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# Economics As A Moral Science\*

By KENNETH E. BOULDING

Adam Smith, who has strong claim to being both the Adam and the Smith of systematic economics, was a professor of moral philosophy and it was at that forge that economics was made. Even when I was a student, economics was still part of the moral sciences tripos at Cambridge University. It can claim to be a moral science, therefore, from its origin, if for no other reason. Nevertheless, for many economists the very term "moral science" will seem like a contradiction. We are strongly imbued today with the view that science should be *wertfrei* and we believe that science has achieved its triumph precisely because it has escaped the swaddling clothes of moral judgment and has only been able to take off into the vast universe of the "is" by escaping from the treacherous launching pad of the "ought." Even economics, we learn in the history of thought, only became a science by escaping from the casuistry and moralizing of medieval thought. Who, indeed, would want to exchange the delicate rationality of the theory of equilibrium price, for the unoperational vaporings of a "just price" controversy? In the battle between mechanism and moralism generally mechanism has won hands down, and I shall not be surprised if the very title of my address does not arouse musty fears of sermonizing in the minds of many of my listeners.

Let me first explain, then, what I mean by moral and by moral science. A moral, or ethical proposition, is a statement

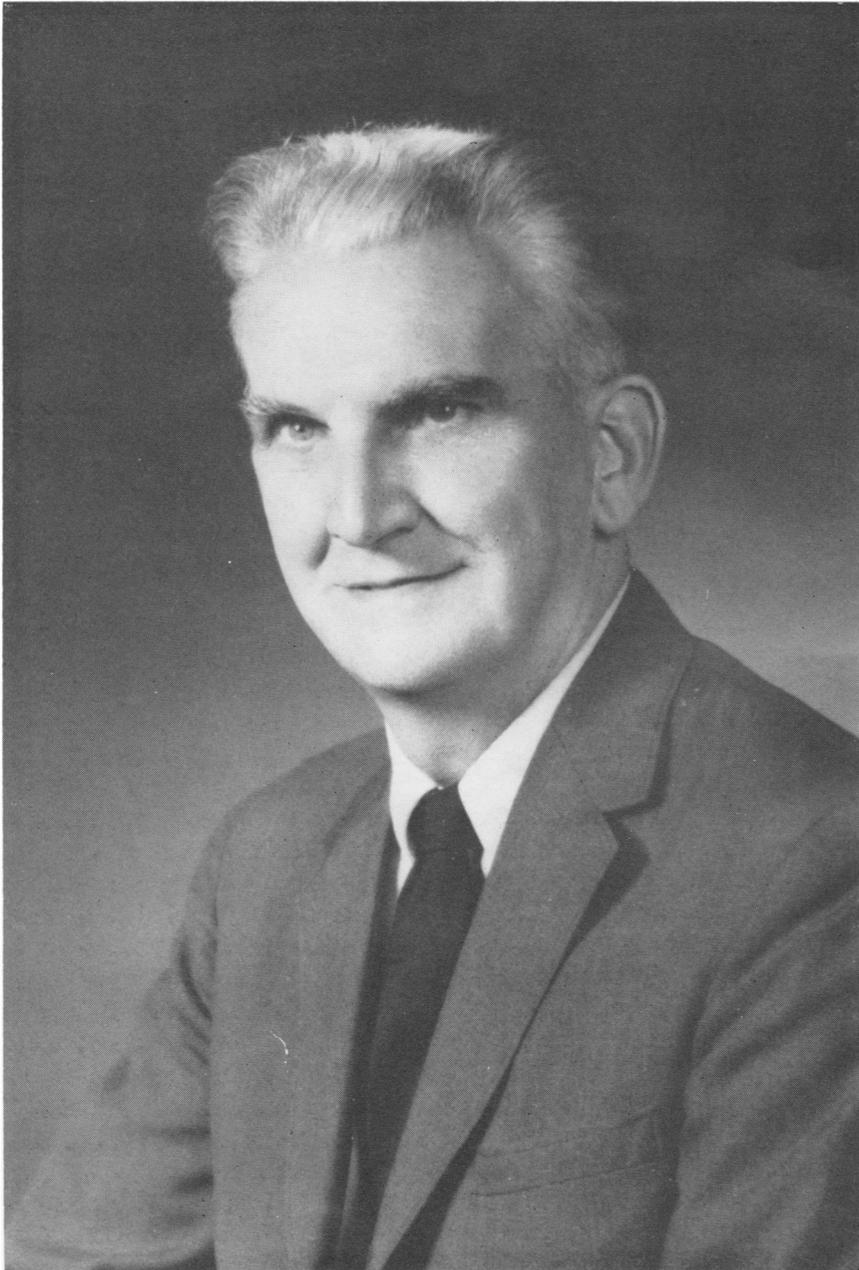
about a rank order of preference among alternatives, which is intended to apply to more than one person. A preference which applies to one person only is a "taste." Statements of this kind are often called "value judgments." If someone says, "I prefer A to B," this is a personal value judgment, or a taste. If he says, "A is better than B," there is an implication that he expects other people to prefer A to B also, as well as himself. A moral proposition then is a "common value."

