THE CONFLICT BETWEEN SOCIAL AND BIOLOGICAL EVOLUTION AND THE CONCEPT OF ORIGINAL SIN

by Donald T. Campbell

This presentation is related to Robert L. Heilbroner's concerns[1] in perhaps five ways. First, it joins Heilbroner in his distrust of the shortsighted selfishness of man. Crudely speaking, I am going to relate that notion to the concept of an innate predilection to sin. Speaking in more functional, evolutionary, and systems-theoretical terms, I am going to be concerned with aspects of human nature that are nonoptimal for complex social interdependence. On this theme there are a number of other current works that are equally relevant. The biologist Garrett Hardin's "The Tragedy of the Commons" and the economist Mancur Olson's *The Logic of Collective Action* both point out that there are many settings in which, if each individual with full information optimizes his own well-being, such optimization jeopardizes collective goods.[2] Another book that reminds us of this theme is Langdon Gilkey's *Shantung Compound*, a report on one of the great experiments in modern social science.[3] Here was collected the most ethically committed and ethically sophisticated group of persons one can imagine (missionaries and religiously oriented professors) interned by the Japanese for three or four years. Gilkey documents in detail the emergence, among this group, of original sin, selfishness, greed, avarice, and petty self-centeredness (centered around food and space), present as vivid temptations for all and yielded to in overt sin by most. This experience was a turning point in his career, changing him from an optimistic liberal theology to a more traditional religious belief in the sinfulness of basic human nature. We can see a similar conversion on Heilbroner's part, from an optimistic utopian designer of future social systems to his present pessimism about the human prospect, based on his present pessimism about individual

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human nature. I will return to this first theme later in the section "Genetics of Altruism" and will treat it as an attribute of man's biologically based human nature, a product of biological evolution.

Second, I join Heilbroner in another pessimism on a different level—the distrust of the shortsighted selfishness of nations. This is a thesis about collective sin, about stubborn aspects of organized human groups that are nonoptimal for collective survival. From my perspective, this is a product of social evolution, what one might call a secondary sin rather than original sin, although it is clear that the antiethnocentric themes in the New Testament, for example, the preaching of the novel belief that even Samaritans could be virtuous, may be focused on this secondary sin.

Third, I join Heilbroner in his belated and grudging respect for the past social adaptedness of the inhibitory and repressive aspects of human culture. In his generation and in mine, it was intellectual brilliance to despise those products of human culture that ran counter to individual hedonism, to regard them as historical-cultural mistakes that were sources of evil. Belatedly and grudgingly, Heilbroner and I have come to see some past adaptive usefulness for these repressive aspects of culture.

Fourth, I join him in his stress on the new problems that societies now have to solve. I join him in his emphasis on the drastic changes in the world that past social evolution has adapted to, making once beneficial adaptations currently maladaptive.

Fifth, like him, I see the need for effective social curbs on human selfishness in the society of the future. Although I may have more hope that these can be worked out in democratic form rather than in totalitarian form, I too, recognize that restrictions on individual freedom will be required.

With this much shared, my presentation cannot be classified as an answer to Heilbroner but, rather, as a reworking of some of the same themes from a different intellectual background, done, however, in the same spirit of non-self-deceptive pessimism or "objectivity," a leaning over backward to avoid wishful thinking. For both Heilbroner and myself, this is background and raw material for deliberate, conscious, prospective problem-solving efforts aimed at devising potential solutions.

More than Heilbroner I am trying to focus on how we got this way, the background of our present adaptations, our present individual human nature, and our present social-system nature, which have now become our problems. The intellectual roots of my paper are in evolutionary theory. As Solomon H. Katz has noted in his presentation at this symposium, such perspectives are underrepresented in

Heilbroner. My evolutionary theory is neo-Darwinian, a hard-line, blind-variation-and-selective-retention orientation, both on the biological level and on the level of sociocultural evolution.[4]

To avoid potential misunderstandings, I would like to make a sharp distinction between two types of evolutionary theory in making prognoses for the future. The first can be called the *extrapolatory* and the second the *mechanistic*. In spite of the ill favor that word has today, I will identify myself as making a mechanistic use of evolutionary theory. The extrapolatory-use evolutionary theory looks at the course of evolution and infers a trend toward ever greater adaptedness, ever higher levels of integration and organization. It tends to be optimistic both about the present perfection of organs, organisms, and social institutions and about the future promise of still higher adaptedness, higher levels of integration, and the like. Herbert Spencer, who drew his primary imagery from embryology, represented this approach to evolutionary extrapolation.

