

The Nature of Purpose

David Hawkins

University of Colorado

THERE are a number of connections between what has been dealt with in this conference and what I want to deal with. The notion of purpose has been taken in the sense in which one talks of purposes that already by implication are well defined, whereas my interest is in looking further into the process of the definition of purpose, or of the active meaning of the verb “to purpose.”

In an essay published posthumously in 1952, the American engineer-novelist, Hans Storm,¹ undertakes to contrast two principles of human workmanship. One he calls the principle of design, and the other, by a “slightly bastard etymology,” the principle of eolithism.* The principle of design he describes from the engineering textbooks of the 1920’s, and from his own practical experience as an electrical engineer.

The designer must first know approximately what he wants and how it is to be used. Next is a choice of building material which must be of known and, as far as possible, of uniform properties. This certainty as to what his objective is and this uniformity of the materials are essential to the whole process. They affect not only the geometrical result of good design, but also the mental discipline with which the process of designing takes place. Given a knowledge of the material and the final objective, the one is applied to the other — the design is applied to the material. The plan begins to emerge, checked and extended by the use of well-known arithmetical rules. This process is continued until the whole becomes realistic in detail, making contact — as Storm says — with the existing world.

At this point a change is made from thought construction to physical construction. The direction of the operation is reversed, starting from contact with the material world and piecing together the structure until it embodies the objective with which the whole process started.

As an illustration of what Storm is talking about, let me describe a hypothetical child building a mobile by the principle of design. He begins with various animal figures which are going to decorate the bottom of the mobile. Being a skilled designer, he knows that what

counts for balance is the weight of the figures. Having ascertained their weights, he goes to the drawing board, groups them in pairs or triples, hangs them pictorially on some number of thin sticks, and, using the method of moments, determines for each stick the center of gravity from which it is to be suspended. He now labels each of these drawings with the sum of weights it represents and begins again with the process of grouping and suspending these composite weights, from still other thin sticks. Since at each tier of the mobile the number of weights to be suspended is decreasing by half or more, he soon gets to a last pair or triple of composite weights and draws a suspension of these and, finally, the center of gravity of the whole system. He is finished with the design stage. He now fashions all of his sticks, notching them at the calculated positions. Having designed the mobile from the bottom up, he builds it now from the top down. He lifts it to the ceiling and, lo and behold, the whole thing balances. The result has a quality, as Storm would say, by which it can be universally recognized — a certain internal consistency, a certain finish, an orderly and uniform style, unchildlike to the utmost.

Storm wishes to challenge an assumption that comes with the principle of design in our society, namely, that this principle is basic and universal; an ideal by which we can measure all craftsmanship from its most primitive and blundering beginnings; a presupposition to which all craftsmen are committed, whether they know it or not, or whether they like it or not. To challenge this assumption, Storm, a professional designer himself, puts forth an alternative, a wholly different principle of workmanship for which he borrows the term eolithism. To establish the *human* character of this method, Storm first describes the basis of *animal* craftsmanship. In a very amusing and accurate description of nest-building, he describes it as the accidental by-product of a number of specific little programs released by the occasion, such as picking up twigs and dropping them, with no evidence of interest in the final product which happens, as though by a conspiracy of nature, to assemble itself in the end.

**eolithism*: engaging existing resources and interests as the starting point for learning experiences. [AC]

Storm finds a few examples of this sort of craftsmanship among humans, among the activities of the collectors of books, stamps, crockery, automobile parts, and such like things, but, generally, it is a rare style among us. Far more frequent, although in our society pushed into a corner of disesteem¹ and lowered social status, is the eolithic pattern.

