THE MACHINE IN THE GHOST—TOWARD THE HUMANIZATION OF BEHAVIORAL TECHNOLOGY

Kuang-ming Wu
University of Wisconsin at Oshkosh

Science and technology operate with scientific methods. The phrase "with scientific methods" can have two meanings. It can mean either "in the frame of reference of scientific methodology" or "using scientific methods as tools flexibly to follow wherever the object of study leads." The former route is that of objectivism; the latter is in accordance with the objective spirit of science. Objectivism idolizes methods as something definitive and misses humanness. The objective spirit uses methods flexibly to follow wherever the object of research leads, and humanizes the science of human behavior.

Scientific methods in behavioral technology can be characterized by three basic features. To miss them is to miss humanness; to take them seriously humanizes behavioral techniques.

(1) Since human subjects are self-reflective, human selfconsciousness "boomerangs" on the tests. Our blood pressure goes up when we know it is being gauged. The test results tend to change once we know that we are going to be tested, especially when we are told that it is a double blind test. Such selfreferential disturbance is similar to experiments on subatomic particles in a generic sense that the test itself is responsible for deviation of the normal behavior of the tested objects. In the subatomic world the test equipment and material disturb the test objects. In human behavior, however, self-awareness of the testing disturbs the test. Science and technology operate linearly; human behavior is recursive. Deviation is inevitable.

(2) Scientific methods operate in terms of discrete units, of an either-or. If the measurement says "15.32" then it is not 15.42. But human behavior is a continuous flow of interaction with its environment, human or non-human. Human behavior can be described by an overlap of many factors, an interfusion of various waves of forces, gradual shifts of tints. It is not like billiard balls reacting to external impact but like liquids. It is describable not by an either-or but a more-or-less.

Take the following two questions: Can we identify a particular personality trait by discrete quantification? And how can we quantify it if we ever did identify it?

The question of identification reminds us of the fallacy of a bald man. Plucking one hair out of a head makes no head bald, nor does plucking another, nor yet another, and so on. We cannot know when a man becomes bald; therefore, a haired man can never become bald. Similarly, since nei-

ther one act of generosity, nor two acts, nor three, and so on, makes a man generous, we can never identify a man of generosity.

And how can we quantify a personality trait, such as generosity? Does it make sense to say Jeff is 3.13 times more generous than John, or that I was pleased with 56.34 units of pleasure? For there are too many qualitatively different shades of pleasure, each of which shades too much into another, to warrant the use of a unit-scale.

Max Black's essay, "Reasoning with Loose Concepts," shows that arguments like that about a bald man can be applied when something is many or few, great or small, and we do not know at which point in the addition or subtraction the answer lies. This difficulty is in all empirical concepts which lack sharp meaning boundaries and cannot be proved by strict logical argument.[1] In my opinion, logical and mathematical concepts are like hard billiard balls, and empirical notions are like soft sponge balls composed of a soft surface of meaning boundary and a hard meaning core. Thus if personality traits are empirical notions and if numbers are mathematical concepts, then numerical measurements of human behavior are doomed to difficulties. Such difficulties are important in the following sense.[2]

Imagine a sheet of paper with a light gray gradually shading into a darker gray. The standard color chart has a series of *discrete* units of gray. To say that the paper has the gray from the degree s to the degree t merely fixes two colors at two extremes. It is not an accurate description of the color (or colors?) on paper. Human behavior is like a confluence of many continuous shades of various colors shifting the resultant hue(s) of psychic significance. This is not a complex situation but a concrete and mobile one of our experiences, defying the discrete scientific measurement that is typical of machines. Treating life with a machine-like measurement commits life to a mechanistic treatment. And then the phrase, "Human life is but a complex machine" sounds self-evident; human behavior can now be machine-manipulated.[3]

A surgeon's report said that the surgery was a complete success, but the patient did not cooperate. For the patient could not take the operation and died; the failure was all Mr. Patient's fault. Today, we would rather blame the ambiguity of human behavior for test deviations than examine the awesome laboratory equipment and impressive scientific theories.

