The Journal of Libertarian Studies, Vol. VIII, No. 2 (Summer 1987)

Hayek's Theory of Cultural Group Selection

by David Ramsay Steele

Institute for Humane Studies
George Mason University

Introduction

Hayek suggests that there are two ways in which we might think of society's having come to be what it is.[1] There is the "constructivist" way, social institutions having been designed for a known purpose, and an alternative, evolutionary way, analogous to Darwinian selection, "a process in which practices which had first been adopted for other reasons, or even purely accidentally, were preserved because they enabled the group in which they had arisen to prevail over others."[2] In this context, Hayek does not contemplate the possibility of any third way.

In this paper I establish what Hayek's evolutionary theory is, and argue (by reference to the preconditions of Darwinian natural selection) that it is scarcely tenable. I advance a third possible way in which social institutions might develop, and contend that this third way is the mode of social evolution envisaged by Liberal social theorists such as Hume, Ferguson, and Carl Menger, mistakenly cited by Hayek as proponents of his own theory of cultural group selection. (I even toyed with the notion of entitling this paper "Hayek Versus the Liberal Theory of Social Evolution.") In the course of these arguments, it will emerge that the refutation of Hayek's theory of cultural group selection knocks away the main support for Hayek's doctrine that reliance on human reason is hazardous in deciding matters of social policy. It will also emerge that Hayek's later thinking involves a curious convergence with the holistic and organicist theories he criticized so bitterly in his earlier writings.

Author's note: This paper was presented at the Midwestern Libertarian Scholars' Conference, Chicago, April 13–14, 1984. (A few minor revisions were made in April 1986.) The paper is a reworking of part of "Spontaneous Order and Traditionalism in Hayek," which, in turn, was an expanded version of a paper first delivered to the Colloquium on Austrian Philosophy and Austrian Politics, London, April 26–27, 1980.

What is Hayek's Theory of Cultural Group Selection?

There are at least three reasons why the peculiarities of Hayek's conception of social evolution have generally escaped notice and criticism:

1. Hayek's theory is singular, even bizarre, and readers tend to put their own commonsensical glosses on it.
2. Whilst Hayek frequently states his theory in unmistakable terms, he at least as often employs phrases that could describe either his theory or the Liberal trial-and-error theory I shall recommend as more convincing. For example, the formulation "what proved conducive to more effective human effort survived"[3] is general enough to cover both theories.
3. Hayek undoubtedly takes for granted the Liberal or trial-and-error scenario in some contexts (though he makes no mention of it in those contexts where it would be relevant to his treatment of cultural group selection).

However, such passages as the following leave little room for doubt about Hayek's commitment to an original and distinctive theory of social evolution:

> In the process of cultural transmission, in which modes of conduct are passed on from generation to generation, a process of selection takes place, in which those modes of conduct prevail which lead to the formation of a more efficient order for the whole group, because such groups will prevail over others.[4]
>
> In so far as such rules have prevailed because the group that adopted them was more successful, nobody need ever have known why that group was successful and why in consequence its rules became generally adopted.[5]
>
> [Cultural evolution is] a process of winnowing or sifting, directed by the differential advantages gained by groups from practices adopted for some unknown and perhaps purely accidental reasons.[6]
>
> [Civilization] was made possible, at least as much if not more than by the growth of knowledge or intelligence, by some moral beliefs that asserted themselves, not by men increasingly understanding their advantages, but simply and solely by the selection of those groups which by adhering to them became able to build much better than they knew. . . . It had been mystical or supernatural beliefs that made groups stick to the traditions of certain practices long enough to give natural selection time to pick from the great variety of groups those with customs which most effectively assisted the growth of their numbers.[7]

Such passages have become increasingly common in Hayek's more recent writings, and they present a coherent and unambiguous theory, which I call natural selection of group cultural systems, or for short, cultural group selection. Among significant points, we should especially notice the following:

1. A selection process, analogous to Darwinian natural selection, is posited as operating in human society.
2. This process operates on groups, distinct populations of humans, each with its distinct culture.
3. What are selected for or against are practices that benefit or hurt the "whole group," and *not* individuals or subgroups within the group.
4. What are selected for or against are entire group cultures, total group systems or aggregates of practices, and *not* particular practices.
5. There is no need for humans to possess any rational comprehension of this process, which occurs independently of anyone's intellectual understanding.
6. The process ensures that customs, morals, laws, and so forth, are useful to human group survival and expansion, even though the reason for their usefulness (or the fact that they are useful at all) is not understood by anyone.
7. We should therefore respect traditional ways even where we can see no good in them, and even where we find them abhorrent, because they serve a function for human society that we may not appreciate. (In fact, Hayek holds that we are bound to find them abhorrent, since he advances the theory, which we will not consider here, that the cultural traditions that have proved vital for the "Great Society" are in conflict with our genetically favored gut reactions, which evolved earlier and are inherently socialistic.)

Thus Hayek's repeated insistence on the importance of cultural group selection is part of his general case against what he regards as excessive reliance on reason.

Immediate Doubts and Puzzles

So much is clear, but there are obscure areas in Hayek's exposition of cultural group selection. The following three questions spring to mind at once:

1. *When did all this take place?* Did it happen in prehistoric times, and if so, does it happen today among primitive groups? Has it happened in recorded history, or is it even still supposed to be going on among industrialized societies?
2. *How do groups succeed or fail?* Do the successful groups exterminate or enslave the unsuccessful groups? Or do the successful groups merely outbreed the unsuccessful groups, by a faster rate of population growth

due to superior productive powers? Or is it rather that in some way "success" manifests itself as glamour, so that the successful groups are more widely imitated, and their efficient practices thus disseminated more readily than less efficient practices?

3. *How narrowly defined are the practices selected?* Are they so broad that all, or nearly all, existing societies exhibit these practices, or are they, for example, characteristically "Western" or even "Liberal"?

Each of these three mutually interrelated questions has the two characteristics that: (1) different answers are implied by Hayek on different occasions, and (2) whichever answer is given raises problems for his theory.

In some places Hayek suggests that cultural group selection occurred in prehistory and was responsible for the transition from a primordial socialistic band to the "Great Society" of trade and division of labor.[8] Indeed, he seems to recognize that only in a vanished age no longer available for inspection could the conditions have obtained that would enable cultural group selection to take place, at least if it occurred by the physical disappearance of the unsuccessful groups. For the groups must be separate entities, not interdependent, and they must impose strict rules upon their members. The rules must be inflexible enough not to change to any appreciable extent, either by internal evolution or by random contacts with other groups. Hayek's recent emphasis on a sharp demarcation between membership and nonmembership of the primordial bands, and on the intensely held supernatural beliefs hypothesized to have accompanied observance of group rules, may be an attempt to establish the (historically unknown) conditions that would make cultural group selection possible.[9] He also suggests that the evidence of social-anthropological field studies has no bearing on the transition from the primordial band to the Great Society, apparently an attempt to cover his theory against the observation that no group of people has been discovered with the characteristics of his hypothetical primordial band.[10] On the other hand, Hayek predicts, "Sometimes whole groups, and perhaps entire nations, will decline, because they chose the wrong values."[11] The context suggests that this will occur by a process similar to that which operated in the past to weed out unsuccessful values, and thus that cultural group selection is still operative. But apart from the consideration that the conditions for cultural group selection to be possible have not existed in historical times, immediate reflection on the well-known events of history prompts the conclusion that the process has not in fact occurred. For example, the English polity evolved over centuries, and not by the most generous application of any version of cultural group selection could any part of that evolution be convincingly explained. There were not thousands of separate Englands, with the "unsuccessful" ones being killed off or absorbed, for reasons of comparative efficiency that no one understood. There was a single continuous social grouping, which evolved in large part by intelligent individuals

improvising on the basis of their theories about the world, by the unintended results of the clash of interest-groups and factions, by calculating statesmen responding to the military fortunes of various European leaders, and so forth.