The mechanistic approach to evolutionary theory focuses on the specific mechanisms that have been propounded to explain the marvelous achievements of biological and perhaps social evolution. In particular, it focuses on the mechanisms of variation, selection, retention, and duplication. (Of these four, particularly for social evolution, the last three turn out to be problematic.) This mechanistic approach emphasizes that the adaptedness of evolutionary products is always wisdom about past environments, adaptedness to past selective systems, fittedness to past worlds. If the environment, ecology, or selective system has radically changed, an old adaptation today may be worse than useless, may be actively harmful. In considering new demands and outmoded adaptive social institutions or biological organs, the mechanist trying to extrapolate into the future asks whether there is in fact a selective retention and duplication system now in operation which will bring the currently outdated adaptations into a new, appropriate adaptation. We can move to higher levels of integration by the route of natural selection only if there is a consistent selective pressure operating in that direction, leading deviations or variations in that direction to survive better, to be more socially imitated, etc., than deviations in other directions. For the evolutionary mechanist to generate optimistic predictions, he must be able to specify the grounds for that optimism in selection pressures, selective systems, supporting an optimistic direction of development.

If we look at the settings in which natural selection has worked, we find that it is a tedious process requiring a very patient environment. It requires consistent selection pressures operating over very long periods of time with statistically large populations of units. It requires

negative feedback. Technically, every mutation not only is a changed adaptation to the world but also changes the world to some degree. Every mutation in some sense changes its own selective system. But this change must be trivial for natural selection to work.

When we come to apply this model of natural selection to the social evolution of the forms of economic and social organizations of modern nations or to modern technological innovations, from the point of view of the mechanics of natural selection we have grounds for pessimism. The ecology may be changing so rapidly that no consistent selection pressures may be operating. Each mutation, innovation, or change in technology may be changing the selective system so substantially that there is no stabilizing negative feedback. There may even be instead a runaway positive feedback (due in part to "vicarious" selective retention systems such as are exemplified in social imitation). When we get to the national level, there are probably too few units involved in mutation and selection for a stochastic process like natural selection to operate. Natural selection is much more apt to be operating on the organization of neighborhood laundries than on the organization of nations or major economic systems. To put it another way, man has become a very large part of his own environment. From the standpoint of natural-selection mechanisms, human biological and social evolution operated optimally when man himself was a small part of the human environment. It may have ceased to operate now that man's dominant environment is man. Thus there is no automatic optimism, no automatic promise of progress, coming from attention to the mechanisms of natural selection in evolution. I suppose there should be, of course, no automatic pessimism either. Optimism or pessimism should come only from understanding the specific systems that are now operating.

Genetics of Altruism[5]

It is useful to an evolutionary understanding of how we got the way we are, and in particular for an understanding of the role of those aspects of traditional religions which one could call repressive or counterhedonic, to look in more detail at a specific problem now preoccupying contemporary evolutionary theory, namely, the genetics of altruism. In developing these theories, I will be citing J. B. S. Haldane, V. C. Wynne-Edwards, George C. Williams, E. O. Wilson, and other modern geneticists. But before getting to them, I would like to have a scripture reading from Sigmund Freud that sets the problem:

> Civilization is a process in the service of Eros whose purpose is to combine single human individuals, and after that, families, then races, peoples, nations, into one great unity, the unity of mankind. . . . But man's natural

aggressive instinct, the hostility of each against all and of all against each, opposes this program of civilization. . . . The struggle between Eros and Death, between the instinct of life and the instinct of destruction . . . is what all life essentially consists of, and the evolution of civilization may therefore be simply described as the struggle for life of the human species.

