

The Formation of Values as a Process in Human Learning

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One of the unfortunate consequences of speaking an Indo-Aryan language is that we tend to turn things into nouns that really should be verbs, according to the famous Whorfian hypothesis. Thus, the "it" in the expression "It is raining" is a beautiful example of a nonexistent noun or pronoun forced upon us by the structure of the English sentence. The word for "values" used as a plural noun may be another example of a group of virtually nonexistent objects that stands as a grammatical substitute for what is essentially a process. Consider, for instance, the two sentences, "I value you highly," and "You have a high value to me." In terms of meaning, these are almost exactly equivalent, yet the first is much more accurate as a description of what is going on. When value is used as a verb, as in the first sentence, it is clear that it represents something that somebody is doing. When it is used as a noun, as in the second sentence, it seems to suggest a quality that is intrinsic in the object. A search for nonexistent intrinsic values inherent in the commodity object plagued the classical economists for a hundred years, until the ghost was finally laid to rest by Jevons and the marginal utility school.

Valuation can express itself either in verbal statements or in actual choices and behavior. I may make the verbal statement, "I value you highly," but if I will not inconvenience myself to the slightest degree in order to add to your welfare the statement may rightly be suspect. Economists have laid a good deal of stress on what they call "revealed preference," which is what one may deduce about people's preferences, that is, values, from their behavior. We may, however, be justified in speaking of "values" as a noun in terms of the description of a state or condition of preference on the part of an individual or even an organization or other unit of choice. Economists since Pareto have defined preferences in terms of indifference curves or, more generally, in terms of a utility or welfare function, which relates the state of the individual in his environment to some measure of his well-being or welfare. Thus, suppose we have a field that consists of combinations of two elements of choice, A and B, measuring A vertically and B horizontally. Then on Cartesian coordinates we can draw the contours of a welfare or utility function, as in Figure 1. This may be visualized as a mountain rising above the plane of the paper. It may have a summit at S, which represents a point of satiation of both the elements A and B beyond which they become "bads" rather than "goods". Each of the contours of the welfare surface is an indifference curve that is the set of all points in the field representing the same level of welfare or well-being. A whole welfare function represents a "value system" and may quite properly be thought of as a property of the person, group, or organization that it describes.

Within a given value system, such as is shown in Figure 1, the value, whether absolute or relative, placed on either of the elements A and B depends entirely on where we are in the field. From any point in the field the absolute value of an element may be defined as the increase in welfare or utility that would result from a unit increase in the element itself. Thus, suppose we start at the point L with an amount OL of B and zero of A and increase the amount of A. Between L and M, welfare increases, that is, A has a positive value. At M, a small increase in A produces no change in welfare and beyond M, as we move from, say, M to N an increase in A results in a decline in welfare; A then has a negative value or is perceived as a "bad". Similarly, as we increase the amount of B along PQR, between P and Q welfare increases with an increase in B, beyond Q it diminishes.

The relative value of, say, A in terms of B is measured by the slope of the indifference curve at any point, or between any two points. Thus, between the points E and F, which are on the same indifference curve, A is highly valued relative to B. This is

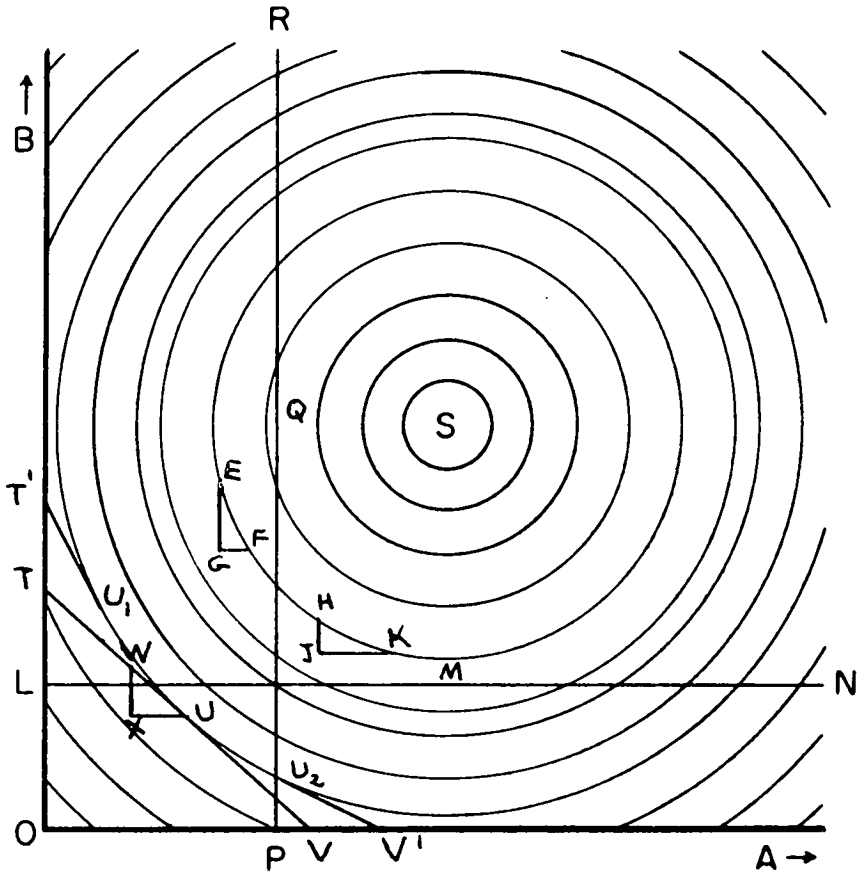


Figure 1.

