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**Book Review**

**Science and Sociology: Predictive Power is the Name of the Game,  
Sheldon Ekland-Olson & Jack P. Gibbs (2017), Routledge,  
ISBN 978-1-138-04784-6**

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**1. Introduction**

Is sociology a science? Or, better to say, is sociology less of a science compared to sciences such as physics or chemistry? Why is it that a vast majority of sociologists feel rather insecure to refer to themselves as scientists (Ritzer, 2015) and some even go so far as to deny the status of sociology as a science (Islam, 2015)? Is there any way through which the scientific standing of sociology can be rescued?

The review before you is that of a joint work by two American sociologists, Sheldon Ekland-Olson and Jack P. Gibbs, whose major concern is sociology's rather low scientific standing.

Thus, from the very beginning pages, every reader can notice the genuine attempt made to promote a science-based sociology whose distinguishing feature is predictive testable assertions. In fact, trying to uncover predictable uniformities is considered by the authors as the principle goal for science in general, and sociology in particular. This is evident in what is mentioned in the preface of the book as Gibbs' long endeavor to look for uniformities in suicide rates across various populations and over time and Ekland-Olson's search for the predictable uniformities in the communities' justification of the violation of vital moral imperatives regulating the taking of life and tolerance of suffering.

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The volume is organized into nine chapters the interconnectedness of which makes the flow of the ideas seem very smooth and comprehensible. It starts with the significance of uncertainty and assertions in science; argues that the uncertainties are largely a matter of the predictive implications of assertions; clarifies how sociology shares the divergent conceptions of science; introduces its own conception of science and scientific theories; focuses on a mode of formal theory construction to further systematic tests of theories; discusses some disastrous beliefs in sociology; and finishes with an emphasis on the search for uniformities and statements of them as propositions.

## **2. Chapter I: The Only Certainty is Uncertainty**

The book sets the ball rolling with a discussion on the importance of uncertainty, praising it as the stock-in-trade of any scientific discipline and a requisite for the progress of science. The view is that the discovered uniformities in science—be it generalizations, theories, or simply beliefs—are only assertions which are claims of varying degrees of empirical certainty. Facts, on the other hand, are defined as events and things known or believed with certainty. In addition to this distinction, the authors underscore another critically important distinction in testing generalizations or theories: analytic and synthetic statements. Note that despite the fact that the distinction drawn here is questioned and challenged mostly by philosophers, the authors stick to their guns and argue in favor of it in different parts of the book.

Later in the chapter, the authors enlist assertions, developing definitions, devising measurement strategies, and conducting tests as the four elements of science while acknowledging their rather uncertain links. The uncertainty they keep referring to even prevails in the testability of assertions, no matter what the science is. Despite such embedded uncertainty, the authors believe, it is out of the ongoing debates among scientists that effective agreements on assertions and procedures for testing them emerge. The approximate consensus in this conclusion is, later in the chapter, linked to Thomas Kuhn's (1996) idea of "Normal Science" which is believed to remain in the ascendancy until new assertions appear. In essence, novel assertions, dramatic

shifts, and scientific revolutions occurring along the seemingly contentious path of science are assumed by the authors to be the building blocks of science. To further emphasize their stance, the authors challenge their opponents through bringing their arguments to the foreground. They question the epistemological anarchy propagated by naysayers (e.g., Feyerabend, 1975) and postmodernists and point to it as the root of the problems prevalent in social sciences in general and sociology in particular throughout the last century. More specifically, they argue that the probable reason social sciences have had only a few indisputable achievements is the indifference of the scientists of the field to vital concepts such as empirical applicability and testability, the main cause of which are notions such as deconstruction of the reality and absence of some universal truth.

Finally, to set the scene for their further arguments and proposals in the forthcoming chapters, the authors also elaborate on the relation between scientific generalizations and theories. They assert that on the way to formulate a theory, assertions are to be sought for and it is within these assertions that testable generalizations are systematically derived from those that are untestable. Here, again, they raise a problem ubiquitous in sociology: the sociologists' seeming inability or unwillingness to translate metaphorical statements into testable ones, which has resulted in more than a century of untestable theories that are mainly based on nothing more than intellectual satisfaction, plausibility, and elegance. What the wise reader can conclude from the opening chapter of this book is the very clear position taken by the authors: That an assertion is scientific if it can be assessed, directly or indirectly, in terms of its predictive power—a position which brings us to the debatable status of sociology.