Why do our relatives the animals not exhibit any such cultural struggle? Oh, we know not! Very probably some of them—the bees, the ants, the termites—strove for thousands of years before they arrived at the state institutions, the distribution of functions, and the restrictions upon individuals, for which we admire them today. It is indicative of our present state that we should not think ourselves happy in any of these animal states, nor in any of the roles assigned by them to the individual.[6]

I believe Freud right in identifying the social insects as our most similar relatives insofar as complex social interdependence, *Kultur,* and self-sacrificial altruism are concerned. I believe he was also right in noting in man a profound ambivalence toward his social role, an ambivalence absent in bees, ants, and termites. Current technical discussions in evolutionary genetics regarding the possibility of selecting traits which are good for the group but are costly for the procreational opportunities of the individual offer an explanation of that difference. It is a difference which mere evolutionary time will not cure, being a by-product of the fact that among humans, unlike the social insects, there is genetic competition among the cooperators. (Among vertebrates, each member potentially produces offspring and in different numbers. Among the social insects, all of the cooperators are sterile and are thus not in genetic competition.) The major disagreement with Freud regards the nature of the ambivalence. Rather than a death instinct, modern evolutionary genetics points to something closer to Freudian narcissism: self-serving aggressiveness in competition with co-workers for food, space, and mates; self-serving cowardice in war; self-serving dishonesty to fellow in-group members; theft, cheating, greed, disobedience, etc. Freud's view of the pervasively counterhedonic content of culture is accepted and given a functional interpretation: The survival value of complex social coordination, with full division of labor, professional soldiers, and apartment-house living, has been achieved in man as a social-evolutionary product which has had to inculcate behavioral dispositions directly counter to the selfish tendencies being produced by genetic selection.

Wynne-Edwards's book *Animal Dispersion in Relation to Social Behavior* has assembled the evidence and made the case for the natural selection of traits leading to the survival of breeding groups and whole species, even at the expense of individual procreational success.[7] While mechanisms for the restriction of population are the

preponderant illustration, his viewpoint supports genetic selection for altruism.

Williams, in *Adaptation and Natural Selection,* challenges Wynne-Edwards's major conclusions, arguing that mechanisms which inhibit the effective fertility of the individual are incompatible with the theory of natural selection in its most developed statistical form.[8] In so doing, he applies an argument on the problem of "altruistic" genes first presented by Haldane in a special appendix to his pioneering book on the statistical theory of evolution.[9] The prohibition is not against all altruistic tendencies but, rather, against those which are altruistic at some risk to the individual and which thus impair to some degree the individual's chances at procreation, effectively diminishing the frequency of his genes in later generations.

While the argument takes a mathematical form in Haldane, and briefly so in Williams's very readable book, its core concept can be stated simply. Let us suppose that mutations have produced a heterogeneity within a social group so that there are some individuals with genes predisposing a self-sacrificial altruism which furthers group survival and others with genes predisposing a self-saving selfishness, such as cowardice in battle, theft, cheating, dishonesty in the service of self-interest, etc. Let us suppose that, due to the presence of the altruistic genes in some individuals, the group as a whole survives better. This increases the average reproductive opportunity of both the altruistic and the selfish among the group members. The net gain for the altruistic is reduced to some degree because of the costs of risks they incur. The net gain for the selfish has no such subtraction. Thus, while all gain, the selfish gain more, and their genes will gradually become more frequent as a result. There is no way in which the altruistic genetic tendencies could increase, to say nothing of becoming predominant, relative to the selfish if there is a self-sacrificial component to the altruism.

Against such a view, Wynne-Edwards and others argue for a group-versus-group selection process that could, if strong enough, counter the individual-versus-individual selection processes within each group. Thus, if competing social groups of the same species varied greatly in the frequency of the altruistic gene and if there were a strong group selection favoring altruism, this could counteract the selection against altruism within each group. Williams argues that such a process is virtually impossible. For breeding groups of expected sizes, the only way group-to-group differences in gene frequency can be achieved is by systematic selection on an individual-to-individual level within each group. Thus the only way the groups with high frequency of the altruistic gene could have developed

would be if they had migrated into an ecology where the trait was not self-sacrificial and then migrated back into a common ecology. Even if this unlikely set of coincidences were to occur, if the altruistic group were to any extent heterozygous or if there were mutants back to the selfish gene, the individual-versus-individual selection processes would erode the prevalence of the altruistic gene in favor of the selfish.

One qualification to this argument follows Sewell Wright in pointing out that, if the breeding groups were very small and highly inbred, then by chance alone some groups would end up being homozygous on the gene for altruism. Williams plausibly argues that such genetic isolation of small groups could not persist and that, in mixing with other populations and becoming heterozygous, individual-versus-individual selection would take over. Mutations would have an effect in the same direction, albeit slower. When Wright's argument is extended to trait complexes involving many genes, it becomes less likely to the *n*th power of the number of such genes. Thus, for vertebrates where there is genetic competition among the cooperators, there are grounds in statistical genetic theory for doubting the occurrence of selection tendencies for self-sacrificial altruism.