Every culture, or subculture, is defined by a set of common values, that is, generally agreed upon preferences. Without a core of common values a culture cannot exist, and we classify society into cultures and subcultures precisely because it is possible to identify groups who have common values.

Most tastes are in fact also common values and have been learned by the process by which all learning is done, that is, by mutation and selection. The most absurd of all pieces of ancient wisdom is surely the Latin tag *de gustibus non disputandum*. In fact, we spend most of our lives disputing about tastes. If we want to be finicky about definitions we might turn the old tag around and say where there is disputing, we are not talking about tastes. Nevertheless, even personal tastes are learned, in the matrix of a culture or a subculture in which we grow up, by very much the same kind of process by which we learn our common values. Purely personal tastes, indeed, can only survive in a culture which tolerates them, that is, which has a common value that private tastes of certain kinds should be allowed.

One of the most peculiar illusions of

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*K. E. Baulding*  
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Number 70 of a series of photographs of past presidents of the Association.

economists is a doctrine that might be called the Immaculate Conception of the Indifference Curve, that is, that tastes are simply given, and that we cannot inquire into the process by which they are formed. This doctrine is literally "for the birds," whose tastes are largely created for them by their genetic structures, and can therefore be treated as a constant in the dynamics of bird societies. In human society, however, the genetic component of tastes is very small indeed. We start off with a liking for milk, warmth, and dryness and a dislike for being hungry, cold, and wet, and we do have certain latent drives which may guide the formation of later preferences in matters of sex, occupation, or politics, but by far and away the largest part of human preferences are learned, again by means of a mutation-selection process. It was, incidentally, Veblen's principal, and still largely unrecognized, contribution to formal economic theory, to point out that we cannot assume that tastes are given in any dynamic theory, in the sense that in dynamics we cannot afford to neglect the processes by which cultures are created and by which preferences are learned.

I am prepared indeed to go much further and to say that no science of any kind can be divorced from ethical considerations, as defined above. The propositions of science are no more immaculately conceived than the preferences of individuals. Science is a human learning process which arises in certain subcultures in human society and not in others, and a subculture as we have seen is a group of people defined by the acceptance of certain common values, that is, an ethic which permits extensive communication among them.

The scientific subculture is no exception to this rule. It is characterized by a strong common value system. A high value, for instance, is placed on veracity, on curios-

ity, on measurement, on quantification, on careful observation and experiment, and on objectivity. Without this common value structure the epistemological process of science would not have arisen; indeed it did not arise in certain societies where conditions might otherwise have been favorable but where some essential common values of the scientific subcultures did not exist. The question as to exactly what values and ethical propositions are essential to the scientific subculture may be in some dispute. The fact that there are such values cannot be disputed. It is indeed one of the most perplexing questions in intellectual history as to why the scientific subculture developed in the time and place that it did in Western Europe. The common values that are prerequisite to it are rather rare among human subcultures. The common values, for instance, of the military or the people that run the international system are quite different from those of science. In this sense, therefore, science has an essential ethical basis.

This means that even the epistemological content of science, that is, what scientists think they know, has an ethical component. The proposition, for instance, that water consists of two molecules of hydrogen and one of oxygen is not usually thought of as a proposition with high ethical content. Nevertheless, any student in chemistry who decides that he prefers to think of hydrogen as dephlogisticated water will soon find out that chemistry is not just a matter of personal taste. The fact that there is no dispute going on about any particular scientific proposition does not mean to say that it is a matter of taste; it simply means that the dispute about it has been resolved through the application of certain common values and ethical presuppositions.

