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Source: *The American Journal of Economics and Sociology*, Oct., 1981, Vol. 40, No. 4 (Oct., 1981), pp. 381-400

Published by: American Journal of Economics and Sociology, Inc.

Stable URL: <https://www.jstor.org/stable/3486799>

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Instrumentalism, the Principle of Continuity and the Life Process

By LOUIS J. JUNKER*

"Economics is nothing if it is not a science of value."
(C. E. Ayres, *Theory of Economic Progress*)

ABSTRACT. *Instrumentalism* and the *instrumental logic*, as developed and re-constructed by *John Dewey*, *Clarence Ayres*, and *Jacob Bronowski*, is a mode of *philosophy* exceedingly critical of dualistic, teleological, tautological, and atomistic individualistic biases in philosophy and in *economic theory*. Instead, it has emphasized processual, contextual, and evolutionary systems of analysis, accentuating conceptual linkages, topological connectivity and joint relationships as a basis of rejecting conceptions of scientific neutrality and intellectual "instruments" forged in an insulating and compartmentalizing style. The *principle of continuity* becomes the key to the truth process and its directly associated theory of *instrumental value*. Applying this instrumental philosophy to the critical analysis of the *utility theory of value* underpinning orthodox economic theory not only exposes the theoretical and philosophical failures of the utility approach but also highlights the strengths of the instrumental logic as a reconstructive tool. The "*life process* of mankind" is most enhanced by distinguishing truth from falsity and by applying *warranted knowledge* to the examination of *social and economic problems* and the *power institutions* which give them an exacerbated life.

I

Introduction

THIS ESSAY REFLECTS on some of the important philosophical problems involved in the theory of value inherent in standard or orthodox economic theory, and on some of the basic reasons why the alternative value theory of radical institutionalism—instrumentalism, exemplified in various forms by John Dewey, Clarence Ayres and Jacob Bronowski—presents itself so exceedingly critical of orthodox thinking on this crucial subject. While it is true

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American Journal of Economics and Sociology, Vol. 40, No. 4 (October, 1981).
0002-9246/81/040381-20\$00.75/0

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that the issues involved in this critique are numerous and complicated, this essay will focus primarily on the Principle of Continuity as a central analytical tool and only feature other issues as they assist us in providing a greater degree of clarity on that main theme. By analyzing these alternative value perspectives in economic theory, this essay necessarily offers a display of two conflicting modes (1) in the Philosophy of Science and indicates why orthodox economics has found itself in a continuous crisis of valuation.

Social value theory is at the center of the economic problem as the economic problem is at the center of the crises in civilization (2). The parameters of value theory conceived in that sense are as broad as life itself. For its explanation and clarification it requires not only a supremely integrative and transactive perspective, since it is necessarily a linked system with many parts, but also an evolutionary quality since it must signify theory in motion, itself requiring critical reexamination and reconstruction as the enlargement of knowledge goes forward. This strongly suggests that the central issue in value theory, whether the orthodox value theory of standard economics or the instrumental value theory of radical institutionalism, is the theory of choice, judgment and decision making and its further reflection in the institutions of our lives. Cultural existence and cultural continuity is inconceivable without choosing and genuine choosing in the human sense is not possible without examination of the grounds and the criteria of our choices.

The "criteria of judgment" used to justify our choices and decisions have, all too regularly and all too often, fallen into two basic modes. The first is the absolutistic mode in which the criteria of choice and valuation are rooted in a theory of natural right and natural order, are based upon principles which are understood to be unchanging and unmodifiable in their fundamental characteristics, are generally preconceived and a-priori in their utilization and most usually are amply suffused with emotional conditioning to deepen the human internalization of the preconceived principles. The second is the relativistic mode in which all values are ". . . conceived to be irrational emanations of the social practices which happen to prevail among the peoples whose values they are" (3) or, as in much economic theory, where all human acts are deemed to be the rational expressions of rational beings whose decisions and judgments are considered to be sufficient unto themselves and to be their own final grounding for adequate, rational and true choices with reference to any larger range of objective criteria.

The central problem with an absolutistic and teleological criterion of social value is that it cannot be adaptive to altering and newly emerging cultural circumstance and it cannot accommodate new growth in knowledge. It therefore becomes not only an active obstruction to progressive and integrating

development but also becomes increasingly anachronistic and institution-binding in a practical sense.

The backward orientation and rigidity of such absolutistic criteria is in no way avoided by a malignant relativistic criterion of social value, whether conceived at the cultural or at the "individualistic" level of analysis since the "ultimate" grounding of such theory is absolutistic in character and suffers the same ills. If the relativistic conception is utilized and is reduced to the "individualistic" level (as in most varieties of standard microeconomic utility analysis), it serves to ground and rationalize any and all choices as tenable, efficient and true relative to the individual's needs, desires, and wishes at any particular time with no reference to genuine knowledge and the truth process by which it is identified. All choices are reasonable, rational and informed if the person making them thinks them to be so. Thus, by implication, genuine knowledge as objective process is denied and the choices of individuals are not to be tested against a larger range of information. As a matter of fact, such a test would be considered irrelevant to the requirements of individual satisfaction. It is for these reasons that the relativistic criterion, like the absolutistic, offers us no guidance for social choice since, even at the "cultural" or better the aggregated level, "social" choice can be little more than a compilation of atomistic, noncomparable, isolated individual "choices" for the evaluation of social value. Choices so conceived *are* value expressions but with the implicit or express denial of the cultural context of their formulation and consequences. The cultural variation of the relativistic mode indicates that values are relative to the culture that gives them credence and are deemed true or not by reference to the culture to which a person is committed. In this case there are no transcultural truths. There are two prongs to this type of analysis; the first being genuinely cultural in its conception (such as in much anthropological analysis) and the second type in which the very meaning of social or cultural is based on a simple linear aggregation of individual choices (such as in revealed preference theory) with no greater significance than that these collected choices represent the "community will." Evaluation of the truth of those choices is avoided.