## **3. Chapter II: On Predictive Implications**

The beginning pages of chapter two look back at the concept of assertions, emphasizing that they are nothing like prophecies. Rather, the authors state, assertions might pertain to the future in the sense that they imply a prediction pertaining to a "conditional future" (p. 14). They also go over the distinction between explicit and implicit assertions as an important factor to be recognized when talking about

assertions. Nevertheless, despite that recognition, the authors mandate scientific assertions to be explicit and directly or indirectly testable, for which the assertions are required to have clear predictive implications.

Subsequently, the chapter moves on to a discussion on logic, empirical applicability, and conceptual clarity. The argument opens with the proposition that in order to cope with the uncertainty about assertions, scientists need to test them. Yet, an assertion cannot be tested unless at least one of its predictive implications can be identified with confidence. To that end, two issues should be dealt with: the logic employed and the empirical applicability of the terms in the assertion. Logic is nothing more or less than a set of rules for relating statements—widely accepted instances are the rules of the classical syllogism and those of mathematics. The important point is that while humans generally tend to argue in terms of an implicit logic, and scientists report tests of assertions without fully articulating the underlying logic, a fully explicit logic is imperative for the identification of an assertion's predictive implications. The problem with the social sciences, according to the authors, is the reliance on the conventions of a natural language resulting in a lack of conceptual clarity and a mishmash of assertions in the sociological literature.

This chapter closes, leaving the digestion of the arguments to be assisted by further detail in the rest of the book. The book's argument in subsequent chapters is guided by the foundational belief that the foremost challenge posed for any scientific assertion is the recognition of its predictive implications, which implies that assertions need to be asserted in a way to enhance agreement as to their predictive implications.

#### **4. Chapter III: The Notion of Science**

In this section the authors confront the reader with definitions of science since definitions are believed to be crucial in science, and even more in sociology where words and phrases are frequently employed with little attention to definitions and more to related feelings and values.

There are sociologists (e.g., Blumer, 1969) who strongly believe that physical science cannot be

taken as a model for inquiry in social and psychological sciences since no single definition can apply equally well to all sciences. By contrast, there are others (e.g., Black, 1995) who see sociology as a science and believe in some criteria of science through which one can predict and explain social life with its social geometry. The authors' attempt in the present book is based on the latter view. To that end, believing that the definitions in the science literature hardly provide a careful definition of science, the authors move on to a collection from dictionaries and encyclopedias. The sources are selected based on accessibility, which promises some degree of broad coverage despite not being random. They provide the readership with eleven definitions in Appendix I of the book while dividing them into four illustrative types and discussing an instance of each type in detail throughout the chapter so as to help with a better understanding of what science is.

Type I definitions are criticized as irrelevant and not thoughtful mostly because they do not reflect conceptual issues or problems in science or simply stake over them very quickly. Type II definitions, on the other hand, are praised because of their references to knowledge as the distinctive product of science. They are also questioned since they have used knowledge in the sense of "beliefs or statements that are true". Such an issue, according to the authors cannot be circumvented by changing the terminology and simply switching from "true" to "valid", "verifiable", "tested", or "confirmed" (p. 23). This, of course, should not be construed as a rejection of objective reality or acceptance of any other related tenet of deconstructionism and postmodernism. Next, the authors applaud type III definitions which correctly depict science as a type of activity and regard them as both strategic and inclusive due to their emphasis on activities and theories. In the example provided as a representative, numerous human activities such as observing, describing, classifying, and measuring are mentioned in connection with science. The authors, however, disapprove of considering these activities as peculiar to science, for "everyone observes, journalists describe, historians classify, and tailors measure" (p. 25). Finally, type IV definitions underscore the application of distinctive methods in science. The semantic problem here is that there is no

clear-cut distinction between method and activity, especially when it comes to the application of methods. For instance, observing, describing, classifying, and measuring are surely activities, but are they also methods? Apart from this issue, in the literature there are many flat denials (e.g., Feyerabend, 1975) that scientists employ some distinctive method.