reflected in the fact that we would be willing to give up a large amount of B (EG) in order to get a small amount of A (GF) and still be just as well off as we were before. By contrast, between H and K, B is valued highly and A not so highly, as reflected in the fact that we will want a lot of A, equal to JK, in order to compensate us for the loss of a little B (HJ). Thus, we do not have a single "value" for either A or B; what we always have is a value system that consists of different values for A and B depending on how much we have of either of them.

Economists have always insisted that actual choice depended not only on the value system but also on the opportunities that were open. A choice is necessitated when the elements in the set of choices are scarce, in the sense that there is a limitation on the quantities that can be obtained, which prevents the chooser reaching the point of satiety. In the field like Figure 1 this is represented by an opportunity boundary, such as the line TUV. What this means is that all combinations of the elements A and B inside the area OTUV are possible for the chooser, that is, constitute a feasible set, assuming at the moment that A and B cannot take negative values and that all combinations beyond this feasible area are impossible of attainment. Economists generally assume that the chooser maximizes his welfare, that is, the point he actually selects is that represented by the point U, where the possibility boundary touches an indifference curve. The point U has the highest welfare that can be attained in the feasibility area.

The concept of a possibility boundary produces another value concept—that of alternative cost. Alternative cost is the slope of the possibility boundary; thus, between, say, W and U we would have to give up WX of B in order to get XU of A. This is value

in the sense of how much we have to sacrifice of one thing in order to get a unit of another. We might perhaps call it objective value by contrast with the subjective value, which is the slope of the indifference curve. At the point of choice these two are the same, given certain assumptions about the nature of the functions, which may, however, by no means always be true.

One proposition of considerable importance that is frequently overlooked follows immediately from this analysis. It is that under some circumstances, which are by no means implausible, a small change in either the opportunity structure or in the preference structure can produce large changes in the optimum point that is chosen. Choice, in other words, can easily be a highly sensitive system responding to small changes in the parameters by large changes in the equilibrium position. This is particularly likely to be the case if the indifference curves and the opportunity boundaries have approximately the same slope. If, indeed, the opportunity boundary and the indifference curve coincide over a range, the position of choice is indeterminate, that is, we have a "dilemma". We quite literally do not know what to choose and a very slight change may take us to one extreme or another. Thus, suppose in Figure 1 the opportunity boundary was $T'U_1U_2V'$. Choice would be indeterminate between U_1 and U_2 where the opportunity boundary and indifference curve were identical. A feather in the balance might move it from U_1 , with a little A and a lot of B, to U_2 , with a little B and a lot of A. This principle has great potential for explaining why value systems tend to cluster around what are often widely diverse points. Thus, as between socialist and capitalist countries the actual preferences and opportunities may not differ very much, but a small difference in the underlying conditions produces large differences in the actual choices made.

This economic approach to valuation, although it clarifies certain concepts and develops the possibility of some important propositions, such as the ones just mentioned, nevertheless has serious defects, most of which relate to the absence of any adequate dynamic considerations in the model. The most serious defect is that economists in general simply assume the preference or welfare functions on the one hand and the opportunity functions on the other without further inquiry and particularly without inquiring as to how these functions come into existence. This is what I have called elsewhere the "doctrine of the immaculate conception of the indifference curve." The opportunity functions and the production functions on which they are based are almost equally immaculately conceived without inquiry into their origins. If we are to receive any understanding of the dynamic processes of society this obviously is not good enough, because both value systems—i. e., preference functions and the opportunity functions that rest on production functions—are learned in a long process of individual and social learning.

Only a very small part of the human value system is genetic in origin, unlike that of the birds and the lower animals whose value system is imparted mainly by their genetic structure. The human comes into the world with certain preferences that are presumably genetically controlled. The baby likes milk, warmth, and mother or some reasonable substitute, and he dislikes hunger, pain, cold, and being wet. On this primitive foundation, the whole elegant structure of human values is learned by a process of information input, output, and feedback. Even sexual preferences seem to be very largely learned, although there are certain potential preferences implicit in the structure of the nervous system. If, however, some people like caviar and red flags, and others like rice and little red books, while still others like hamburgers, French fries, and red, white, and blue, the answer has to be found in the life experience of these people, rather than in their genetic structure. What we know very little about, however, is exactly what elements in the input, output, and feedback history of the individual or society produce what structures in either values or production functions. Production functions perhaps are easier. The Balinese learns how to make batik and how to conduct elaborate and complex interpersonal relations. The American learns how to make automobiles and how to enjoy baseball.