In all the above cases we are faced with a necessary choice of either of two main courses. We are faced either with the acceptance of the assumption that the atomistic individual and his equally atomistic value expression are the first and last unit of calculation and the final reference point for evaluation of choices; or with the assumption that a culture's values are "true" because many people are committed to those values or committed to the idea that the word "true" is itself irrelevant to the whole choosing process. Choices are just choices—period.

All these variants of social value are challenged by the instrumentalist socioeconomic philosophers herein discussed and an important part of their reason for that challenge lies in the way they perceive the Principle of Continuity.

The conditions for human survival and the requirements of a genuine scientific approach compel us to abandon progressively the absolutistic and simple relativistic modes of social value because they offer no genuine conceptual guidance and no perception of the role of warranted knowledge in human affairs. Instead, we need to achieve a working understanding of the changing specific relations and the intellectual premises of a unifying, integrating and extensible value system which emphasizes the constant and persistent human search for warranted knowledge, for more creative and constructive human experience and for more humane institutional forms based upon that evolving knowledge. The emphasis here is not only that we can and must distinguish better from worse knowledge, information and practice, but that we are now distinguishing the *criteria* by which better and worse are to be understood.

The philosophical system that we call Instrumentalism is best identified by its conceptualization and utilization of the instrumental logic. The initial burden of the instrumental logic as earlier developed by John Dewey (4) was nicely summarized by Clarence Ayres in his review of Dewey's Gifford lectures published as *The Quest for Certainty* (5).

As the phrase 'instrumental logic' itself suggests, this philosophy has been from the first explicitly evolutionary . . . that principle itself is overtly Darwinian and represents the first serious attempt to commence the analysis of human thought with the assumption that man is an animal species struggling for survival on a minor planet . . . Beginning thus, with a scientific rather than a theological assumption, Mr. Dewey has no difficulty in going straight on to the demonstration that all human thought—all concepts, categories, logics, and philosophies—are part of the protective equipment of the race in its struggle for survival. Ideas are instruments in the larger activity of living and their validity, far from being absolute or cosmic, is relative to the activity of which they are a part. Such, I take it, was the initial burden of the 'instrumental logic' (6).

The *emphasis* in Dewey's *Essays in Experimental Logic* (1916), was on the explication of the logic of science; the logic of discovery and on ideas and tools as integral instruments in the knowing, thinking and doing process but with much less explicit—one might even say amorphous—reference to what we would now call ceremonial behavior functions. For this reason, Ayres

regarded the publication of *The Quest for Certainty* as a crucial turning point; as a transformation or transmutation of the scope and significance of the explicit character of the instrumental logic. Ayres notes this shift:

But, whereas this issue, as a question, has lurked persistently in Mr. Dewey's mind for many years, he has here for the first time attempted to face it directly and discuss it extensively as after all the major issue of the 'experimental logic' (7)

What is the major issue? That there are large portions of human thought, "concepts, categories, logics and philosophies" that are *not* part of the "protective equipment of the race in its struggle for survival," but in fact diminish our capacity to survive and destroy our capacities to differentiate wasteful and destructive human activities from productive, creative and humane behavior. And now Ayres confirms that Dewey's Gifford lectures change the thrust of the instrumental logic to its explicit dichotomous form, what we might now call the *reconstructed instrumental logic* (8).

To this end he [Dewey] has begun by identifying two contrasting philosophic outlooks with two human activities so basically contrasting that their dichotomy extends backward through geologic time to the dawn of civilization. These are, roughly, myth, legend, magic, and religion, on one hand, and, on the other, technology. The whole gamut of traditional philosophies, from Plato's 'ideas' to the 'essences' of that 'realism' which is just now enjoying so much pulpit popularity, is identified with myth, and magic. It is all a quest for certainty, that is to say, for the fictitious assurance and compensatory solace of an ideology. This is a bold stroke. It amounts to saying that metaphysics proceed from the same motive as superstition, the craving for an escape from the uncertainties of reality into the security of the imaginary, and produce the same effect as superstition, the assurance of an ideology which supplants the actual world: it even achieves this effect by precisely the same method, to wit, by *isolating some portion of the actual world and then by some form of apotheosis raising it to an ultimate or absolute from which ineffable satisfaction—the peace which passeth all understanding—may be derived*. In contrast to all this, the technological or experimental method is that of modifying the conditions of life by facing actuality and dealing with it in such a way that thought, instead of being cut off from actuality in order to provide a refuge for the imagination, is retained in close functional union with practical activity and is therefore mundane and intelligible as thought and definitely instrumental as activity. Science of course provides the most vividly contrasting case of the experimental method. Not only has it exceeded

every other exercise of human ingenuity in its competence to modify the actual conditions of life; in its ideology we find a scheme of categories that is largely if not wholly instrumental in Mr. Dewey's original sense and experimental in the latter connotation. Not quite exclusively, of course. Neither in primitive nor in sophisticated thought are the ideologies of superstition and technology quite distinct (9).

This reconstructed instrumental logic constitutes, at one and the same time, a more general perspective, a general theory and a normative tool for systematically distinguishing "choices," "decisions" and "judgments" which have the overall consequence of diminishing the human creative potential from choices, decisions and judgments which enhance and enlarge the human creative potential. As such, we can distinguish both positive and negative functions in the reconstructed logic. The integral and linked nature of the positive aspect numbers among its logical corollaries a conception of general welfare; a particular view of the democratizing process; and a principle of continuity and among its negative aspects a concept of power; of invidiousness; of master-servant relationships; and of time abortion. I propose not to attempt to analyze all these behaviors in this paper. Professor Marc Tool has recently made a valiant effort to clarify the parameters of instrumentalism and social value theory in a pair of brilliantly executed articles (10). My task is more limited and explicit—to explain the central and commanding role of the principle of continuity in the instrumentalist-institutionalist system and to indicate the bearing of this principle on the core concept of orthodox economic analysis—the utility theory of value.