Seeking to minimize such inscrutable observations and esoteric arguments and avoid starkly broad formulations of science, in the following chapter the authors offer a three-part definition of science with an implicit focus on what its practitioners do.

### **5. Chapter IV: A Conceptualization of Science**

In their proposed definition, science is comprised of “(1) activities believed by those who participate in or control the activities as (2) conducive to the formulation of assertions about the characteristics of entities and (3) assessments of those assertions in light of their predictive power relative to that of contenders” (p. 28). In simpler words, when doing science, scientists gather information and make assertions about the characteristics of entities. These assertions are the building blocks of science, can culminate in theories which can be constructed along various paths, and need to be assessed in light of their relative predictive power. Following this three-part definition of science, there comes a detailed discussion of the definition’s main components being activities, assertions, and assessment of predictive power.

Activities encompass a very wide range of behavior and may be overt, internal, or some combination. The activity component differentiates this book’s definition of science from those which are limited to products. In the present view, science is both process and product, with knowledge being the most common product dependent upon some producing activity. Some activities are intended to produce knowledge which is an express or implied answer to a question stated or unstated. Whether the answer is a scientific activity, or simply an instance of satisfying general curiosity depends on the context. That is to say, if the answer is to be tested, it qualifies as a scientific activity. As also mentioned previously in the earlier chapters, the authors

highlight the fact that when it comes to arriving at the answers, there is no logic of discovery. In better words, “how one arrives at a generalization is irrelevant as regards its predictive power” (p. 30), the third component of this book’s science definition. The declaration made by the authors is “if an answer to an empirical question is not susceptible to a direct or indirect assessment in terms of predictive power, it is not science” (p. 32). Rightly, after their declaration, they also predict and embrace that all components of their definition, especially this third one, are objectionable.

The important point to note here is that despite the deliberately broad definition provided by the authors, not all human activities can be qualified as science since they may not have anything to do with predictive power, a notion that is described in great detail by the authors in terms of seven dimensions (1. testability, 2. predictive accuracy, 3. range, 4. scope, 5. time-space specificity, 6. discriminatory power, and 7. parsimony). According to the authors, these dimensions have no fixed order and what truly matters is for a theory to exceed its contenders with regard to all of them. The authors’ obvious preoccupation with the notion of predictive power is mainly because they are of the belief that it is the most effective way to reduce the uncertainty they have reasonably embraced at the very beginning of the book. Such a perspective gives their definition a prescriptive nature which mandates that a scientific answer to any question should be assessed in terms of the answer’s predictive power.

### **6. Chapter V: Conceptualization of Scientific Theory**

The chapter opens with the authors going through the five most important conceptual problems confronting any attempt to answer what a scientific theory is. Next, the authors turn to the same collection from the dictionaries and encyclopedias examined in chapter four, only this time these publications are their source of definitions of “theory”. The reason for investigating the same publications was the possibility of some relation between definitions of “science” and “theory”. The authors report no entry or subentry for “theory” in three instances of the eleven publications in which there is a definition of science. While the remaining eight definitions are provided in

Appendix II of the book, the authors quote only three of them as distinctive types. Each type is described in detail and the reason why any instance labeled as extremely ambiguous, hodgepodge, and ambivalent is discussed subsequently. In short, the authors judge the definitions as defective and difficult to comprehend. Such a difficulty partly develops as a result of confounding the four distinct subjects of theory, a theory, scientific theory, and a scientific theory. However, the authors try to resolve this issue by avoiding a definition that applies indiscriminately to all the four subjects and deal exclusively with “a scientific theory” or “scientific theories”.