The kind of "selfishness" selected needs to be spelled out in more detail. Self-sacrificial altruism in the defense of offspring is selected, as it is only through these offspring that the increase in gene frequency can be achieved. Sibling mutual defense will usually be selected since siblings share 50 percent of the same genes. But tendencies to sacrifice for the protection of more remote relatives such as cousins or nephews are rarely, if ever, advantageous. Williams accents this point by noting that parental defense of offspring occurs only in species in which parents can distinguish between their own and their neighbors' offspring. Thus familial solidarity is selected for, but group solidarity on larger than family lines that involves much risk or sacrifice on the part of the cooperator is in general selected against. Of course, much cooperative behavior involves a direct gain rather than risk or loss, and such cooperative behavior is positively selected and is therefore not altruistic in Haldane's technical sense. Williams uses the hunting of elks by groups of wolves as one of many examples. In other instances, the gains to the individual outweigh the losses, as R. L. Trivers argues for warning cries in birds.[10] The degree of vertebrate sociality that can thus be produced probably comes close to its limit within packs of wolves and chimpanzees which include several families, that is, a very limited degree of social interdependence in comparison with the social insects and civilized man.

The case of the social insects—termites, ants, and bees—is fundamentally different. There is no genetic competition among the cooperators. A cowardly soldier within one nest will not have more offspring than a self-sacrificially brave one, for both are sterile. It is only the queen and the drones that have offspring—and their chances of producing offspring increase with the frequency of there being effectively brave soldiers. Likewise, the sterile soldier termite that stands, fights, and dies is not in genetic competition with the also sterile worker whose conscience calls him to flee back to the nest when enemies are near. As a result, the social insects have achieved extreme degrees of complex social interdependence involving dramatic degrees of self-sacrificial bravery and other extreme division-of-labor adaptations.[11]

Undoubtedly, the first prerequisite to this evolution was the development of a sterile caste. After that invention, the futher evolution of a complex division of labor could take place. For ants, wasps, and bees, this development was furthered by the fact that male drones are haploid, having only one set of chromosomes rather than pairs. Thus they give all their offspring an identical set of genes, with the result that females share three-fourths of their genes with full sisters and only one-half of their genes with daughters. There is thus a selective advantage to furthering the life chances of younger eggs from the same mother over their own offspring. As judged by the more primitively social forms, this furthers a first stage of social life lacking morphological differences between queen and worker except for inhibited fertility. Wilson, building on W. D. Hamilton, presents the details.[12] (He also provides evidence of some forms of genetic competition within the nest, using this to predict drone selfishness and other anomalies. These qualifications do not affect the arguments and illustrations which I used above.) The achievement of the first sterile castes in termites is less well understood. It no doubt first involved a survival value for immature sibling assistance with brood care, on which was superimposed a prolongation of the period of infantile infertility. Again, once an infertile worker caste was achieved, the subsequent development of complex multicaste differentiation of structure and function was possible. The key first step was elimination of genetic competition among the cooperators.[13] (There are remarkable parallels to social insect organization in Aldous Huxley's *Brave New World,* including worker sterility and incubator mass production of embryos from a few selected donors.[14] One wonders whether these prophetic details could have been influenced by conversations between Huxley and Haldane on the genetics of altruism.)

Williams's book may eventually turn out to be as extreme in one direction as Wynne-Edwards's was in the other. Motivated in part by the feeling that many animals are in fact more altruistic than the simple model employed by Williams would allow, the evolutionary geneticists, with mathematical models and computer simulation, are exploring more complex environmental and genetic contingencies.[15] Indeed, Hamilton, on whose work Williams and Wilson heavily depend, takes a much less extreme position than Williams or I do here, arguing that if selfishness genes are preponderant, then selection favors altruistic ones, while if altruistic genes are in the great majority, a selective advantage adheres to selfishness genes.[16] Whatever the outcome of the current debate, it seems definite that the degree of altruism found in those vertebrates for which there is competition among the cooperators will be much less than that found among the social insects or kamikaze pilots. Thus the contrast on which this essay is built may be reduced by current research developments but will remain substantial.

On the Conflict between Social and Biological Evolution in Man

Human complex social interdependence greatly exceeds that of wolves, chimpanzees, and California mountain woodpeckers. If animal counterparts are to be found at all, it is among the social insects. And, while the ambivalence Freud noted is present, plus uneven execution of the self-sacrificial roles in the social machine, in many ways civilized man even exceeds the social insects in his complex social interdependence.

