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"WHAT IS TRUTH" IN ECONOMICS?[1]

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IT SEEMS that a great many thoughtful people in the world are like Pontius Pilate in that they ask the question of our title, but "do not wait for an answer." But a considerable number differ from him in the interesting respect that instead of asking others the question they volunteer to give the answer themselves, to others, and to the world, without waiting to be asked. This leads to the writing of books of varying character and size, which one suspects are more interesting on the average to their authors than they are to any considerable number of readers. And to many of those who do read them this may be a comforting thought, since it means that books on methodology probably do not do much damage. The chief reservation would be that they are most likely to be read and taken seriously by the young.

Mr. Hutchison's methodology or philosophy of economics is of a sort which is particularly irritating to this reviewer, especially because it is so common, among people who "ought to know better." The author is a positivist, i.e., one of those who always think of "science" with a capital *S* (if they do not always write it that way) and use it in a context which conveys instructions to pronounce in the awe-inspired tone chiefly familiar in public prayer.

[1] Review of T. W. Hutchison's, *The Significance and Basic Postulates of Economic Theory*. London: Macmillan & Co., Ltd., 1938. Pp. x+192.

This emotional pronouncement of value judgments condemning emotion and value judgments seems to the reviewer a symptom of a defective sense of humor. The attempt to build a social science on these foundations suggests that the human race, and especially a large proportion of its "best minds," having at long last (a very long last) found out that the objects of nature are not like human beings—are not actuated by love and hate and caprice and contrariness, and subject to persuasion, cajolery, and threats—have logically inferred that human beings must be like natural objects, and so viewed by the seeker of knowledge about them.

We read only a few pages into Mr. Hutchison's book before coming to the development of the all-important distinction between science and philosophy, illustrated by an example which in fact admirably illustrates the superficiality and dogmatic oversimplification involved in the author's own position.

> The reason why scientists, unlike philosophers, can build on and advance their predecessors' work rather than each being simply "influenced" by it and starting afresh right from the beginning at the same problems with some complete new system, is that "scientists" have definite, agreed, and relatively conclusive criteria for the testing of propositions, solutions, and theories which "philosophers" do not accept [p. 7].

The meaning, if it has one, is clearly, "go thou and do likewise." The illustration is that of two imaginary economists in an argument as to whether the check system did or did not exist in present-day Paraguay. If they were scientific, they might themselves go to Paraguay and investigate. In that case, the argument might be settled by their actually having a check before them. "Then, having settled the scientific dispute, they might begin a philosophical dispute . . . ." as to whether they had got "the real check-an-sich" or only "the idea or appearance of a check" (p. 8). Now it is surely obvious, without any reference to transcendental reality, that it would be impossible to assert on the basis of any printed slip of paper or other object "before them" whether "the check system" existed or not. One would certainly have to know the history of the "object," and the laws and business usages connected with it. In fact, it is inadmissible to speak at all of "the" check system, if one is making any serious pretense to accuracy;

and if one is talking about a check system at all, one is certainly concerned with purposes aimed at and results achieved as well as with the existence and paths of motion of printed pieces of paper, or any physical events.

In short, such a contrast between glorified science and a caricature of philosophy is not helpful but rather the opposite. But Mr. Hutchison's conception of science has a specious plausibility and a strong intellectual appeal, and that is precisely what makes it dangerous and pernicious and in that sense important, especially (again) because of its appeal to the young. It is utterly remote from "reality," in the "real" sense, in contrast with the artificial and arbitrary use of the word by positivist philosophers, who at bottom are simply bad metaphysicians. The appeal of this method is oversimplification which amounts to serious falsification. Where there are or can be "definite, agreed, and relatively conclusive criteria for the testing of propositions, solutions, and theories," there are no very serious intellectual problems, and no methodological problems whatever. The problem of truth in Mr. Hutchison's subject matter is not one of finding such tests; any tests which can be proposed would rather themselves have to be tested by the propositions of economic theory as already understood.

Mr. Hutchison continues: "The scientist proceeds by means of the two inextricably interconnected activities of empirical investigation and logical analysis, the one, briefly, being concerned with the behaviour of facts, and the other with the language in which this is to be discussed" (p. 9). This statement, like the generalization previously quoted, may pass as a definition of science, though obviously a restricted, if not an arbitrary, one. If science is so defined, the fraction of human knowledge which is "scientific" is almost disappearingly small, and includes no knowledge of human or of social data, or specifically of economics, and most specifically of economic theory—if the key words (including "empirical," "logical," and "facts") are taken in the meaning of ordinary usage.

One who has read critically so far in the book will be moved to read on with the particular object of finding out what the author

actually means by such terms as "empirical" and "logical." He will not have much success. But he will find that Mr. Hutchison does not stick at all to the principles so emphatically put forward in chapter i—which fact is on the whole rather to his credit, though it means that he really has no philosophical position at all. As to observation, he will be able to discern, on coming to the fifth chapter (the last in the book except for a conclusion and an appendix) which in some measure comes to grips with some of the more common and familiar concepts of economics, that the author has quite dropped his rigorous and "hard-boiled" (dogmatic!) pose. Speaking of propositions about such mental attitudes as expectation and the derivation of utility from a commodity, he simply states that he *prefers* "the ordinary usage by which such propositions *are regarded* as definitely verifiable or falsifiable" (p. 146; my italics). He finds a "core of truth in the common-sense 'comparison of utilities' [between persons]" (p. 148), and approves of including "welfare economics" in "economic science." This is a "far cry" from looking for printed pieces of paper (where even the meaning of the printing is assumed to raise no questions).

In the few pages in which the meaning of testing is considered, our author first finds a " 'conventional' element" in the tests which "one lays down" (p. 145) and then apparently asserts that all tests are "purely conventional" (p. 152; also 147, 148, etc., on the "ordinary use of words," and "*how words are in fact used*" [author's italics]). According to this theory, a logically or factually wrong statement is on the same level as a piece of faulty grammar which in no way affects the meaning of what is said. Certainly no one believes that to be true. But in the meantime (p. 147) we also learn that propositions and concepts fulfil the scientific criteria (of empirical testibility) "if we *choose* to define them as doing so, and do *not* fulfill it if we do not choose" (author's italics). Here truth is merely a game in which the players are free to make any rules they please.

Thus when our author "gets down to cases," he seems to abandon entirely his stern insistence on factual testing and to fall back upon the naïve conceptions of common sense. His philosophical position, in the brave passages where he professes one,

would seem to be that of "logical positivism"; that is—if one can hope to state a position which he does not believe to be tenable, acceptably to anyone who does believe in it—knowledge is (or true propositions are) relative to objects of two sorts: (*a*) "things," such as printed pieces of paper, which can be identified by pointing and naming, and (*b*) verbal definitions, which are a pure matter of the use of language in accord with conventional or arbitrary rules: "Purely theoretical analysis consists in the manipulation of concepts in accordance with the rules laid down in their definitions" (p. 30). It is simply assumed that there is actually no disagreement—that no "test" is ever necessary or in question—either as to observed facts or as to the meaning and the truth of any stated inference. One must suppose that there is never any question even as to whether there is disagreement or not, or whether rules arbitrarily laid down are actually followed.