To lay the ground for their definition of a scientific theory, the authors attempt to deal with the sticky issues in this area. First, it is mentioned that a scientific theory is comprised of more than one statement and at least one synthetic and one analytic statement are required. It is important to note that these are not isolated statements and need to be logically related. The foregoing approaches an important issue, especially in sociology where most of the theories are stated according to the conventions of a natural language (e.g. English) which are too limited and ambiguous to establish indisputable logical relations between the statements. Also, in order to fight the critics of empiricism or positivism who deny the analytic/ synthetic distinction, the authors reconsider the nature of synthetic and analytic statements. They reconsider the question asking if a scientific theory must necessarily include definitions and report the negative answer suggested by some definitions in Appendix II. Yet they believe that an explicit answer would not resolve this issue since it depends pretty much on the natural history stage (NHS) of each science. More specifically, the NHS of some sciences is so long and constructive that some of the words, terms, or phrases no longer need a definition. As for the second issue, they write of the various problems posed by testability and test outcomes while defining a scientific theory. The necessary relevance of testability raised by the authors, however, is denied by some scientists—string theorists in physics and grand theorists in sociology in particular. This denial, having haunted the physical sciences as well as sociology, is the very concern prevailing throughout the book. Thirdly, issues pertaining to the finite/infinite

distinction—whether a generalization can be limited to a finite category of events/ things—are discussed. Believing that the infinite range should not be a necessary feature when defining a scientific theory, the authors regard the distinction as a matter of degree, with the range of a theory’s assertions being the most relevant consideration. Finally, the thorniest problem of all is whether the definition of a theory must include references to explanation and/or causation. As for the explanation part, the authors report an inspection of widely accepted theories in science showing that none of the words “explain”, “explanatory”, or “explanation” appears in them. The first reason they mention for such a gap is that we *read* explanations into theories. There is also the evidentiary problem which questions evidence of explanatory adequacy. Additionally, there are other problems such formulating a definition and specifying criteria for an adequate explanation. Establishing a causal connection is regarded to be even knottier, for ever since David Hume (1896) there has been no effective agreement to either define causation or in formulate empirically applicable criteria for casual evidence.

The authors’ foregoing ruminations lead to an alternative definition of a scientific theory which defines it as “a set of logically related assertions about contingent characteristics of some designated entity or entities, with the understanding that the assertions are to be assessed by their predictive power relative to that of contenders” (p. 60). As can be seen, this definition avoids using “explanation”, “cause”, and “infinite” due to the authors’ belief that when defining or formulating a scientific theory, words, terms, or phrases that appear conducive to insoluble problems should not be forced into the definition. As expected, the final step taken by the authors in this chapter is clarifying their definition through a clarification of the key terms so that they can further its empirical applicability.

## 7. Chapter VI: Formal Theory Construction (FTC)

The authors open the chapter with expressing their concern about the closure of the “theory factory” in sociology, a factory which, they believe, has a never-ending nature and is supposed to run forever. Theory factory is about searching for uniformities in particular

categories of events or things which imply testability and later result in devising theories. This search should naturally start in the NHS. The problem in sociology's history is that it commenced long before there was strong evidence of uniformities in the field's subject matter. In other words, at the early stages, the prominent sociologists used to seek ideologies rather than uniformities and, worse, this has escalated in the last century. What we are left with in social sciences then is neither an NHS in the field, nor a quest for uniformities and grand theories at the present time. Thus, to further the connection between theories and uniformities through the promotion of terminological distinctions and testability, the authors suggest the adoption of some mode of formal theory construction (MFTC). Consequently, the chapter focuses on the basic features of the authors' proposed MFTC, an issue which is hardly dealt with on sociology's landscape since it is perceived as an imposition of orthodoxy.

The authors propose that social sciences can be rescued if their scientists start gathering data, devising generalizations and stating theories according to some MFTC. This implies a set of rules, some or all of which exceed the conventions of a natural language, for stating a scientific theory. More clearly, MFTC attempts to offer some systematic terminology and a way to connect abstract notions with data, both of which lead to greater testability. Of course, this attempt has faced some stiff resistance since from the field's very beginning all theories have been employing the conventional language and the injection of new terminology is assumed to lead to jargon, obscure abstractness, and consequently more complexity. The authors react to these concerns and criticism and defend MFTC, concluding that if a natural language is used, premises and conclusions cannot be identified and deduced confidently, inconsistencies in a theory will be difficult to detect, and the connection between deduction and testability will be obscured. To formulate a scientific theory, testable and untestable statements, all in the form of assertions or definitions, are required to be distinguished explicitly. Now, this distinction does not necessarily need MFTC, but deducing testable statements from the untestable ones does require MFTC as natural languages are too limited and ambiguous for such systematic deductions.

