter J. Richerson and Robert Boyd, "A Darwinian Theory for the Evolution of Symbolic Cultural Traits," in *The Relevance of Culture*, ed. Morris Freilich (New York, 1989), 121; Boyd and Richerson, "How Microevolutionary Processes Give Rise to History," 181.
33. Martin Daly, "Some Caveats about Cultural Transmission Models," *Human Ecology* 10 (1982), 402–404.
34. *Ibid.*, 406. See also David Hull, "The Naked Meme," in *Learning, Development, and Culture: Essay in Evolutionary Epistemology*, ed. H. C. Plotkin (Chichester, Eng., 1982); H. Kaufman, "The Natural History of Human Organizations," *Administration and Society* 7 (1975); Timothy Goldsmith, *The Biological Roots of Human Nature: Forging Links Between Evolution and Behavior* (New York, 1991).
35. Stuart-Fox, "The Unit of Replication in Socio-Cultural Evolution," 68.
36. Rosenberg, *Sociobiology and the Preemption of Social Science*, 151.
37. Charles Lumsden and E. O. Wilson, *Genes, Mind and Culture: The Coevolutionary Process* (Cambridge, Mass., 1981); 358, 360, 362. See also Wilson, *Consilience* (Cambridge, Mass., 1998).
38. Boyd and Richerson, *Culture and the Evolutionary Process*, 25; "How Microprocesses Give Rise to History," 203.
39. Laurence J. Peter, *Peter's Quotations: Ideas for Our Times* (New York, 1977), 477.