

Skidmore, William L.

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William L. Skidmore (Canada)

PREDICTION AND THE SOCIAL SCIENCES

It is common to read that prediction is the most impressive and elegant achievement of science (Phillips, 1966, p. 50; Gibson, 1960, p. 150). Often it is held that prediction can lead to control of events, as indeed it has in the physical sciences. Examples of such prediction and control are all around us; space flight, based upon the laws of gravity and falling bodies, is but a dramatic example. However, compared to the physical sciences, social science does not enjoy so happy a reputation in the field of prediction.

In an effort to account for the dissatisfaction of some with social science's ability to predict, two examples of criticism will be discussed. The discussion will proceed by degrees, beginning with an analysis of what two critics take to be "prediction". In these instances, the definitions differ, showing that there is some confusion about what the social scientist might hope to achieve. This examination provides clarification about the roots of the problem of understanding the concept of prediction. Second, a description of actual instances of prediction in social science will be offered. This description will rely on a well-known example from sociological literature. Finally, after having derived from its critics and its practitioners what prediction is *not*, and what form it takes in the social sciences, some conclusions suggest themselves as to the role of prediction in the theory as well as in practice of social science. In general, it will be shown that social science prediction has no necessary relation to future events, but rather, by conceptually stopping time, it treats past, present and future as precisely the same. Also, the concept of "cause" is shown to be irrelevant to the problem of social science prediction as it is practised, and that the "determinism" often thought to be the basis of scientific prediction does not violate the assumption of "free will" with respect to individuals.

Perhaps it is because astronomy has enjoyed considerable and impressive success in scientific prediction that Beard choose it with which to contrast his view of social sciences:¹ "If social science were a true science, like that of astronomy, it would enable us to predict the essential movements of human affairs for the immediate and the indefinite future, to give a picture of society in the year 2000 or the year 2500 just as astronomy can map the appearance of the heavens at fixed points of time in the future. Such a social science would tell us exactly what is going to happen in the years to come and we should be powerless to change it by any effort of will."

Beard's use of a closed system, astronomy, with few variables to account for, as an example of "true" science makes plain his idea of scientific prediction. It involves at least these achievements: (1) prediction of the individual case, (2) absolutely invariate order of nature, (3) prediction in time.

Beard's concept of prediction is that of previewing the future so that each case (it is not clear at what level he is arguing when he speaks of "essential movements of human affairs") could be dealt with in relation to every other case of events, and prediction about any and/or all of them could be precise. He is challenging social science to earn its name by discovering absolutely invariate order among human variables (a goal not theoretically impossible), but he is also asking it to predict each one of their relationships at one and the same time. He is in effect calling for social prevision that would foresee inventions, shifts in technology or physical conditions, and so on, abilities that the astronomer need not consider in mapping the heavens. Presumably Beard's view is that social science would predict the values of present, but unknown social variables, as well as the values of these and other social variables in the future.

Of course Beard's conclusion is that social science, by failing to "predict" in his sense of the term, is not science at all. A different tack is taken by Winch (1958). He is saying, in effect whatever kind of science social science may be, it cannot be a predictive one.

Winch argues that no voluntary behavior may be predicted. He holds that if voluntary behavior is understood to mean behavior with an alternative, then any prediction of a given behavior from antecedent events would equally be predictive of the alternative. He argues that the social scientist must rely only on understanding the situation as the actor views it, but that such understanding is predictively inadequate. If the social scientist's understanding of the actor's behavior allows for the actor to take any of a set of alternative actions, then all the scientist's

¹ Ch. A. Beard, *The Nature of Social Science*, quoted after E. Nagel, *The Structure of Science*, Harcourt, Brace and World, New York, 1961.

understanding of the causes of behavior and of the actor's motives will not allow him to define the actor's choice.

Winch also contrasts his view of prediction in social science with that of the physical sciences. In the physical world, elements, compounds and levers have no choices and therefore must invariably respond to their environment in fixed predictable ways. It is because of this that reliable law-like statements can form the basis for physical science prediction. It is the absence of such "determinism" in human affairs that makes prediction impossible for the social sciences.

Winch, like Beard, understands "prediction" in the sense of perceiving the future. His idea is one of discerning in advance what behaviors will be manifested by examining present behavior and meaning. He is also talking about advance determination of a single actor's behavior from a theoretically infinite set of alternatives. By withholding consideration of normative behavior, Winch does not even allow for the possibility of predicting an individual's activities based upon observation of the behaviors of several individuals in like situations.

Have Beard and Winch really touched the meaning of "prediction" as it is actually understood in social science? When sociologists "predict", what exactly do they do and not do?

Blalock (1960, pp. 158-61) points out that when we assume we have the correct values of a given variable, say x , and we are asked to predict other variables, we are not asked to predict in advance which other variables will be associated with x as well as their values, but only the values of one or more variables known to be associated with x . In this case, the identities of the variables thought to be associated with x have been discerned over time by observing regularities in their occurrence, but the prediction (estimation) of their values is made for the same point in time as the observation of the value of x . That is, we assume that other variables relevant to x and its correlates are consistent with their values at previous times, and we are interested in how much a knowledge of the value of x will assist us in predicting (estimating) the existing value of another variable at that moment.