To help the readers develop a better understanding of their argument, the authors provide a detailed illustrative MFTC in the remaining pages of this chapter.

## **8. Chapter VII: More on Issues and Problems Concerning FTC**

Here the authors treat the issues and problems of FTC in more detail and introduce additional ones to promote FTC's acceptance in sociology.

Given the tradition in sociology where all theories are stated according to the conventions of a natural language, any MFTC is highly likely to meet with fierce resistance. As opposed to only a defense of tradition, some of this resistance comes from objections to specific components. One of these components is the application of some "sign rule". Yet, the opponents of the sign rule are criticized by the authors for failing to provide an alternative for it other than the conventions of the natural language. Despite the critics' lack of clarity in stating their objections, the authors embark upon examining some possibilities raised by themselves. As another issue, the authors anticipate three fears about the adoption of FTC by sociologists: That their theories become less plausible, too complicated and less informative, and that FTC might impose orthodoxy on the field. These fears are also dealt with by the authors in detail.

The above-mentioned issues bring our authors to treat some inconspicuous implications of their proposed MFTC. The first implication is that since positive results of tests of theories might not pertain to causation or explanation of the variation in the variables, an illustration of a particular MFTC has no utility. The authors' response to this implication is that depending on test results, the illustrative theory can promote the basic goal of science which is detecting order in events or things and furthering that order through novel conceptualizations. Also, as for the epistemological implications, the authors assert that one of the reasons for the usual meager associations among sociological variables is the abstract quality of major sociological constructs and their questionable empirical applicability. Unfortunately, due to sociologists' commitment to the conventional form of stating theories, there exists the huge problem of empirical applicability, hence the

call for a systematic way to connect constructs with empirical referents.

Finally, to achieve their ultimate goal, which is selling FTC, the authors embark upon considering alternative modes. For example, in response to the complexity issue raised as an objection to their proposed mode, they try to entertain simpler modes providing that they do not preclude the two primary goals of FTC being testability and agreement in assessment of sociological theories. The important point made here is that prospects for alternative modes of FTC need to change as sociology changes over time. One major change would be a long natural history stage which would promise a vast conceptual clarification and an identification of terms that offer more empirical applicability than does sociology's current terminology. That change would in turn set the scene for an MFTC that does not entail constructs and would be significantly simpler than their mode.

In the last pages, the authors also acknowledge the limits of their mode of theory construction and, above all, emphasize that their FTC promises to promote the testability of sociological theories, not necessarily their predictive accuracy.

## 9. Chapter VIII: Disastrous Beliefs in Sociology

This chapter covers the extensive damage caused by some beliefs in sociology to sociology's scientific standing.

The first disastrous belief denies the existence of any objective reality. Such solipsism, according to the authors, has evolved among Greek philosophers and more recently been promoted by deconstructionists and postmodernists. The rationale for one such denial is that whatever one senses passes through one's mind which is molded by a myriad of personal and collective forces. Some examples are culture and religion functioning as filters that prevent us from knowing the world out there as it is. The authors reject this view, believing that science is about developing a better understanding of those filters and that its organization reduces the personal and cultural influences on that understanding. To clarify, scientists' endeavor to design measurements and carry out tests according to

some conventional procedures can minimize the influence of these filters. Moreover, the authors inform us of the new procedures of objective data collection and the expansion of the data which is available today for research in social science. More importantly, when it comes to the interpretation of data, science is there to help the practitioners examine whether their constructed interpretations have predictive implications, with the next goal being a systematic assessment of those implications. What deserves due attention here is that our authors do not deny the major "interpretive noise" (p. 109) in data; they, nevertheless, are optimistic about progress along the way owing to sociologists' access to an enormous body of data. The second ruinous belief embraces causation among sociological variables as readily demonstrable. This belief is particularly harmful in that it ignores a large number of issues and problems about causal evidence, without a substantial reduction in which, effective agreement over the criteria of causal evidence cannot be reached. Lastly, the third dangerous belief regards generalizations as unnecessary and perhaps horrible for science. To this the authors respond that generalizations are required for predictions since it is generalizations we test in a theory and without them there exists no science.