An eolith is literally a piece of junk remaining from the Stone Age. Storm quotes a definition, “stones picked up and used by man and even fashioned a little for his use.” The important matter in the definition is that eoliths were picked up already accidentally adapted to some end and, more importantly, strongly suggestive of the end. We may imagine the person whom the anthropologists describe so formidably by the name of *man*, strolling along in a stonefield, fed, contented, thinking preferably about nothing at all — for these are the conditions favorable to the art — when his eye lights perchance on a stone just possibly suitable for a spearhead. That instant, the project, the very idea of the spear, originates. The stone is picked up, the spear is in manufacture. Not only do the shaft and the thongs remain in the background as things which will in due time no doubt be thought of and be taken care of, but the very need and usefulness of the spear are in a way subsidiary to that instant’s finding; and if the spearhead during the small amount of fashioning that is its lot goes as a spearhead altogether wrong, then there remains always the quick possibility of diverting it to some other use which may suggest itself.

Now we come to the serious point of Storm’s ironic argument. To sharpen the contrast with the principle of design, he says, let us remember the basic principle of the designing workman. He must know what he wants and, even before the design begins, he must decide on his material. The fashioner of eoliths, on the other hand, must have a continually open mind about materials and he must be very adaptable in the matter of ends of what he wants. If the eolith defies the use it first suggested, then, perhaps, there is another use equally interesting and worthy. The essential limitations of the principle of design lie in the givenness and fixity of goals, and the need to eliminate variety and heterogeneity from the means and materials; they are thereby reduced in any significance or value they may have, *except* in serving those given ends.

A characteristic of eolithic craftsmanship is that it never goes twice the same and, therefore, uniform procedures, theories of design, and so forth, are of very little use. The doorpost picked up on the beach was many times as rugged as design would require, and the structure itself so redundant in the bracing which suggested

itself along the way, that the problem of stability simply didn’t require advanced planning. Alternative ends further weaken the requirements of design. The unruly ox, an eolith by Storm’s analogy, is readapted to usefulness in the stewpot, and the tree that fails to bear fruit becomes firewood. Armed with these distinctions and stories, Storm now turns to the examination of our contemporary society which — and he speaks of the 1930’s — has become so dominated by the principle of design that eolithism is all but excluded. All natural eoliths have been long since swept up from urban settings. The only resource for the unsuppressible impulse, where it does emerge, lies in the availability of materials which were once designed for specific use but are now worn out or obsolete. Thus, the great symbol of the eolithic impulse, submerged but not suppressed, is the junkman. Both he and his customers suffer from social disesteem because they do not bow to the dominant principle of design. The logic of the design principle eats farther into the organization of life when designers go from uniformity of materials to uniformity of parts and kits whose mass production eliminates all competing intermediate species. Thus, more and more it happens that a practical man, wanting to satisfy his individual and, by the new standard, eccentric wants, is forced to improvise with materials never intended for these purposes. In the interest of mass production, men’s goals themselves are forced into restricted and stereotype patterns.

A good essay is in its own nature a rather eolithic construction. It begins with some story, some item of curious concrete detail picked out of the course of experience. It explores some chain of associations, abstracting patterns of gradually widening significance, until, finally, something generic and universally relevant has been defined — not defined abstractly, but defined around that spearhead. It is likewise in the spirit of such procedures that one man’s construction would be picked up by another and put to uses which the first might never have foreseen or intended. Hans Storm’s essay lay after his death in an old pile marked, “Returned from Publisher.” As a friend of Storm’s and of his literary executor, I saw it and, having some dim presentiment of use to put it to, got it published as it certainly deserved.

Perhaps, you may guess what my intended use is, but I must confess that I’m still not really too sure — I’m being quite eolithic. Throughout the history of ethics we see many attempts to systematize that part of the common culture which deals with conduct and decision around what we can now refer to as the principle of design. Just as our immediate actions can be organized and grouped around a variety of specific goals or functions,

¹ *disesteem*: low esteem or regard [AC]

so these in turn can be judged as serving a single ultimate goal or *summum bonum*. This must be fixed and unalterable, invariant to all choice. But that implies in turn a goal with roots so fixed in human nature that there is no possibility of significantly questioning or altering it.

With respect to the second requirement of design, the material out of which a life is to be fashioned, well-tested rules of design are needed but also the material must be sufficiently homogeneous to make those rules applicable repeatedly; otherwise, there is no point in having them. The hierarchy of design rules, in this view of accumulated prudential wisdom, is what we call morality.