Now, in the present writer's opinion, all this is fundamentally misleading and wrong, if not actual nonsense. The fundamental propositions and definitions of economics are neither observed nor inferred from observation in anything like the sense of the generalizations of the positive natural sciences, or of mathematics, and yet they are in no real sense arbitrary. They state "facts," truths about "reality"—analytical and hence partial truths about "mental" reality, of course—or else they are really "false."[2] Economics and other social sciences deal with knowledge and truth of a different category from that of the natural sciences, truth which is related to sense observation—and ultimately even to

[2] I must deny that any conclusion which can claim any sort of logical validity, or even any meaning, can be drawn from any proposition which is really arbitrary, including mathematics and formal logic itself. This will be more fully explained below. Statements by mathematicians and mathematical logicians which are partly careless formulation and partly based on error of fact are in my opinion largely responsible for the prevalence of this untenable view.

As to economics, Mr. Hutchison approvingly quotes Professor Schumpeter's statement that Gossen's law "is not a law of economics . . . . but an assumption," which is "in principle arbitrary," and "we could . . . . make the opposite assumption, and it could not be called false" (p. 134). I must say categorically that we could not make the opposite assumption, or any divergent assumption, and tell the truth or talk sense about economic behavior. The principle referred to as Gossen's law is a descriptive fact about such behavior, which is a reality. As Whitehead has said of natural science, economics is not a fairy story.

logic—in a very different way from that arrived at by the methodology of natural science. But it is still knowledge about reality. Its character will be considered in more detail after a few general observations about the knowledge problem.

The starting-point of any discussion in this field is recognition that all discussion ultimately rests upon statements of fact and principle which are assumed to be accepted as true and which cannot be defended by argument if they are denied or questioned. If one begins with confident and sweeping assertions about "tests," one is under a corresponding obligation to make it unambiguously clear what sort of propositions do and what sort do not need testing and what tests are accepted as valid and not themselves in need of testing. This follow-up is just what we do not find in Mr. Hutchison's essay.

Even the briefest survey of the problem must recognize at least three types or fields of knowledge, in contrast with Mr. Hutchison's two, and the third type, not considered by him, is by far the most important for the problems of economics with which he is supposed to be dealing. The three fields are: first, knowledge of "the external world," including both the plain man's knowledge of everyday reality and the physical scientist's knowledge of his primary data of observation; second, the truths of logic and mathematics (the problem here is whether knowledge of this sort is knowledge about the same objective reality as the first category or whether it is about thinking or mind—or what is the relation between the two); third, knowledge of human conduct. It is of course in this last field that economic problems lie, though, as will be emphasized, they constitute but a small fraction of that field and only one of several categories which must be recognized within it, and a still smaller fraction of knowledge about human "behavior," if behavior and conduct are most correctly and usefully defined. The subject matter of relevant knowledge of conduct, in contrast with mechanical response, is primarily human interests—interests in action, in contrast with the interest in knowledge—and the relation between interests and action, in our knowledge of both and in action itself.

Regarding our knowledge of the external world, the first fact which calls for emphasis is that the data of immediate observation cannot be taken on their face, but must be "tested." The bare fact that an individual sees, or thinks that he sees, or reports seeing, a physical object or event—in everyday life or in a laboratory —by no means establishes that event as real, or a proposition reporting it as true. In many familiar situations it does not do so even to the observer himself; he sees the "straight staff bent in the pool"; and when observing a sleight-of-hand performance everyone knows that what he "sees" is entirely different from the "reality." Validity has little relation to vividness in the impression or fervor in the report. The "snakes" seen and reported by the sufferer from delirium tremens are probably by no means inferior in such respects to the observations of the scientific zoölogist.

And a second fact, of even greater importance, if possible, is that testing observations is chiefly, and always ultimately, a social activity or phenomenon. This fact makes all knowledge of the world of sense observation, whether that of the plain man or that of the scientist (not to mention knowledge of social data), itself a social activity and a social phenomenon. In addition, it means that all such knowledge is inseparable from (*a*) self-knowledge of the knower, and (*b*) knowledge of other knowers and of their knowledge, or of their "minds," and hence of the nature and conditions of knowing and thinking as such. The concrete nature of this testing process is the subject matter of treatises on scientific method, and it is neither possible nor necessary to discuss it in detail here. The essential point for our purposes is that knowledge of external reality presupposes "valid" intercommunication of mental content, in the sense of knowledge, opinion, or suggestion, among the members of a knowing group or intellectual community. A conscious, critical social consensus is of the essence of the idea of objectivity or truth.

Moreover, a consensus regarding truth is itself by no means a "mere" (undisputed) fact. It rests upon value judgments as to both the competence and the moral reliability of observers and reporters. (It is no matter of a majority vote!) Without a sense of honor (as well as special competence) among scientists—if, say,

they were all charlatans—there could be no science. And if ordinary normal human beings habitually and systematically lied, or talked dream talk (or reported free association), there would be no possibility of any knowledge, or of the existence of minds or intelligence. There could be no "feeling" of truth or of reality; we could never form these notions, or have any communicable, and hence any intellectual, experience. "We" could not exist at all as minds or selves. There might, indeed, be animate beings, or animate objects, making biologically "correct" responses to their environment and to one another's physical behavior. But anything that can properly be called knowledge on the part of any subject is unthinkable apart from self-knowledge and valid intercommunication with similar (competent and trustworthy) knowing selves, living, thinking, and acting in and in relation to a common world of not-self, which is the general object of knowledge. This naturally suggests the question as to how we do know (imperfectly, of course) the content of one another's minds, or how we intercommunicate. This is the problem of the third field of knowledge. But we must first make a few observations about the second field.

With respect to the highly abstract propositions which form the axioms of logic and mathematics, the essential fact is that all such knowledge is at the same time knowledge of the external objective world and knowledge, in a special sense, of the way in which minds work. In the former aspect it differs from the more concrete knowledge which forms the content of the sciences only or primarily in the degree of generality or abstraction. The propositions of algebra, as well as those of arithmetic (in contrast with those of economic theory, as we shall see) are verifiable in the crude empirical sense of that term, to any degree of accuracy which is thought worth the cost, by counting beans. (The "beans" may be imaginary if the problem-solver's memory and imagination have sufficient power and reliability.) In fact, most of the content of arithmetic and algebra consists essentially of "short cuts" or procedures for saving time in computation, as compared with the prohibitively slow and costly method of getting results

by counting. And the propositions of geometry are also empirically verifiable, to any worth-while degree of accuracy, by drawing and measuring figures.