One thing we do know: As people communicate with each other, individual preferences and value systems tend to converge into something that might almost be called a "common value system". A common value system is what defines a culture or a subculture, which consists essentially of a group of people all of whom have rather similar value systems and welfare functions. A common value system almost inevitably

determines an ethical system, which is a common value system in which the value system itself is highly valued, so that people who do not hold it are regarded with suspicion and distaste. Tastes are values about which we can agree to differ. If I like coffee and you like tea, there is no great reason why we should not agree, provided both are available. If two sets of tastes are complementary the case is even better, as with Jack Spratt and his wife. You may recall that Jack Spratt could eat no fat, his wife could eat no lean, and so betwixt the two of them, they licked the platter clean. Tastes that are too similar indeed may lead to conflict, such as the two rival princes who were in complete agreement—they both wanted Milan. On the other hand, with any group of people who are in close communication, these very communications produce conformity in all those things that symbolize membership in the group, whether speech, dress, taste in food, even taste in symbols and ethical principles. We must recognize indeed that in one sense there are no purely individual tastes, just as there are no pure individuals. We are all artifacts of our society. Only those tastes are allowed to the individual that society permits. Any man in our society who has a taste for communism or bigamy, young people who have a taste for pot or LSD, a chemist who has a taste for the phlogiston theory, or an astronomer who has a taste for Ptolemaic theory will soon find that, even in the scientific community, and still more in utopian communities, there are not many tastes that are really private.

The proposition that choice is a highly sensitive system may throw a certain amount of light on how the total structure of preferences developed into cultures and subcultures, i. e., into what might be called "preference clusters". If we could map the value systems or preference structures of all the individuals in the world onto some kind of field, we would find that they would not scatter uniformly around the field but would cluster into value constellations much as the matter in the universe is clustered into stars and the stars into galaxies with large empty spaces between.

The evolutionary model of mutation and selection is perhaps the best one that we have at the moment to interpret the total human learning process, which includes both the learning of value systems and preference functions and also the learning of techniques and production functions. These functions can be thought of as "species" that inhabit the human nervous systems of the world. They propagate by means of communications, i. e., through outputs, inputs, and feedbacks of information, feedback being an input that is perceived as being related to a previous output. As an individual person grows from birth his image of the world or what might be called his "internal universe" continually changes under the impact of information input and output. This is a growth process in the image that is very imperfectly understood. In part it grows by its own internal systematic processes, largely through the generation of internal information inputs in the imagination. In part it grows because of inputs and feedbacks from outside. In this process, dissonances or disappointments are of particular importance. At any one moment we have certain images of the future and as time goes on these are either realized or not realized. If they are realized our general image tends to be confirmed; if they are not realized—if we are disappointed—some revision of the image usually has to be made.

We start off with a genetically constructed value system, with some things having high value (rewards) and others low value (punishments). Our images tend to grow toward the rewards and away from the punishments. However, the value system itself does not remain stationary, but changes as the image develops; that is, we have to learn most of what we regard as rewards and punishments beyond the most obvious physiological level. In particular, we find the approval of those around us rewarding and their disapproval punishing, unless we also learn to put a low value on approval and a high value on disapproval, as may be done at a late stage of development, if the individual rejects the society around him, as some do. Most people, however, do not get to this stage and are socialized into the society in which they grow up, accepting its preference structures and learning its technology. We thus see the process of socialization as something like the reproduction of the gene in biological evolution, by which images, value systems, preference functions, and so on are transmitted from one person to another by a process of simple reproduction, so that the children grow up with much the same value systems as the parents. This is not wholly dissimilar from the process by

which genes reproduce by a kind of three-dimensional printing. In social evolution, however, printing is much less accurate and much more subject to change in transmission. The value systems of children may be very much like that of their parents, but they will rarely be identical and sometimes they may be drastically different.

If we are to understand the processes by which value systems change, we have to look at the phenomenon of social mutation. This consists of the development of images in the mind of a single individual that are different from those around him. This happens presumably because of the internal processes of growth in the image within the individual, and represents in a sense an alternative method of reducing dissonance. If there is dissonance between the incoming messages and the existing image, this may be reduced in at least two ways. We may deny the validity of the messages or we may deny the validity of the existing image and reorganize it. Consider, for instance, the case of a young person who has grown up in a small sect, hearing nothing but the doctrines and the value systems of the sect, who then goes out into the world—to college, for example—and finds himself exposed to a whole set of communications that are dissonant with his values. He may reject these communications as invalid and remain with the sect, or he may decide that the previous communications and images are invalid and may undergo a radical restructuring of his image of the world and his whole value system. Another possible reaction to dissonance is compartmentalization, that is, having one value system for one part of life and another for another. The more complex the society, the more compartmentalization is likely to take place, simply because of the differentiation of roles. The value system that man professes and even practices on Sunday may not be the same as that which he obeys on Monday. The value system that man employs in his professional life may not be that which he employs in his political life. Scientists, for instance, have been known to be quite unscientific when they go into politics.