II

The Principle of Continuity

THE PRINCIPLE OF CONTINUITY in the instrumentalist-institutionalist system is not just a conception of continuousness in any sense. It has a more precise and special meaning. It is not a reductionist "continuity." "Above all, the contemporary naturalist is concerned with the continuity of inquiry. He assumes that scientific, experimental procedures can operate upon all human experience. In terms of reflective inquiry there are no discontinuities. Values, no less than atoms, must come under intelligent scrutiny . . ." (11). It is the ". . . breaking apart of experience" (12) that John Dewey has challenged. "His constant appeal to continuity . . . based on the structure of nature itself . . ." (13) is vitally reflected in the Silliman lectures delivered by Jacob Bronowski at Yale University (14). Bronowski writes:

I believe that the world is totally connected: that is to say, that there are no events anywhere in the universe which are not tied to every other

event in the universe . . . I will repeat it: I believe that every event in the world is connected to every other event. But you cannot carry on science on the supposition that you are going to be able to connect every event with every other event. . . . It is therefore, an essential part of the methodology of science to divide the world for any experiment into what we regard as relevant and what we regard, for purposes of that experiment, as irrelevant.

We make a cut. We put the experiment . . . into a box. Now the moment we do that, we do violence to the connections in the world. Therefore we have always . . . to put a fence around the law, to put a fence around the law of nature that we are trying to tease out. And we have to say "for purposes of this experiment everything outside here is regarded as irrelevant, and everything inside here is regarded as relevant" (15).

But, to anticipate a further part of the argument we must here be reminded that the "cuts" made are all convenient simplifications and that the decoding cannot be right in any final sense because all answers are partial and finite in relation to the assumption of total connectedness in the universe.

. . . while the universe is totally connected, we *cannot* extricate ourselves from our own finiteness. And therefore, we do this decoding by a highly imaginative, creative piece of guess work. But we finish with something that is only a gigantic metaphor for that part of the universe which we are decoding (16).

"We are really saying that there is no system of axioms which can embrace the whole of nature . . ." (17), and our view of it will always then be partial. There is no complete language of science.

. . . if nature is totally connected, then we should prefer those languages or systems which show the highest connection, not because they do in fact show the connections in nature, but because they are coming closest to it (18).

The world is totally connected. Whatever explanation we invent at any moment is a partial connection, and its richness derives from the richness of such connections as we are able to make (19).

Karl Popper takes us on the same path but in a slightly different way (20). He describes science as the search for true theories but he enlarges his descriptive evaluation by saying that ". . . truth is not the only aim of science. We want more than mere truth: what we look for is *interesting truth*" (21) and that

The new theory should proceed from some *simple, new and powerful*,

unifying idea about some connections or relations (such as gravitational attraction) between hitherto unconnected things (such as planets and apples) or facts (such as inertial and gravitational mass) or new 'theoretical entities' (such as field and particles) (22).

Bronowski comments on Popper's remarks:

This is admirably conceived and said. In the most practical way, it leaves no doubt that there is something more in the human search for knowledge than the wish to get the facts right—basic as that is. We want to feel that the world can be understood as a unity, and that the rational mind can find ways of looking at it that are simple, new, and powerful exactly because they unify it (23).

Then, in a brilliant series of passages, Bronowski proceeds to enlarge upon his description of the necessary characteristics of "interesting truth" as unity or what he has called the "richness" of scientific theories and I shall quote them in their entirety:

It is also clear that the demand for unity in a theory goes outside the principle of correspondence, however this is applied. It is an appeal for coherence, and I myself express it by saying that a theory must be *rich*, by which I mean that it must contain a wealth of connections to other theories and the effects that flow from them. Whatever words we use, they express the same conclusion, namely that a scientific theory has to combine the view which sees truth in correspondence with that which sees it in coherence. We cannot expect a theory to be true, but we cannot rightly assess its content unless we give weight both to correspondence, that is, to fact, or effect, and to coherence, that is, to unity or richness.

Since Popper does not develop the concept of unity, let me say something about the concept of richness that I use. It starts from the same recognition that the organization or structure of a theory is a part of its content. However, Popper confines himself to single theories, while I think of the axiomatic system of a science as a whole. Popper has remarked (following Joseph Agassi) that systems of axioms are only provisional, and 'should be regarded as stepping stones rather than as ends;' and he has taken issue with Pierre Duhem and Willard V. Quine for involving the whole system whenever a single theory is challenged. Nevertheless, I hold that the state of a science can only be characterized by the set of axioms which govern it at the time, and the content of a theory can only be measured when we see it embedded in them . . . But a set of axioms in an empirical science is not a linear array of

separate statements (even when they are formally independent). A set of axioms is a topological network, in which the knots or joints are the inferred or theoretical entities which the science has had to create so that it will hold together as a unity. The network is given its character by the pattern of linkages that it forms across the joints, and it is the topological invariants of connection that describe it which I call the richness of a system. A new theory changes the system of axioms, and sets up new connections at the joints which change the topology. And when two sciences are linked to form one (electricity with magnetism, for instance, or evolution with genetics), the new network is richer in its articulation than the sum of its two parts.

What I call the richness of a scientific system therefore has dual aspects (as any network does). In the first place, a system to be rich must be compact: that is, a variety of effects must flow as consequences from a small body of axioms. But of course it will not do merely to count the 'number' of axioms, for such an enumeration has no meaning in itself. To be rich, the body of axioms must be internally connected, so that as many as possible take part in explaining many different effects which otherwise would seem to be unrelated. It is the connections between the axioms which give the system its coherence and its specific structure. And the connections are made by having several axioms share the same pivotal concept, namely, one of the unobserved entities that we postulate to explain the observed effects. Thus a scientific system is rich not so much because its axioms are few in number, as because they are linked at and radiate from a small number of postulated entities—such as force, curvature, valency, binding energy, quanta, elementary particles, and so on (24).