This will probably not be disputed for the "ordinary" algebra of real numbers and "ordinary" geometry, the geometry of Euclidean space. When we go beyond these realms the matter may seem to be otherwise, but a little critical reflection will show that it is a rather superficial seeming. Propositions which involve such concepts as imaginary numbers, or non-Euclidean space, merely represent a higher degree of abstraction; they are still descriptive of the real world.[3] The fact that we can hypothetically reverse some axiomatic propositions, such as that parallel lines never meet, or postulate the opposite, and use the result in valid reasoning, creates no serious difficulty. We can do this with any proposition with content, as long as there is no explicit contradiction. There is a difference only in degree, not an essential difference in kind, between such reasoning and inference from the simplest hypothesis contrary to fact, such as supposing that an object had been in a different position or had been moving in a different direction or at a different velocity than was actually the case, in discussing an automobile accident or a laboratory experiment.

The apparent universal necessity, or a priori validity of any proposition which seems to have it, is far less mysterious than is often represented. It may be true to say that universally necessary propositions are "forms of thought," or laws of intelligence or mind; but such a statement does not mean at all that they are not truths about the real objective world. Rather the a priori necessity of any proposition is simply, and in this writer's view, correctly, explained by the fact that our minds lack any power of really creative imagination or original intuitive knowledge of superempirical reality, and not by the fact that we possess any such powers. Any statement which "must" be true under all conditions is simply a statement of a fact about the world which is so universal and fundamental for experience that we cannot "think

[3] For a brief and particularly illuminating discussion of these problems see the essay "Intelligence and Mathematics," by Harold Chapman Brown, in the volume *Creative Intelligence* (New York: Henry Holt & Co., 1917), pp. 118–75.

it away," or imagine a situation in which it would not be true. (Mr. Hutchison frequently refers in a very matter-of-fact way to what is "conceivable"; e.g., pp. 104, 142.) The real mystery (insoluble to the present writer) is how any mind could imagine, or think it imagined, that there could be a real contrast between the most general features of reality as experienced and what a mind living in and formed by it is able to imagine, or between the fundamental laws of nature and those of thought. The higher the degree of abstraction involved, the easier it is to regard a proposition as a form of thought rather than as a fact about the world.

All this must by no means be taken to imply denial or questioning of the reality of reasoning, as an activity of mind. But extremely little light is thrown on the nature of reasoning by the traditional treatment of formal logic. The heart of intellectual activity consists in the discernment of similarities and differences, the conjunction and separation or "concomitant variation" of attributes, including behavior over time or associated changes in attributes, all of which is fairly well summed up and indicated in the word "analysis."[4]

With regard to the relation between deduction and observation, or intelligence and the senses, in our knowledge of nature, there is not much that should need to be said. Surely anyone who has made any progress at all in the study of philosophy, or even in private reflection about its problems, can be assumed to know that any simple antithesis between observation and inference is utterly untenable, if not downright foolish. The question as to the primary or immediate data of consciousness is perhaps the main perennial, unsolved and probably unsolvable problem of the theory of knowledge as a whole. What is observation? and What is inference? are questions on a par with What is truth? if they do not simply restate the same question. It has been a commonplace, at least since the time of Kant, that ordinary "sense per-

[4] It may be suggested that the nearest we come to creative reasoning is found in "passing to the limit" in mathematical operations. This operation seems difficult to classify as between induction and deduction. "Extrapolative" reasoning has something of the same character, and is especially important in natural science.

ception" is very largely an intellectual operation. And since the dawn of modern science, it has been a matter of arbitrary choice of viewpoint whether what we *actually* "see" is things, qualities, or sensations, or even nerve currents. It is also essentially a commonplace that what we perceive, or are able to perceive, is largely a matter of the "apperceptive mass"—and this involves both expectations and interests.

It should now be clear that we cannot separate the discussion of reality from the discussion of the knowledge of reality, the nature and structure of thinking and the conditions of its validity, or the workings of "mind" (meaning minds). There are two senses in which a distinction can be made between propositions about mind or thinking and propositions about reality. The first relates to "wrong" thinking, or to doubt or opinion recognized as questionable. This is a matter of degree. To the extent that any proposition or idea is regarded as false or as affected with uncertainty, its contents are regarded as subjective, as being in somebody's mind rather than in the objective world. (In a real sense the theory of knowledge is the theory of error and illusion.) The second valid distinction, which is familiar in philosophy and which we have had more occasion to discuss at length, is connected with the limits of our power to postulate or to imagine deviations from reality as known. This also is more or less a matter of degree. The axioms of algebra seem "more certain" and unescapable and hence more mental than those of geometry, and the elementary laws of motion (the nature of mass and force) do not seem very far from the status of geometry as to inevitability. Again, the development of the relativity and quantum theories (discontinuity) has cast doubt on the reliability of what can or cannot be imagined as a test of truth.

All this is chiefly a long preliminary to a discussion of the third field of knowledge, in which lie the methodological problems of economics. The whole subject matter of conduct—interests and motivation—constitutes a different realm of reality from the external world, and this fact gives to its problems a different order

of subtlety and complexity than those of the sciences of (unconscious) nature.[5]

The first fact to be recorded is that this realm of reality exists, or "is there." This fact cannot be proved or argued or "tested." If anyone denies that men have interests or that "we" have a considerable amount of valid knowledge about them, economics and all its works will simply be to such a person what the world of color is to the blind man. But there would still be one difference; a man who is physically, ocularly blind may still be rated of normal intelligence and in his right mind.

Second, as to the manner of our knowing, or the source of knowledge; it is obvious that while our knowledge ("correct" observation) of physical human behavior and of correlated changes in the physical objects of nonhuman nature plays a necessary part in our knowledge of men's interests, the main source, far more important than in our knowledge of physical reality, is the same general process of intercommunication in social intercourse—and especially in that "casual" intercourse, which has no important direct relation to any "problem," either of knowledge or of action—which has been found to play a major role in our knowing of the physical world.

Mr. Hutchison, like other positivists, pretends that knowledge of people's minds is an inference, from the observation of their bodies, of their physical behavior.[6] The least critical considera-

[5] The reference is to interest in action, in contrast with the interest in knowing. It goes without saying that theoretical and practical interests are inseparably connected, though we can talk about them separately, by abstraction. Our theoretical interest in things as things centers in classification, which means the discovery of similarities and differences, including correlation and concomitant variation and probability. The significance of all this for action is obvious; we "predict" the unknown from the known (both in future time and in the present) and predict the effect of our actions upon materials. (All action ultimately reduces to moving matter in space by the use of our muscles.) Yet we unquestionably have purely intellectual interests which are not reducible to the production of desired modifications in the course of physical events.

[6] ". . . . Having examined by introspection the marginal utility of different amounts of money income to himself, [the economist] perceives that this 'inside experience' is correlated with a certain 'external' behaviour of his as regards money income. He arrives at the conclusion by 'external' observation that his 'external' behaviour regarding money is similar, in general, to everyone else's. He assumes

tion of the alleged process of "inference" by which we are supposed to learn of the content of others' minds through observation of their physical behavior would show that it is so different from the inferences either of inductive science or of logic and mathematics that a different word should certainly be used. Cooley has used the phrase "sympathetic introspection," which, loose and "literary" as it is, goes deeper into the realities than the positivistic "simplism."