The situation is further complicated by the fact that in social systems communications do not merely flow from one individual to another, but are dispersed over large numbers of people through mass media. The communications system is not even confined to the present time. We have a very large volume of communications with the dead through their artifacts and especially through their books, their paintings, and other semi-permanent means of communications. A great deal of what happens to a student in college is communication from times past, that is, from the dead. One sees, for instance, the enormous impact of books like the Bible, the last author of which died almost 2,000 years ago. We also have an increasing amount of communication through the mass media, the newspapers, radio, television, and so on by which messages from one person will reach millions of others. In spite of this mass communication, however, face-to-face dialogue, or what might be called "double feedback," is of enormous importance in the formation of value systems. Feedback is one of the most important sources of credibility and, in the case of the mass media, feedback is very remote. Indeed, a conversation that begins "What did you think of the TV show last night?" may have much more impact in changing value systems than the show itself.

Social evolution exhibits much more instability than biological evolution and hence is much more difficult to predict. This is particularly so in the case of evolution of value systems, less so perhaps in the case of the evolution of technology. It is extraordinarily hard to identify evolutionary potential in social systems at the time when it appears. This is why history is always surprising to us as it develops. The great mutations and value systems associated, for instance, with the names of the founders of religions, the prophets, and the poets, are virtually impossible to predict in advance, though perhaps we can say something about what it is that gives them survival value. We look, however, at the impact of individuals like Jesus, Mohammed, and Marx; we see the enormous importance of individuals who become exemplars and who may set a process of reproduction of value systems in the minds of men that profoundly changes the whole social structure. It is hard to see, for instance, how anything in the information system of the Roman Empire could have alerted Tiberius to the fact that in an obscure prophet of humble origins in a small corner of his empire was going to set in motion such an extraordinary chain of events. Similarly, who would have thought that a wild old scholar with a beard in the British museum in the mid-nineteenth century

would have had such an impact on the twentieth. Those who will be the prophets of the twenty-first and twenty-second centuries are likely to be hard to identify now.

In the evolution of value systems, the development of organizations, and the skills of organizations, and especially organizations that are specialized in propagation of value systems, clearly play an important role. One thinks particularly of such organizations as churches, political organizations—especially the national states and political parties, and economic organizations, such as firms and corporations. For any organization to survive in the great ecological system of the social world it must be able to get inputs from its environment and it must be able to send outputs into its environment, and its capacity to do this depends in considerable measure on the structure of value systems and preferences of that environment. The firm, for instance, that is producing something that nobody wants will soon find itself out of business. Political parties, likewise, whose product falls into disfavor are likely to be voted out of office. A church whose doctrines do not appeal to the people around it will soon disintegrate. It is not surprising, therefore, that all organizations become modifiers of the value environment around them. In the case of the firm this is advertising and selling activity; in the case of the church and the political party and the national state, there is preaching and propaganda, often under the name of education, which is designed to change the value environment around it in favor of the survival of the institution. From the point of view of survival of an organization, the value environment may have several aspects, i. e., what in the first place might be called "simple demand" for the product of the organization. If the product is highly valued in the environment the organization will be able to survive in a market environment provided that the market itself is highly valued and legitimated.

At another level there are value systems in the environment regarding the nature of the organization quite apart from its product. Some organizations are valued for their own sake. We might express the same proposition by saying that organizations have outputs that are not commodity outputs; outputs such as, for instance, identity, security, and those subtle outputs that produce inputs of approbation and identification. This relates to the part of the social system I have called the integrative system, which deals with such matters as status, identity, security, approbation, community, identification, legitimation, love, and so on. The survival of organizations, however, is a very complex business. The corporation that nobody loves may survive by producing goodies; the country or church that nobody loves will probably not survive for very long.

The functional relations involved in the integrative system are very tricky and obscure and exhibit all sorts of nonlinearities and discontinuities. Nevertheless, I am convinced that the dynamics of the integrative system dominate all the other elements in the social system, in the sense, for instance, that if an institution loses legitimacy for whatever reason it has a very poor chance of survival. We get, however, extremely complex systems of both negative and positive feedback, sometimes leading to growth and expansion of particular institutions and syndromes, sometimes leading to decay.

Another very interesting problem in the dynamics of value systems is the interrelationship between technology and values, that is, between the growth of knowledge as embodied in production functions and input-output relationships in the commodity world and the development and change of preference and value systems. The problem can almost be summed up by saying "Do we get what we like or do we like what we get?" A value system, or a preference function, is never independent of the field of choice over which it is exercised, and in particular, widening the field of choice through changes in technology may profoundly affect value systems even in those areas where the technology has not changed. The invention of the automobile is an almost classic case in point. There is hardly any area of the value structure that has been left unchanged by this invention. It has changed our religious life, our sexual life, family life, the structure of our cities, and even in some degree the form of government. Television may have an even greater impact in the long run, for by introducing a new and rich channel of information into the home environment, it changes not only the family structure, but the whole learning process of the child and is resulting in a generation far more different from its parents than any generation in human history before. This impact of change in opportunities on the preference structure itself has been almost completely neglected

by economists, though businessmen and politicians have known about it for a long time, and it raises enormously difficult questions for the evaluation of social processes.

