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BOOK REVIEW:PHILOSOPHICO - METHODOLOGICAL ANALYSIS OF PREDICTION AND ITS ROLE IN ECONOMICS, BY WENCENSLAO J. GONZALEZ, SPRINGER, NEW YORK, 2015

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Philosophico – Methodological Analysis of Prediction and Its Role in Economics by Wenceslao J. Gonzalez (2015, Springer) is a thought-provoking and thorough investigation on the role and status of economics within the sciences. The book's main aim is to argue for a shift in the methodological requirements of economy, and sciences in general, from *prediction* to *explanation,* in ways that are both normative and descriptive, and within that dimension, to focus on that certain type of explanation that economics can and should provide. As a former student of Herbert Simon (Nobel Prize in Economics 1978), Gonzalez adopts most of Simon's theses, most obviously that of the importance of *bounded rationality*, as opposed to the framework of *substantive rationality*, used in neo-classical or mainstream economics. However, while Simon's focus is on economic *behavior*, Gonzales uses the concept of *action*, which he claims is more accomodating for the input from other disciplines, especially for those concerning the socially declared aims of individuals. The book also seems very keen to show, within a couple of chapters, many of the issues from the philosophy of science that would be relevant for mapping out economic research.

The book is divided into five parts, exploring issues that range more or less from general to particular, as described by the author: part I concerns the problem of prediction as a test for economics, part II concerns the general orientation and methodology of science, part III, the methodology of social sciences and economics in particular, part IV, the use of rationality and empirical approaches for prediction, and part V, the possible moves from description to prescription in economic methodology.

The first three parts, up to chapter 6, contain a rich array of references to the author's own work, generally related to the philosophy of science, and offer a rich taxonomy. Different domains need to be explored since, as the author claims, the methodology of science "supposes other studies, namely semantics of science, logic of science and epistemology" (p.6), and can also be related to ontology, axiology and ethics. Luckily, all of these issues are interconnected, and every perspective discussed has implications in each domain. Also luckily, the *broad* approach in economics (as opposed to the restricted approach of econometrics for example) has been a longtime component, and is, basically, the conceptual work of philosophy. Questions such as "is the economy deterministic or stochastic" (p. 9), matter for the status of prediction. "Is prediction an aim of science?" or "Is prediction a test?" each open to different perspectives. Prediction as an *aim* generally supposes a necessary condition, while prediction as a *test* supposes be a sufficient one. Testing could involve prediction as strong demarcator (for the status of science itself), or as a weak demarcator (for the

status of a sentence within that science). Some sciences or methods barely involve prediction, such as the theory of evolution, but all of them involve an explanation and a cognitive progress which increases truth-likeness, relevant for predictions in connected disciplinces. Gonzalez believes that "grasping the process itself that makes it possible to get reliable predictions". (p.18)

There are many other distinctions within the first part of the book, and not all of them seem relevant to proving a certain thesis. Rather, they are there to provide a mapping of the issue which is often historical, and the author goes to great lengths to ensure thoroughness. He takes sides in most characterisations. For example, he accepts the asymetry of explanation and prediction (Rescher as opposed to Hempel), and he considers it not just temporal, but also structural and epistemic, related to causal linkage (p. 50). In the following chapters, he focuses on two disputes. The first is between Popper and Lakatos, on the role of historicity for sciences, in which he finds a contradiction between Popper's insistence for an uniquely descriptive method in social science and the universality of falsificationism, and sides with Lakatos, because of the latter's emphasis on the positive role of experience in anticipating new facts, by means of developing heuristics. (p.107). The second dispute is described in Part 3, and regards the role of prediction from four perspectives, that of Milton Friedman (predictivism), John Hicks (quasi-scientific), James Buchanan (dualist posture) and Herbert A. Simon (wary attitude). This begins with the distinction between *Erklären* (explanation) and *Verstehen* (understanding). An emphasis on the latter usually leads to dualism, since sciences provide different understandings, as well as on qualitative as opposed to quantitative methodologies. Is *Verstehen* purely historical? More so for Dilthey than for Weber, Gonzalez tells us, but it does not coincide with *Erklären* unless in the works deriving from Auguste Comte. Within economics science, Friedman puts emphasis on prediction as the goal of science, as a way of converging the classical dualism. John Hicks, on the other hand, considers economics as a discipline on the edge of science, incapable of prediction, or rather, incapable of predicting what will happen, as opposed to what might happen, if there are no disturbances. Compared to this, Buchanan states that there are two domains of economy, one in which predictions and foresights are possible, and another, speculative and subjective, that can offer insights but not predictions. The fourth option is Simon's, according to whom, "prediction does not belong to the set of characteristics that make economics a science." (p.157)