To the second question, Hayek seems to allow all possibilities, with references to population growth,[12] conquest,[13] and imitation.[14] But each of these has its problems, not the least of which is that any one of them can be swamped by either or both of the others working in a contrary direction. It is difficult to accept that the most rapid population growth is always an infallible sign of "success." Civilization is based on cities, yet throughout much of history, population growth has been lower in the cities than the surrounding countryside, and in many cases the urban population's fertility was below replacement, so its maintenance relied upon immigration of rustics. This process continues today on an international scale, with the most technologically advanced societies facing the prospect of declining populations except for immigration from the (intuitively) "less successful" countries.[15] (In some cases, like the United States, this effect is being temporarily masked by the fact that some internal groups, only a few generations away from backward agrarian social conditions, have high enough fertility rates to keep the average for the native population above replacement.)

As for conquest, Marx states somewhere that it is a "law" that societies founded on conquest adopt the culture of the conquered population. While no doubt a gross oversimplification, this is certainly far closer to truth than the reverse would be. The most prominent of several reasons is that conquerors take the conquered women, who play a major role in bringing up children. The grandchildren of the Scandinavian conquerors of Normandy spoke only Norman French. In some cases of conquest, even the women are exterminated, but this reduces the efficacy of conquest as a means of spreading the practices of the conquerors to a larger population. In some cases vigorous attempts are made to stamp out the native culture and replace it with the conquerors' culture, but this is rarely completely successful and is probably more common in recent centuries than earlier. (Another reason may be that society is big and complex, while conquest by a comparative handful may be easy, as in the repeated conquests of ancient Egypt.)

Furthermore, ability to conquer is not a very satisfying index of civilized "success." Historically, many comparatively civilized, productive peoples were conquered by rougher and less cultivated sorts. This raises the wider question of whether there is any necessary connection between "success" in the selective process and "success" in any sense we might wish to preserve and extend. We must resist the slovenly inclination to lump together all the things we like about civilization, assume that they are mutually conducive, and assume that whatever favors any one of them (or even, whatever favors some entirely different "success" trait) favors them all. That a culture has prospered by rapid population growth shows only that it permits, and probably favors, rapid population growth, or rather, that it did so under past conditions. That a culture prospered by military

conquest shows only that it was good, or at least not hopelessly bad, at military conquest.

Selection by imitation of societies that are glamorous or awe-inspiring because of their success is the least convincing of all the alternatives, because it introduces the element of conscious, rational appraisal with which the entire argument is supposed to dispense. It is very rare—virtually unknown—for *all* of the culture of an alien people to be imitated, except by the occasional individual "convert." Usually the imitators are selective in what they imitate, and they select according to some theory of what *makes* the glamorous group so glamorous. Indeed, imitation often goes along with a certain amount of contempt for the people imitated, and precisely for that reason a desire to learn the tricks that have regrettably made them so successful; the adoption of some European behavior-patterns by Eastern peoples such as the Japanese illustrates this. Further, Hayek emphasizes the *whole pattern* of practices in a group's culture, and if this whole pattern is not taken over, what will result by imitation will not (according to Hayek's argument) partake of the effectiveness of the whole pattern. It may well be less adaptive than what was abandoned; anecdotes abound of the kind in which a tribal chief buys an alarm clock though he cannot tell the time. An extreme example is the case of the Pacific cargo cults.[16] Like the Japanese, Koreans, and others, the cargo-cult members are rationally exercising discrimination in their choice of Western practices, but unlike those others, the cultists are operating according to a mistaken theory of the reasons for Western success.

Selection by imitation also has the difficulties that (1) stray, random influences of imitation may proceed in either direction, and (2) the imitating and imitated groups may be linked in some systematic way, the most probable and significant being that they each benefit from specialization and therefore from their differences. If we postulate that members of group A copy the practices of group B because group B impresses by its glamorous success, it follows that information about B is available to members of A. It is therefore highly likely that information about A is available to members of B. All this cosmopolitan cultural exchange seems difficult to reconcile with the granite inflexibility of rules within each group, which is required for natural selection to work. But in any case, we should be clear about what is envisaged: A member of group A must know something about group B; based upon his knowledge, he concludes that B is more successful than, or in some way superior to, A; he forms a theory that certain of the practices of B are responsible for the superiority; he rejects any theory that asserts that his own group is fated to remain inferior to group B, or that he ought to be loyal to A regardless of the remote consequences for group success; he then decides that the costs to him of adopting the new B practices are less than the benefits that thereby accrue to him; he next makes an analysis of the relevant group B practices, and manages to correctly copy them; he copies enough of them, and the right ones, to bring about the same benefits for his own group;

and the condition must also be fulfilled that members of group B are not simultaneously copying practices from group A. Whatever we may think about all this, it can hardly be considered to form part of an argument that is going to result in the conclusion that rational appraisal should be limited in policy issues.

The elusiveness of the route by which one group supplants another appears in passages such as this, on the prehistoric transition to the "abstract" society:

> It is very likely that in the course of this development a wealthier urban and commercial poulation often imposed upon larger rural populations a law which was still contrary to the mores of the latter, just as after the conquest by a military band a military land-owning aristocracy imposed in feudal ages upon the urban population a law which had survived from a more primitive stage of economic evolution. This is also one form of the process by which the more powerfully structured society, which can attract individuals by the lures it has to offer in the form of spoils, may displace a more highly civilized one.[17]

Since Hayek has not discussed the displacement of more civilized by more powerfully structured societies, the final sentence is puzzling, perhaps pointing to future works in which Hayek will explicate his conception of social evolution. It is not clear whether he regards such "displacement" as an unfortunate occasional occurrence or thinks it valuable for a society to be "more powerfully structured." If the latter, it is a mystery why he should think that. The significance of the "spoils" is unclear, since in the two examples given it is the extension of the law to the subjugated, not any distribution of spoils, that is important. As to the two examples supplied, we may note that (1) a hypothetical process by which a more advanced culture subdues a more primitive culture is supported by a historical case where a more primitive culture subdues a more advanced one, and (2) the case of the towns under feudalism is one in which precisely what is supposed to happen in Hayek's scheme *does not happen,* viz., the towns retain their culture, alien to that of the feudal rulers. We may similarly suppose that the rural populations subdued by Babylonians, Incas, or their unknown prehistoric predecessors might retain their separate cultures (the story of the Jews' Babylonian captivity and return suggests as much) and that these might indeed survive long enough to modify the culture of the rulers.

On the question of how broadly or narrowly Hayek conceives the cultural practices selected, clues are scant. Although Hayek in one place seems to suggest that existing primitive peoples are unlike the primitives left behind by the advance to civilization in the past,[18] in another place he does imply that existing primitives, equally with those of the past, lack something vital that they would have to acquire before becoming civilized.[19] Private property, trade, contract, and a judicial system appear to be as prominent in most primitive societies as they are in industrialized ones, though naturally less elaborate.[20] Social-anthropological fieldwork has uncovered a great range of existing primitive societies, enough to scotch any fondly held prejudices about the necessary attributes of different "stages" of develop-

ment, but nothing has turned up remotely like the Hayekian primordial band, untrammelled by customary rules, guided only by immediately perceived benefit. This seems to be equally as uninstantiated in the realm of the actual as are the promiscuity and primitive communism beloved of Morgan and Engels.