It is especially with these explanations by Bronowski that I have come even more fully and deeply to appreciate the intellectual power of the instrumentalist-institutionalist philosophy. All of its greatest figures (Veblen, Dewey, Ayres and Foster) have struggled to clarify the concept of continuity; the continuum of means-ends, of inquiry, of technology, of truth and of value. How prescient and insightful Ayres was when in 1949 (25), he wrote:

Value is, of course, a relational word like 'truth' and 'cause,' to which, indeed, it is closely related. All these words refer to the interconnect-edness of things in the universe and to the continuity of human experience which is itself a part of the universe. We speak of causality when we are thinking of the unity of the universe; we speak of truth when we are thinking of the coincident unity of our discourse; and we

speaking of value when we are thinking of the likewise coincident unity and continuity of our own life process (26).

In all this the instrumental logic is the pivotal conception because it incorporates, on the one hand, the whole thrust of the continuity principle and all its corollaries and defines our advance and survival possibilities by our capacities to use all the instruments of inquiry to that effect. It conceives that all portions of our knowledge can only be defined *as knowledge* as it links in with and forms joints to other portions thus making the knowing process and the continuum of inquiry necessarily coincident with each other. And that is the only way we can understand the meaning of truth and the truth process. The joints, the linkages, the unifying "richness" of our concepts and theories not only define the integrating character of our universe, of our discourse, and of the entire life process but also necessarily give us our clues to the coincident meaning of causality, truth and the value process. The locus of value, that is, the criteria of judgment by which we know anything to be so or not so in the tentative sense of all science, is the continuum of instruments, tools, concepts, philosophies, categories and ideas by which we create and enlarge upon the "topological network," that is, the truth process. This is our gateway to species sanity without which our flights of imagination and our hypotheses would run wild.

On the other hand, the instrumental logic also incorporates a discontinuity principle; that is, "concepts," "instruments," "philosophies," "categories" and "ideas" that split and divorce portions of human experience in teleological, dualistic, atomistic and individualistic terms, lending themselves to rigid compartmentalization, encapsulation and falsification of all cognition. As truth is unifying, falsity is disunifying in comparative terms and thus the instrumental logic becomes a dynamic tool in which the advance of unification becomes the instrument by which the discernment of disunification is made possible. The advance of science has two simultaneous functions, to progress by successful and continuous linkage—joint expansion and meaning enlargement—and coincidentally to define the character, limits and anachronism of "knowledge" it is outdated. Science is simultaneously progressive and disintegrating and the instrumental logic is the explicit principle recognizing that creative paradox. Thus the instrumental logic is an expression of both creative contradiction and conflict integrated into the entire gamut of human experience. The problem with such discontinuities is that they create the groundwork and prepare the intellectual soil for growing and sustaining mythologies, superstitions, power systems and absolutisms which always serve to provide the means by which mankind plagues itself at all levels of experience and through its multifarious and vested institutional forms.

Before we bring this portion of our analysis to a close let us return to an earlier work by Bronowski, *Science and Human Values*, and remind ourselves of his powerful statement concerning the evolution and evaluation of concepts:

. . . Society has evolved a sequence of central concepts each of which was at one time thought to make it work of itself and each of which has had to be corrected to the next. There was the early eighteenth century concept of self-interest, in Mandeville and others; then came enlightened self interest; then the greatest happiness of the greatest number; utility; the labor theory of value; and thence its expression either in the Welfare State or in the classless society. Men have never treated any one of these concepts as the last, and they do not mean to do so now. What has driven them, what drives them is the refusal to acknowledge the concept as either an edict or self-evident. Does this really work, they ask, without force, without corruption and *without another arbitrary* superstructure of laws, which do not derive from the central concept. Do its consequences fit our experience; do men in such a society live so or not so? This is the simple but profound test of fact by which we have come to judge the large words of the makers of States and systems (27).

What, then, are we to learn and infer from these remarks of Ayres, Popper and Bronowski?

First, that the concept of continuity sets the focus of genuine inquiry and is its central guiding principle. It constitutes the axiomatic grounds for an evolutionary social science whose continuity is not expressed simply in chronological sequences but in logical-temporal connective systems as well.

Second, that all genuine knowledge is creative connections; it is unifying; it is created continuity and linkage and the richness constitutes the integrity of inquiry. Thus Bronowski's description of the richness of a theory is defined by its "topological network;" by its "pattern of linkages" formed "across the joints" is exactly what Ayres means by the coincident unity of a system and its parts related in complex levels of generalization.

Third, that the long standing philosophical separation of modes of truth searching is no longer tenable and that the correspondence, coherence and consequences of theories are really aspects of the same process and cannot be isolated and separated.

Fourth, that genuine truth, so far as we can know it, and genuine values, both of which emerge from the topological network, are related in mutuality and in progressive transformational and transmutational building blocks not simply in relations of contrariety. But mutuality is tricky. There is a difference

between genuine mutuality—the growing topological network without force, fraud or arbitrary power and pseudo-mutuality—that “mutuality” which can be linked and joined and which even displays some modicum of compatability but fails the test of continuity in general when faced with a larger range of knowledge. Thus, pseudo-mutuality refers to those portions of our “knowledge” which split off from and come into conflict with the general topological drift and momentarily cannot be resolved by topological enlargement. If this “knowledge” is backed by funds of arbitrary power the result is the enlargement of malignant ceremonialism.