Man and the social insects demonstrate the great survival value of extreme social interdependence. The case of the social insects shows that some complex forms of it can be achieved on a genetic base. That vertebrates have never achieved it is due to the evolutionary trap or conflict produced by genetic competition among the cooperators. Man is in the same genetic predicament. The conclusion seems to be inevitable that man has been able to achieve his social-insect-like degree of complex social interdependence only through his social and cultural evolution, through the historical selection and cumulation of educational systems, intragroup sanctions, supernatural (superpersonal, superfamilial) purposes, etc. A detailed discussion of the selective-retention evolution of social customs and artifacts is available elsewhere.[17]

Not only must man's complex social interdependence be a product of social evolution; the evolved socially induced dispositions must also have directly opposed the selfish dispositional tendencies continually

selected for by the concurrent biological evolution. It is this opposition between the dispositional products of biological and social evolution that explains Freud's observations on man's ambivalence toward his social roles and his contrast with the unambivalent insects. But Freud was wrong in believing that length of time in evolutionary history is the problem; it is, rather, the more fundamental fact of the evolutionary route toward social complexity.

This conclusion goes far beyond Williams, Wilson, and the other geneticists in its emphasis on the role of social evolution.[18] Here I have gone beyond whatever biological authority I have spoken with above. But the conclusion provides for me, as a social scientist interested in the puzzles of his own cultural background, a strong reason for accepting Williams's point of view. For it makes evolutionary sense out of the otherwise anomalous or incomprehensible preoccupation with sin and temptation in the folk morality that our religious traditions provide. The commandments, the proverbs, the religious "law" represent social-evolutionary products directed at inculcating tendencies that are in direct opposition to the "temptations" which for the most part represent dispositional tendencies produced by biological evolution. For every commandment we may reasonably hypothesize a biological tendency running counter to some social-systematic optimum.

This hypothesis predicts certain uniformities in the popular moralizing of all complex societies—a scholarly investigation which I have not yet undertaken. All should have preachments against cowardice in battle. Inspection of fragments of the anthropological literature leads me to expect this to be nearly universal, even among societies without a full-time division of labor or storable foodstuffs. All should preach against lying for personal gain (if not lying for group advantage), in-group theft, greed, murderous rage, and arrogant self-pride. Industry, abstemiousness, doing one's unique duty, group loyalty—all should be praised. A detailed study of this aspect of the moralizings of the presumably independently developed complex societies is called for: ancient China, the valleys of the Indus and the Ganges, the Aztecs, Mayas, and Incas. For these purposes, shame cultures and guilt cultures (if such differences exist) share a functional equivalence.

Implications for Heilbroner's Problems

This background on how we got this way I feel is relevant to the kinds of issues and the kinds of solutions that we may look for in trying to solve the human prospect and its problems. The kind of respect for tradition thus generated is, it seems to me, neglected in most social

science. The social scientists with whom I was raised, particularly the psychologists, have referred to tradition only to explain some malfunction like prejudice. But, if we see the dynamics of our social system as socially evolved, we can respect the past adaptedness of at least some of the counterhedonic preaching against human nature that is embedded in the content of culture. We can respect it whether we see it in our religious past or whether we see it in modern Maoist China, preaching against the sins of selfish bourgeois human nature. Such a respect for tradition can make one sympathetic with modern prophets of doom, like Konrad Lorenz, who are afraid that mankind is losing its ability to transmit this cultural treasure from one generation to the other.[19] Lorenz recognizes that his own willingness to identify man as an instinct-ridden animal may be one of the forces undermining society's ability to transmit this precious inhibitory tradition by undermining the supernatural sanctions most societies have employed in this process.

Such a perspective gives us grounds for calling the intellectual community to task for having too narrow a vision and for failing to recognize the important social-evolutionary treasures that are essential to complex social coordination, that are essential to being able to live in cities far from where food is grown, etc. In terms of the utopias that we would seek out, it should lead us to be more sympathetic with those utopian systems built on a distrust of human nature than with those which assume a benign human nature needing no restraints. Thus socialism would be more attractive than anarchism or its modern version, libertarianism. Capitalism's trust in "the hidden hand," in the belief that if each individual optimizes his own welfare collective welfare will also be optimized, is also incompatible, although market mechanisms might still be deemed optimal for job allocation and other social-cybernetic problems. Thus part of our problem may be due to a loss of a precious part of tradition which was carried by religious symbols, a loss which social scientists, psychologists especially, have stupidly, shortsightedly, and unscientifically furthered. (I say "unscientifically" from the perspective of what I now believe to be a more encompassing scientific theory.)

