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Sociology of science and the turn to social constructivism

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Abstract: Knowledge about and reflection on the epistemological developments in sociology of science is an important step towards a critical analysis of the discipline, its present, and its future. The assessment of theoretical and empirical trends within the discipline has a number of beneficial consequences. Thus, spurring a discussion about the relative merits of new trends might contribute to the clarification of the epistemological positions, the methodologies used, and the communicativeness of the arguments that are made. We believe that it is important to periodically initiate discussions on the paradigmatic developments in a particular field of study. Such discussions will increase methodological awareness and reflection and will further the methodological expertise of the scholarly community. Recently, a salient turn from positivist to constructivist approaches has come to dominate the field of sociology of science. We have contextualized the development of social constructivism in sociology of science through a brief historicist foray. This approach allows us to inform the reader about the advent of social constructivism in this domain and to present in a nutshell its claims of contributions, as well as to mention the criticisms levied against it. We have extended our contextualization even further by relating these new developments to the history of humanistic paradigms and the study of cultural phenomena like the world of ideas, knowledge, and science. Our intent has been to provide a platform for reflecting over these developments and to create a system of reference points for orientation in the realm of sociology of science thought. We hope that this article will contribute to the emergent discussion on constructivism in general, on constructivism in sociology of science, as well as on the positioning of constructivist agendas across disciplines. We believe that the present discussion will increase the methodological awareness of practicing scholars and will make them reflect on their own methodological affiliations, preferences, and biases. It is our deep conviction that in such a way we can contribute to the advancement of an epistemologically sophisticated scholarly community that navigates with ease the murky waters of methodological decision-making.

Keywords: Social Constructivism, Sociology of Science, Epistemology, Social Science Methodology

1. Introduction

Sociology of science emerged in the 1960s as the study of science as a social institution. This presupposes research on the social basis of the institution, the influences that society exerts on it, as well as the social relationships inside the institution. In this case, sociologists treated science as a "black box," focusing only on the inputs and outputs, and in particular, on the social pressures and their effects. In respect to other social scholars, sociologists left the analysis and the study of content to philosophers of ideas and historians of science, focusing on the social relationships between science and its environment, as well as among the components of the science system. It was more about the social influences on scholarly beliefs, values, norms and standards of behavior, rather than the ontological adequacy of the scholarly contributions. Sociologist were intrigued by the social forces that drive discovery and change in beliefs, the role of social relationships for the productivity of the scientific process, and the importance of social factors across the whole institution. But that early focus was about to change dramatically in the 1970s and 1980s, so that today this field of inquiry is largely dominated by interpretivist and constructivist orientations.

In a world dominated by positivist thinking both in the

natural and social sciences, it is paradoxical that the scholars who research science have embarked on a totally different approach to their object of study. They have subscribed to humanistic paradigms and methodological approaches that can be envisaged altogether under the aegis of social constructivism. This is a problem that deserves attention and better understanding. It is also interesting to consider how scientists who very often work within a positivist paradigmatic environment react to this unusual turn, in particular when we experience today a very strong momentum towards the ideas of the social construction of reality. In this case, we have an overlap of two major areas of concern. One is associated with the nature of the epistemological foundations of contemporary knowledge production systems; the other is related to the ways of studying how social influences shape not only knowledge, but the knowledge production systems as well.

The purpose of this paper is to initiate a discussion about the status of social constructivist thinking in sociology of science. Our goal is to raise awareness about the paradigmatic situation in that domain. This doesn't mean that we have any biases or preferences. Knowledge about and reflection on the epistemological developments in sociology of science is an important step towards a critical analysis of the discipline, its present, and its future. Spurring a discussion might contribute to the clarification of the epistemological positions, the methodologies used, and the communicativeness of the arguments that are made. We believe that it is important to periodically initiate discussions on the paradigmatic developments in a particular field of study. Such discussions will increase methodological awareness and reflection and will further the methodological expertise of the scholarly community. This is an important prerequisite for building a methodologically proficient scholarly community that is capable of making cognizant epistemological choices.

For methodological purposes, we undertake a historicist foray to investigate the adoption of social constructivism by the community of sociologists who study science. This kind of historicist approach helps us analyze the status of social constructivism in the domain we study. It also allows us to highlight the variations of the method; and provides us with a platform for understanding the need for a constructivist approach. It puts in perspective the criticism levied against it from "practicing" scientists and social researchers. Most importantly, this approach helps us to reveal the domination of social constructivism in sociology of science, which is one of several domains in sociology that have adopted constructivist thinking rather than positivist rationality.