Fifth, that malignant ceremonialism is in fact a short circuiting process. Its primary “instruments” are ideas and concepts which split the connectivity in human experience. Its intellectual “tools” are precisely those fundamental and arbitrary conceptions upon which the instrumental-institutionalist theorists have heaped their concerted critical attention.

Thus, Dewey spent virtually his entire intellectual life exposing the preposterous dualisms inflicted upon us through all the realms of behavior and thought; the dualisms that bifurcate human experience into encapsulated, isolated and therefore untenable and unexplainable divisions—mind/body, fact/value, individual/social, means/ends, knowing/doing, subject/object and more.

It is upon the “authority” of dualism, teleological reasoning, tautological invertedness and malignant (atomistic) individualisms that arbitrary power is grounded, rationalized and imperiously justified. It was due to the persistent and intellectually tenacious scholarship of Clarence Ayres that we are now better prepared to recognize how these “tools” work in and through orthodox economic analysis not only to encapsulate and distort human experience but also to assist the normalization of this system of dogmas into our consciousness, making us less adaptable and less able to utilize our growing knowledge effectively.

III

Instrumental Economics and the Utility Theory of Value

WHAT IS THE SIGNIFICANCE of all this methodological discussion for economic analysis? I want to address this question not in large generalities but rather with specific attention to a particular problem. It has become something of a national economic pastime for certain commentators on Ayres’ work to present him as some sort of illiterate on the mundance intricacies of orthodox economic theory, claiming in the process that he essentially did himself and all of the economics profession a major disservice by his obstinate and persistent attacks on price theory; on its philosophical foundations and on the assumptions and preconceptions underlying that system (28).

All of these criticisms are, in my judgment, nothing more than stunted excuses for analysis. They are wrongheaded and misconceived because their authors fail to fathom Ayres' total system and fail further to drive their own critique to the central point of Ayres's analytical thrust at orthodoxy. It is all too simplistic for Professor Breit to say, in his now infamous footnote, that it would be easy for any "first rate price theorist" to put Ayres away. Perhaps that is true for this or that technicality in price theory but Ayres was less concerned with such technicalities because his attention was riveted on the jugular vein of orthodoxy. He was driving for the heart of the orthodox system—the utility theory of value—and if this proved friable why then a large portion of those technicalities that economists enjoy manipulating would lose their sense and meaning.

This is *not* saying that price data are not important nor is it saying that we need not analyze price data. It *is* saying that price theory as taught to students in our universities—the games of cardinality, ordinality and revealed preferences—is a patchwork of tautologies, teleologies, dualisms, individualisms and utility assumptions and inferences that make less and less sense in light of advances in the social sciences and the philosophy of science.

Let us see it in the flesh. A colleague of mine has recently revised his well adopted textbook on *Basic Economic Concepts: Microeconomics* (29). He may not fit Breit's definition of a "first rate price theorist," but he is a capable and candid devotee of the orthodox tradition in the fullest sense. How does he instruct students on the meaning of utility theory?:

Utility is a measure of expression of an individual consumer's tastes and preferences. Utility theory assumes that utility is measurable and that it can be assigned by an individual to all units of all the goods and services available to him. The measure of utility or unit of satisfaction is called a *util*. It is understood that people do not actually assign utils, but the theory predicts that people act as if they had roughly calculated utility schedules in their minds as they do their shopping.

Utility is subjective in nature. The absolute number of utils assigned to a unit of a good or service by an individual is meaningless. What is meaningful is how it relates to the number that the individual assigns to other units of the same good or service and to other available goods and services. For example, if an individual assigns 100 utils to the first potato at a meal, 50 utils to the second potato at this meal, and 1000 utils to a steak at this same meal, we can determine that he likes the first potato twice as much as the second potato and that he likes the steak ten times as much as the first potato and twenty times as much as the second potato. The individual could have expressed exactly the same tastes by assigning 2 utils to the first potato, and 20 utils to the

steak. The latter example simply uses a different scale with the utility ratios left unchanged.

Utility comparisons can be legitimately made by a single individual, but it is not possible to compare satisfaction or utility that two different individuals receive from the same good or service. There is no comparable scale. Both an ascetic monk and a high-living playboy may assign 1000 utils to a steak and 100 utils to a potato, so that they would both be expressing a 10 to 1 ratio. However, we cannot conclude from this that they receive the same satisfaction from the steak or potato (30).

Have the powerful minds of the first rate economists really escaped the quaintness in this candid statement or are they just another variant in numbered clothing? "Utility is a *measure* of . . ." "Utility theory assumes that utility is *measurable* . . ." Utility can be "assigned by an individual . . ." "The *measure* of utility or unit of satisfaction is called a util . . ." "Utility is subjective in nature." Utility functions between different individuals are "not possible to compare." "There is no comparable scale." These are all the more obvious points (31). Add a bit of bad logic and infer some general meanings from the entire quotation and what do we have? Almost the entire gamut of fundamental theoretical incapacities that instrumentalists-institutionalists have constantly castigated.

Is there any fundamental difference between this "modern theorist" and Professor Edgeworth as it relates to the issues under examination? Hardly, except perhaps that the former has perhaps stopped hoping for a utilometer-hedonimeter "that could count the atoms of pleasure enjoyed by different people at the same time or even the same person at different times." None has ever been invented (32). The references to measurement under the assumed conditions are nothing more than farce. The subjectivity of utility reflects a classic dualism as well as an inferred atomistic individualism and utility as a unit of satisfaction constitutes a tautological relationship when worked out, with all the implications that the role of inquiry and the growth of knowledge in this analysis have no essential bearing on the choices made, choices changed, or on the dynamics of the continuing process of choice alteration. The non-comparability of utility functions further reflects both utility and scalular atomism as well as a perspective of compartmentalized and uncombinable pieces. This is the point. If it is clear that science is "rich" or truth is "interesting truth" only as it enlarges linkages, continuities and relationships, then any system of concepts which diminishes, obstructs or philosophically misconceives these continuities or, postulates non-continuous, non-linkable concepts loses not only its fruitfulness but its very place as knowledge.