Now there is a dilemma in this way of thinking, which philosophers usually refer to as teleological or goal-dominated ethical theory, and which has long been noticed by its critics. It appears that the definitions of a supreme goal, a *summum bonum* implicit in human life, whether naturalistic or also super-naturalistic in sanctions, are not specific enough; not of sufficient informational richness to govern choice in the endless variety of concrete situations calling for choice. Such a goal only appears to govern, in the minds of those who claim it as their guide, because they have unwittingly read into it some dominant bias which is, in fact, highly specific — the projection of their own highly specific commitments and engrossments written large. So it is that capitalists and communists will not be outdone in their devotion to the long-run ends of human welfare but claim sometimes to be debating or battling merely over a choice of alternative means. So, a young person debating with himself over a choice of vocation attempts to weigh the alternatives before him as means to his future well-being and satisfaction as he defines those goals at the moment. So, the advocates of civil disobedience and of “Black Power” might debate as to which means is more conducive to the overcoming of racial domination in the United States. In none of these cases, I believe, can we avoid conceding that the purported end, conceived rigorously as invariant to the proposed choice of means, is something somehow ill-defined. To conceive of a Good Society is to be quite essentially vague about the historical development of that society. To conceive a future in America which is no longer vexed by the issues of race is to face the question whether, in that world we seek, “Whitey” will get off very easily or whether he has to suffer and learn a bit more in the process. The inheritance for the future of our society, of the very paths among which we are now attempting to choose, is not at all going to disappear. It is not at all obvious that the futures we are looking at are invariant to this kind of choice in quite essential ways — even, perhaps, in rather grossly visible institutional

ways. It is not easy in general to see goals, future goals in human affairs, with sufficient specificity so that they can, in fact, preside over choices (which we can then call choices of means) and, at the same time, be genuinely invariant to the consequences of those choices. The futures themselves seem to differ, not merely the means. If you represent this graphically, you may draw a choice of means as lines which branch from a choice point and then reconverge. At the point of reconvergence, you could say, from that point on I needn’t take into account the consequences of the choice, because from there on they are washed out. But suppose the lines don’t reconverge? Then I think you have to speak of the choice of ends as well as of means.

Such examples as these, and many others that I am sure you can recall out of your own personal experience, or out of our national political experience, raise very basic questions as to the degree to which the state of such a being as a human being can be conceived independently of his history, or as to the degree to which ends can be conceived independently of means. If ends cannot be defined in such a way as to render them invariant to a choice of means, then there are simply no pure choices of means. Thus, the moral problem of means and ends simply does not arise, which is one way of solving that problem. Theoretically you can say — you know, the standard moral debate “Yes, but does the end justify the means?” If the question arises, the answer *must* be, of course, “no.” We must formulate the end so that it *includes* the means.

If we are to define a goal or a purpose as a future state, on the other hand, to be brought about through instrumental control, it must be defined as an equivalence class, invariant to some range of choice among what we can then call alternative means. The choice of means may then and only then be subsumed under the principle of design, as a choice of instrumental scaffolding, not effecting or entering into the nature of the goal as a goal. They are then subject only to criteria of technical reliability and efficiency where optimization means minimum expenditure of resources applicable to the achievement of other ends.

Storm’s principle of the homogeneity of means in design reaches its pinnacle in our traditions when all the *de facto* heterogeneity of alternative means is declared irrelevant to the definition of the dominant purpose and then measured by a common numeraire² of economic value. Optimization becomes the sole criterion of choice. The implicit notion of a quantity of means gets generalized, in spite of the enormous heterogeneity of the actual means which we employ through the social mechanism of pro-

²*numeraire*: an item or commodity acting as a measure of value or as a standard for currency exchange. [AC]

duction and exchange, and we end with the substantive notion of value basic to the classical economists, from Quesnay to Marx.

If there is a goal which is single, ultimate, and well defined, then all choice becomes instrumental and all choice falls under the principle of optimization, the principle of design, no matter how the goal itself is defined. This is why Kant rather shockingly declared that theological ethics — he had in mind the specific formulation of the goal of obtaining the kingdom of heaven — fall under the principle of hedonism, the pleasure principle.