## 10. Chapter IX: The Quest for Uniformities and Propositions

The books' beginning words are "uniformity" and "uncertainty". Interestingly, it also comes to a closure with those very same terms:

Science is a constant search for uniformities. These uniformities are commonly stated as propositions that are ideally united by deductions from a particular set of premises. The authors stress that propositions may come from any number of sources, for there is no logic of *discovery* in science. This is while they also insist that there should be a logic of *justification* in science for a theory or proposition to survive. This logic of discovery is based on the relative predictive power of theories through which scientists try to reduce uncertainties. Whatever the field—physics or sociology—when stochastic processes in developing theories contain uncertainty of measurement, the predictive accuracy in testing those theories is usually far from impressive. This simple argument together with the

foregoing chapters of the book suggest that “contemporary sociology is a far cry from genuine science” (p. 125). To further enlarge upon uniformities, the authors provide an illustrative example and discuss some crucial qualifications and complexities in asserting a uniformity. They also go over situational assessments which, although limited in both time and space, can result in the discovery of potential uniformities in an infinite category and mention the popularity of these assessments compared to testable assertions of uniformities in sociology.

Additionally, the talk on situational assessments and value judgments brings the authors to a discussion on politics in this regard. They argue that policy-makers and their personal biases and commitments can and do influence the laws and policies crafted in every society. Accordingly, sociologists’ value-laden beliefs affect the empirical questions they ask. This means that policy-driven research can leave us with rather dim prospects of developing formal theories unless sociology starts embracing the “is/ should be” distinction and moves towards an unbiased assessment of the “is” without attention to the political climate and pressures. The authors also believe that despite the sources driving the questions, there is still hope for social sciences if their practitioners pay close attention to conceptual problems and issues and try to minimize conceptual ambiguities and maximize consensus over measurement strategies so that situational assessments in the field can be compared and, consequently, uniformities can be detected.

Keeping this issue in mind, in the final pages of their book, the authors encourage sociologists to set the formulation of propositions stemming from detection of potential uniformities as their top priority and, to set the scene for future attempts, they finish their book with a critical admiration of Jonathan Turner’s (2010) search for principles of sociology as both an instance of their FTC and an attempt in sociology to formulate some basic principles instead of profound generalizations which discourage the search for uniformities.

## 11. Concluding Remarks

Despite the relative complexity of the subject matter covered in this book, the interconnection

of the discussions and how they unfold in each chapter make it much easier to follow the arguments. The authors move back and forth among the chapters to further clarify certain points and this movement is accompanied by the required chapter(s) referenced within parentheses next to each jump. This approach encourages the reader not to follow a fixed pre-defined order while reading the book, but to jump forward and backward along the book whenever needed. The illustrative examples are also of great help to deepen the reader’s understanding of the main issues of the book such as the proposed MFTC.

Another strong point of the book is the authors’ being their own worst critics. They question their own arguments and try to respond to the criticisms they themselves raise. They are also open about the space limitations preventing them from an in depth treatment of some issues and resulting in some superficial quick handling of them. For instance, they admit that their book does not claim to and cannot treat FTC thoroughly, not even if limited to sociology, and warn their reader against construing their proposed mode as set in stone. Additionally, they acknowledge their restricted focus on American sociology and lack of effort to move beyond the boundaries of the United States in presenting examples from research and relevant data.

My hearty recommendation of this book shall be my final words of this review as well. I highly recommend the book, specifically to academics and practitioners coming from humanities. Under the influence of post-modernism, most of us tend to promote ideologies, keep our distance from science, fear orthodoxy, and prefer ontological and epistemological pluralism. This book, on the other hand, is an effort to put forth the rules of science as a game so that we can start playing it. Now you might not like some of those rules, but the only way to change them is to learn them first!

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