There is however a fundamental sense in which the epistemological process even

in the physical and biological sciences is now running into situations which have strong ethical implications outside the scientific subculture. The myth that science is simply discovering knowledge about an objectively unchangeable world may have had some validity in the early stages of science but as the sciences develop this myth becomes less and less valid. The learning process of science is now running into two serious difficulties. The first might be called the generalized Heisenberg principle. When we are trying to obtain knowledge about a system by changing its inputs and outputs of information, these inputs and outputs will change the system itself, and under some circumstances they may change it radically. My favorite illustration of the Heisenberg principle is that of a man who inquires through the door of the bedroom where his friend is sick, "How are you?" whereupon the friend replies "Fine," and the effort kills him. In the social sciences of course the generalized Heisenberg principle predominates because knowledge of the social sciences is an essential part of the social system itself, hence objectivity in the sense of investigating a world which is unchanged by the investigation of it is an absurdity.

The second difficulty is that as science develops it no longer merely investigates the world; it creates the world which it is investigating. We see this even in the physical sciences where the evolution of the elements has now been resumed in this part of the universe after some six billion years. We are increasingly going to see this in the biological sciences, which will only find out about the evolutionary process by actively engaging in it, and changing its course. In the social sciences one can defend the proposition that most of what we can really know is what we create ourselves and that prediction in social systems can be achieved only by setting

up consciously created systems which will make the predictions come true. Knowledge of random systems can only be obtained by destroying them, that is, by taking the randomness out of them. There is a great deal of evidence, for instance, that the fluctuations of prices in organized commodity or security markets are essentially random in nature. All we can possibly discover therefore by studying these fluctuations is what bias there might be in the dice. If we want to predict the future of prices in such a market we will have to control it, that is, we will have to set up a system of counterspeculation which will guarantee a given future course of prices. The gold standard is a primitive example of such a system in which it is possible to predict that the price of gold will lie within the gold points as long as the system remains intact. Similarly, we can predict the inside temperature of a house with an effective furnace and thermostat much better than we can predict the outside temperature simply because we control one and not the other.

We cannot escape the proposition that as science moves from pure knowledge toward control, that is, toward creating what it knows, what it creates becomes a problem of ethical choice, and will depend upon the common values of the societies in which the scientific subculture is embedded, as well as of the scientific subculture. Under these circumstances science cannot proceed at all without at least an implicit ethic, that is, a subculture with appropriate common values. The problem exists in theory even in what might be described as the objective phase of science, that is, the phase in which it is simply investigating "what is," because the question of the conditions under which ignorance is bliss is not an empty one. The assumption which is almost universal in academic circles that ignorance cannot possibly be bliss might under some circum-

stances be proved wrong by the very methods of science itself. As long as science is investigating an unchanging world, however, this problem does not become acute, for if knowledge does not change the world, then all ignorance does for us is to prevent us from satisfying our idle curiosity. When, however, knowledge changes the world the question of the content of the common values, both of the subculture which is producing knowledge and of the total society in which that subculture is embedded, becomes of acute importance. Under these circumstances the concept of a value-free science is absurd, for the whole future of science may well rest in our ability to resolve the ethical conflicts which the growth of knowledge is now creating. Science *could* create an ethical dynamic which would bring it to an end.

Let us return then to economics as a moral science, not merely in the sense in which all science is "affected with an ethical interest," but in the quite specific sense of asking whether economics itself can be of assistance in resolving ethical disputes, especially those which arise out of the continued increase of knowledge.

Economics specializes in the study of that part of the total social system which is organized through exchange and which deals with exchangeables. This to my mind is a better definition of economics than those which define it as relating to scarcity or allocation, for the allocation of scarce resources is a universal problem which applies to political decisions and political structures through coercion, threat, and even to love and community, just as it does to exchange. I have elsewhere distinguished three groups of social organizers which I have called the threat system, the exchange system, and the integrative system. Economics clearly occupies the middle one of these three. It edges over towards the integrative system

insofar as it has some jurisdiction over the study of the system of one-way transfers of exchangeables, which I have called the "grants economy," for the grant, or one-way transfer, is a rough measure of an integrative relationship. On the other side, economics edges towards an area between the threat system and the exchange system which might be described as the study of strategy or bargaining.