Once you have such a goal, all action becomes instrumental and the question is simply how to get there. Let me come back in this connection to a question of design that Storm does not explicitly touch. Some ends, some versions of the supreme goal, are already matters of more or less. If you think about pleasure-principle formulations of ethics, you want to maximize the pleasure. Others are all or none, like that of being among the elect in the literal Augustinian version of what it is all about. But these latter goals, although they are, all or none, are quantifiable, intermediately quantifiable in terms of expectation values. I am sure many of you know Pascal's "great wager," which is a careful calculation of this kind. Goal-seeking in the presence of uncertainty, of noise, requires a matching redundancy of effort. Hence by husbanding our resources rather than wasting them, we are able to increase our expectation of success. We have husbanded them for the supreme purpose. Thus, in Kantian context, we get the Protestant ethic which makes it quite clear that if a rich man can hardly enter heaven, as it says in the Good Book, a poor man has even less chance. So, it is not true that the well-designed life is irredundant by the standard of a noise-free or surefire pathway to salvation. In Storm's symbolism, a properly designed structure will have just that degree of redundancy which is sufficient to render it functional in the presence of all the uncertainties involved in the calculations of stresses — you know, the redundancy which is known as a safety factor.

When a child builds a tower out of drinking straws and pins, you might, as an exponent of design (this is my never-never child who operates by the principle of design), urge him to get it up to its intended height with a minimum number of straws; but then you might urge that it be proof against any ten scissor cuts, thus posing a problem close to that of the theory of error-correcting codes. The result would still be design, not eolithism. It was not in this connection that Storm mentioned safety factors, however; it was in connection with the counter-ideal of eolithism to which I now wish to turn.

The starting point, you will remember, was that of a

situation in which purposes are not very clear or very firm and where the materials we find around us are qualitatively diverse and heterogeneous — a situation which in some respects rather does resemble the real world. He said that eolithic structures that were built in this way usually did in fact stand and serve the purposes they had helped to suggest because relative to those particular purposes they would be radically over-designed. And this is where I come to the question of the nature of purpose.

I have argued elsewhere that purposive or teleological description is a proper mode of scientific description in many contexts outside that of human praxis, notably, of course, for some systems in biology and the study of the machine as a quasi-biological system.

What is absent from all such teleology, however, is a certain component of what the philosophers have called intentionality. For most purposes that idea can also just be rendered as intention, but let's use the technical term that has been coined. As long as we restrict ourselves to the description of behavior in living things or machines or people, teleological concepts are appropriate wherever the system described is one for which a particular metastable equilibrium is characteristic of the system, which can be known independently of the particular mechanisms of informational feedback, and so forth, by which the system attains or maintains that equilibrium. What is missing, and what the older antivitalists were objecting to in the vitalises, is the idea that a system which could be described in teleological language in this sense was, thereby, supposed to be a conscious agent *intending* its goal. So, the question now before us is how we are to conceive that special and crucial component of purpose called intentionality. It is my own position that we human beings *have* the concept of purpose, as distinguished from *being* more or less purposive in our behavior — as are all the other animals — because in a new and emphatic sense of the word, we are purposive *beings*.

What I want to point out is that we alone are able to destabilize first, then to modify, and, finally, to invent goals. We are *more* purposive than other animals because we are able to analyze and re-synthesize our goals into more comprehensive patterns of a hierarchical nature; we are able to design our goals. That is the positive side. In a correlative sense, we are *less* purposive than the other animals. This is the negative side. We are all too conscious of the tentativeness and potential inadequacies of these designs we make, and thus are subject not only to deviation from steadfastness but also subject to despair. Where there is no *vision*, the people perish. Not only are we subject to despair but also to withdrawal in the face of despair — which is why that naughty fellow, James Thurber, added "And where there is *television*, the peo-

ple also perish.”