With reference to a given moment, it may be allowable to say that one "infers" another's thought or feeling from, say, uttered sounds and facial expression. But no brute fact is more familiar than the psychological datum that one does not hear or see much

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or draws the analogy from this, therefore, that everyone else is 'internally' similar to himself.

"We again leave on one side the difficulty as to how this 'internal' assumption could conceivably be tested. This is connected with the crudity of the distinction between 'inside' and 'outside' experience. At this stage we want simply to emphasise the more obvious point that our economist cannot get any general results by introspection alone, but only by observation of 'external' behaviour (which may be so delicate as tone of voice, or facial expression), spoken and written words, etc., but which (to continue with this crude and misleading distinction) must be 'external,' whether further inferences or analogies as to the 'inner' experience are drawn or not" (p. 139).

And again: "Ordinarily, if one asks people how they know that a man gets utility out of a commodity, or . . . . know that one man gets more utility . . . . than another . . . . one will probably receive as an answer something to the effect that 'This man regularly spends a greater percentage of his income on this commodity than the other,' or 'When I asked them how they liked this commodity this man exclaimed in one way, the other in another way.' *That is what is called in ordinary language* 'one man getting more utility out of a commodity than another' " (see pp. 147–48; his italics. This statement might be labeled as a warning, to philosophers and others, as to the kind of thing a philosopher is likely to say under the urge to establish some theory which is far simpler than the facts; of a certainty, no one thinks that in speaking of an experience of enjoyment he means "exclaiming" or any physical act.)

On p. 143 Mr. Hutchison enters an express denial that his analysis of "introspection" is in any way to be confused with doctrines of solipsism or behaviorism, and says that he makes no assertion about the reality of consciousness, or the existence or nonexistence of anything. The clear meaning is that he has no philosophical position, and no theory of knowledge which is of any use in doubtful cases, where alone a theory is of any significance. The bare fact that Mr. Hutchison completely ignores intercommunication, while he makes all inferred or deduced truth a matter of "convention," means that the final precipitate is mostly confusion.

more than one understands. What we immediately, consciously, apprehend is the "meaning," and if called upon to reproduce the physical facts we should do so chiefly by "deduction" from the remembered meaning, not from any direct recall of sense data. Surely no one thinks that from any conceivable knowledge of the physical world it would be possible to predict what interests intelligent beings living in it would have, even if all conceivable knowledge of human psychology be thrown in.

What is really in question is the nature of intelligence, which can only be discussed by considering the process by which intelligence is built up in the individual, or by which an intelligent individual comes into existence. "We" undeniably live in a world where intelligence is the property of human beings who are born, live through a common life-cycle and die—both as biological units and as minds. And they are certainly born completely ignorant, without minds, and acquire knowledge and intelligence by a process about which the developed intelligence knows and can say a good deal.[7] Under the conditions of the only world we know anything about, knowledge and intelligence are completely "unthinkable" apart from a continuing and developing social process of learning. This necessarily involves for the learner intercommunication with other selves, including large numbers of selves who know (have learned) vastly more than himself and all of whom live in and react to a world of not-self, about which they habitually intercommunicate. Thus our knowledge of the world and our knowledge of one another and of "mind" in general form inseparable bodies of knowledge which must be studied in relation to one another, if we are to know anything about any of them, or to talk sense about them. All are to be accounted for "genetically" in terms of a twofold historical evolution, in the individual and in the race.

[7] Whether it is possible for human beings to conceive or imagine an immortal mind, which never learns but is eternally omniscient or at least eternally knows all that it ever knows (or to imagine a community of such minds) is a question which need not be argued here. The reader will be correct in inferring that the writer is very doubtful about it.

Among the citations with which Mr. Hutchison prefaces his fifth chapter (and specifically its first section, on "The 'Psychological Method,' " is the following from Wieser:

> "We can observe natural phenomena only from outside, but ourselves from within." The employment of this inner observation is the psychological method, "which finds for us in common economic experience all the most important facts of economy. . . . . It finds that certain acts take place in our consciousness with a feeling of necessity. . . . . What a huge advantage for the natural scientist if the organic and inorganic world clearly informed him of its laws, and why should we neglect such assistance?" [p. 132].

This position our author proceeds to annihilate—as nearly as one can tell what he means—or at least to ridicule. In the present writer's opinion it is essentially sound, though the analysis is admittedly not carried very far in a philosophical sense, by Wieser or by most of those who advocate it.

Observing from within must be interpreted in the light of the social-mental, intercommunicative character of all thinking, already insisted upon. It is obvious that knowledge based on such "observation" is intuitive in a special sense as compared with any knowledge of nature, or even with the very highest abstractions ordinarily treated as logical axioms or general forms of valid thinking as such. It is not conceivably possible to "verify" any proposition about "economic" behavior by any "empirical" procedure, if the key words of this statement are defined as they must be defined to be used with relevance and precision. To form the idea of economy or economizing, one must first know that the end of an action is in general more or less different from its empirical result. Economy involves an intention or intended result, which is not amenable to observation in any admissible use of that term.

As to the content, or "basic postulates," of economics, it is surely indisputable, to begin with, that the first of these postulates is the reality of economizing, or economic behavior, the general meaning of which is known to any possible participant in any economic discussion—"intuitively," in the sense already indicated. To repeat, it is not possible by any observation of any act to tell whether or in what degree it is "economic"; indeed, the subject

himself rarely knows even approximately, until a considerable time afterward, and never very accurately. (The contrast with mathematical axioms may again be called to mind.) All discussion of economics assumes (and it is certainly "true") that every rational and competent mind knows (*a*) that some behavior involves the apportionment or allocation of means limited in supply among alternative modes of use in realizing ends; (*b*) that given modes of apportionment achieve in different "degrees" for any subject some general end which is a common denominator of comparison; and (*c*) that there is some one "ideal" apportionment which would achieve the general end in a "maximum" degree, conditioned by the quantity of means available to the subject and the terms of allocation presented by the facts of his given situation.[8]

We surely "know" these propositions better, more confidently and certainly, than we know the truth of any statement about any concrete physical fact or event, whether reported by someone else or made by ourselves on the basis of our own experience, and fully as certainly as we know the truth of any axiom of mathematics or of logic. We know them in the same way that one knows

[8] This is one aspect of the intuitive or common-sense notion of economizing. The term refers also, and perhaps primarily, in everyday usage, to the more or less "correct" manipulation of the means employed. This manipulative aspect of economic behavior is treated in the sciences which make up the general body of *technology*, with which economics is not directly concerned. Everyday usage, and everyday thinking, are much confused as to the relation between economy in the allocative sense and "technical efficiency." In brief, the difference is that the choice between technical processes is not affected by the principle of diminishing efficiency, and consequently does not give rise to apportioning and proportioning; the correct choice is one of all or none.