But this undermining is not the only problem. Some of the most serious of our present doomsday predictions are due not to the undermining of old social norms but, rather, to the continued strength of old counterhedonic social adaptations. Look at our capacity —which is a product of the same type of counterhedonic social evolution that produced our religions—to assemble, organize, and carry out wars. The military patriotism syndrome is probably even more uniform from tribe to tribe and nation to nation than any of our

religious ethics. This is a healthy product of a past social evolution which we social evolutionists must see as having once been adaptive. It is still so strong that political leaders, without feeling hypocritical, continue to solve internal-solidarity problems by mobilizing for war. It represents a present-day retention in essentially full strength of a social adaptation which goes against selfish human nature, which leads individuals to risk their own chance of biological progeny for the sake of saving the skin of some symbolic social organization. Still more strongly than Heilbroner, I feel that group-level ethnocentrism, social-group selfishness sacrificing individual-level selfishness, is central to some of the dire prospects in our human predicament. Indeed, it is conceivable that in the present day the undermining of traditional values might produce a beneficial impairment of our ability to wage wars. Thus there are, possibly, beneficial by-products of the undermining of social adaptations that are no longer adaptive. As close as we are to the United States bicentennial celebrations, as close as we are to Virginia, we can think of what a great fool Patrick Henry was when he said, in essence, that it was worth his life to be misruled by fellow Virginians rather than be misruled by Britons or that it was worth his life to live in the United States rather than to live in Canada. The alternatives being weighed by Patrick Henry—"Give me liberty or give me death"—were symptomatic of social-evolutionary adaptations overcoming self-preservation. While I cannot make that statement about all military alternatives, clearly the capacity to mobilize for war which Patrick Henry symbolized is a successful product of past social evolution curbing human cowardice and selfishness, and yet it is one which is a major threat to our survival this day.

On the products of biological evolution in human nature which now create problems, there is a recurrent minor theme in Heilbroner which deserves mention.[20] This has been called "hedonic relativism" in traditional philosophy and psychology[21] and has been most elaborately developed in psychology under the terms "level of aspiration"[22] and "adaptation-level theory."[23] The general conclusion is that pleasure and pain, success and failure, even equity and injustice, are relative to one's own prior experience and to the contemporary rewards others are observed to receive. These two background conditions set a neutral level against which raw experience is transformed into pleasure and success if above the adaptation level or pain and failure if below. If rewards or achievements persist, then the adaptation level rises, raw experience is recalibrated, so that experiences previously pleasant are now neutral or worse. One can see how this insatiable covetousness or ambitiousness has been of adaptive value in the past ecological niches of rat and man. But it gives lie to the social planners'

goal of creating a social paradise on earth, for it predicts that, once achieved, that paradise would be experienced as only partly pleasure but also partly pain and partly blah.[24] In Heilbroner, this comes in as the recognition that increased material goods, decreased working hours, increased sweets and fats in the diet, and the like, have provided only an initial pleasurable impulse. Once we are used to them, we are no more satisfied than our parents or grandparents were with much less. The traditional observation that greed is insatiable becomes even truer as one gets away from simple things like food and into commodities like money and power.

The truth of hedonic relativism is represented in the antihedonistic components in both Eastern and Western religions. They describe human beings as trapped by their biological urges on a hedonic treadmill where the carrot will always be in front but will never be reached. One is doomed forever to seek pleasure and yet never be satisfied. The message of Buddha and Saint Francis (both of whom were indulged princes, with all the wine, women, and song they could possibly want) was to give up the goal of sensate pleasure and get off the hedonic treadmill. While contemporary social planners, even after assimilating the lessons of Heilbroner and this symposium, are unlikely to depend on the solution through religious asceticism recommended by Buddha and Saint Francis, the problem is one planners should directly address. The message of hedonic relativism is not entirely pessimistic. When modern man encounters the greatly reduced standard of living that Heilbroner and others convince us is inevitable, adaptation-level theory to be sure predicts an initial preponderance of experiences of pain, frustration, and failure. But if this new level holds steady, our adaptation level will catch up to it so that, eventually, hedonic experience will recover its normal balance of pleasure, neutrality, and pain.