Dualisms create disunity in human experience and in our view of nature. They are non-evolutionary and reductionist. They split the subject from his world of experience and isolate the "human being" so that we cannot know the derivation and significance of our humanity (33). They force us to devise untenable and impossible explanations of behavior patterns, mores and human nature in general with the consequences that the disunifying disease spreads.

Atomistic individualism separates, isolates and encapsulates human beings from each other and then explains society by some useless artificial construct such as social contract by which individuals and society are falsely connected. Tautologies are self-reinforcing and self-defined; utility is satisfaction; satisfaction reflects value; value is measured by price; price is related to utility. The dog is consuming itself tail end first. Teleologies close off relatedness and connectivity. They are non-processual. They deal in first causes and final ends and, in the instrumentalists' language, they are consummatory. As orthodoxy would have it, "production is the means to which consumption is the end," or "wants are primary data."

Science, it might be argued in contrast, is the progressive utilization and incorporation of evolutionary time into our analyses of events and coincidentally, therefore, a firm move towards the de-teleologizing of causality. Geology and biology, for example, have come a much further way than formal economic theory in this respect (34). Some of the most careful and discerning explanations and critiques of the development of utility theory have been rendered for us by one of the world's most respected economists, Nicholas Georgescu-Roegen (35). Most insightfully he began his article on "Utility" for the *International Encyclopedia of the Social Sciences* with the statement: "In the broad perspective the history of economics emerges as a struggle with the problem of value" (36). As he has so skillfully demonstrated, not only are there many specific ways to approach that complicated problem but the very meanings of the ideas have been continually shifting. Needless to say we have not reached the end of that road by far, and the instrumental value theory is another step in our struggle with that complicated value problem.

IV

Conclusion

THE SUM OF THIS ANALYSIS is not only that the philosophical "tools" of orthodoxy and the utility theory of value create a sickly picture of economic science; they have also sought to create a unification of the disunifying principles of suppositious experience. The utility theory of value is palsied at its joints not because there is not a kind of "harmony" in this unification in the narrow sense, but because the specific unification developed by orthodoxy is fundamentally disharmonious with the rest of our emergent knowledge and

with human experience. It is aggressively out of touch and its theoretical constructs are appallingly isolated. It has compartmentalized itself into a theoretical corner and it will not advance itself until it disgorges its own intellectual anachronisms. What will stand of orthodox value theory or of the multitude of "technical tools" and conceptual niceties if the utility theory of value in its present usual form is given up for dead? Very little!

Perhaps that is why Clarence Ayres did not spend a great deal of time concocting utility functions and "measuring" relative choices in utility terms and why he regarded this application of indifference analysis as a subterfuge. When the utility theory of value is shown to be shaky the rest that is built on its foundations seems so much less important.

Thorstein Veblen and Clarence Ayres are in the world-class league in their criticisms of orthodox economics and more importantly for their recognition and development of the principle of continuity as a fundamental conception of genuine science. On this point, their critics are usually hopelessly out-classed.

Radical instrumentalist-institutionalist theorists have been critical of orthodoxy for all these and more reasons but their greatest creation is the reconstructed instrumental logic by which we acknowledge not only the connectivity of the life process as expressed by the linked topology of genuine knowledge and inquiry but also the disunifying character of ceremonial behavior. Our capacities to survive and to sustain our lives effectively and humanely are rooted in this recognition and in our struggles to advance the former and reconstruct the latter.

Bronowski delivers a most appropriate summation remark: "You can prove everything if you no longer distinguish between truth and falsehood" (37). Instrumentalism and the instrumental logic are our tools for discernment and action and the continuous consequences of their application constitute the life line of humanity and that is why we have called it the "Life Process of Mankind."

1. C. E. Ayres, *Towards A Reasonable Society* (Austin: Univ. of Texas Press, 1961), p. 21.

2. Social value theory deals with the problem of choice and the criteria of valuation involved in choosing, and the social value theory of Clarence Ayres, John Dewey and Jacob Bronowski places the process of inquiry and the possibilities of warranted knowledge at the heart of the evaluative process. Economics, in its orthodox theoretical variety, has been oblivious of this trend and still accepts the individualistic-atomistic bias which makes valuation not a cultural process but an atomistically personal matter. Strictly speaking, the growth of genuine knowledge and the changes that occur in its constitution are excluded as dynamic elements in standard economic theory. Consequentially, this leaves an unacceptable latitude for economic power systems essentially to have their way unimpeded by critical attention from orthodox economists who are generally supportive of such latitude. Thus, the economic problem is really a combination of

conceptual backwardness, ideological rationalization and the coextensive unchecked power functioning of existing socioeconomic institutions. Orthodox economic theory is a rationalizing process for the “unseen hand” and a system of avoidance for the application of human intelligence to the planning process necessary to the proper functioning of economic systems. Nevertheless, human intelligence struggles to prevail and the resultant gap between what we are learning—enduring knowledge—and how we rationalize and justify exploitative power institutions (the avoidance or ceremonial control of enduring knowledge) constitutes the root of our economic problem. The economic problem in the crises of civilization in its most general sense therefore centers around the acceptance or rejection of elitist, hierarchical and exploitative institutions (master-servant economic structures) and of their economic consequences in human relationships. Social value theory grapples with the underlying criteria of that struggle.

3. Ayres, *op. cit.* p. 22.

4. John Dewey, *Essays in Experimental Logic* (New York: Dover Publications, 1953). These essays were originally published in 1916 and incorporated four essays from the earlier volume, *Studies in Logical Theory*, published in 1903.