This last point is discussed at length, since it is also Gonzalez's option. The central concept for Simon is that of *bounded rationality*: the idea that humans do not simply try to maximize their benefits, but are bounded in that process by their own cognitive limitations and capabilities in evaluating their options. Most importantly, the decision-making strategy is that of *satisficing* and not *maximizing,* which means that whatever takes place above the satisficing condition is ontologically uncertain, and therefore unpredictable. This leaves a lot of room for investigating diferent ways in which phenomena could be (partially) predicted, but also denies prediction as the only possible contribution of economics. Pages 163-165 detail Gonzalez's own view of economics, in light of some of the distinctions made in the first chapters. Subsequently, several other distinctions are made in order to deliniate Gonzalez's view from Simon's. The first is *economical activity* as opposed to *economics as activity*. The former concerns

”classical” predictive mechanisms, abstracting features such as inflation and prices, while the latter is the new interdisciplinary discipline: economics interwoven with other activities. The second distinction, initially set by Anscombe, is between *intention* as a mental act and *intentionality* as a feature (orientation) of the action. (p.187) The third is simply between action and behavior, where action is seen as an essentially human characteristic, oriented towards external features, such as goals. What Gonzalez tells us is that, compared to Simon, his theory also opens up human economic behavior towards the intentionality of speech acts (p.223), and that in turn is something that is sometimes evaluated rationally and consciously by agents, in a manner simmilar to the *maximizing* branch of rational choice theory. On the other hand, the options that are evaluated are themselves induced through bounded means, as shown by Bicchieri. (p.234) Following Gonzalez, it would be fair to say that economics, before the latest developments, was more concerned with something that we now know is only a feature of the conscious „edge” of human activity.

To be clear, Gonzalez endorses prediction in economics as a test, and not as an aim, which means he considers it *sufficient* but not *necessary* for granting a scientific status. It just happens that prediction exists in economics and plays crucial roles, both in testing theoretical models and in modelling practical sollutions. The fifth part of the book details more applied issues from economic methodology. There are expert estimations and methodological estimations. There are predictive approaches from cyclical or trend-projecting estimations, and, regarding the principles, they can be model-based or law-based. Directly feeding into all of them, according to Gonzalez, is a *metaprediction*: that of the suitable structural character of the phenomena to be taken into account. (p.280). Therefore, the question arises about when a certain model should be abandoned, in order to isolate exogenous variables. For all practical aims, improving a science consists not just in increasing the ability of prediction for each model, but also in making clear the boundaries of what can be predicted ahead of time, whenever possible.

Personally, I find Gonzalez’s book useful for students or researchers in at least three domains: thephilosophy of science, the ”broad” economic approach (those looking for the theoretical bases of methodology), and in the study of rationality. The rate at which taxonomies are introduced can seem high at times, but all concepts are brought again into discussion in subsequent chapters. As introductions to each of these domains, the chapters function well. The ample list of further readings could also be of use to more advanced researchers. Regarding the possible impact and influence of the book, it should probably be seen as a plead and theoretical foundation for the interdisciplinarity that is already taking place. Economics – as the ”flagbearing” science of the social – seems destined to include more input from connex sciences. However, the paradigm shift seems to have happened with Herbert Simon, Wenceslao S. Gonzalez’s contribution being mainly an expansion.