To complete the circle there is also an area, between the threat system and the integrative system, of legitimated threat which is the principal organizer of political activity and the main subject matter of political science. All these systems are linked together dynamically through the process of human learning which is the main dynamic factor in all social systems. Part of this learning process is the learning of common values and moral choices, without which no culture and no social system is possible. The process by which we learn our preference structures indeed is a fundamental key to the total dynamics of society.

Economics, as such, does not contribute very much to the formal study of human learning, though some philosophical economists like Frederick Hayek [4] have made some interesting contributions to this subject. Our main contribution as economists is in the description of what is learned; the preference functions which embody what is learned in regard to values, and the production functions which describe the results of the learning of technology. We may not have thought much about the genetics of knowledge, but we have thought about its description, and this is a contribution not to be despised.

Thus, economics suggests the proposition that actual choices depend not only on preferences but on opportunities, and that under some circumstances quite small changes in either preferences or opportu-

nities may result in large changes in actual choices made. This proposition applies just as much to ethical choices and common values as it does to private tastes. It throws a good deal of light also on what might be called the evolutionary ecology of ethical systems. Successful ethical systems tend to create subcultures, and these subcultures tend to perpetuate and propagate the ethical systems which created them. This principle helps to explain the persistent division of mankind into sects, nations, and ideological groups. If we were to map the ethical preference systems of the individuals who comprise mankind, we would not find a uniform distribution but we would find a very sharp clustering into cultures and subcultures with relatively empty spaces between the clusters. All the members of a single sect, for instance, tend to think rather alike in matters of ethical judgment and differentiate themselves sharply from the ethical judgments of other sects. Individuals tend to be attracted to one or another of these clusters, leaving the social space between them relatively empty, like space between the stars. The reasons for this phenomenon lie deep in the dynamics of the human learning process, for our preferences are learned mainly from those with whom we have the most communication. This principle accounts for the perpetuation of such clusters, though it does not necessarily account for their original formation, which exhibits many puzzling phenomena. The splitting of these clusters in a kind of mitosis is also an important and very puzzling phenomenon. Once we realize, however, that these are highly sensitive systems as economic analysis suggests, we can see how wide divergences might arise. Thus, the actual difference in preferences and even opportunities between, shall we say, the socialist countries and the capitalist countries, may in fact be quite small, but this differ-

ence is enough to produce a very wide difference in the choices made.

Economics has made its own attempt to solve some of the problems involved in the moral judgment in what we know as welfare economics. I believe this attempt has been a failure, though a reasonably glorious one, and we should take a brief look at it. Welfare economics attempts to ask the question "What do we mean when we say that one state of a social system is better than another in strictly economic terms?" The most celebrated answer given is the Paretian optimum, which states in effect that Condition A of a social system is economically superior to Condition B, if nobody feels worse off in A than in B, and if at least one person feels better off. "Better off" or "worse off" are measured of course by preferences, so that we could restate the condition as saying that State A is superior to State B if one or more persons prefer A and if nobody prefers B. If we permit internal redistributions within the system, that is, compensation, the range of possible superior states is considerably broadened. From this simple principle a wide range of applications has been found possible in a stirring intellectual drama which might well be subtitled "Snow White (the fairest of all) and the Seven Marginal Conditions."

Many, if not most, economists accept the Paretian optimum as almost self-evident. Nevertheless, it rests on an extremely shaky foundation of ethical propositions. The more one examines it, for instance, the more clear it becomes that economists must be extraordinarily nice people even to have thought of such a thing, for it implies that there is no malevolence anywhere in the system. It implies, likewise, that there is no benevolence, the niceness of economists not quite extending as far as good will. It assumes selfishness, that is, the independence of in-

dividual preference functions, such that it makes no difference to me whether I perceive you as either better off or worse off. Anything less descriptive of the human condition could hardly be imagined. The plain fact is that our lives are dominated by precisely this interdependence of utility functions which the Paretian optimum denies. Selfishness, or indifference to the welfare of others, is a knife edge between benevolence on the one side and malevolence on the other. It is something that is very rare. We may feel indifferent towards those whom we do not know, with whom we have no relationships of any kind, but towards those with whom we have relationships, even the frigid relationship of exchange, we are apt to be either benevolent or malevolent. We either rejoice when they rejoice, or we rejoice when they mourn.