Hayek's conception of the necessary elements of the Great Society, which survive because they were selected out during a process that preceded the birth of the Great Society, defies criticism on account of its nebulousness. But however broadly or narrowly we conceive these elements, history must place a great strain on the theory. As far as is known, Sumer was the first great civilization. It seems to have been extraordinarily "liberal,"[21] at least immensely more liberal than many later civilizations, notably the "totalitarian" Assyrian, and perhaps more so than much of the world today. A very large proportion of the features of the Great Society, and especially those features which particularly appeal to Hayek, just seem to have appeared full-blown at the very dawn of history, to have died away, and then to have appeared full-blown elsewhere, essentially independently.

General Difficulties With Biological Parallels

There are difficulties with the notion that culture can evolve in a manner that parallels evolution of living organisms. In the biological case, natural selection depends upon a definite distinction between individual and population. The population adapts via its members' differential prospects for reproduction. Individuals reproduce by a process that preserves likeness, with some—usually comparatively slight—variations. An individual that survives to reproduce passes on an enormous collection of characteristics, mostly similar to those of its fellows that failed to reproduce or to reproduce so plentifully. In cultural group selection, where is the population and where the individual? One might regard each performance of a practice as an individual, the kind of practice as the population (for instance, one historical act of genuflection as an individual, genuflection as the population). But here the parallel fails because in Hayek's account there is no selection for particular practices, such as genuflection, but only for the entire set of practices carried by the group.[22] In nature this is true for the individual, which is selected for or against because of its entire makeup rather than a single characteristic. One trait might be conducive to reproductive performance in combination with other traits, but not with a different set. The individual is selected out of a pool of largely similar individuals; thus the effect is usually to select for one or a few differentiating characteristics according to their efficacy in combination with most of the others. One is then tempted to try a different analogy: of the biological individual with the social group, the population with the set of all social groups with similar cultures. That does not work very well either. Rarely are there numerous social groups with highly similar cultures. Either groups are so closely linked (coming to each other's aid in war, for instance) that they must

be regarded, from the point of view of natural selection, as one individual, or they differ very considerably in culture. In this respect, human groups are unlike small populations of organisms, upon which natural selection most effectively operates. We do not find batches of very similar cultures, differing in a few details, so that this replicated order can be honed toward adaptiveness by progressive selection of those details which work best as part of that order. It is as if we had a few thousand organisms, each potentially immortal occasionally splitting into two, occasionally fusing, each preserving some continuity but changing spontaneously in many details at all times. Anything like Darwinian selection is out of the question here.

Flies or rats can become resistant to poisons faster than can human populations, because flies and rats have shorter generations. In view of the acknowledged importance of the rapidity of cultural change, it seems relevant to ask for the length of a cultural generation, or rather (since potentially immortal organisms can breed rapidly), for the reproduction rate. Since for Hayek the reproducing entity is a group's whole system of cultural practices, such questions appear to have no sensible reply. The reproduction rate of a cultural system maintained by a group seems to be meaningless. Ordinarily, groups, and group cultural systems, do not reproduce at all in any sense that would fit. The founding of new Greek colonies in ancient times would be about as close as we could get, but even here the new colonies started to evolve apart once founded, and since they continually interacted with the other Greek communities, we could hardly regard each colony as a separate organism for selective purposes.

Hayek reminds us that human culture evolves much more rapidly than human biology.[23] But if cultural group selection is to be relied upon, human culture would evolve much more slowly than human biology. For the selection of groups is a slower process than the selection of individuals, and group selection according to culture cannot be expected to proceed any faster than group selection according to genes.

Evolution Within the Group

Inasmuch as Hayek emphasizes the importance of the total system of a group's cultural practices, it is necessary to sharply distinguish internal changes in this system from those changes that result from selection among total systems. The latter kind of adaptive change is menaced by the former, not assisted by it. To take the biological parallel, if the genes of a living organism were to improvise their own changes, so that an individual organism at one point in its life were changed out of all recognition from the same individual at a different point (unpredictably, and not according to any programmed developmental scheme), this would not help out natural selection; rather it would prevent natural selection from making any progress.

Hayek often suggests that we should make changes in particular details of our customs, morals, and laws, in the light of our appreciation of the way in which these changes will enhance the working of the whole system. Nowhere does he seem to recognize that such a mode of conscious adaptation is incompatible with cultural group selection. Hayek appears to think that these two processes are almost the same, or complementary, when they are mutually incompatible. Hayek's account of the spontaneous evolution of law depicts judges applying old rules to new situations, and testing any doubtful rule by its consistency with the totality of inherited rules, which ought not to be open to question.[24] Hayek praises the Common Law tradition, in which precedents are regarded as embodying general principles, which are then applied to new situations as they arise. Sometimes, however, legislation must step in when some consequences of the direction taken by successive legal rulings "are seen to be clearly undesirable".[25] Neither the evolution by accumulation of precedents nor the legislative intervention can be squared with cultural group selection; in both cases the law is changed according to individuals' conscious awareness of what is desirable. In neither case is there any automatic selective check on the wisdom of the decisions, much less any check that operates by enabling some groups to prevail over others.

Hayek repeatedly insists that the merit of laws and other rules inherited from the past is that the process which selected them was independent of any human design, and that the adaptiveness of these rules rests in their total concatenation. But if the array of inherited rules is to be modified piecemeal by conscious decisions according to perceived desirability, then even the rules that remain unmodified lose (following Hayek's argument) any claim to respect, because they have become parts of a different system of rules. It is almost as though Hayek believed that cultural group selection selected general, abstract principles, and that conscious decisions which made the rules more conformable to those principles thereby aided the selection process. But the fact that the new decisions can be classified along with the old decisions does not mean that a selection process which favored the old decisions will favor the new decisions. What has not been selected is no more likely to be adaptive merely because it can be classified with what has been selected. We may suppose that along with the features selected, there are other adaptive features which could be classified together with them. But nothing entitles us to assume that that hypothetical classification can be known, or that it corresponds to the classification judges might make.

In a reference to the evolution of systems of morals, Hayek contends that it is "only by recognizing the conflict between a given rule and the rest of our moral beliefs that we can justify our rejection of an established rule."[26] It is permissible, or at least, in Hayek's opinion the idea may be countenanced, to change one detail of the inherited system of moral rules, if this introduces greater consistency into the whole system of rules. But there is no reason to suppose that if the system of morals has been arrived at by a form of natural selection,

intellectual consistency will be of any consequence. Perhaps the most adaptive system of moral rules is one riddled with absurdities and incongruities. The Stickleback does not bother its head trying to render the quirky patterns of its nesting and territorial behavior into a harmonious series of propositions. Hayek also claims that a moral innovator must first purchase the esteem of his fellows by strict adherence to the established rules.[27] Elsewhere he proposes that the social group is governed by "dominant old individuals who are firmly set in their ways and not likely to change their habits, but whose position is such that if they do acquire new practices they are more likely to be imitated than to be expelled from the group."[28] Such remarks, endorsing the cautious traditionalism that Hayek recommends as a matter of settled policy, may be very valuable on other grounds, but they do not harmonize with cultural group selection, which if true would not indicate caution as a desirable policy. It might indicate either blind adherence to tradition and resistance to all change, or that we could have no sound basis for any sensible decisions at all.