There is, then, a clear distinction between prediction of the future and prediction, or estimation, of a variable's values in the present. If this kind of prediction is to be applied to future events, all circumstances and definitions relevant to associated variables must be assumed consistent with their values when observations of the variables are made. Then the values of each variable may be estimated for the future without regard to changing conditions of other variables. It should be emphasized that this procedure conceptually stops time: it assumes future conditions to be exactly as they have been in the past. This conceptual necessity leads to the assumption that "reality is constant", that future events will indeed be comparable with present or past ones. Of course

this assumption affects the choice of variables to be examined with respect to future states as well as the prediction of their actual values.

It is well known that the constancy of reality assumption of physical science serves less well in the social sciences. Among the actions of levers, atoms and compounds, the last actions taken by these do not influence their propensity to take similar actions again under similar circumstances, and it does not effect likelihood of other entities to follow suit. Among human actors, "reality" is not "stable", but uniquely able to change itself. Thus prediction in the social sciences cannot proceed on this basis.

It is also clear that in addition to an assumption of "stability", both Beard and Winch have the behaviors of single elements in mind when they speak of prediction. But in sociology it is not the behaviors of individuals that is of theoretical concern. Rather, prediction deals with aggregations of similar individual cases that may be justifiably treated as a unit. Prediction is about this unit. A description of such a variable is a statement of how many members of the unit behave in a certain way, or about how much they behave.

The social scientist has been depicted here as dealing with a much less tidy world than that of the physical sciences. The assumption of a constant reality is less well suited to social science. The social scientist has therefore been concerned with predicting population parameters at any given time and with *inferring* that his estimates will hold in the future, to the extent that reality is constant, when this is left as an open question. Social science has not dealt with prediction of the future of individual cases (person's behavior in a group, single attitude in a constellation of an individual's attitudes, etc.) but rather, it has attempted to determine the occurrence probability of values of variables in populations. The difference between predicting the individual case and predicting a population characteristic was critical to Beard's misunderstanding of social science and to Winch's argument.

Examples of prediction in the social sciences may be taken from any quarter. A well-known one, which is not a new development, is Warner's work on social class.

Warner *et.al.* (1949) have shown in their operationalization of social class that four major variables (occupation, income, type of house, and dwelling area) are highly related to each other. That is, knowledge of the value of any one of these variables contributes to accuracy of prediction of values of the other three at any given time. Prediction in this sense does not require that, without prior knowledge, Warner should have been able to predict that his four variables would be related. Neither does it imply that a past social scientist, without knowledge of the concepts of occupation, income type of house, and dwelling area, as they are used by Warner, should have been able to predict from knowledge

of his own time that these variables would be related in Warner's research on social class.

It should be emphasized that no specific prediction about an individual's income, type of house, dwelling area, or occupation is being made. Warner's statements of prediction on these variables hold only that for a given sampling of all individuals (or heads of households), there will be high correlation of measures of these variables in a high percentage of cases as long as relevant conditions remain comparable or constant. Statements about individual cases involving these variables can take the form only of inferences about the probable nature of the individual case as a representative of all such cases in like situations.

A clarification of what is meant by prediction in the social sciences may now be made, and a sketch of how this prediction is useful in theory building and conceptualization can be drawn.

Prediction has no necessary relation to future events. In social science, prediction is the estimation of the values of variables associated in a population with other given variable or variables. If this type of prediction is to be applied to temporal matters, we must essentially treat the future as part of the present by assuming that future conditions are equal or similar to present ones in all relevant respects and that the same estimation of population parameters we would make for the present would hold for the future. This kind of prediction is symmetrical, *i.e.*, it does not matter, if x and y are related, whether we predict x from y or y from x . Thus, no notion of cause and effect need be relevant. Even if we measure the variable taken as independent at a given time and the dependent one at a later time, there is no reason within the logic of estimation that one or the other should be taken as causal.

The fact that regularities have been noted and found useful in prediction does not refute the supposition that persons theoretically have freedom of choice (cf. Becker and McClintock, 1967). The fact that some choose one alternative while others choose another may be explained by reference to different values they may place upon the various alternatives,² but this is irrelevant to the point that in a given population under given conditions, we may depend upon some regular percentage of individuals choosing one of a given set of alternatives.

Of what use is all this to the academic social scientist? Do regularities and predictions have any but utilitarian application? Theory building requires that regularities be discovered in nature. Even if it is possible to predict that certain variables will be commonly associated in certain relationships, it begs the question why this is so. This invites the theoretician to develop conceptual schemes which take in the com-

² This is what G. C. Homans has done in his *Social Behavior*, Harcourt, Brace and World, New York, 1961.

mon properties and explain the variances of others. At this new level of conceptualization, new variables are usually suggested and their probable values may be conceptually predicted. Research, relying on the estimation of values of the new variables, can then falsify or support the conception of the new variables' values. Thus, prediction in the social sciences, despite objections that it is not possible, is a common occurrence. As better research tools are perfected, one can expect prediction in social science to become even more impressive.

REFERENCES

- Becker, G. M., McClintock C. G., "Value: Behavioral Decision Theory", *Annual Review of Psychology*, vol. 18, 1967, pp. 249-286.
- Blalock, H. M., *Social Statistics*, McGraw-Hill, Toronto, 1960.
- Gibson, Q., *The Logic of Social Inquiry*, Routledge and Kegan, London, 1960.
- Nagel, E., *The Structure of Science*, Harcourt, Brace and World, New York, 1961.
- Phillips, B. S., *Social Research*, Macmillan, Toronto, 1966.
- Warner, W. L., et al., *Social Class in America*, Harper and Row, New York, 1949.
- Winch, P., *The Idea of a Social Science and Its Relation to Philosophy*, Routledge and Kegan, London, 1958.