We may conclude by applying some of these principles briefly to the transportation industry. This industry exists because the total value system puts a sufficiently high value on moving things and people from one place to another. The proposition that mobility has survival value emerges very early in the game of evolution. This is, indeed, the great difference between animal and vegetable life. Vegetables do not get around, animals do. On the other hand, vegetables are still here in very large numbers, so that obviously mobility has not been essential to evolutionary survival. It may be, indeed, that there are certain disadvantages in mobility and it was this that forced the animal kingdom into those frantic attempts to improve itself that essentially ended in man, whereas the vegetable kingdom was able to realize the survival advantages of immobility and was not forced to develop so much complexity. Perhaps we should conclude therefore that mobility leads to complexity, but not necessarily to survival. We see this principle operating in the social system too. Transportation is a cost rather than a benefit and the less of it we can get away with in a sense the better off we are. The benefit aspects of transportation are nearly always associated with variety. This is especially true of the transportation of humans because, although this has some importance for dissemination, that is, moving people to where they are most useful, the main function of human transportation is the provision of variety of experience, which is something that we do tend to value highly and certainly has to be included as one of the elements in the field of choice.

The transportation system also provides something that has very little to do with transportation as such, namely, identity. A man on horseback not only can travel farther faster than the man on foot, but he is also bigger and more impressive, and he has a larger threat capability, at least in some circumstances. It is not surprising, therefore, that aristocrats were chevaliers, which is simply the French for men on horseback. The domestication of the horse probably did more to destroy equalitarianism and to establish hierarchical social systems than any previous technological development. The fact that if you fed a horse you could not feed a man in an era when the surplus from the food producer was quite small was a very effective guarantee that horses would be scarce and not very many people could have one. This again established hierarchy. The horse, indeed, in a crowded, agricultural society, produces feudalism and the whole feudal set of values, with a distressing degree of probability.

By contrast, the automobile has been a great democratizer. In a technologically advanced society it is feasible for everybody to have one as long as oil supplies hold out, for it does not require a food surplus because it lives on gasoline. The automobile is an extension of the human body just as the horse is, but where the man on the horse is a centaur, proud and domineering, the man in an automobile is just a fast turtle, protected by a shell from the world around him and on a fundamental level of equality with his fellow man in fellow automobiles. The difference between a man in a Volkswagen and a man in a Rolls Royce is much less than the difference between a man on a horse and a man on foot. This is why I suspect that, in spite of the architects and city planners who hate automobiles because they destroy the human scale of the urban environment, the automobile is here to stay as long as we have anything to power it. This large four-wheel bug with detachable brains may in a sense be the evolutionary successor to the pedestrian. The pedestrian, of course, will survive in protected places like college campuses, but we are going to have to face the fact that the pedestrian, like a vegetable, survives as an example of an earlier stage of evolutionary development. The universality of the demand for the automobile and the difficulty that even the communist countries have in suppressing it suggests that we have something here very fundamental and universal in the development of value systems. The automobile indeed is the temple of a new religion, more universal than any of the great religions of the past. It is religion of personal power and human sacrifice and this fact alone makes it extremely difficult to control. We should not be unaware, however, of the possibility of value mutations that will change the automobile culture. We see signs of this in the hippies for whom a "trip" does not connote transportation, and also in quite respectable elements of the

society such as the conservationists, environmental scientists, pollution experts, preachers, and planners.

A problem of particular importance to the transportation industry is the extraordinarily subtle and complex relationships that exist between political decisions on the one hand and the value systems of the electorate on the other. The relation between the value systems of political decision-makers and those of the electorate is loose in the sense that a great many political decisions are made arising out of the structure of political organization that probably do not correspond to the value systems of the electorate. In matters of highway development, for instance, a tax system that gives highway departments large funds only loosely controlled by legislatures has probably had more impact on the development of transportation in this country than any overt electoral process. Political decisions, like technology, also have a back-effect on the value systems of the electorate. There are bandwagon effects, for instance, that suggest that political decisions are, up to a point, self-justified, no matter what they are. Nevertheless, there is a residue of electoral power and of independent dynamic processes of formation of value systems among the electorate that cannot be neglected, and it is this perhaps more than anything else that produces long-run changes. About this sort of thing, however, we do not have a very good information system.

One concluding observation is that even though every institution, organization, and sector of the social system depends heavily for its survival and success on what might be called its value environment—that is, on the value systems of those persons who constitute its environment—the information system regarding this value environment is almost universally defective and this is perhaps one of the prime causes of decisions that lead to disaster. The most glaring case of this is the international system, which has an information system that is almost deliberately designed to produce misinformation and ignorance, but we find much the same thing in decision-makers in regard to domestic policy and particularly in regard to organizations and segments of the economy. A more explicit recognition of the importance of the value environment, therefore, and the development of an information system that can create more accurate images of it could hardly fail to improve the quality of decision-making in all fields.

Discussion

John B. Lansing

I was at first a little amazed that Boulding had chosen to write just this paper for this Conference. But I think it does make a good deal of sense to bring out the initial body of theory, which is very familiar to some people here and perhaps not familiar at all to some of the rest, if I correctly estimate the diversity of this gathering. There are in it a few key ideas that are really quite central to the problem that we are concerned with—quite abstract, but quite relevant.