In numerous discussions of Hayek's theory, I have been offered the failure and consequent disappearance of hippy communes and producers' cooperatives as examples of Hayekian selection. But these will not do, because they are parts of a wider society. Suppose that communes and cooperatives benefited the whole of society but that no one recognized this. It would not have helped them. It is entirely possible that a subgroup may act beneficially for the whole group and be selected against, or that it may act harmfully and be selected for. It might be thought that a subgroup's benefits for the group would result in prestige, imitators, and the wherewithal to support large families all being "awarded" to the subgroup. We are tempted to think this likely because we assume that someone recognizes the subgroup's benefits, but this would make the selection process dependent upon someone's intellectual grasp of the subgroup's importance. Alternatively, there might be some invisible-hand process by which rewards accrue to the beneficial subgroup regardless of anyone's conscious recognition of benefit, but this will happen only if institutions favor it. Frequently the activities of small minorities, such as Jews in medieval Europe or Asians in twentieth-century East Africa, are hugely beneficial to society as a whole, but this leads neither to disproportionate minority expansion nor to large-scale emulation of minority ways by the majority.

Application of cultural group selection to modern history must fail because of the interdependence of all groups. Although Hayek predicts that "whole nations" will decline "because they chose the wrong values," it seems unlikely (given some of his other views) that he would grant that Soviet Russia was demonstrated to possess the right values by its successful expansion. It is a commonplace in liberal circles that the Soviet Union is able to progress, or perhaps even to maintain itself, only by drawing upon the technological achievements of the more market-oriented West. Hayek seems to share this view.[29] Hayek would probably

insist, in the context of any past or future Soviet expansion, that the West and the Soviet Union are components of a complementary system. But that is not compatible with treating the Soviet Union or any modern nation as a separate culture susceptible to natural selection. There are familiar ways in which nations may get on the wrong track and visibly decline, with the result that inappropriate practices are replaced. For example, they may adopt unwise economic policies and become materially impoverished, so that various individuals around the world—academics, journalists, and others—see the wrongness of those policies and broadcast their conclusions. Or the nations' governments may find that international lending agencies make their loans conditional on the adoption of new policies which increase the likelihood that the loans will be repaid. So it is not denied that nations may decline because they chose the wrong policies, and even the wrong "values." But this has nothing to do with cultural group selection.

There are, then, three major problems for a theory of cultural group selection in conditions where there are frequent contacts between "groups":

1. The groups may function interdependently, and therefore be better viewed as complementary sub-groups.
2. Where there is transmission of practices from one group to another by imitation, there can be no assumption that the transplanted practices will have the same significance in their new soil.
3. We cannot assume that the transmission of adaptive practices will be favored over maladaptive practices. (Members of rich and powerful social groups often imitate the customs of poorer and weaker peoples, as when Lowland Scots adopted a copy of the tribal "clan" system, plaids and all, of the Highland savages.)

Adaptiveness Cannot Be Inferred From Survival Alone

According to the views prevailing among evolutionary biologists,[30] natural selection operates only in conditions where there is a substantial number of similar entities with the capacity for self-replication at a potentially geometric rate.[31] The sole mechanism of selection is the arithmetic mean of the reproductive success of those entities endowed with a particular characteristic, compared with the arithmetic mean of the reproductive success of those entities endowed with an alternative characteristic. The forces making for selection must be high relative to the rates of change of the selected entities. Natural selection cannot look ahead and engineer developments because they will have beneficial consequences at the end of the selection process. Nor can it operate for the benefit of anybody or anything except via reproductive performance. These ideas are in stark contradiction to commonplace notions of evolution, which generally share a viewpoint that might appropriately be labeled "providentialism." Providentialists (who

probably include most educated laypersons who have not made a special study of evolutionary biology) tend to assume that (a) anything in nature of any benefit (for any organism) has been selected because of that benefit, or (b) anything at all in nature must have been selected for in order to survive, and therefore must be of some benefit. Since almost anything that can be imagined will benefit some organism, these two formulations are in practice equivalent.

For example, many people probably suppose that senescence (deterioration through old age, leading to death) is prevalent in nature because it is somehow beneficial. They may suppose that it is nature's way of clearing the ground and making a fresh start, preventing overpopulation and making room for new generations, but this line of thinking has to be rejected as incompatible with natural selection. Any individual that had the potential for living longer than others in full reproductive vigor must gain a selective advantage, and no selective disadvantage, thereby. There is no reason why this advantage would stop accumulating with any given increase in longevity, short of potential immortality. Surprising as it may seem, death from "old age" has no "biological function" whatever. It may have benefits, but since there is no way that those benefits could be selected for by superior reproductive performance, *the benefits do not account for its occurrence, and its occurrence does not show that there are any benefits.* It is only when this has been comprehended that one is in a position to appreciate the ingenuity and elegance of Medawar's explanation of senescence.[32]

There is similarly no justification for supposing that occasional drownings of lemmings (which gave rise to tales of their "mass suicide"), the individual "suicide" of a moth flying into a flame, homosexuality (which occurs in all mammals), the pain suffered by a fatally wounded animal, sexual arousal in a female past her fecund stage of the life cycle, the fact that blood is red, the fact that you can sometimes hear your own heartbeat, the susceptibility of humans to backache and delusions, or millions of other persistent features of the natural world, have any adaptiveness.

Influenced by the providentialist outlook, some sociologists and social-anthropologists adopted a "functionalist" approach to institutions, an approach which produces explanations that can never be refuted, since anything benefits someone. Hallpike provides a salutory dismissal of functionalist theories of war.[33] In his hostile comments on Hallpike's paper, Eibl-Eibesfeldt asserts that since wars have been going on since the dawn of mankind, they must serve some function.[34] He triumphantly follows this "refutation" with a list of ways in which war has contributed to humankind's development. One might as well argue that as human beings have always been falling from heights and breaking their necks, this must fulfill some function. And sure enough, these falls help to select those with stronger bones and the intelligence to calculate dangers accurately!

Although natural selection is a spontaneous process that hits upon devices a conscious designer might easily miss, it is subject to many of the same limita-

tions as is a designer. It must make use of the materials available, and in gaining one advantage, it may have to pay a price in associated disadvantages. An architect can decide to save space by putting in fewer supporting walls, or gain security by putting in more. The former choice leads to more collapses of buildings; the latter to less freedom of movement within. It would be a mistake to look for the purpose of rool collapses or constricted movement. (Hallpike satirizes the functionalist interpretation by suggesting that the function of dry rot is to ensure that houses are periodically overhauled and redecorated.[35])

Vestigial features (such as the rudimentary legs on the bodies of snakes) remind us that natural selection is imperfect and bound by the past. Any organism can be adapted only to its past environment; any recent environmental change throws open anew the whole question of adaptiveness.

An important prerequisite of natural selection is stability of replication. Occasional mutations can be coped with, but the rate of mutation has to be low in relation to the pressure of selection on different characteristics. It is no use expecting natural selection (or trying to practice artificial selection) if what you are selecting among changes too much, independently of the selection process. Selection works cumulatively only if what is selected in each generation is likely to remain largely unaltered for many successive generations.