The almost complete neglect by economists of the concepts of malevolence and benevolence cannot be explained by their inability to handle these concepts with their usual tools. There are no mathematical or conceptual difficulties involved in inter-relating utility functions, provided that we note that it is the perceptions that matter [2]. The familiar tools of our trade, the indifference map, the Edgeworth box, and so on, can easily be expanded to include benevolence or malevolence, and indeed without this expansion many phenomena, such as one-way transfers, cannot be explained. Perhaps the main explanation of our neglect of these concepts is the fact that we have concentrated so heavily on exchange as the object of our study, and exchange frequently takes place under conditions of at least relative indifference or selfishness, though I argue that there is a minimum degree of benevolence even in exchange without which it cannot be legitimated and cannot operate as a social organizer. We exchange courtesies, smiles, the time of day

and so on with the clerk in the store, as well as exchanging money for commodities. The amount of benevolence which exchangers feel towards each other need not be large, but a certain minimum is essential. If exchangers begin to feel malevolent toward each other exchange tends to break down, or can only be legitimated under conditions of special ritual, such as silent trade or collective bargaining.

Nevertheless, economists can perhaps be excused for abstracting from benevolence and malevolence, simply because their peculiar baby, which is exchange, tends to be that social organizer which lies between these two extremes, and which produces, if not selfishness, at least low levels of malevolence and benevolence. The threat system constantly tends to produce malevolence simply because of the learning process which it engenders. A threatener may begin by feeling benevolent toward the threatened—"I am doing this for your own good"—but threats almost invariably tend to produce malevolence on the part of the threatened towards the threatener, and this is likely to produce a type of behavior which will in turn produce malevolence on the part of the threatener towards the threatened. This can easily result in a cumulative process of increasing malevolence which may or may not reach some kind of equilibrium. The breakup of communities into factions and into internal strife frequently follows this pattern. At the other end of the scale, the integrative system tends to produce benevolence and those institutions which are specialized in the integrative system, such as the family, the church, the lodge, the club, the alumni association, and so on, tend also to create and organize benevolence, even beyond the circle of their members. This is partly because benevolence seems to be an important element in establishing a satisfactory personal identity, especially after the

threat system has been softened by the development of exchange. Those who live under threat, who generally occupy the lower end of the social scale, as well as those who live by threat at the upper end, tend to find their personal identities through malevolence and through the development of counter-threat or through the displacement of hatred onto weaker objects, such as children and animals. Once this state is passed, however, and society is mainly organized by exchange, there seems to be a strong tendency to move towards the integrative system and the integrative institutions. The Rotary Club is a logical extension of a business-oriented society, but it is not one that would necessarily have occurred to economists.

Oddly enough, it is not welfare economics with its elegant casuistry, subtle distinctions, and its ultimately rather implausible recommendations, which has made the greatest impact on the development of common values and ethical propositions. The major impact of economics on ethics, it can be argued, has come because it has developed broad, aggregative concepts of general welfare which are subject to quantification. We can see this process going right back to Adam Smith, where the idea of what we would today call per capita real income, as the principal measure of national well-being, has made a profound impact on subsequent thinking and policy. The development of the concept of a gross national product and its various modifications and components as statistical measures of economic success, likewise, has had a great impact in creating common values for the objectives of economic policy. Another, less fortunate, example of a measure which profoundly affected economic policy was the development of the parity index by the Bureau of Agricultural Economics in the United States Department of Agriculture. As a

measure of the terms of trade of agriculture, this became an important symbol. "A hundred per cent of parity" became the avowed goal of agricultural policy, even though there is very little reason to suppose that the terms of trade of a given historic period, in this case the period 1909-14, have any ultimate validity as an ideal. Because of differing rates of change in productivity in different parts of the economy, we should expect the terms of trade of different sectors to change. If, for instance, productivity in agriculture rises faster than in the rest of the economy, as it has done in the last thirty years, we would expect the terms of trade of agriculture to "worsen" without any worsening of the incomes of farmers, and without any sense of social injustice.