Boulding immediately puts the value problem in a context of choice. You do not think just one value; you think immediately of a choice between two, and of course that generalizes to as many as you can comprehend. It puts emphasis on the fact that there is a trade-off and what that trade-off is depends on where you are. Thus, what is a good thing at one point becomes a bad thing at another, and vice versa. If we keep that firmly in mind I think we may cope a little more adequately with the community values that we are supposed to do business with here. We operate in terms of constraints, which is another useful notion not to lose sight of and a very familiar one, but one you can drop quite easily in a discussion of something as intangible as this.

I would have emphasized, more than Boulding did, one of the problems. He talks about the dynamics of changing values perhaps rather more than I think we need to. Though of course they are changing on us, we are in a bad enough way to get at the current position—as to what the value systems now are. I think the most serious difficulty is the one he suggests in that amusing bit about the red, white, and blue versus the riots in the little red book, which is that the subcultures, within which values may be taken as homogeneous, do not necessarily include everybody.

I think it is quite reasonable to suppose that the value systems of different racial groups in this country and of people of different socioeconomic status are different. They may very well be meaningfully different in terms of the value systems that we have to deal with here.

Mattie Humphrey

I got a different impression, although not a conflicting one. The challenge that we had prior to the speech—namely, to begin to get at how values can be compared and traded-off—was on my mind when I listened to the talk, and the talk gave me a clue as to why it did not necessarily have to be viewed in that way. The minute Boulding identifies value as process rather than thing, or explicit objective, there is the possibility that values can be derivative rather than competitive; meaning that, if community implies a whole, then one gets at the central core, or the heart, or what is the life-death reality, of the whole and derives the values from that.

There was also an implication that there are a number of communities and we seem to shift from one (the single) to the other (the plural) as we talk about it. We can conceive of an "American community" but then we start talking about the whole community and then we start talking about communities. In one context we are talking about a whole nation and have to derive some values as to what is essential to the life of that nation. But if we get down to another level, where we can talk about differing communities and competitive values, we are not talking about a whole nation and I do not know how clearly this is coming through. I think we have to decide whether we want separate competitive communities to be weighed against each other in terms of trade-offs or whether we want

to get at the heart of what is essential to "the" community—that is, America—and begin to develop and accumulate values that are essential to the comprehensive life of the nation. From my cultural bias, people who are immobilized and forced to deal with conflicting or contradicting realities will tend to develop a more conceptual way of moving around and will begin to use a great deal more imagination because they cannot actually move physical things. . . .

Samuel J. Mantel

I have two very short comments. First, the framework Kenneth Boulding set out—this whole general area of indifference analysis—has buried within it a trap for those who are not accustomed to using it or not accustomed to conceiving things in those terms. The trap is the following: You cannot aggregate individual preferences into group preferences. When you look at preference systems through this frame of mind you cannot expand the set of preferences you find. This means that when you pick up this kind of a format for looking at preferences (and it is an extremely useful one), you must concentrate on selecting the kind of population group you are going to live with for the duration of the analysis.

Second, and this is a pragmatic response to Boulding's speech, the emphasis on the dynamism, I think, is very well taken. Nobody really understands how to go in and identify a set of values in the way we normally rather casually toss out that expression. We do not know anything about them. What we can do though, sometimes, and we all do this when we respond to one another as individuals or watch nations respond, is to gauge changes in value systems and set up our response based on the perception of a change that we do not really understand in or of itself very well.

John B. Lansing

If one can get some reasonable grasp of what an operative value system is at the present time, then one is in a better position to tackle the question of how it is changing. Boulding points out the differential ability of people in various disciplines to understand the nature of change in a value system and the impact that the changing system has on things we are doing now and should be doing in the future.

I think it is clear that values are changing. But, for instance, can we assume that we correctly assessed values when we were building highways in rural areas? The rural resident, even if he had values that differed greatly from those expressed in the highways built in his area, did not utilize the modes of opposition that are used in urban areas today.

Allan B. Jacobs

We have been discussing values, choice, and trade-offs. It seems there has been an underlying assumption accepted that there always is a possibility of trade-off. I would suggest that, concerning some values, there may for all practical purposes be no possibility of trade-offs.

Rodney E. Engelen

In our thinking about values and the use of values, we must remember that we are trying to apply these at many levels. For example, there is the basic level of trying to decide allocation of resources for transportation in contrast to such other social needs as education or recreation. This sort of basic decision-making was involved when the Interstate System was built. The execution of that decision has an impact on a variety of other plans down to the metropolitan level. I do not think we have even begun to get the feedback impact of that Interstate System on our value systems.

We have to make a realistic appraisal of whether we can afford our values. There may be some limit for this country in what we choose to do and value. Maybe we have to find some less costly ways to achieve some values.

Reverend Robert G. Howes

This question of values is one with which we deal occasionally as preachers and planners. I wonder if it might not be necessary to move the discussion of values to a little different level than seems to have emerged so far. . . . We should move the discussion to the level of values as a sense of restraint; a sense of self-sacrifice, a willingness by people to be hurt here and now so that somehow an overall good can be accomplished. . . .