Spiders keep down the number of flies, and this benefits humans, but that fact plays no part in explaining why spiders keep down flies. Economists will recognize this as a "free rider" problem: The spiders have no way of charging humans for their benefit, because the spiders have no way of selectively excluding humans. Many relationships in nature are of the free rider sort.

All these points can easily be applied to society. The survival of some persistent feature does not show adaptiveness, and no matter how beneficial that feature, this does not necessarily explain its persistence. Even if natural selection is responsible, adaptiveness applies only to the past. And "benefit" does not account for survival except as conduciveness to improved reproductive performance in competition with similar societies lacking the putatively beneficial feature. A benefit that accrues only via the modern international economy, united by the world market and division of labor, cannot account for the existence either of practices which gave rise to that social unification of the world or of practices which have been enabled to develop since. Just as there is no natural selection for the adaptiveness of the totality of living things on Earth, so there can be no natural selection accounting for the adaptiveness of a world social order. It is a paradox of Hayek's account that he seeks to explain the rise of the Great Society by the evolution of groups fitted to the Great Society, when it would be possible to realize the benefits of the Great Society only by obliterating the group's discrete and independent character, essential to the alleged evolutionary route.

Adaptiveness applies only to the environment within which selection occurred, and this must be true for any natural selection of culture. The environment of

a human group would seem to be very largely a matter of its relations with other groups, and the assumption of environmental constancy is questionable. But the necessity for stability of replication is even more dangerous to Hayek's theory. If Hayek relied upon the physical extermination of groups with maladaptive practices and the repopulation of their former habitats by colonists from the surviving groups, this would be a slower process than that of individual genetic selection. Even so, and even postulating groups with a monolithic intolerance and rigid orthodoxy of a degree never encountered historically, it defies belief that the formation of colonies would produce near-perfect copies of the mother society. Yet Hayek wants a process that works faster than individual biological selection and therefore has to rely upon the making of converts from those impressed by the evident success of groups with more adaptive practices. Sufficient stability of replication could scarcely be maintained under these conditions.

In nature, natural selection does not only introduce novelties, but at least equally importantly, it is necessary to maintain existing adaptations. Selection must ensure that there is permanent pressure to eliminate random departures from existing structures. A convincing theory of social evolution would likewise have to show, not just that certain practices were favored, but that there remained a ceaseless tendency to revert to those practices.

Group Selection

In developing his theory of cultural group selection, Hayek was influenced by biological theories of "group selection."[36] Although such theories were given wide popular exposure, especially by Robert Ardrey,[37] they were always a controversial minority view among evolutionary biologists, and in recent years have increasingly been rejected on theoretical and empirical grounds. There is no doubt that group selection occurs, in the sense that a population can be wiped out and its habitat taken by a different population, but it is only under unusual conditions that this could effectively counteract selection of individuals, which may often work against group benefit. Part of the reason is simply that, as individual selection is bound to proceed much faster than selection of populations, any trait that benefited groups at the expense of individuals would normally dwindle within all groups faster than it could spread by expansion of favored groups. It used to be claimed by some writers that animals would restrict their individual rates of reproduction in order to avoid overpopulation, and this example is cited by Hayek.[38] It was later shown that although higher population density leads to fewer offspring in many species, this maximizes the number of individual parent's offspring that can be successfully reared. It is individually advantageous, and group selection is unnecessary for its explanation. Advantage to the group is fortuitous.[39] Thus Darwin's position that evolution proceeds by individual and not group selection has substantially been reasserted, though the issue is not entirely settled, and a few biologists still champion group selection.[40] Hayek clearly

developed his theory of cultural group selection unaware of the trend of biological theory. In a discussion of various group patterns, including the "arrow formation of migrating wild geese, the defensive ring of buffaloes, or the manner in which lionesses drive the prey towards the male for the kill"[41] as well as the coordinated activities of ants, termites, and bees, Hayek quite correctly observes that such group patterns do not depend upon the individual organism's awareness of them but merely on the individual's following certain rules. He then goes on to apply this idea to human social patterns (in itself, not unwarranted), and adds, "Yet all the individuals of the species which exist will behave in that manner because groups of individuals which have thus behaved have displaced those which did not do so."[42]

This leap is unjustified. For instance, the behavior of a lioness in driving prey toward the male is likely to show a net benefit (to be reproductively profitable) for that individual lioness. Group benefit is incidental, and as an explanation, redundant. This discussion, written no later than mid-1966 and therefore quite early in the development of Hayek's cultural group selection theory, helps to uncover the assumptions underlying it and is significant in that it already shows Hayek posing the exclusive alternatives of design and group selection.[43] By 1979 Hayek had become aware of the trend in biological thinking, and asserted in a note to the third volume of *Law, Legislation and Liberty:* "Although the conception of group selection may now not appear as important as it had been throught . . . there can be no doubt that it is of the greatest importance for cultural evolution."[44]

An Alternative View of Natural Selection of Culture

The rapidity of cultural transmission and innovation may mean that natural selection of culture should be separated from the notion of selection of human groups. Following this line of reasoning, we regard the individual practices or ideas as organisms, analogous to fleas or bacteria in their relation to the human groups that bear them. We ask what causes a particular sort of practice or idea (what Dawkins calls a "meme"[45]) to survive or die out, perhaps independently of the fortunes of the human hosts. Natural selection of human groups is an unlikely path for natural selection of memes, since culture is so contagious. Fashions and religions are often compared to epidemics. It would be unconvincing to propose that bacteria have evolved to benefit humans because the human groups infected by harmful bacteria must have died out. The unconvincingness arises only partly because bacteria can live outside human bodies; it is mainly due to the fact that their rate of transmission is so rapid as to make the reproductive performance of their hosts a negligible consideration for their own reproductive performance. I suggest that cultural practices are the relevant self-replicating entities, and as with biological organisms, individual selection is overwhelming. (An important

aspect of selection of individual practices is their compatibility with group-borne systems of cultural practices. That, of course, is quite different from selection that works upon the systems as wholes.)

Hayek says that the success of groups is influenced by the sorts of cultural practices they maintain (True), with the result that those groups which happen to adopt beneficial practices will have a better chance of survival (True), and therefore the practices handed down from the past are likely to be useful to humans, even if they cannot understand why. Hayek would not say that the success of groups is influenced by the sorts of fleas, lice, and tapeworms they maintain (True), so that those groups which happen to adopt beneficial fleas, lice, and tapeworms will have a better chance of survival (True), and therefore the fleas, lice, and tapeworms handed down from the past are likely to be useful to humans, even if they cannot understand why. The latter conclusion is false. The former conclusion might be true, but like the latter, it does not follow.

The importance of this point can be illustrated by comparing a couple of imaginary histories. First, suppose that at a certain time a continent is inhabited by ten tribes, of equal population and level of civilization (by whatever standards may be supposed to be relevant). The continent is sealed off from outside cultural influences, and all cultural influences of one tribe on another are somehow prevented. We return to this continent a few thousand years later. We find that nine of the tribes have expanded enormously in population and have achieved dazzling successes in the arts and sciences. The tenth tribe has dwindled, and its people are as wretched and ignorant as can be imagined. Further, the culture of this tenth tribe has changed little, while the cultures of the nine tribes have undergone repeated transformations, so that the continuities are less easy to trace than are those between the Hittites and the inhabitants of Los Angeles. For our second historical scenario, suppose that everything is just like the first, except that (1) intertribe cultural influences are permitted, and (2) on our return visit we find that all of the ten tribes are profoundly affected by the culture of the tenth tribe. (For instance, they have all been converted to the tenth tribe's language and religion, and identify themselves as descendants of the tenth tribe.) In the first case, we would not be tempted to conclude that the culture of the tenth tribe possessed, or was likely to possess, superior conduciveness to human survival and well-being. In the second case we might be so tempted, but this conclusion would be just as unwarranted as in the first case.