Even though economic measurement may be abused, its effect on the formation of moral judgments is great, and on the whole I believe beneficial. The whole idea of cost-benefit analysis, for instance, in terms of monetary units, say "real" dollars of constant purchasing power, is of enormous importance in the evaluation of social choices and even of social institutions. We can grant, of course, that the "real" dollar, which is oddly enough a strictly imaginary one, is a dangerously imperfect measure of the quality of human life and human values. Nevertheless, it is a useful first approximation, and in these matters of evaluation of difficult choices it is extremely useful to have some first approximation that we can then modify. Without this, indeed, all evaluation is random selection by wild hunches. It is true, of course, that cost-benefit analysis of all sorts of things, whether of water projects, other pork barrel items, or in more recent years weapon systems, can be manipulated to meet the previous prejudices of people who are trying to influence the decisions. Nevertheless, the fundamental principle that we should count

all costs, whether easily countable or not, and evaluate all rewards, however hard they are to evaluate, is one which emerges squarely out of economics and which is at least a preliminary guideline in the formation of the moral judgment, in what might be called the "economic ethic."

Nevertheless, the economic ethic, or the total cost-benefit principle, is subject to sharp challenge. Two principal criticisms have been made of it, the first of which I think is probably not valid, and the second of which may be valid under limited circumstances. The criticism that I think is not valid is that cost-benefit analyses in particular, or economic principles in general, imply selfish motivation and an insensitivity to the larger issues of malevolence, benevolence, the sense of community and so on. It is quite true, as shown above, that economists have neglected the problem of malevolence and benevolence. Nevertheless, our attitudes towards others can be measured at least as well as we can measure other preferences, either by some principle of "revealed preference" or by direct questioning. It is entirely within the competence of economics, for instance, to develop a concept of the "rate of benevolence" which is the quantity of exchangeables, as measured in real dollars, which a person would be willing to sacrifice in order to contemplate an increase of one real dollar in the welfare of another person. If the rate of benevolence is zero, of course, we have indifference or pure selfishness; if the rate of benevolence is negative we have malevolence, in which case people need compensation in order to contemplate without loss the increased welfare of an enemy, or in reverse would be willing to damage themselves in order to damage another. The rate of malevolence then would be the amount in real dollars one would be prepared to damage one's self in order to damage another person to

the extent of one dollar. These rates of malevolence incidentally are frequently quite high. It apparently costs the United States about four dollars to do one dollar's worth of damage in Vietnam, in which case our rate of benevolence towards North Vietnam is at least minus four. In determining cost-benefit analysis we can easily include rates of benevolence and malevolence, adding the benefits and subtracting the costs to those toward whom we are benevolent, multiplied of course by the rate of benevolence, and subtracting the benefits and adding the costs, similarly modified, to those towards whom we are malevolent.

The concept of a rate of benevolence, incidentally, is at least a partial solution to the perplexing question of interpersonal comparisons of utility around which economists have been doing a ritual dance for at least three generations. Any decision involving other people obviously involves these interpersonal comparisons. They are made, of course, inside the mind of the decision-maker and what his rates of benevolence or malevolence are likely to be is determined by the whole social process in which he is embedded. Surely something can be said about this. We are, for instance, likely to be more benevolent to people who are going to vote for us and perhaps malevolent to people who are going to vote against us. The economic theory of democracy indeed as developed by Anthony Downs and others is a very good example of what I have sometimes called "economics imperialism," which is an attempt on the part of economics to take over all the other social sciences.

The second attack on the "economic ethic" is more fundamental and harder to repulse. This is the attack from the side of what I have elsewhere called the "heroic ethic" [1]. In facing decisions, especially those which involve other people, as

virtually all decisions do, we are faced with two very different frameworks of judgment. The first of these is the economic ethic of total cost-benefit analysis. It is an ethic of being sensible, rational, whatever we want to call it. It is an ethic of calculation. We cannot indeed count the cost without counting. Hence, it is an ethic which depends on the development of measurement and numbers, even if these are ordinal numbers. This type of decision-making, however, does not exhaust the immense complexities of the human organism, and we have to recognize that there is in the world another type of decision-making, in which the decision-maker elects something, not because of the effects that it will have, but because of what he "is," that is, how he perceives his own identity.