Genetic supports for complex social coordination can come not only from internal individual impulses toward altruism but also from tendencies to enforce moral behavior, reciprocity, and altruism on the part of fellow members of one's social group. As Trivers points out, genes for such tendencies incur no self-sacrificial cost for the bearer and, if effective, produce gains in survival likelihood for both the bearer of the gene and his fellows.[25] While expressing such roles in today's complex society is discouraged (old scold, fishwife, Mrs. Grundy, scandalmonger, carper, nagger, bluestocking, tattletale, harpy, faultfinder, judger, shrew, killjoy, caviler, spoilsport, censurer, censor, holier-than-thou), there are perhaps here genetic resources that our future society may need to reactivate. In his interesting precursor to studies of the authoritarian personality, Svend Ranulf

speaks of the "altruistic" interest in seeing crimes punished even when one will not benefit personally and even when one has not personally been harmed by the crime.[26] He identifies this as a part of a middle-class psychology. Perhaps it is a more general social- and biological-evolutionary disposition characteristic of complex societies. Such tendencies, and their milder counterparts in the tendency to enforce conformity to group norms on others, are not incompatible with democratic forms of political organization but do interfere with the freedom of individuals. In the future anticipated by Heilbroner, social-organizational forms which exploit such tendencies may be necessary. Related to conformity pressures is the individual trait of fearing ostracism. Genetic tendencies in this direction might evade the selection predicament of simple altruistic traits. In Olson's *Logic of Collective Action,* a major illustration is voluntary versus compulsory union membership.[27] Olson decides that compulsory membership is essential if unions are to provide to their members the collective goods that are their goal. Such compulsory memberships may be, like enforced taxation, characteristic of the democratic coercion that may have to be increasingly used in the future.

What Can We Do?

If we are at a stage in evolution where there are so few actors, where the changes we make disturb the system so greatly, and where the selective system that leads to survival or nonsurvival is itself so unstable that we cannot trust either biological evolution or social evolution of the passive kind to produce new adaptations, what alternatives do we have? Here I join with Heilbroner and other speakers at this symposium in arguing that whatever hope we have is through our own trial-and-error thinking, paper-and-pencil planning, and computer simulation, all vicarious substitutes for overt natural-selection evolution. From the epistemology that I advocate, everything that is adaptive has to come from some kind of blind variation and selective retention process.[28] But as this is done in maze learning and in thinking, there is a blind variation of alternatives and a selective retention based on some model of the world. In processes of thought or computer simulation we can explore alternatives vicariously that we need not explore in overt action. Such exploration of alternatives in thought, computer simulation, planning, or in conferences like this is always vicarious, indirect, and secondary, is always dependent on the validity of our model of the environment, which is never perfect, so that it is not as valid as natural selection, but it is all we have. Our only hope, then, is in brainstorming about alternative futures, selecting those alternatives that seem to us to be best, and then getting into

politics to try to make the few acceptable alternatives our future political reality.

NOTES

1. Robert L. Heilbroner, *An Inquiry into the Human Prospect* (New York: W. W. Norton & Co., 1974).

2. Garrett Hardin, "The Tragedy of the Commons," *Science* 162 (1968): 1243–48; and Mancur Olson, *The Logic of Collective Action* (New York: Schocken Books, 1968).

3. Langdon Gilkey, *Shantung Compound* (New York: Harper & Row, 1966).

4. Donald T. Campbell, "Variation and Selective Retention in Socio-Cultural Evolution," in *Social Change in Developing Areas*, ed. H. R. Barringer, G. I. Blanksten, and R. W. Mack (Cambridge, Mass.: Schenkman Publishing Co., 1965).

5. This section is adapted from my "On the Genetics of Altruism and the Counterhedonic Components in Human Culture," *Journal of Social Issues* 28 (1972): 21–37, with modifications and with permission from the Society for the Psychological Study of Social Issues.

6. Sigmund Freud, *Civilization and Its Discontents* (London: Hogarth Press, 1930), pp. 122–23.

7. V. C. Wynne-Edwards, *Animal Dispersion in Relation to Social Behavior* (Edinburgh: Oliver & Boyd, 1962); see also his "Intergroup Selection in the Evolution of Social Systems," *Nature* 200 (1963): 623–26, and "Self-Regulating Systems in Population of Animals," *Science* 147 (1965): 1543–47.

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