A theory of natural selection of memes is worth elaborating, but it is surely liable to be limited. In particular, we cannot help noticing that humans are inclined to discard those practices they come to believe to be harmful, and adopt those practices they find useful—a fact excluded alike from Hayek's theory and from the above.

Traditional Practices as Instruments

Hayek presents two alternatives: Either an institution was designed by a single mind and its operation conceived in advance, or it evolved by a group selection process entirely independent of human understanding. But there is a third possibility, which I suggest accounts for most of cultural evolution: that evolution proceeds by a process in which design and insight play an indispensable role, though the process as a whole is undesigned.

Consider the evolution of the bicycle (or of the piano, military strategy, the suit, the rifle, numbers, harmony). Here each model is produced consciously by a designer, guided by a traditional pattern the designer did not invent. The modifications are not random; they could be made only by conscious intelligence, though some might have been originated unreflectively or even by mistake. These modifications are not based on an exhaustive knowledge of the artifact; it is an error to suppose that because we have designed and built something we know much about it. Many proposed modifications are stillborn, others have their vogue and are then abandoned, whilst a few endure for a considerable period, perhaps becoming permanent features—like the bicycle chain or zero in mathematics. What determines the fate of an innovation is a "community judgement" (i.e., the judgments of numerous individuals) on whether the innovation *works*. People have common standards they can use to settle this question, at least provisionally.[46]

The evolution of the bicycle shares some qualities with Hayekian evolution. The course of the development is spontaneous, and it would obviously be unwise to try to direct it along a predetermined path. It may even be seen as a form of natural selection, since although conscious choice is vital, no single person's choices (or the choices suggested by a single formulated program) determine the evolutionary path. Indeed, it is just about conceivable that an innovation might be made and disseminated by an almost unconscious process, a slip of the pen at the drawing board, or a misreading of figures at the factory, followed by careless imitation. A modern bicycle could not have been devised "from scratch," without generations of experience of trial and error. Numerous promising-looking innovations that were unsuccessful and a few, perhaps inauspicious, departures that worked have cumulatively resulted in something that embodies, in a sense, more knowledge than any individual could possess.

On the other hand, we did not have to wait, in order for the bicycle to improve, for those civilizations that chose silly bicycle designs to be exterminated, outbred, or conquered by those with better bicycles, nor for the bicycle to make such a contribution to the efficiency of one group that this group became mysteriously yet evidently superior to other groups, so that members of the other groups applied to join the superior group, thereby incidentally and uncomprehendingly adopting its bicycle design. It would not matter if the more successful bicycles were made by patently unsuccessful, declining, and despised groups;

insofar as the bikes worked, they would be copied. Every stage in the bicycle's evolution depended upon some people's being able to appreciate what was an improvement and what was not. Even the hypothetical case of the error at the factory leading to an almost wholly unconscious innovation depends upon conscious judgment in a negative way; this departure was preserved, whereas most would have been corrected, because it failed to obtrude upon anyone's attention as an inferior construction. People had to have some idea of what a bicycle was *for*. The evolution of the bicycle would not be explicable on the hypothesis that they thought it was a sewing machine, still less on the hypothesis that they had no idea what it was.

The bicycle evolved by trial and error. This phrase is literally somewhat misleading, since in the notion it conveys, the preservation of success rather than recognition of error is the important thing. Deliberate trial is not essential. A cat learns how to get out of a box by pressing a lever. The cat could have fallen against the lever at a time when it had, so to speak, given up trying to get out of the box. What matters is that the cat will repeat the lucky motion in future, whenever it wants to get out. Trial and error does presuppose goal-seeking, and the capacity to preserve those practices that improve prospects for goal attainment. Intellectual insight will probably help. The application of the phrase "trial and error" to Darwinian selection is much looser and inclined to be misleading, since no goal-seeking is involved. One would be unlikely to say that sand and pebbles had come to line seashores because of trial and error. In Hayek's account of cultural group selection, there is strictly no trial and error.

I propose that social practices, or assemblages of practices, no matter how narrowly or abstractly conceived (a handshake, punishment for adultery, private property), evolve in much the same way as did the bicycle. They are vehicles, implements, or instruments that enable people to get what they want, and people cling to them or discard them according to whether they have been found to work. This hypothesis accounts for all of the facts accounted for by Hayek's natural selection theory, and there are numerous facts Hayek's theory does not explain, and indeed prohibits, that are easily explained analogously with the evolution of the bicycle. Most striking of these is the rapid pace of cultural evolution, far too fast for the weeding-out of whole societies.

The bicycle evolved in the way it did not only because of improvements in design, but also because of changing purposes (traveling to work, traveling as part of work, recreation, exercise, sport) and a changing environment (changes in roads and paths, other forms of transport, cyclists' incomes). Similarly, a traditional practice will respond to environmental changes, which will largely be changes in other practices. Practices have to be compatible with other practices, and it may help if they are complementary. A social practice may work at one time, and cease to work because of changes in other practices. Here we make contact with one of the well-worn themes of sociology, the inter-

action between different institutional spheres: the economy, family, state, religion, and so forth. We also encounter the theory associated with historical materialism: that changes in technical methods of production ("productive forces") will cause people to change their traditional ways of organizing themselves interpersonally in production ("relations of production"). In turn these changes will cause other kinds of practices to fail to work as satisfactorily as they did before. Adjustments will be made gradually where possible, but occasionally some cumulative changes will build up an increasing tension with respect to some traditional practices that cannot be adapted in the desired direction except by sudden, radical transformation.[47]

A practice may be regarded as valuable in itself, much in the way that a cyclist might develop an affection for a particular bicycle or model of bicycle. When we say that a practice is "valuable in itself," we mean that the production structure is less roundabout; utility is derived more directly, in the same way that eating provides utility more directly than does ploughing. And where practices enhance their utility by being similar or mutually interlocking, there are economies of standardization. Greetings, word usages, family obligations, or property rights derive some advantage for their practitioners from being standardized throughout society, in much the same way as electric power points, coins, or tape cassettes come to be standardized. Out of a range of possible practices, there are advantages in picking *one* option and sticking to it, quite apart from the comparable merits of the options. There is a built-in traditionalism, since the cost of switching to a new standard may be higher than the increased utility derived from an alternative practice, which would therefore be better only in an imaginary universe where we could start from scratch.

Cultural evolution depends upon humans being able to judge what is useful to them, and generally does not operate independently of utility; it cannot be ruled out that humans may improvise themselves into a corner, so that they have to take a fresh look at their overall situation, and sweep aside many customary ways in order to release constraints upon progress. There is no area of cultural life that proceeds without the need for conscious commitment by individuals. No consciously maintained rule or practice would last long in any society unless large numbers of individuals saw good reason to persist with it. Few refrains are more common, throughout history and throughout the world, than that of elders bemoaning the fact that youngsters are deserting the old ways. And it's true—they always are. Hayek suggests that people follow rules without thought, and the rules endure. This is true in some cases, like unnoticed regularities in language (dubiously called "rules"). But in the sorts of cases with which Hayek is more concerned, like property, law, and morality, I suggest that typically people strive hard to maintain rules and are often doomed to fail.