(3) Scientific methods operate with logical certainty—if this is true then that *must* follow. Human events, however, can only be typified by "Given this, that may well happen for the most part," or "That all depends on how this turns out," or "Such and such for now, until further notice." Scientific explanations are explanations by logical and mechanical laws, saying that such and such is the rule, except for unusual cases. But the so called "unusual cases" may be more numerous than the normal ones, rendering the word, "normal," meaningless. Two examples describe such a situation.

Example 1: A loving son said that the day his mother died was the happiest day in his life. Upon listening further we understand: God relieved her for an incurable agony. His filial sorrow was compensated by and became a psychic component in religious and filial joy. We can neither say this case is an exception (for each human case is unique) nor claim this case fits our "normal" expectations (for our expectation of filial sorrow did not materialize).

Example 2: I once said that to marry a person of similar interests and temperament is like committing psychic incest; misery will ensue. Our wise Professor, William Springer, said, "Not necessarily, for my explanation becomes true only after the fact. Temperamental similarity may work in many *other* ways more or less unforeseeable."

Mechanical explanations are usually post-factual and retrospective, not forecasts with logical certainty. Mechanical explanations are not out of place but only part of the total picture of human behavior, similar to the relation of our bones to our behavior. Our bones are mechanically fitted together to move mechanically, yet we can combine those mechanical ways to produce whatever behavior pattern we want. We can later explain any behavioral pattern we have adopted in clear logical and physical terms. But why we adopt that particular pattern is out of our logical reach. We cannot exhaustively calculate the precise route of our behavior *before* we adopt a certain course of behavior.

For instance, in Example 1 above, the supposedly "negative" impact of a mother's death serves to deepen her son's religious joy. In Example 2, temperamental similarity can serve as either a negative or a positive marital reinforcement.

Thus we can see two points: First, the logico-mechanical laws of impact are not negated but are creatively *integrated* in personal behavior. Our bones are fitted and operated according to the laws of physical motion. Yet we are free to steer bones' physical operations to produce free "human behavior."

Secondly, *how* our psyche operates is less important than its meaning. Is this behavior that of anger or joy? And why do you get angry? Such psychic meaning can never be discerned by physical laws of bone-movement alone.

Thus physical operations and explanations are a necessary but not sufficient condition for understanding human behavior. Cat gut and horse hair must be brought together by Mr. Menuhin's hand to produce exquisite music, which can never be understood in terms of cat gut and horse hair alone. Analogously, the mechanical laws of our bone movements are needed to produce human behavior, but its meaning cannot be deciphered by the mechanics of bones. The physiological mechanism of reproduction can exhaust the meaning neither of human birth nor of the birth of artistic, moral, or intellectual creations.

Now that the concrete human situation meets and mixes with the linear mechanical operation of science and technology, how can we humanize behavioral technology? Two answers can be given.

First, behavioral technology uses the scientific methods of measurement which are at odds with the fluid human psyche. And so, whenever psychology succeeds in *exhaustively* measuring human psyche, it succeeds only in catching the psyche's shadow that has just passed through the measurement. If Skinner succeeds in reducing psyche to something predictable with a *Walden Two* certainty and without subjective interference, then he has destroyed the subjective core of the psyche, that is, the human subject himself.

Secondly, objectivistic and mechanical elements do exist, integrated in our psychic activities as the physical activities of bones, and are part of human behavior. Such integrations are as subtle as the wind blowing where it wills, and as spontaneously incalculable as the ripples of smiles on the face of a dreaming boy.

In this sense, psychology is a historical science. One understands historical causal nexus only after the *fact*, which is etymologically always in the past, as what has been done. Psychological predictions will be as imprecise (though as reasonable) as an historian's prediction. Psychic activities remain rational, not illogical, but the sort of logicality we have on hand is just a part of "rationality" properly so called that pervades historical and psychic realities. The role of logic in rational psychic history cannot be understood by mathematical logic.