The scope of this paper is delineated by our intentions and goals. Our treatment of the content domain and the social constructivist approaches to sociology of science is limited to a typical journal article size narrative and to highlighting the most important points in each approach or situation. Each of the approaches or issues mentioned here can become a legitimate object of a subsequent paper. For us, it is more important to create a discursive environment that will provide a foundation for further examination of the subject matter, as well as discussions, arguments, and debates. We have deliberately selected some thought-provoking ideas in order to bring stronger attention to a number of issues and attract more active participation in the study of this subject matter.

2. Intellectual Background

2.1. Inception and the Early Years

Sociology of science as a systematic study of the social institution of science took off in the 1960s and its emergence is generally credited to the works and investigations of Robert Merton. The groundwork for its institutionalization was laid by some of his earlier works, such as "Science, Technology, and Society in Seventeenth-Century England (1938)" [1]. Merton's sociology of science, a.k.a. "traditional sociology of science" or "the positivist and normative study of science" has several distinctive features. Science is perceived as a rational enterprise, where the content of the natural sciences is ultimately determined by facts of reality. There are clear lines of demarcation between science and non-science.

Sociology of science can and should study the social conditions that make scientists' work possible and may influence the choice of problems to study and the extension of certified knowledge based on experiment. For the sociologist, in Merton's understanding, the content of science is a "black box" and this content and the intellectual side of science is better left to historians of ideas and philosophers of science. Science is somewhat autonomous and unique among other human endeavors and scientific research is governed by a particular social structure at the heart of which is the "scientific ethos."

The scientific ethos consists of four norms of science that amount to prescriptions of how "a man of science" should pursue the institutional goal of accumulating empirically sound and theoretically consistent knowledge [2]. The 4 norms are: (1) Communism, which asks scientists to share their findings with the scientific community so that the institution promises 'returns' only on 'property' that is given away; (2) Universalism enjoins scientists to evaluate knowledge claims using universal and impersonal criteria, so that the allocation of rewards and resources should not be affected by the contributor's race, gender, nationality, social class, or other functionally irrelevant statuses; (3) Disinterestedness suggests that the primary motive for scientists to do research should not be self-interest because such un-altruistic behavior would conflict with the institutional goal of science (extending certified knowledge); (4) Organized Skepticism proscribes dogmatic acceptance of claims and instead urges suspension of judgment until sufficient evidence and argument are available.

So long as scientists adhere to this "moral code," the social institution of science will function smoothly and be

able to achieve its major goals. When scientists break these norms, anomie may occur unless they are being swiftly punished by the scientific establishment, which has little tolerance for aberrations such as plagiarism, cheating, false claims of priority in discoveries, etc.

Merton's emphasis, as S. Cole [3] points out, was mainly on 3 things: the 'foci of attention', i.e. problem choice, the 'rate of advance' or how quickly knowledge grows in a particular discipline, and the intellectual development of science, which may be steered in a certain direction by social, economic, political, legal, and other changes.

Merton's school of sociology spawned numerous studies by Coles (stratification and consensus [4]), Harriet Zuckerman (scientific elites[5]), Diana Crane (the invisible college, productivity and recognition[6]), Warren Hagstrom (the scientific community[7]), Norman Storer (the normative structure of science [8]), Ian Mitroff (counter-norms [9]), and Nicholas Mullins (citation in science, cognitive consensus, journal acceptance and rejection of papers [10]).

2.2. The Constructivist Turn

In the mid-1970s a new group of researchers in sociology of science and sociology of scientific knowledge started to reshape the field, which eventually ended up in a relativist-constructivist turn that now dominates the area known as STS (STS is used in two meanings, 1) Science and Technology Studies, and 2) Science, Technology, and Society). This is not completely surprising, considering the major turn in the second half of the 20th Century towards humanistic thinking and the resurgence of the humanistic paradigms in philosophy and the social sciences. In fact, by highlighting the constructivist turn in sociology of science, we both corroborate the new intellectual developments and provide one more illustration of their impact on human thought.

The largest influence on this trend undoubtedly came from the historian of science Thomas Kuhn [11], whose seminal book "The Structure of Scientific Revolutions" (first published in 1962 followed by a second edition in 1970) sent shock waves through the field of social studies of science. Terms such as "paradigm," "incommensurability," "normal science", "scientific revolution," "scientific anomaly", "scientific crisis," "scientific puzzle-solving", and so on became firmly entrenched not only in the social studies of science vocabulary but have been widely used in a variety of other areas (including politics).

Kuhn's influence cannot be underestimated, especially his view that science progresses not by systematic accumulation of verifiable knowledge but by abrupt interruptions, paradigm shifts, knowledge claims being relative and incommensurable, that different scientific communities can have diametrically opposed interpretations of the same data, that all data are theory-laden. As Kuhn [11] himself points out in the Postscript to the 2nd edition of his book on p. 206, "Perhaps there is some other way of salvaging the notion of 'truth' for application to whole theories, but this one will not do. There is, I think, no theory-independent way to reconstruct phrases like 'really there'; the notion of a match between the ontology of a theory and its "real" counterpart in nature now seems to me illusive in principle. Besides, as a historian, I am impressed with the implausibility of the view."