An explanation of the origin of private property in terms of trial and error on the basis of perceived advantage goes back some centuries and has recently been

restated by economists specializing in the study of property rights.[48] Recorded instances of the development of private property among peoples formerly adhering to common property[49] accord well with this theory and do not corroborate cultural group selection. I suggest that private property was never introduced or maintained because it "benefited society" or "helped groups to survive," but for reasons of evident practical utility noted by Aristotle, Cicero, Grotius, and Pufendorf. Private Property was maintained because, in the judgments of numerous individuals over the centuries, it worked. It led to the growth of a market whose extent and intricacy could never have been foreseen. Intelligent improvisation opened up possibilities for human welfare unsuspected by the improvisers.

Nonhuman Cultural Evolution

Hayek makes references[50] to the celebrated account of the macaque monkeys observed by Kawamura on Koshima Island, but this appears to bear out the cumulative trial-and-error theory sketched above and to be difficult to reconcile with cultural group selection. To lure monkeys to a place where they could be more easily observed, scientists scattered grain and sweet potatoes on the beach. One monkey invented the washing of sweet potatoes in the sea. This innovation was copied by other moneys, until it spread by imitation to most of the population. The same "genius" then invented the separation of sand from grains by throwing them on the water surface, and this too spread by imitation. Because of their new-found interest in the sea, the monkeys learned to swim and dive for seaweed, which in turn led them to travel to other islands.[51] A cultural revolution occurred without any group selection, and many thousands of times faster than would have been possible by group selection. The new practices persisted both with inventor and imitators because they enabled these individuals to be more effective at attaining their prior goals. The practices were not preserved because they helped the group, though presumably they did that incidentally. Even if they had resulted in net harm to the group, they would still have spread among individuals and, given some stray interchange of individuals among groups, could have spread among all groups long before there was any appreciable differential effect upon groups. Irreconcilable with cultural group selection, the Koshima observations are also incompatible with Hayek's alternative hypothesis, that new practices become established only when the respected elders accept them. Among the Koshima macaques, new practices were always invented and most readily imitated by the young. The old either followed tardily or died off without benefit of the innovations.[52]

Earlier Liberal Writers on Social Evolution

Hayek frequently refers to earlier liberal writers in such a way that the reader might conclude that they too advocated cultural group selection in some form.[53]

This inevitably follows from dividing all accounts of the origin of social institutions into nonevolutionary and group-selectionist.

I will here briefly mention three of the thinkers most often cited by Hayek in this connection: Hume, Ferguson, and Carl Menger. Hume presents the growth of social institutions as the outcome of individuals consciously pursuing their own interests.[54] Humans improvise their social order by developing what they find to hand. For example, the first social group was a natural extension of the family.[55] Because their "self-love" tends to lead to conflicts, individuals see the need for general rules that apply to everyone. Hume cautions: "I here only suppose those reflections to be form'd at once, which in fact arise insensibly and by degree"[56]—a different matter from saying that the conscious "reflections" do not arise at all, though even that could occur in an improvisatory, trial-and-error scenario. Adam Ferguson sees Man as an ingenious contriver, and it is precisely from this inventive faculty that he sees social change flowing, though not in the direction anyone expects.[57] Menger distinguishes between two sorts of social phenomena, those which are "the results of a *common will* directed toward their establishment (agreement, positive legislation, etc.)" and those which are "the unintended result of individual human effort (pursuing *individual interests*)."[58] In Hume, Ferguson, and Menger, social evolution is an outcome of intelligent individual behavior, and there is no hint of cultural group selection, which would seem to offer a belated rationale for the organicist and historicist notions that both Carl Menger and Hayek have been at pains to repudiate.[59]

A Few Conclusions and Suggestions

Among considerations arising from the above discussion, I would urge that (1) It is a mistake to appeal to cultural group selection to provide a defense for policies that rational appraisal would on other grounds reject; (2) there is nothing that makes social orders optimal or efficient, except insofar as many seriously suboptimal or inefficient formations may be eliminated incidentally by rational policy-making or trial-and-error groping; (3) Hayek views society as a frail hothouse bloom that requires the most delicate care, whereas it is more in the Liberal tradition (and more accurate) to regard civilization as a robust weed, virtually impossible to stamp out; and (4) cultural group selection, which became prominent in Hayek's writings in the late 1960s and has grown in prominence ever since, tends to go against some of his earlier (and sounder) arguments against methodological collectivism and historicism.

NOTES

1. F. A. Hayek, *Law, Legislation and Liberty*, vol. 1, *Rules and Order* (London: Routledge, 1973), pp. 8–9.
2. Ibid.
3. F. A. Hayek, *Studies in Philosophy, Politics and Economics* (London: Routledge, 1967), p. 111.

4. F. A. Hayek, *New Studies in Philosophy, Politics, Economics and the History of Ideas* (London, Routledge, 1978), p. 9.
5. F. A. Hayek, *Law, Legislation and Liberty*, vol. 2, *The Mirage of Social Justice* (London, Routledge, 1976), p. 5.
6. F. A. Hayek, *Law, Legislation and Liberty*, vol. 3, *The Political Order of a Free People* (London: Routledge, 1979), p. 155. (Footnote number omitted.)
7. F. A. Hayek, "The Rules of Morality Are Not the Conclusions of Our Reason," Plenary Lecture, Twelfth International Conference on the Unity of the Sciences, pp. 5, 7. (Grammatical correction: "became" substituted for "becoming.")
8. Hayek, *Law*, vol. 3, p. 160.
9. Ibid.
10. "On this the study of still surviving primitive people can tell us little." Ibid., p. 156.
11. Hayek, *New Studies*, p. 20.
12. Hayek, "Rules of Morality," p. 5.
13. Hayek, *Law*, vol. 3, p. 202, *n.* 39.
14. Ibid., pp. 159, 166. In particular, Hayek lays greatest emphasis on the successful society's greater ability to increase its size by recruiting new members voluntarily.
15. See, for instance, Eugene Grebenik et al., Council of Europe, *Population Decline in Europe, Implications of a Declining or Stationary Population* (London: Arnold, 1978).
16. Peter Worsley, *The Trumpet Shall Sound, a Study of 'Cargo' Cults in Melanesia* (London: MacGibbon and Kee, 1975); and Peter Lawrence, *Road Belong Cargo, a Study of the Cargo Movement in the Southern Madang District, New Guinea* (Manchester: Manchester University Press, 1964)
17. Hayek, *Law*, vol. 3, p. 202, *n.* 39.
18. Ibid., p. 156.
19. *Ibid., p. 160.*
20. See, for example, C. Daryll Forde, *Habitat, Economy and Society, A Geographical Introduction to Ethnology* (New York: Dalton, 1963); and Edward A. Hoebel, *The Law of Primitive Man, a Study in Comparative Legal Dynamics* (New York: Atheneum, 1968).
21. Samuel N. Kramer, *The Sumerians, Their History, Culture and Character* (Chicago: Chicago University Press, 1963).
22. Hayek, *Studies*, pp. 683–72.
23. Hayek, *Law*, vol. 3, pp. 154, 156; and Hayek, "Rules of Morality," p. 4.
24. Hayek, *Law*, vol. 1, pp. 85–88, 94–123.
25. Ibid., p. 88.
26. Hayek, *Law*, vol. 3, p. 167.
27. Ibid.
28. Hayek, *Studies*, p. 79.
29. F. A. Hayek, *The Constitution of Liberty* (London: Routledge, 1960), p. 47.
30. What follows is heavily indebted to George C. Williams, *Adaptation and Natural Selection, a Critique of Some Current Evolutionary Thought* (Princeton: Princeton University Press, 1974).
31. At least, this is often stated. But David Hirschleifer pointed out to me that any potentially continuous increase will do; it does not have to be geometric. However, any increase becomes geometric if we assume that the average individual in each generation has the same reproductive capacity.
32. Peter B. Medawar, "An Unsolved Problem in Biology," in *The Uniqueness of the Individual* (London: Methuen, 1957), pp. 44–70.
33. C. R. Hallpike, "Functionalist Interpretations of Primitive Warfare," *Man* 8, no. 3 (September 1973: 451–70.
34. Irenäus Eibl-Eibesfeldt, *The Biology of Peace and War* (London: Thames and Hudson, 1979), p. 182.
35. Hallpike, "Functionalist Interpretations, p. 451.
36. Hayek, *Studies*, p. 70, and *Law*, vol. 1, p. 18.
37. Robert Ardrey, *The Territorial Imperative* (London: Collins, 1967). Hayek was impressed by the later works of Ardrey; see, for example, Hayek's *Law*, vol. 3, p. 197, *n.* 7.