What I am urging is that the root concept of purpose, namely the concept as it functions in the intellectual economy of human praxis, functions because we alone in the animal kingdom are able to set purposes and not just seek them. When our purposes are clear and steadfast, we think least about them and, in the ideal limit, we are not conscious of them at all. They govern but we do not consult them; *we* do not have to. *They* are in charge. They are in use but they are not under scrutiny *as* purposes. Problems that arise then are problems about means, and means are judged in the light of purposes; but, again, the purpose itself does not have to be in focus and you do not have to have a word for it. If men were wholly dominated by fixed and unalterable purposes, biologically built-in and arranged in some automatic hierarchy of priorities, these purposes would never be noticed or talked about, any more than a child who uses the logical form of contra-position is conscious of it as a logical form. It is only because we are committed and able to fabricate the purposes which organize our behavior that we are conscious of purposes or intend them. And intention involves construction, invention. At this point, I believe, we must recognize Storm’s second principle of workmanship and see the verb to purpose as denoting a mode of intellectual activity which is inherently eolithic. Since one cannot accept the conceptual framework of a single, unquestionable goal which is informationally rich enough to discriminate and measure all available choices as being choices among means, it follows that goal-setting is not itself a teleological process that fits the pattern of the theory of design. If it is a teleological process, it is one in a somewhat altered and novel sense. The setting of goals is an eolithic process by nature, and the capacity for setting goals is the capacity uniquely associated with intentionality, with self-consciousness as a phase of experience.

Let us start from the position that at any given time a human being can be described and, indeed, *must* be described, in terms of overt involvements or purposes which, as we say, take up his time; but these purposes are not intrinsically stable and are subject to perturbation. That is the first principle of the eolithic mode.

The second is that the eolithic craftsman is responsive to the suggestions of the heterogeneous and varied nature of his materials when the structure to be fashioned is not a bridge or tower but the individual life, or society’s life. The materials in question will consist of everything the craftsman can command as his own, which means his property, that which is proper to him in the old meaning of *propriety* which I would like to revive. Propriety includes not only one’s physical possessions in the usual

sense but also one’s self, one’s needs, desires, commitments and talents. Peripheral to oneself as center of this sphere are one’s possessions and the resources one can command. These resources of property are not merely instrumental. Because they are heterogeneous and variable, they are not subject to uniform rules of calculation. It is out of this qualitative diversity that purposes get destabilized, just as Storm’s eolithic craftsman finds that, if the spear doesn’t work this time, he’ll find another use for the stone at which he has been working. Purposes get destabilized and in the end reconstructed. Ends may, of course, come into conflict with each other and that is one way of seeing them destabilized, but, if that conflict gets beyond the stage of a mechanical tug-of-war, it leads to a reassessment of resources, a situation which I would define as a tension between established purposes and the collectivity of one’s resources. A purer case arises when there are no conflicting well-defined goals. Storm’s *man* was just wandering among the stonefields, well-fed and content, and, if you had asked him what he was up to at the moment, he would have said, “Oh, nothing much.” But then he saw the odd-shaped stone and it became the very model of what would someday be called the spearhead.

On the eve of such a daring innovation, man has, I think, always a moment of nervousness about the whole enterprise because it occurs to him that it might be successful. Perhaps he has a momentary daydream about impaling the bison with this new device, as the pygmies impale the elephant, and he wonders whether perhaps he isn’t getting too big for his boots. In fact, such an invention will not be a mere means because it will affect the whole quality and organization of his life quite irrevocably. Is he quite sure that he wants to go that way? And, if our ancestors who invented the wheel or the smelter had foreseen us, perhaps they would have shied away from the enterprise or at least thought twice about it. That is one side of the tension between existing goals and available resources but, when we home in on the more typically human resources that we command, there is another side. A part of what it means to say that our resources are heterogeneous and varied is that they do not all fit equally well into a given rationalized pattern of goals. Some of them go unused and underdeveloped or undeveloped. The human clay out of which we fashion our lives is sometimes resistant to the particular fashioning and suggests instead a different goal which it might more readily serve. Not only the odd-shaped stone but the odd-shaped impulse may summon up the customary action for review and suggest its redefinition.