It is essential to understand that the concept of "physical" efficiency, as usually employed, is a misconception. It would be valid only in a case where only one physically described and measured result is in question, and where at the same time the means employed are at once limited and available for no other use. Such cases are certainly rare in reality; means are usually economized in any particular use because they are valuable for other uses. According to the most elementary laws of physical science, all the matter and energy which go into any reaction always come out of it quantitatively unchanged, so that efficiency as physically measured is always 100 per cent, which is to say that the conception is without meaning. Any efficiency measurable as a percentage involves evaluation of alternative possible results, the relative usefulness of the output alternative to any given result constituting the "real cost" of the latter.

he is writing sentences and not simply making dark markings on a white surface—or is reading versus seeing such marks—by living in the world "with" other intelligent beings; we neither know them a priori nor by one-sided deduction from data of sense observation.[9]

A major problem in connection with the basic postulates of economics, and one which surely calls for notice in any serious philosophical discussion of its methodology (but which is not mentioned in Mr. Hutchison's volume), arises out of the habitual practice and usage in economic literature of treating the distinguishing fact about goods and services—the fact that they are the subject of economic decision—as a measurable quality in the things themselves. As every student knows, one of the first questions raised in modern philosophy, in connection especially with the transmission theory of vision, was that of what "qualities" really inhere in the object, and which ones are in the mind of the observer. It is a familiar observation or remark that values (or some of them) are "tertiary qualities"—on the line of the famous distinction made by Locke between the primary and secondary. Closely connected with this topic is the vitally important matter of quantity and measurement.

The quantity or degree of variable attributes is fundamental for the interest in action, and the concept or feeling of objectivity itself, as against subjectivity, has come for the modern mind to be closely connected with the possibility of measurement, and the accuracy attainable. This fact has also greatly influenced our notions of what constitutes "science," especially in English usage.

[9] The best illustration of apportionment and of the maximizing of desired results through correct apportionment is undoubtedly the individual's expenditure of a given money income in the purchase of "want-satisfying goods or services" (in general and accurate terms, exclusively services) available to him in a perfect market at given prices; but the principle can perfectly well be illustrated from a Crusoe economy.

For the purpose of the present discussion, the conception of economic activity may be limited to "stationary conditions," i.e., behavior relative to given wants, resources, and technical knowledge. Whether or in what cases activity deliberately aimed at changing any of these given conditions is "economic," is a question which raises issues of a higher order of difficulty than those in question here.

(It is much less true in French.) Economic theory deals with interests as abstract magnitudes (intensities) and hence "naturally" considers them as inhering in the objects of interest, as attributes, and, also as measurable, which two considerations yield the familiar notion of "utility." This way of thinking is doubtless due in part to the fact that utilities receive a kind of measurement through the process of competitive exchange in the market, and in part it is due simply to the intellectual craving for objectification of any subject matter under discussion. Measurement and measurability present problems which cry for discussion, for it is obvious that measuring has a very different meaning in connection with different kinds of variables. The facts which are relevant for economic concepts present a paradox. On the one hand, there is certainly no question of measuring utility as an objective quality of a good or service, and we apparently do not measure any sensation or feeling as such. For example, a thermometer does not measure temperature as felt, but an inferential or theoretical "objective" state of things which is supposedly the uniform basis of the variable temperature sensation.[10]

On the other hand, it is indisputable that in the thinking of civilized man choices are very largely a matter of quantitative

[10] The saying often quoted from Lord Kelvin (though the substance, I believe, is much older) that "where you cannot measure your knowledge is meagre and unsatisfactory," as applied in mental and social science, is misleading and pernicious. This is another way of saying that these sciences are not sciences in the sense of physical science, and cannot attempt to be such, without forfeiting their proper nature and function. Insistence on a concretely quantitative economics means the use of statistics of physical magnitudes, whose economic meaning and significance is uncertain and dubious. (Even "wheat" is approximately homogeneous only if measured in economic terms.) And a similar statement would apply even more to other social sciences. In this field, the Kelvin dictum very largely means in practice, "if you cannot measure, measure anyhow!" That is, one either performs some other operation and calls it measurement or measures something else instead of what is ostensibly under discussion, and usually not a social phenomena. To call averaging estimates, or guesses, measurement seems to be merely embezzling a word for its prestige value. And it might be pointed out also that in the field of human interests and relationships much of our most important knowledge is inherently nonquantitative, and could not conceivably be put in quantitative form without being destroyed. Perhaps we do not "know" that our friends really are our friends; in any case an attempt to measure their friendship would hardly make the knowledge either more certain or more "satisfactory"!

comparison. Apart from this fact, there can be no discussion of economics, for the concept of economy or economizing, or the synonymous term, "efficiency," literally loses its meaning. Yet, a level of satisfaction, being a mental fact, is not measurable, in the sense in which any physical magnitude is measured. The question whether, or sense in which, the "general economic result," or "that which the individual strives to maximize," is a quantity, has been much under discussion since Edgeworth introduced the distinction between cardinal and ordinal magnitudes, and especially of late, since Messrs. Hicks and Allen published their "Reconsideration of the Theory of Value,"[11] embodying the indifference-map approach. In the present writer's opinion, the magnitude in question is quantitative in the sense in which any subjective state is quantitative and in very nearly the same sense as any objective quality for which we have no accepted technique of measurement, and which must consequently be estimated. (The indifference curve corresponds to the use of the zero method in physical measurements.) The main point seems to be that in the absence of any technique of measurement, there is no clear differentiation between a subjective state and an objective quality, and the reference of an experience to the external world or to the mind is shifting and largely arbitrary. This may explain the somewhat anomalous fact that in literary usage the economic result which we attempt to maximize is commonly referred to as "utility," rather than as "satisfaction," though the former term means a quality of things and the usage makes grammar swear at logic.

But this is not the end of the paradox. The most embarrassing fact (which is indisputably a fact) is that actual exchange values certainly do not measure the satisfaction intensities (or "psychic income," or whatever it may be called) with which economic theory deals. These are "hypothetical"—such as would be realized

[11] See *Economica*, February and May, 1934. In reply to this, Dr. Oskar Lange defended "The Determinateness of the Utility Function" (*Review of Economic Studies*, I [1933–34,] 218–25), and a notable series of discussions have followed, chiefly in these two journals. See also Professor J. R. Hicks's *Value and Capital* (Oxford, 1939).

by the "economic man," who is postulated as knowing definitely and accurately all the facts and magnitudes, knowledge of which would influence his behavior in any way. These begin with his own tastes and the consequent psychological or subjective effects of consuming given quantities of any commodity, in comparison with all other commodities, and also with all other possibilities, including "leisure," or the nonpecuniary values obtainable from the use of any resource outside the market organization. Perhaps the most interesting epistemological datum for economic theory is that we actually both know (everybody who understands the meaning of the proposition knows) that maximum efficiency is (would be) achieved through ideal allocation of allocable resources (that allocation which makes total return a maximum by making the marginal increment of return from the same small unit of the resource equal in all alternative modes of use) and also know that no individual achieves this maximum (or the chances are infinity to one against it). This divergence arises because ignorance, error,[12] and "prejudice" in innumerable forms affect real choices.