We do need scientific theories and methods, but they must emerge operationally out of our experience in a historical manner, and cannot be dictated apodictically.[4]

Always keep in mind the above two points—one, logic cannot exhaust human behavior, and two, logic is part of human behavior—in scientific operation logic humanizes human sciences, which are increasingly called "behavioral technology." True objectivity, doing justice to the object of scientific research, requires that scientists stop being the slaves of the objectivistic logic and measurement.

Gilbert Ryle in his *The Concept of Mind* attacked the Cartesian view which he said treats us as the ghost in the machine; he judged that view to be a category mistake. I want to extend his simile and say that we are like the machine in the ghost. The machine resides in the ghost as the bones reside in the elan of our human behavioral significance. We ourselves are the ghost made up of mechanical operation. To confuse their priorities is as irrational as to confuse university buildings with their tone-and-ideal (the ghost) set by the academic activities in them, hence a category mistake. But since the university is invisible and science treats the visible, scientists tend to identify their meticulous investigation of architectural details with

the invisible ghost of the university. To realize such category mistakes and misplaced concreteness[5] is to make the first crucial step toward humanizing behavioral technology.

In conclusion, we are the machine in the ghost. If we say we are only machines, we miss our ghost. If we say we are the ghost in the machine, we mechanize our ghost. We lose ourselves in both approaches. The bane of scientific objectivism is to treat only the visible mechanical aspect of human behavior and to miss its humanness. Fortunately, science need not be confined to objectivism and methodolatry. In order to be objective, that is, to do justice to its object of research (namely, ourselves), science must exorcise narrow objectivism. Science must objectively see, and pursue our understanding of, the machine in the ghost, our true total identity as human.

NOTES

1. Max Black, *Margins of Precision*. Ithaca: Cornell University Press, 1970, pp. 1-13. Black reports here Cicero's account of *falakros* (bald man) or *sorites* (heap).

2. The second point might be objected to as follows. In mechanics we take into account certain inaccuracies of our measurement. We even purposely neglect those unnecessarily small figures in the pointer-reading. Therefore, such technical adjustments of empirical calculation and measurement are not confined to the human area; they apply in general to all empirical studies. (This objection is kindly furnished by Professor William Springer of the University of Texas at El Paso.) Two responses are possible. First, it is not the machine but the scientist, a discerning objective researcher not bogged down in methodolatry (of objectivism), who does the adjustment. And there is no strict logical or mechanical rule that can be uniformly applied to practical adjustment routinely practiced by scientists and mechanics, as to when and how much we have to adjust our pointer-reading.

Second, if adjustment is necessary in the realm of empirical objects in general, mechanical operation in the area of human subjects is all the more (not less) to be carefully adjusted. All in all, then, the main contention in the text stands as valid.

3. How self-evident the link seems among the three—the machine mentality, logic, and rationality—can be seen in the following antinomy, in a Kantian fashion, that has plagued the notion of human freedom since perhaps the time of Plato. It goes thus: Unless our life is governed by rationality, we are not free. Rationality is governed by laws of logic. Therefore, unless our life is governed by laws of logic, we are not free. But things governed by laws of logic are quite mechanical, and anything mechanical is not free. Therefore, we are free by virtue of rationality, and not free by virtue of rationality.

Thus by linking freedom to rationality, and confining rationality to the laws of logic, freedom becomes another name for determinism. The synonymity of freedom with fatalism is obtained through a total identification of rationality with laws of logic, embodied in artificial intelligence.

4. Such a view is promoted refreshingly by two practicing psychiatrists, Ronald V. Kidd and Luiz Natalicio, in their "An Interbehavioral Approach to Operant Analysis," *The Psychological Record*, 32 (1982) 41-59.

5. This is a parody on Alfred North Whitehead, for whom the error of "mistaking the abstract for the concrete" is the Fallacy of Misplaced Concreteness. See his *Science and the Modern World*, (New York: The Free Press, 1925, 1967) pp. 51,55; *Process and Reality*, New York: Macmillan Company, 1929, 1960 p. 27.