What was the first impulse, the first time, that led to the first act of hospitality? Or the first refusal of the

young or perhaps not-so-young priest to make the human sacrifice? When did that first happen? What was it that moved the elderly lady *not* to get up one day on the bus in Montgomery? Where does the novelty come from that now and then intrudes itself into a standard situation and in the end transforms it into the beginning of a new pattern of work or conduct? Sometimes it might be ennui,³ sometimes it might be the perception of closure in the system of your activities which you have come to realize will not reach beyond a certain domain; you are interested then in something which you perceive as beyond that domain. Sympathy is a potent destabilizer on occasion. It is part of our responsiveness to each other as is the personal authority of those who impress us with skill or assurance or power. Conscience, the internalized voice of authority, may give us pause as may the authority of tradition. Whatever the source, it can be characterized as arising from within the collectivity of our resources, but all of this is only the opening phase. What now comes along is the kind of problem-solving which is different from scientific problem-solving, whether in the theoretical or any other related domain of science. I could call it ethical problem-solving if the word were taken broadly enough to include all redefinition of ends, whether or not they were conspicuously connected with what we would ordinarily call moral issues.

Since alternatives now are not viewed in merely instrumental terms, they are not commensurable with respect to their efficiency in terms of presiding and unquestioned goals, and that means the choice is not made by what we metaphorically call weighing or deliberating, which means in Latin, “from balancing.” The balance implies that you have an operational definition of weight. Aristotle said we only deliberate about means, never about ends, and, in this literal sense of the word “deliberate,” he is, I think, correct. But, if he means the reconstruction of ends is not a reflective, judgmental, or cognitive process, he is clearly wrong. It is a mode of problem-solving and the general form of the problem is this: to what end or system of ends will I commit myself?

My previously accepted goals are destabilized and I am for the moment disengaged, not committed to them. The situation I want to deal with is one in which I know very well the best choice but, for some reason, rebelliously, impulsively, perversely, I do not go along. That fact by itself means I am unwilling to follow my standard, my fixed and stable goal, although at the moment I have no other in which to put my trust. So far, my account is purely factual and descriptive; we simply find ourselves in such situations. But, if I now try to go on and say how, in fact, we behave in such situations, I will have

to list alternatives and then commit myself to a philosophical value judgment, a tough nut for philosophers.

One way of acting is to suppress the offending and destabilizing impulses, characterizing them as bad, wicked, and naughty, together with a showing of guilty emotion. Complete suppression is not guaranteed, however. The impulses may pop up again in the forms which Freud has taught us to be aware of. Or we may stay in the quandary, confused and inactive. Or we may yield to the invasive impulse and break with the past recklessly, risking later regret. Whatever I do, there is an alternative, qualitatively distinct from the others because it is what I *ought* to do. This is a funny kind of “ought,” a philosophical ought, if you wish.

At any rate, let me describe it schematically. It is a process of problem-solving in which I go through several phases which are conceptually distinct; to go through that process is what I ought to do.

In the first phase, I can shift back and forth between the formerly dominant involvement and the habitual standard of evaluation which it carries with it, on the one hand, and the newly suggested alternative, on the other; and at each shift I can both criticize and modify the definition, the description of each alternative, so that I am in effect scanning an increasingly wide range of potential courses of action around each of the original poles. A part of this process is that I look farther than I have before at various factual questions which now become relevant. The new and deviant interest may be superficial and its virtual abandonment without significance. Or I may find in defending the new interest that it plausibly represents some previously unnoticed capacity of talent which has been excluded or undervalued in the dominant economy of my life. I might seriously think of doing something which, at one time previously and according to my still dominant values, I would regard as cowardly, for example. But in a new light it may appear as courageous. Or the opposite.