Both of the facts just mentioned, the partial conformity of conduct to economic principles and the fact that conformity can only be partial, are really known with "absolute certainty"—in the sense already explained, that we are unable to think away the fact of deliberate activity of the sort described. If conformity were perfect, the behavior in question would cease to be either "economic" or deliberate, and would become a mere mechanical response to a stimulus situation, which is a categorically different matter.[13]

[12] The economic subject would in many cases have to have perfect foreknowledge, as well as perfect knowledge. This foreknowledge might even have to extend to the infinite future, and, as Mr. Hutchison very properly emphasizes (p. 97), it is logically impossible for two individuals to have perfect foresight of each other's actions and to act upon it. More accurately, this is possible only if the activities of both are preconcerted.

[13] The known imperfection of correspondence between motive and result is further proof that we do not infer the former from the latter. Apparently it cannot be too often repeated that conduct cannot be interpreted in terms of positive categories. The phenomenal sequences of positive science cannot in any sense be problem-solving, while this is the most important fact about human conduct. Consequently any attempt to universalize positive categories involves denying the

Superficially considered, economic knowledge presents a certain parallelism with our knowledge that a perfect circle has certain properties, but that no empirical circle is perfect (or we could not know it if it were). But there is first the categorical difference already mentioned, that one can investigate empirically the imperfections of the circle, to practically any degree of accuracy worth the trouble, while this is possible for economic behavior only within the narrowest limits at best, and in a completely different sense of the word "empirical"—so different as to make it essentially a different word, if it is used at all. Methodologically considered, economics is a highly abstract "concrete deductive" science, similar to geometry or to mathematical mechanics; but in addition its data are intuitive in a far higher or purer sense than is true of mathematics itself (cf. above, p. 8). A closer parallel to the economic case from the physical world would be that of a law of physics involving a time sequence in phenomena, such as the law that the orbit of a body moving in a gravitational field is one of the conic sections.

The vital difference between the economic law of a maximum and the conic-section principle is that in connection with the former we have two independent sources of information, if not in fact three, which should be distinguished, and they do not agree. We know something about economic behavior and its motives in the same general way that we know about orbits and the "forces" which lie behind them, i.e., through sense observation and inference from observed behavior, in the physical sense. Motive in this connection is closely analogous to physical force.[14] We also, however, know about motive through the general process of intercommunication between our own minds and other minds,

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reality of the notion of a problem or solution, or question or answer. Of course it also involves denying the meaning of denial and asserts that illusion and error are themselves illusion and error. Limitations of the economic character of choice, in favor of factors still further removed from positive "factuality," will be considered presently.

[14] Force also—as every student or thoughtful person knows—is "metaphysical" and repugnant to the scientific intellect, and serious efforts have been made to build the theory of mechanics without it (without success!).

which is the fundamental basis of all knowledge, whether of the world or of mind (meaning human minds, primarily normal), and the basis of intelligence itself. The first difficulty of scientific method in economics is that the two main sources of information inherently disagree. Motives as inferred from their "effects" and motives as known directly by "internal observation" do not accurately correspond. (This fact is a condition of the existence of motivated behavior or conduct.) Perhaps it is more accurate to say that we know directly about the failure to correspond itself—due to error, prejudice, etc.—through the primary source or medium of knowledge, intercommunication. But if we raise the question of "testing" our knowledge of motivation in any particular case by an *ad hoc* investigation, in the only sense in which this is possible, it would appear that we bring in a third source of knowledge which probably ought to be distinguished from the general knowledge of mind derived from social intercourse. This is explicit questioning with answers based on explicit and critical introspection on the part of the economic subject making the choice.

We come now to another, and if possible even more essential, item in connection with the discussion of the basic concepts in economics—especially with reference to the positive or factual character of its data—which is entirely ignored by Mr. Hutchison. In the demarcation of economics, the interests of the individual (or those of the state, for the economics of totalitarian collectivism) are regularly and properly taken as factual data. It is usually made explicitly clear that in economics as a science no question is raised as to the "validity" of the "actual" scale of preferences of the economic subject. And our own discussion so far has accepted this view that preferences themselves are simply facts, the only question being as to how these facts are known. It must now be emphasized that this position is possible only for a treatment limited to the character of "pure" economics, completely divorced from any consideration of criticism or guidance of social action. In so far as any treatment of economics makes explicit reference to the merits of any social policy, some theory of value, beyond factual preference, is necessarily involved. This is just as true for

rigorous laisser-faire individualism as it is for any form or degree of interference or "control." Individualism, as a subject of approval or disapproval, is a social policy and an ethical category.

Moreover, a really thoroughgoing laisser-faire individualism, accepting individual preferences as absolutely final, not only has never been either practiced in or advocated for any "society" (a political concept) but is even theoretically impossible under any conditions fundamentally like those of the real world. For, in a world in which individuals grow old and die and are replaced by new units who are born as "infants" and are necessarily reared and educated in the society in which they are to live and function as members, it is merely absurd to treat the individual as a datum for purposes of decisions regarding social policy. Any change in policy will affect the kind of individuals of which society in future time will be composed, and not merely the relations between individuals, and these consequences cannot be ignored. And it is a fact to be kept in mind and recognized as a condition of talking sense about human interests, that everyone, habitually and inevitably, makes a distinction, which is vital, however vague it may be, between personal preferences and values assumed to be objective. (This means imperative but not absolute.) The social assertion of an individual preference itself rests on such a judgment of value; it is essentially a "right" in so far as it has any significance whatever.[15] No discussion of group action can be carried on in propositions which merely state what "I want."

[15] Mr. Hutchison appends to his book an eight-page discussion of economic policy, in the form of a destructive criticism of "Some Postulates of Economic Liberalism." It contains many good points, and is characteristically notable for the citations in the footnotes. It certainly overstates vastly any claim ever seriously made on behalf of "classical economics" in alleging its position to be "that Economic Science quite definitely demonstrates that a Liberal, capitalist, *laissez-faire* economic policy leads to maximum returns for the community or to greater returns than any collectively planned economic policy" (p. 177). (And Professor von Mises would hardly be generally accepted as "the leader of contemporary Economic Liberalism," unless this means the academic opponent of socialism most conspicuous for the extremism of his position.)

The main defects of the Appendix seem to the reviewer to be two: First, the author does not recognize the obvious reservation for any defense of economic individualism (in addition to frictional limitations) that even in so far as the system "works" in accord with its theory, individuals—which really means families—

But the value judgment has also a more immediate significance for the discussion of social policy. Judgments of value are also facts, data, and data of supreme importance. Social discussion has not only to be relative to some ideal of what policy ought to be, in the judgment of the parties to it; it also has to make a categorical distinction between what the individual members of any society affected by policy at the moment regard as right, or as rights, and what they, as individuals or as groups, sects, or what-not, merely want. It is an indubitable fact that every normal individual makes this distinction in his own thinking with reference both to his interests and conduct and to those of other persons; and the fact that he usually does not, in the opinion of others, make it very accurately—especially in the sense that he tends to erect nearly every interest or wish of any importance into a right—by no means implies either that the distinction can be ignored or that it is possible to discuss group policy or the behavior of individuals in groups without recognizing that there is a valid though unprecise distinction.