38. Hayek, *Studies*, p. 70, and *Law*, vol. 1, p. 164, *n.* 8. Although Darwin had no place for group selection counter to individual selection, group selection theories were frequently advanced by biologists and nonbiologists from at least as early as the 1920s, but no concerted criticisms or extended debate on the subject transpired until V. C. Wynne-Edwards, *Animal Dispersion in Relation to Social Behavior* (Edinburgh: Oliver and Boyd, 1962), which evoked a considerable controversial literature. See George C. Williams, ed., *Group Selection* (Chicago: Aldine, 1971); and Robert N. Brandon and Richard M. Burian, *Genes, Organisms, Populations: Controversies over the Units of Selection* (Cambridge: MIT Press, 1984).
39. David Lack, *Ecological Adaptations for Breeding in Birds* (London: Methuen, 1968). Recent textbooks of evolutionary biology generally have less than two pages on "group selection," and that dismissive. Paul Ehrlich, Richard W. Holm, Dennis R. Parnell, *The Process of Evolution*, 2d ed. (New York: McGraw-Hill, 1974), p. 119. And see the forceful statement in Egbert Giles Leigh, Jr., *Adaptation and Diversity, Natural History and the Mathematics of Evolution* (San Francisco: Freeman, Cooper, 1971), pp. 245–50.
40. For example, David Sloan Wilson, *The Natural Selection of Populations and Communities* (Menlo Park, Calif.: Benjamin/Cummings, 1980).
41. Hayek, *Studies*, p. 69.
42. Ibid., p. 70.
43. Hayek here cites Alexander M. Carr-Saunders, *The Population Problem, a Study in Human Evolution* (Oxford: Clarendon, 1922), which contains an anticipation of the main outlines of Wynne-Edwards's theory, with the focus on humans rather than other animals. The influence of other parts of this work upon Hayek is also highly evident, a fact of interest to students of Hayek's intellectual biography and the "LSE connection."
44. Hayek, *Law*, vol. 3, p. 202, *n.* 37. In the lecture "The Rules of Morality Are Not the Conclusions of Our Reason," Hayek asserts: "It is at the moment the predominant view among biologists that such group selection is at least not important in Darwinian evolution. I am not wholly convinced by this, but this is a matter for biologists to decide. All that matters to me is that, in the explanation of cultural evolution, group selection is of crucial and central importance" (p. 4). Hayek fails to address the fact that the considerations which led biologists to this conclusion apply, a fortiori, to cultural evolution, along with additional difficulties.
45. Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976), p. 206. And see L. L. Cavalli-Sforza, "Similarities and Dissimilarities of Sociocultural and Biological Evolution," in F. R. Hodson, D. G. Kendall, and P. Tăutu, eds., *Mathematics in the Archeological and Historical Sciences* (Edinburgh: Edinburgh University Press, 1971), pp. 535–41.
46. This does not commit me to pragmatism. Whether something "works" is a brief way of discussing whether it does what is required of it by certain common theoretical standards. One might have to decide whether a line of verse, a passage of counterpoint, the dénouement of a whodunit, a scientific explanation, or a mathematical proof "worked." The expression helps to remind us that we may be able to decide that something works without understanding how it works—though in some cases we might have to understand in order to decide.
47. Karl Marx, *A Contribution to the Critique of Political Economy* (Moscow: Progress, 1970), pp. 20–22.
48. Furubotn and Pejovich, in a summary of this literature, assert that "changes in property rights are triggered by the interaction between the prevailing property rights structure and man's search for ways of achieving more utility." Eirik G. Furubotn and Svetozar Pejovich, eds., *The Economics of Property Rights* (Cambridge, Mass.: Ballinger, 1974), p. 9. (Emphasis removed.)
49. See Harold Demsetz, "Toward a Theory of Property Rights," in ibid., pp. 34–37. Originally in *American Economic Review* 57 (May 1967).
50. Hayek, *Studies*, p. 79, and *Law*, vol. 1, pp. 163–64, *n.* 7.
51. A summary is provided in Edward O. Wilson, *Sociobiology, the New Synthesis* (Cambridge, Mass.: Belknap, 1975), pp. 170–71, which cites M. Kawai, "Newly Acquired Pre-cultural Behavior of the Natural Troop of Japanese Monkeys on Koshima Islet," *Primates* 6, no. 1 (1965): 1–30. See also S. Kawamura, "The Process of Sub-cultural Propagation among Japanese Macaques," in C. H. Southwick, ed., *Primate Social Behavior* (Princeton: Princeton University Press, 1963).

52. Hayek, *Studies*, p. 79.
53. Hayek, *New Studies*, p. 9. Here Hayek propounds group selection and refers to his earlier essays, "The Results of Human Action but Not of Human Design" (*Studies*, pp. 96–105) and "The Legal and Political Philosophy of David Hume" (ibid., pp. 106–21). But nowhere in these essays does Hayek clearly ascribe any form of group selection to the writers discussed (Mandeville, Savigny, Montesquieu, Ferguson, Josiah Tucker, Hume, Adam Smith), though he occasionally employs phrases that could be taken to describe either cultural group selection or individualistic trial-and-error. Between the *Studies* (1967) and the *New Studies* (1978), cultural group selection had moved to the center of Hayek's thinking.
54. David Hume, *The Philosophical Works*, ed. T. H. Green and T. H. Grose (Aalen: *Scientia*, 1964, reprint of London, 1886), vol. 2, pp. 258 ff.
55. Ibid., pp. 259–60.
56. Ibid., p. 274.
57. Adam Ferguson, *An Essay on the History of Civil Society, 1767* (Edinburgh: Edinburgh University Press, 1966), pp. 6–7, 122.
58. Carl Menger, *Problems of Edonomics and Sociology* (Urbana: University of Illinois Press, 1963), p. 133. The same idea is repeated many times, e.g., on p. 158.
59. Ibid., passim, especially pp. 144–59; F. A. Hayek, *The Counter-Revolution of Science, Studies on the Abuse of Reason* (Indianapolis: Liberty, 1979), passim, especially pp. 93–152.