This "heroic" ethic takes three major forms—the military, the religious, and the sporting. The heroic ethic "theirs not to reason why, theirs but to do and die" is so fundamental to the operation of the military that attempts to apply an economic ethic to it in the form of cost-benefit analysis or programmed budgeting, or even strategic science as practiced by Herman Kahn, T. C. Schelling, or even Robert McNamara, are deeply threatening to the morale and the legitimacy of the whole military system. Religion, likewise, is an essentially heroic enterprise, even though there is a strong streak of spiritual cost-benefit analysis in it. The enormous role which religion has played in the history of mankind, for good or ill, is based on the appeal which it has to the sense of identity and the sense of the heroic even in ordinary people. "Here I stand and I can do no other" said Luther; "To give and not to count the cost, to labor and ask for no reward" is the prayer of St. Francis. "Do your own thing" is the motto of our new secular Franciscans, the Hippies. In our

national religion, President Kennedy said, "Ask not what your country can do for you, ask only what you can do for your country." We find the same principle in poetry, in art, in architecture, which are constantly striving to disengage themselves from the chilling embrace of cost-benefit analysis. I cannot resist quoting here in full what has always seemed to me one of the finest expressions in English poetry of the heroic critique of economics—Wordsworth's extraordinary sonnet on King's College Chapel, Cambridge (Ecclesiastical Sonnet, Number XLIII):

#### INSIDE OF KING'S COLLEGE CHAPEL, CAMBRIDGE

Tax not the royal Saint with vain expense,  
With ill-matched aims the Architect who  
planned—  
Albeit labouring for a scanty band  
Of white-robed Scholars only—this immense  
And glorious Work of fine intelligence!  
Give all thou canst; high Heaven rejects the  
lore  
Of nicely-calculated less or more;  
So deemed the man who fashioned for the sense  
These lofty pillars, spread that branching roof  
Self-poised, and scooped into ten thousand  
cells,  
Where light and shade repose, where music  
dwells  
Lingering—and wandering on as loth to die;  
Like thoughts whose very sweetness yieldeth  
proof  
That they were born for immortality.

Okay, boys, bring out your cost-benefit analysis now! There is a story, for the truth of which I will not vouch, that Keynes once asked the chaplain of King's College if he could borrow the chapel for a few days. The chaplain was overjoyed at this evidence of conversion of a noted infidel until it turned out that Keynes had got stuck with a load of wheat in the course of his speculations in futures con-

tracts and wanted to use the chapel for storage.

The "lore of nicely-calculated less or more," of course, is economics. I used to think that high heaven rejected this because its resources were infinite and therefore did not need to be economized. I have since come to regard this view as theologically unsound for reasons which I cannot go into here, but also for a more fundamental reason. High Heaven, at least as it exists and propagates itself in the minds of men, is nothing if not heroic. The power of religion in human history has arisen more than anything from its capacity to give identity to its practitioners and to inspire them with behavior which arises out of this perceived identity. In extreme form, this gives rise to the saints and martyrs of all faiths, religious or secular, but it also gives rise to a great deal of quiet heroism, for instance, in jobs, in marriage, in child rearing and in the humdrum tasks of daily life, without which a good deal of the economy might well fall apart.

A good deal of the criticism of economics from both left and right arises from dissatisfaction with its implied neglect of the heroic. There is a widespread feeling that trade is somehow dirty, and that merchants are somewhat undesirable characters, and that especially the labor market is utterly despicable as constituting the application of the principle of prostitution to virtually all areas of human life. This sentiment is not something which economists can neglect. We have assumed all too easily in economics that because something paid off it was therefore automatically legitimate. Unfortunately, the dynamics of legitimacy are more complex than this. Frequently it is negative payoffs, that is, sacrifices, rather than positive payoffs, which establish legitimacy. It has been the precise weakness of the institutions that we think primarily of as eco-

nomics, that is, associated with exchange, such as the stock market, the banking system, organized commodity markets and so on, as Schumpeter pointed out, that they easily lose their legitimacy if they are not supported by other elements and institutions in the society which can sustain them as integral parts of a larger community. On the right also we find nationalists, fascists, and the military, attacking the economic man and economic motivation from the point of view of the heroic ethic. It is a wonder indeed that economic institutions can survive at all, when economic man is so universally unpopular. No one in his senses would want his daughter to marry an economic man, one who counted every cost and asked for every reward, was never afflicted with mad generosity or uncalculating love, and who never acted out of a sense of inner identity and indeed had no inner identity even if he was occasionally affected by carefully calculated considerations of benevolence or malevolence. The attack on economics is an attack on calculatedness and the very fact that we think of the calculating as cold suggests how exposed economists are to romantic and heroic criticism.