The economic view is only one aspect of motivation and is usually severely limited in various directions by a number of other

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share in the social product on the basis of productive capacity furnished (as measured by its sale value) which is perhaps never defended as having any close correspondence with ideal ethical desert, particularly for the dependent members of the family unit. More generally, he also takes the individual as a datum and completely fails to recognize the point emphasized in our text above: that any approval or disapproval of any social policy must rest on ethical value judgments of some sort. (Also, as will be presently observed, human-social interests and values are at best only to a very limited extent covered by the conception of economic efficiency, even in the broadest possible definition.)

Second, he evades the main issue in formally declining to discuss "the relations of democratic authority and of experts to the general public" (p. 181), which in our view is wholly, and not merely "largely," as he says, "a political issue" and is virtually the whole issue in the problem of collectivism. But previously (p. 180) he has practically begged the question for collectivism by stating that its experts would be "chosen and dismissable by those who hired them," implying that this would be true in the sense significant for the individuals whose lives would be regulated by these experts. Moreover, his entire discussion relates explicitly to a "social-democratic Utopia," which experience and abstract reasoning both indicate is impossible—a practical contradiction in terms.

aspects. Activities conform only in part, and usually in a rather limited degree, if rigorously examined, to the economic principle that the motive is to realize given ends in the maximum degree possible with given means. The value of an action to the individual is only in part a function of the result achieved or to be achieved. To begin with, it is typical that the value is connected with the achievement of a result, and yet not dependent on any value in the result itself. Perhaps the simplest illustration is that a "good" game must be good for the defeated party, whose efforts are frustrated and fail, as well as for the winner, while even for the winner the concrete result—the score made in whatever form—is of no significance when achieved. This is as clear in the case of solitaire as in a competitive game. (The positivist might well ponder the fact that no objective definition can be given of "work" and "play," fundamental as the concepts are in any discussion of economics or of conduct in general.)

In addition, we all know that we generally do not know at all accurately what we want, and in considerable measure act to find out. And our interests are to a considerable extent explorative in a more intrinsic sense; the motive of action is in part curiosity as to what the result will be, and hence depends on partial ignorance of the result when the action is performed. It is undoubtedly a general principle that ends are more or less defined in the process of realization, and that the interest and value in an action centers in this redefinition as well as in the achievement of any result given in anticipation.

The role of the value judgment in individual motivation constitutes a more serious limitation on the economic view of motivation. One commonly wants to do the "right" thing, without knowing what it is, in contrast with wanting to do any given thing. In this case the problem in action is to decide upon an end, upon what to want, as well as to achieve one's desire. And "rightness" has a variety of meanings; we want to be right in a mere conventional meaning and also in several "real" senses—aesthetically, intellectually, and morally. And the economic aspect of behavior

itself has its own quality of rightness, beyond mere desire; it is within limits a "matter of principle"; "waste is sin."[16]

We have indicated only a part of the plurality of categories necessary for the interpretation of economic behavior. The same concrete behavior phenomena form the subject matter of all the social sciences, including psychology, and may be considered by the physical and biological sciences as well. A serious analysis of "social phenomena," oriented to the methodological controversies which have been rife in recent years (and more or less since the development of the Historical School), would have to be based on a quite complicated pluralism. The main types of categories in terms of which any human act would have to be explained may be suggested by the following summary classification. This could be greatly expanded, and all the categories apply to virtually every conscious human action. It is particularly to be emphasized that even at the lowest factual level, truth and knowledge are inseparably related, not only to interests but to values. Truth itself is a value.

I. Positivistic. (Causal laws in the sense of phenomenal uniformity, in contrast with motivation as an efficient cause, i.e., excluding deliberation and problem-solving; if consciousness is recognized, it is treated as "epiphenomenal.")
   1. Physical causality, or behaviorism. To be applied as a matter of course, as far as it can be, as far as it can yield answers to our questions. Measurement and correlation (statistics).
   2. Historical causality. Linguistics is the type of a social science using the historical or institutional method, but it is also valid to a considerable extent for other departments of social behavior, including the "economic." (There is usually little question of deliberately changing a mode of institutional behavior, as the case of language adequately illustrates; also "observation" of meanings is a special problem.)
   2*a*. Biological interpretation, involving such essentially teleological concepts as competitive struggle and adaptation—as applied to plant or unconscious life—is an intermediate or hybrid category.

II. Motivated, or deliberately problem-solving action. (Both "problem" and "solution" seem to be indefinable, doubtless the most important indefinables of our thinking.)

[16] For a full discussion of this theme of the value judgment inherent in the notion of economy itself, cf. the admirable essay by Alex L. Macfie, *The Nature of Economy and Value* (London: Macmillan & Co., Ltd., 1937).

1. Economic behavior. A subject uses given means to realize given ends, only the procedure being problematical. (Taken in the strict sense, this applies only to "stationary conditions," but all deliberative behavior is economic "in so far as," and in the sense that, ends and means are given and the problem is that of procedure.)
2. Action in which the motive is abstract or social, such as interest in action or power as such, achievement, curiosity, conformity (to fashion or to law), distinction, co-operation, competition ("victory"), etc., but where no value judgment is involved.
3. Action in which the evaluation of the end is the main deliberative problem. This category includes intellectual, aesthetic, and ethical activity, or the pursuit of the proverbial trio, "the true, the beautiful, and the good."

The positivist who would seriously try to be consistent and thoroughgoing would have to stick strictly to the realm of physical causality (uniformity of sequence) and deny the relevance of any other categories of interpretation. As we have seen, the validity of the notion of economy itself, or any interpretation of behavior in terms of motives, depends on the factor of error or uncertainty in numerous forms. But all such considerations—all conception of any process as problem-solving in any sense—are excluded by the preconceptions of positivism, are rejected as unreal, transcendental, or mystical.

It would hardly seem to call for argument that the methodology of economic theory should be worked out in relation to the function performed by the science or discipline in the education of the individual—the reason, apart from intellectual curiosity or general culture, on account of which most students will be interested in it. The first fact for emphasis regarding the relation between economic theory and action or conduct is that the activities for which it should furnish guidance are those of the citizen and statesman, not those of the individual as a *wirtschaftender Mensch.* Its practical problems are those of social policy. And the first requisite for "talking sense" about social policy is to avoid the nearly universal error of regarding the problem as in any sense closely parallel in form to the scientific-technological problem of using means to realize ends. The social problem, and the only problem

which should properly be called social, is that of establishing a social consensus on matters of policy.