I may discover inconsistency in the rationalization of the dominant economy or of the proposed departure from it. I may find inconsistency with other interests not directly involved in the original definition of the issue, and so on. The essential point is that, as each originally conflicting viewpoint reasserts itself, I may have to modify the future course of action it proposes, to meet difficulties and objections that have been raised against it. The process is what the lawyers call an adversary proceeding. If it develops well, it does so because each alternative gets progressively modified until, at some point, they overlap, they coincide. This coincidence now defines a solution to the original problem and constitutes

³ *ennui*: a feeling of listlessness and dissatisfaction arising from a lack of occupation or excitement. [AC]

what can properly be called a rational choice of ends. Interests or commitments or desires which initially stood in conflict, old and settled versus new and raw, have now been progressively redefined until as redefined they no longer conflict but are synthesized as a single course of action. And this course of action may resemble the one or the other original course more strongly in initial or overt steps to be taken or it may be quite different from either in outer manifestation. Its sanction is that it has been arrived at by the successive application of relatively impartial, although seldom infallible, tests of consistency, of probable fact, of feasibility, of self-knowledge, of authority, and so on.

A friend of mine once gave what I regard as a nice shorthand formula. When in a dilemma, introduce novelty. This is the real point: successful ventures of ethical problem-solving, in the sense of redefinition of ends, are characterized not by instrumental choice in relation to still more ultimate ends but by a refinement of discrimination, by the invention of previously improbable and thus inaccessible ways of functioning which bring greater order and confidence or competence into our lives. There is nothing arbitrary or subjective about the pattern of such problem-solving. It begins with a situation in which we are, in fact, estranged or alienated from the full power of previous commitments and ends with a situation in which we will, in fact, commit ourselves to action, newly defined, although never quite without a sense of strangeness, discontinuity, and residual anxiety.

What I am trying to get at is a mode of the human capacity which Dr. Bar-Hillel noted in discussing the superiority of the human being as the theorizer. This superiority makes it extremely plausible that machines in their interaction with us should be used in a way instrumental to theorizing rather than as a substitute for it, although the theory of theorizing may very well lead us to fascinating machine experiments. But I would add to Bar-Hillel's emphasis on man as theorizer another and, I think, related emphasis. Man is also uniquely constituted to be a setter of goals — although we have very old traditions which enable us to evade facing this. The modern form in which this emphasis has been stated most acutely, too acutely to be digestible, is that of contemporary existentialism. According to Mr. Sartre, at any particular moment you are making a choice of being what you are and consciousness is choice. Although one can understand the nature of that communication, as a sober philosophical statement it seems to me quite outrageous.

The process of choice itself is not something which happens as though in the blink of an eye — the way Sartre seems to see it. The process of choice is a rational process, if by rational you refer to something that shows strong, essential analogies with other forms of problem-solving, other forms of intellectual activity, the use of similar schemata. Choice then clearly is a rational activity and we cannot say, "I chose to do this" unless we have, in fact, *constructed* the end which we then say we have chosen. The sense of ownership of a purpose — "It's mine because I built it" — is, I think, one way of getting at the mystery of the "philosophical ought." I have committed myself to a goal in a very intelligible way: I built it. Just as you commit yourself to a house when you build one for yourself. If we can get away from thinking of choice as choice among antecedently *given* alternatives and think of choice as a constructive process, then I think we will be at the beginning of some wisdom about the whole discussion of purpose and the whole situation in which we find ourselves, in which means are so often the center of our interests, and ends are so fugitive in our discussion as objects of serious consideration. Then we will perhaps be on the way to making the transition which I, for one, think we are deeply committed to: in such a field as cybernetics we should not only be concerned with something called science, but also concerned with the setting of goals and, in particular, the setting of the goals which we need to set here and now.

David Hawkins (1913–2002), scientist, mathematician, philosopher and educator was the official historian of the Manhattan Project at Los Alamos, New Mexico. A Distinguished Professor of Philosophy at the University of Colorado from 1947 to 1982, Hawkins felt passionate about educating the layman about science, especially about the destructive power of nuclear weapons. David and Frances Hawkins became leaders in improving science education for elementary schools and founded the Mountain View Center for Environmental Education at U of C in 1970.

Notes

¹Storm, H. O. "Eolithism and Design," *Colorado Quarterly*, 1, (3) Winter 1953.