5. John Dewey, *The Quest For Certainty* (New York: Minton, Balch and Company, 1929).

6. C. E. Ayres, Review of *The Quest for Certainty*, *International Journal of Ethics*, Volume 40 (1929–30), pp. 425–26.

7. *Ibid.*, p. 427.

8. I call this the *reconstructed instrumental logic* in recognition of the shift in emphasis that took place with the publication of *The Quest for Certainty*, but not only for that reason. Ayres took what was still a somewhat amorphous tool of analysis and honed it into a finer analytical instrument; applied it explicitly to the analysis of institutions, as Dewey had not, and made it possible for those scholars who followed in his path to more explicitly and unambiguously go straight to the teaching and utilization of this powerful tool of analysis—the ceremonial-instrumental dichotomy. This was, indeed, a reconstruction.

9. Ayres, *op. cit.*, pp. 427–28. (My emphasis.)

10. Marc Tool, “A Social Value Theory in Neoinstitutional Economics,” *Journal of Economic Issues*, Vol. 11, No. 4 (December, 1977), and “Constructs of Value, Freedom and Equality in Institutional Economics,” *The Social Science Journal*, Vol. 15, No. 1 (January, 1978).

11. George Geiger, *Philosophy and the Social Order* (Cambridge, Mass: The Riverside Press, 1947), p. 49.

12. George Geiger, *John Dewey in Perspective* (New York: Oxford Univ. Press, 1958), p. 28.

13. *Ibid.*

14. Jacob Bronowski, *The Origins of Knowledge and Imagination* (New Haven: Yale Univ. Press, 1978). Especially see Chapters 3 and 4 successively entitled “Knowledge as Algorithm and as Metaphor” and “The Laws of Nature and The Nature of Laws.” These lectures are published posthumously but were delivered in 1967 at Yale University. Bronowski died in 1974.

15. *Ibid.*, pp. 58–59.

16. *Ibid.*, p. 70.

17. *Ibid.*, p. 80.

18. *Ibid.*, p. 89.

19. *Ibid.*, pp. 96–97.

20. See Karl R. Popper, “Truth, Rationality, and The Growth of Scientific Knowledge,” in *Conjectures and Refutations: The Growth of Scientific Knowledge* (New York: Harper and Row, 1968) (originally published by Basic Books, 1962) pp. 215–50. In this relatively brief footnote to a complex subject it is to be pointedly noted that Karl Popper, in much of his written work, was exceedingly critical of the pragmatic-instrumental modes in philosophy. Against the tide

of his work and in spite of specific disclaimers there are germs of instrumental philosophy in his thought. Bronowski, in his essay "Humanism and The Growth of Knowledge," brilliantly merges these seminal points of instrumental philosophy as they appear especially in Popper's essay noted above, and shows their fruitful implications for understanding the nature of the truth process. Bronowski's broad and generous interpretation of Popper's views was used essentially as a forcing bed not only to clarify his own ideas but also to pressure the Popperian position to conform to some of its seemingly contradictory germinal implications. Popper's reply to the Bronowski essay is illuminating. (See *The Philosophy of Karl Popper*, Part II, (La Salle, Ill: Open Court, 1974), pp. 1091–95.) He shows that he is in agreement with many of Bronowski's key points and even considers them as part of his own system of thought. Even where it appears that they do disagree it might be strongly suggested that at least a portion of that disagreement in this specific discussion is semantic rather than substantive.

The point to be made of all this is not to argue that Karl Popper is really an instrumentalist in the Dewey-Ayres tradition, but only that some of his important ideas are quite compatible with portions of that system. It should also be clear that I regard Jacob Bronowski as a notable and creative proponent of a variant instrumentalist philosophy exceedingly compatible with Dewey and Ayres; no matter how he formally labeled his particular approach.

21. Quoted in Jacob Bronowski, "Humanism and the Growth of Knowledge," in Paul Arthur Schilpp ed., *The Philosophy of Karl Popper*, Part I, p. 627. (My emphasis.)

22. *Ibid.*

23. *Ibid.*, pp. 627–28.

24. *Ibid.*, pp. 628–29.

25. C. E. Ayres, "The Value Economy," in Ray Lepley, ed., *Value: A Cooperative Inquiry* (New York: Columbia Univ. Press, 1949).

26. *Ibid.*, p. 43.

27. Jacob Bronowski, *Science and Human Values* (New York: Julian Messner, 1956), p. 56.

28. For example, William Breit, "The Development of Clarence Ayres's Theoretical System," *Social Science Quarterly*, September, 1973, especially what has now become the infamous footnote No. 25. This footnote is so concocted and strained in its argument that it deserves a separate and extended commentary which I will give it in a piece entitled, "Ayres's Critique of Orthodoxy and the Breit Footnote." See also Lewis Hill, "The Institutional School of Economic Thought Reconsidered," *The Rocky Mountain Social Science Journal*, 8 (October, 1971), p. 11, in which we are told by a professed institutional economist that dedicated institutionalists should refrain from destructive criticism of conventional theory; and Lewis Hill, "Some Notes on Clarence Ayres' Theoretical Institutionalism," *Social Science Quarterly*, June, 1974, p. 195, which is little more than a repetition of Breit's comments, claiming that Ayres made an error that was both logical and tactical in attacking orthodoxy in his *Theory of Economic Progress*. Paul Strassman claims that Ayres never bothered to be skilled at nor fair to middle run micro- and macroeconomics in his "Technology: A Culture Trait, A Logical Category, Or Virtue Itself?" *Journal of Economic Issues*, 8 (December, 1974), p. 672; and finally, William Patton Culbertson Jr., "The Preconception of Institutional Economics," *Social Science Journal*, January, 1978, p. 8, in which we are informed that Veblen threw out the infant with the bath water in rejecting price theory, that Ayres was an outsider and a marginal man in the economics profession because (!!) he used a questionable strategy in his *Theory of Economic Progress* by opening the book with a scathing attack on price theory. Further, we are informed that even more than Veblen's, Ayres's critique of price theory was superficial because he really wanted to get on with his principal theme concerning the development of industrial society. All of this was done without a serious mention of the utility theory of value! Culbertson's comments are nothing more than warmed over Abba

Lerner who couldn't fathom the main thrust of *The Theory of Economic Progress*, any better than Culbertson does now in his 1945 review in the *American Economic Review*.