I suggest that unless we are to have total anarchy we have to accept in democracy a notion that somehow a reasonable consensus of reasoning men, at any given point, can be said to have established an overall good. I see a whole set of metropolitan burdens, some of which are objective and some of which are subjectively perceived to be burdens: for example, public housing in suburbs or downtown, airports, noise, pollution. I suggest that what we may require is some kind of a metropolitan ethic—a metropolitan morality. . . . We need a people who, in an enlightened self-interest that can operate only on a metropolitan level within metropolitan parameters and. . . in a reasonably conceived dedication to a common good, will be willing to sacrifice itself somewhat. I think if we are going to look for an enlightened self-interest within local parameters and expect any urban or suburban neighborhood to accept any of these metropolitan burdens without a metropolitan morality of some sort that we are wasting our time; we are not going to get to first base.

Alan Altshuler

If we want to devote this session to beginning to give some direction to the conference, perhaps we ought to become a little bit more concrete in terms of identifying what the central issues are that are agitating the country. It seems to me that the first, and probably the most important, issue in transportation is the egalitarian issue. The way in which this is posing itself is that we clearly have a majority of the country that owns automobiles and is highway-oriented. For this majority of the country, quite clearly, the Interstate System has made mobility greater and has produced great satisfactions. At the same time, by changing the layout of our metropolitan areas in response to the automobile—by placing the places that one wants to get to further and further apart, by encouraging the growth of the automobile and, therefore, destroying the patronage base of transit and, at the same time, by spreading things out reducing the potential for walking as a way of producing mobility satisfaction in society—we have probably produced an absolute, and certainly a drastic, relative worsening of the position of those who cannot get around by car. . . .

The second issue, which really flows out of the first issue, is the issue of what kind of society we are. Are we a crude majoritarian society, or are we a society that is tolerant of, and cultivates, pluralism and diversity and tries to build a near-universal

national consensus for its policies rather than just a majoritarian consensus? And what is the price that we are prepared to pay for a very broad consensus among the major groups of the society, particularly such enormous groups as the blacks in our central cities?

I think it is quite clear that this society is not devoted to total equality. But, if one looks at the issue that agitates the country, it is the demand by some people for equality versus the resistance of others to those demands. This is the drift of American policy, probably over the course of the century, but certainly over the course of the 1960's. It seems fairly clear that the movement of society has been in the direction of greater consensus along several dimensions. The clearest, the one in which there is the greatest degree of consensus, is equality of opportunity. But beyond that, there is increasing agitation over setting minimum welfare standards. There are other aspects as well. There is the issue of equality before the law, the issue of equal consideration for the victims of progress as for those who benefit from progress, and so on. I am not sure exactly how to phrase all of these because some of them shade over into compassion as opposed to equality. But nonetheless these are the issues that are the central domestic issues.

If I was going to theorize a bit further about it, I would say that when American society is not doing as well in the aggregate as many people, particularly economists, believe possible along the dimensions of economic growth, full employment, and so on, that those tend to be the central domestic issues. When, however, we are doing well along the lines of growth and full employment, the central issues become issues of equality or issues of quality... maybe both. By quality, I mean such things as safety, purity of the environment, beauty, and so on. And probably the extent to which we focus on equality as opposed to quality is the extent to which the law and the militants are raising the egalitarian issue. At the present time they clearly are, and particularly in connection with urban highways. That is why the critical value issues that we face in urban transportation today are those in the more densely populated areas of our urban conglomerations, rather than throughout the country.

On the whole, I think the American people are a people which sets rather broad constraints for its government. Only when the government goes beyond those constraints do particular groups of people begin to make a tremendous fuss. The American people do not expect to guide their political leaders in detail; they rather hope to place them within broad bounds.

The one other point I did want to make is that we can learn from the quite natural failures of the past. This is not a matter of using hindsight to blame those who were doing the planning 20 or 25 years ago, but, rather, to try to learn from their experience. Their experience, I think, poses two crucial planning issues for us. As we make a grand design for a long-term future, because we have to, how much ought we to be thinking about leaving ourselves options all along two dimensions? One is clearly the time dimension. The whole grand design should, insofar as possible, be loose enough so that we can change it in response to changing values. We should try to design this flexibility in. The second is to think about which aspects of the total program are really national in scope, statewide in scope, metropolitan-wide in scope. To what extent can we leave state option in national programs, metropolitan option within state and national programs, or neighborhood and small-city option within metropolitan, state, and national programs? A very strong case can be made that we have tended, in the past, not to identify selectively enough those aspects of a national objective that really did require a national policy. Rather, we have assumed that because certain aspects of the policy required national supervision and a national determination of priorities that all aspects of the policy did so. The learning experience that I think we ought to be going through today is that of how much option we can build into these national programs, without sacrificing those values which made a national program necessary in the first place.

Milton Pikarsky

The concept of the public good undergoes evolutionary changes so that, if we are hopeful of coming to some absolute value judgments, we are bound to fail in this area.