My personal view is that, especially at his present stage or development, man requires both heroic and economic elements in his institutions, in his learning processes and in his decision-making and the problem of maintaining them in proper balance and tension is one of the major problems of maturation, both of the individual person and of societies. Economic man is a clod, heroic man is a fool, but somewhere between the clod and the fool, human man, if the expression may be pardoned, steers his tottering way.

Let me conclude by stealing another idea from economics and applying it to general moral science. This is the concept

of a production function, some sort of limited relationship between inputs and outputs as expressed in the great biblical principle that grapes are not gathered from thorns, or figs from thistles (Matthew 7:16). There are production functions not only for grapes and figs, but also for goods and bads, and indeed for the ultimate Good. We dispute about what is good, about what outputs we want as a result of the inputs we put in. We dispute also however about the nature of the production functions themselves, what inputs in fact will produce what outputs. In the case of physical production functions the problems can be resolved fairly easily by experimenting, even though there are some pretty doubtful cases, as in the case of cloud seedings, which do not seem to be demonstrably more effective than rain dances. In the case of moral production functions, however, the functions themselves are much in dispute, and there may indeed be more disputation about the production functions than there is about the nature of the desired outputs themselves. I was impressed some years ago, when engaged in a long arduous seminar with some young Russians and young Americans with how easy it was to agree on ultimate goals, even across these widely divergent ideologies, and how extraordinarily hard it was to agree about the inputs which are likely to produce these ultimate goals.

There is a problem here in human learning of how do we get to know the moral production functions in the complex melee of social, political, and economic life, when it seems to be pervaded throughout with a note of almost cosmic irony in which almost everything we do turns out different from what we expect because of our ignorance, so that both the bad and the good we do is all too often unintentional. I cannot solve this episte-

mological problem in one short paper, but I recommend it as a major intellectual challenge to the moral sciences. What I am concerned with here is with economics as an input into this moral production function. Does economics, as George Stigler has suggested, make people conservative [3]? If so, it is perhaps because it simply points out the difficulties and dangers of heroic action and makes people appreciate the productivity of the commonplace, of exchange and finance, of bankers and businessmen, even of the middle class which our heroic young so earnestly despise. Perhaps this is why so many young radicals today have abandoned economics as a poisoned apple of rationality which corrupts the pure and heroic man of their identities and sympathies. Economics is a reconciler, it brings together the ideologies of East and West, it points up the many common problems which they have, it is corrosive of ideologies and disputes that are not worth their costs. Even as it acts as a reconciler, however, does it not undermine that heroic demand for social mutation which will not be stilled in the voices of our young radicals?

I confess I have been deeply disturbed when I have asked myself these questions and I have no easy answers to them. Nevertheless, I am not sorry that I became an economist, for to belong to a body of people who have never even thought of introducing malevolence into their social theory is somehow in this day and age a little cheering. The anxieties, the moral anguish, and the intense dispute which has racked the American Economic Association this year and which is symbolized by the question as to whether we should move our meeting from Chicago is symptomatic of the fact that not even the study of economics can turn people into purely economic men. Strangely enough it was the mathematical economists and eco-

nometricians who were most heroically moved by a sense of outrage against their personal identity, and who were least affected by the cost-benefit analysis. In this year of crisis I have also learned something about myself—that it is easier to make heroic decisions as a member of the committee than it is as a sole decision-maker and that heroism is much less appropriate in political than it is in personal decisions. The lessons of this year, therefore, are that the study of economics does not produce clods, even if perhaps the American Economic Association does not produce undue heroics. So we can hope at least that economics is one of the inputs that helps to make us human. If so, the

benefits of this strange activity will be well worth its undoubted cost, even if in our heroic mood we dare not calculate them.

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