29. Werner Sichel and Peter Eckstein, *Basic Economic Concepts: Microeconomics* (Chicago: Rand McNally, 1977).

30. *Ibid.*, p. 141.

31. There are a number of important points to be emphasized here. Economists are not often literate in the fields of philosophy and scientific method and they also have the handicap of thinking they can bluff their way through difficulties in these areas as they bear on economic issues. It is not unusual at all for economists using utility analysis in microeconomics to either deny that philosophical issues are involved altogether or to use the insulating and compartmentalizing argument that they are not philosophers but economists and, while not being able to deal with philosophical issues, they nevertheless know what fine use can be made of utility theory in economic analysis. They seek to salvage what they think they can use from a specific philosophical development while either denying the critical contextual and evolutionary history from which it came or, by claiming that the utility concepts are really only common sense rules that derive entirely from sensible observation of reality to which the philosophical derivation is extraneous.

The conceptual roots of economic utility theory are to be located in the utilitarian philosophical tradition tracing from Locke and the pleasure-pain distinction through Hume, Bentham and the vacillating J.S. Mill to name only the most prominent. The resultant hedonism, subjectively oriented self-interest, natural order conceptions (including Smith's "invisible hand"), natural law theology and psychology have all come under devastating attack and criticism in their respective fields and are considered outmoded by serious scholars. Orthodox economic theorists have insulated and isolated themselves from this overall critical trend and continue to hang on to an array of assumptions, preconceptions, terminologies and meanings which derive from the utilitarian philosophical past and which make it easier to cling to the theoretical fictions of present day price theory. One economic equivalent of these outmoded concepts is the continued adherence to the conservative and hypothetical conception of the self-adjusting automatic market mechanism and the derived concepts of value and price tied to that automaticity principle. The invisible hand of self-adjustment natural order concepts are worthless for dealing with a world of oligopolistic, monopolistic, multinational wielders of power. In economic theory utility is a fictitious euphemism for the elements and influences that determine price and value in the market place. It is a tautology that serves to gloss over the fact that the 19th century economists not only did not know what forces created value or had an understanding of the integrative conception of value, but what is more outlandish is that they had no scientific means of gaining an understanding of them. "Modern" economic theory, in the utilitarian tradition (utility theory of value) is one of the last remnants of an antiquated explanatory system but it nevertheless hangs on not to serve the purposes of knowledge but to rationalize the needs of propagandists and self-justifying economic power institutions. If economic democracy is to survive and grow it can only do so in an intellectual milieu with a more positive and creative conception of value than that of the prevailing utility theory.

32. Professor Guy Routh has done an admirable job of demonstrating that orthodox economic theory stands naked but still unashamed in his excellent book, *The Origin of Economic Ideas* (White Plains, N.Y.: International Arts Sciences Press, 1975), p. 242. See also Nicholas Georgescu-Roegen, "Utility and Value in Economic Thought," *Dictionary of the History of Ideas* (New York: Scribners, 1973), Volume IV, p. 457.

33. It is especially interesting to me that Jacob Bronowski in his posthumously published Bampton Lectures (*Magic, Science, and Civilization*, New York: Columbia University Press, 1978,

p. 20) wrote the following: ". . . I call everything magic which dualizes our view of the world. The Cartesian division between mind and body, I think, is a piece of old fashioned magic which we had better forget." It can reasonably be said that much of formal economic theory is constructed of dualistic conceptions, strongly implying that economic theory, in its orthodox-traditional variety, is more magical than scientific.

34. See S. Toulmin and June Goodfield, *The Discovery of Time* (New York: Harper & Row, 1965).

35. Nicholas Georgescu-Roegen, "Utility" in *International Encyclopedia of the Social Sciences* (New York: 1968), Vol. 16, pp. 236-67; "Utility and Value in Economic Thought," *Dictionary of The History of Ideas* (New York: Scribners, 1973), Volume IV, pp. 450-58; "Choice, Expectations and Measurability," *Analytical Economics: Issues and Problems* (Cambridge: Harvard Univ. Press, 1966), pp. 184-215; "Vilfredo Pareto and his Theory of Ophelimity," *Energy and Economic Myths*, (New York: Pergamon Press, 1976), pp. 307-49. Needless to say I do not want to saddle Georgescu-Roegen with all the critiques explained in this paper, but as I have read what he has written over the years and listened to him explain and criticize the central concepts of economic theory, I take some strength from his work and from his person.

36. *Ibid.*, "Utility", p. 236.

37. Bronowski, *The Origins of Knowledge and Imagination*, p. 80.

New Sociology Journal

THE DEPARTMENT OF SOCIOLOGY of the National University of Colombia in Bogotá has established a new scientific journal for sociology, *La Revista Colombiana de Sociología* (Colombian Review of Sociology). Its first issue gives promise that it will be one of the important scientific journals of the discipline.

One of the articles is on interdisciplinary regional research, the value of which is illustrated by its application in a study of the upper valley of the Cesar River.

Gabriel Restrepo E. is editor-in-chief (director) of the new journal, which is produced by the Documentation and Information Center of the department, headed by Luis Carlos Diaz M. For further information, write the Center, or the review; the address of the latter is Apartado Aéreo 058443, Bogotá, D.E., Colombia.

This initiative is another evidence of the vigorous scholarship inculcated at the university. To promote research, other faculties there produce at least six reviews.