This is in no sense a scientific-technical or manipulative problem, unless we consider "society" under the form of a dictatorship over which the dictator is proprietor as well as sovereign, and as an enterprise which is to be managed solely in his interest. And even then the manipulative problem would be categorically different in form from that presented by the effort of human beings to exploit the objects and forces of nature. The manipulation —or "control," in the only proper sense of that word—of human beings (by other human beings) is almost entirely immoral and to be prevented; and when it is accomplished it is through such processes as coercion or persuasion, or especially deception, none of which has any meaning in connection with the control of natural objects by men. (The higher animals, especially those domesticated, are in an intermediate position.) If society is in any sense democratic or free, its problems are problems of group decision and group self-determination, in connection with which control is a misleading term.

The social action which the study of economics has as its function to guide, or at least to illuminate, is essentially that of making "rules of the game," in the shape of law, for economic relationships. The concrete form of such rules will be overwhelmingly that of taxes, or of prohibitions of particular lines of activity, subject to penalties. Consequently, the problem of prediction which is set for economics as a science may be said to be that of the individual reaction, as consumer or producer, to price data, or more specifically, to price changes. The problem of the role of general economic theory in such prediction is, then, to show what can be inferred from the general principles or axioms of diminishing utility and diminishing (technical) returns, both of which may be viewed as particular cases of the more inclusive principle of substitution.

The limitations of the possibility of prediction need all possible emphasis if the theory is not to be misused, and they are quite drastic. In the first place, it is evident that only the direction of

the response, i.e., whether a given activity will be increased or decreased, can possibly be inferred from theory alone. The amount of response to a change of given magnitude (except reduction from the actual volume to zero) can in the nature of the case be known only from empirical-historical data stating the facts of past reactions to various price situations, or, conceivably, from answers by individuals to hypothetical questions.

And there are two other important reservations to be emphasized—in addition to the principle of *caeteris paribus*, which should hardly need to be mentioned. (It should hardly be necessary to remind any educated person that the effect of any one cause must be considered apart from the possible effects of other causes which may be operating at the same time.) The first of the two important reservations is that the individual's satisfaction function or indifference-map must be assumed to remain the same during and after the change. (This obviously might be included under *caeteris paribus*.) The second reservation is that a person rarely acts exclusively on the basis of a satisfaction function. This means two things: (*a*) that the motivation is not purely economic, and (*b*) that the choice is not free from error. Both are excluded from the notion of behaving "rationally," in the economic sense.

The assumption of a stable satisfaction function is of course highly unreliable, but it has predictive value, in the absence of any discoverable reason for believing that it has changed. The point is important particularly because of the difference between predicting human behavior and predicting the behavior of physical objects under changed conditions, in that the latter neither behave irrationally or sentimentally, nor make mistakes, nor "change their minds" (and more or less correspondingly their reaction patterns), as human beings are notoriously liable to do. This trait of human beings, in contrast with physical things, whose responses reflect an inner nature which is either invariant or changes only for objectively discoverable reasons, is admittedly embarrassing to the economist as a scientist, but there does not seem to be anything that he can do about it. It is particularly to be noted that change of mind upsets any positivistic prediction

on the basis of observation of previous behavior to the same extent as it does predictions based on inference from the abstract economic laws.[17]

Economic positivists and empiricists have apparently given little thought to the manner in which we actually predict human behavior in everyday experience. The "law of large numbers" is applicable where large numbers of human beings behave individually in fairly standardized situations—the case of "insurable" contingencies or risks. In the prediction of individual behavior—one's own or that of an acquaintance or of a stranger—concrete records of past performance play a relatively small role in comparison with more subtle bases of insight into character and personality. If one wanted to predict the answer which an individual would get to an assigned simple problem in arithmetic, the first and principal basis would be to work the problem and see what is the "right" answer; and the next step would presumably be to inquire into his "competence." But arithmetic, be it noted, is the science of "right" answers, not a statistical study of those which men actually get.) Where large numbers of human beings act as groups, and not individually, the basis of prediction is "social psychology," which even more than that of individuals is a matter of insight and interpretation, in contrast with statistical extrapolation.

In short: The formal principles of economic theory can never carry anyone very far toward the prediction or technical control of the corresponding economic behavior. But such a result, by any method, is both utterly abhorrent to all humane thinking, and

[17] A more fundamental weakness of inductive prediction in economics is that empirical (i.e., statistical) data never present anything like an exhaustive analysis of phenomenal sequences down to really elementary components, and the correlation of and extrapolation from composite magnitudes or series never can be very reliable. The real unit would be an invariant and measurable human trait, either an interest or a response independent of interests, a reflex. Mention of the effort and high-grade intellectual energy which has been expended in attempting to predict the course of various statistical economic series—and specifically the prices on the organized stock and produce exchanges—should be a sufficient reminder of the difficulties and limitations inherent in such projects; analytical studies of "forecasting" make it doubtful whether the results (so far) are much better than random guesses.

self-contradictory. The intelligent application of these principles is a first step, and chiefly significant negatively rather than positively, for showing what is "wrong" rather than what is "right," in an existing situation and in any proposed line of action. Concrete and positive answers to questions in the field of economic science or policy depend in the first place on judgments of value and as to procedure on a broad, general education in the cultural sense, and on "insight" into human nature and social values, rather than on the findings of any possible positive science. From this point of view the need is for an interpretative study (*verstehende Wissenschaft*) which, however, would need to go far beyond any possible boundaries of economics and should include the humanities as well as the entire field of the social disciplines. However, a sound investigation of problems recognized as economic, and of proposed lines of social action, would yield results surprising to the critics, as to the proportion of such questions which could practically be settled on the basis of a reasonable interpretation and application of sound economic theory.

All this negatively critical discussion of Mr. Hutchison's "position" does not imply that a student may not derive much useful education, in economics and in wider fields, from the study of his book. It is a very "learned" work, citing and quoting extensively, and hence is valuable as an introduction to the literature of its field. Its fallacies are rather those of omission—what it excludes rather than what it contains. But the exclusion is itself positive, not to say dogmatic; and in the reviewer's opinion its study ought to be accompanied by adequate warning of its limitations. It is perhaps the chief merit of the work that, as we have pointed out, the author ends up by virtually abandoning the "criteria" on which at first he lays so much emphasis.

From the very nature of conduct as problem-solving, and from the character of human problems, even at the level of relative simplicity considered in economic theory—and because no problem is purely economic except by abstraction from other and more important features of concrete human interests—it follows that

"criteria" apply only superficially to statements about conduct. The limited part or aspect of human problems which can be treated in the form of positive science is the subject matter of the positive natural sciences, long since separated out and recognized as such —by abstraction from the complexity and waywardness of reality as a whole.[18] These sciences, indeed, include all the natural sciences of man and, specifically, all the branches of "sociology," in so far as their votaries have succeeded in developing these as positive sciences. In the nature of the case again, the limits to the development of positive sciences of human behavior are to be determined by "trying," and not by "theorizing." But there cannot possibly be any boundary with any degree of definiteness between the spheres of "determinateness" and of "freedom."

[18] An ultimate limit to scientific explanation is of course set by the fact that the explanation of mental process is itself a mental process, so that any exhaustive explanation would have to explain both itself and the explainer. This not only starts a regress to infinity, but contradicts the nature of thinking as an activity.