One of the examples we have given in discussing the concept of the cost-benefit ratio was the motor fuel tax program of Oregon in 1914, which was the first of its kind. Soon most of the states accepted the same principles, and all of them did by the 1920's. Then the values of priorities came up and the cost of road construction was compared with the benefits to the road user only, without taking into consideration the values of cost to the adjacent owners. We were concerned with the farm-to-market road, with transportation between cities. With the advent of World War II, we found that the heavy urbanization of the cities combined with the deterioration of the existing physical plant and the obsolescence of the plant, due to increased population found at the conclusion of World War II, combined with many other problems of a social nature. We tried to solve some of them with highway funds and highway money. The highway program was used as an aid in the removal of slum areas, something which had widespread approval. We did not realize what dislocating neighborhoods would result in, what dispossessing people would do. As this was realized, Government became involved in more than the physical problems of "...pick up my garbage, take care of new bridges, build a new school." Now we became involved in the social field, the welfare field, education, fighting crime, and other areas where Government had not previously been as greatly involved. I think this evolutionary change will continue.

Donald Appleyard

Values belong to groups of people or communities or to people in different roles. In trying to construct a framework of use to planners, we have to identify value systems in some way with particular groups in the population. It complicates the matter enormously but is much more productive than talking in the abstract.

Each of the professional groups in highway planning also has a different value system or at least weighs values in a different way. It would be useful to identify the value profiles of all such groups.

Abraam Krushkhov

There is a kind of humanistic trend expressed by people here which implies that we are not so much interested in controlling our environment as we are interested in understanding it and relating ourselves to it better. This can be exemplified by the idea that maybe, in some cases, the best use of land is no use at all. I think this is just one difference between the humanistic and the scientific approach as a matrix for the valuing process.

There are three other levels of valuing that are going on today which I think are very important. The astrophysicists and the space explorers are showing us, with each passing day, how miniscule man is in the whole expanding universe and in the diminishing earth as a part of that expanding universe. I believe that what is happening is that we are being subjected to the most massive attack on man's egotism since Copernicus' time. And, if you really see man becoming more and more miniscule in this expanding universe, it almost makes a conference like this useless. Because, you wonder, what are we talking about? Our own egotistical values in a time and place in which, maybe, we are just a passing moment—in this complete solar and interstellar development—and maybe we will not be here much longer due to some possible accident in outer space.

Dropping down another level, to the level of the atom bomb and Vietnam, you can almost see why there is such a fantastic disenchantment on the part of the young people in this country today with the valuing process that is going on in existing urban institutions—they are not buying it. The inflexibility and the rigidity of our present urban institutions and their incapacity to change and renew themselves is what is driving a whole generation of people out of this society.

And, of course, the last level of values may be what we really are here to talk about. This is at the community level and certainly in the area of race relations—all of the factors that have to do with the changing times and the social upheaval that characterize so much of urban society throughout the entire world and not just in this country.

Clarence A. Steele

I just want to make two comments on this excellent paper by Boulding, not necessarily in disagreement, but as an extension of his remarks. He comments in one place about social values changing. I am not so sure that that is exactly what happened. I think it is not so much that the social values change as it is that, at a given time, the emphasis changes. Let me demonstrate what I mean. We were talking at the office the other day about campus disturbances and all that sort of thing. One of the feminine members of our staff said, "Why, 25 years ago, when I was attending one of the local universities here in the District of Columbia, we protested R.O.T.C. We carried placards, and we sat in and disrupted a meeting. How much different is that from what is happening today?" I remember, too, that during the depression when I was doing graduate work at the University of Wisconsin, we had a very active peace group there and those who did not see things quite the same as they did were saying that these people were determined to have peace even if they had to lick everybody else in the world to get it. What I am trying to say is that I think, fundamentally perhaps, there are more similarities than there are differences among us. We emphasize certain points and we disagree on them because a particular thing at one time is important to us, or is made important by a situation that develops. . . .

Erwin A. France

Are there some basic human values? If there are and they can be identified, how can they provide a context in which to look at the whole question of community values as it relates to transportation planning? I believe there are some basic values that traditionally get ignored.

Irwing J. Rubin

Let me share with you some of my observations in Michigan with respect to freeway development. Building a lot of mileage in rural areas had a great positive effect and the negative impact was minimal. When constructing freeways in central cities, we saw the increased housing problems and other difficulties associated with dislocation. We also saw that additional highway capacity was provided. But the value of the additional freeway segments tends to become marginal in many of our cities today. This gets us back to the concept of trade-offs and the different ways in which a particular contour level on the matrix can be achieved.

If we begin to analyze social developments, it has become quite obvious that the major problems are those that relate to dignity, to manhood, to the ability to . . . have an impact

on Government with insistent demands for improving facilities, education, and so forth. But the major thrust is a demand for power. At the same time, all of us have been subjected to a tremendous amount of difficulty in suburban areas, where we find ourselves dealing with fomenting home rule and demands for local control. These, in essence, are not much different from the Black Power demands and the demands of the black community that we find. As a result of all of this, we find ourselves dealing with a better perception and understanding of the urban and metropolitan process. We are forced, many of us very unwillingly, to begin looking at far more fundamental issues which relate to values and are beginning to question whether mobility in and of itself is the thing that we are seeking; or whether what we are seeking is mobility in order to serve the needs, wants, and desires of people in the community in order to achieve certain regional and local goals. . . .