Kuhn also places heavy emphasis on the paradigm (theory) being in essence socially constructed in the sense that it is what a certain group of scientists decides to agree upon or share. The problem is that he uses a circular definition for paradigm and a scientific community. "A paradigm is "…the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community." A scientific community, on the other hand "consists of men who share a paradigm."([11], Postscript). Although Kuhn himself recognizes the circular nature of these definitions, he claims that not all circularities are vicious.

Today, constructivism clearly dominates the field of STS, unlike the situation that Stephen Cole [3] describes in "Making Science." More than 75% of practitioners in the field and more than 80% of the articles in the top journals in the field (Social Studies of Science and Science, Technology, and Human Values) belong to some brand or reincarnation of social constructivism.

3. The "Gist" of the Constructivist Turn

Constructivist philosophy of science brings forward several important assumptions. Science should not be studied as a 'black box' but we have every right to search for social influences on the content of scientific knowledge. Science is by no means entitled to some privileged status as the only valid and reliable form of knowledge, other forms are equally legitimate and have equal claims on 'truth'. Scientific disputes cannot be resolved by empirical evidence alone; the empirical evidence itself is dependent on the theory that underlines it.

In addition, several more assumptions shape the constructivist way of thinking about the social aspects of science. In a strong sense, nature does not determine science, instead the social behavior of scientists and negotiations among them determine how the laws of nature are defined [3]. Replication in science is hardly possible and almost never done (e.g., Harry Collins [12]), because idiosyncratic factors will render that almost impossible and thus the rationality of science is undermined. In essence, there is no such thing as "scientific facts" since these are decided by the scientific community through a process of negotiations, persuasion, and skillful rhetoric.

Constructivists favor a micro-approach to studying scientific practice and knowledge construction (a detailed analysis of observable behavior in the laboratory, including verbal behavior, conversations and texts) unlike the preferred macro-level analysis of traditional Mertonian

sociology of science. This is also in line with the general humanistic turn in philosophy and sociology, and the more powerful presence of culture studies on the academic arena. There is a kind of a pendulum effect. After reaching a pinnacle in the middle of the 20th century, positivism gradually started giving up positions to the humanistic paradigms.

In principle, the vibrant development of science and technology in the 19th and the first half of the 20th centuries created an environment of technological optimism and boosted positivist thinking. The rapid scientific and technological development during World War II has only helped to consolidate these beliefs and to rise the confidence in science and technology to a point when the human kind has practically disregarded the wisdom of humanities in exchange for the mechanistic rationality of the natural sciences. However, a number of social developments at the end of World War II made people pondering again about the meaning of life and the nature of human values. The rapid technological progress was evidently making the humanistic side of our culture to lag behind. Many of the World's leading thinkers and intellectuals became aware of the dangers that technological breakthroughs can bring. The colossal war machine and the unspeakable destruction during WW II, the annihilating power of the nuclear bomb, and the unpredictable effects of the newly emerging space industry – all these developments made some of the leading intellectuals think about the lost human dimension and the dangers of uncontrolled technological optimism.

In this context, it is only natural that sociology of science was one of the first sociological disciplines to pay special attention to the new intellectual developments. Unlike demography and political science where most of the research work is done at the macro-level, current sociology of science has a much narrower area of study and often engages in the study of phenomena exemplified at the micro-level. The number of scientists is not comparable to the general population. The scientific community is both concentrated in comparatively few geographic points, and at the same time it is dispersed over the whole country. The typical survey rationality and methods that have performed marvelously in opinion polling, might not always work so smoothly in sociology of science. Marketing researchers have conceptualized these difficulties when they started talking about industrial marketing. In that domain, the population is small, geographically dispersed, and the individual entities (corporations and their decision-makers) are well known. Marketers found out that direct marketing with face-to-face methods works much better and brings a more complete understanding of the situation.

We would suggest that something similar has affected the intellectual atmosphere in sociology of science. In addition to the emerging macro social developments, new intellectual trends, and resurgence of the humanistic values, the evolving practices in several professions and disciplines probably affected the sociology of science community. This led to the emergence or main-streaming of a number of post-positivist approaches to science. For example, Symbolic Interactionism in its various forms gained an adequately strong position in the sociological community. Ethnomethodology and in particular its second generation offspring approaches started gaining more followers in sociology. These developments brought about a new attitude towards ethnography with its emphasis on understanding human societies and making sense of human culture, values, and behavior patterns. Ethnographers created a bridge to a new way of studying social arrangements and understanding the processes of construction of meaning.

4. Varieties of Social Constructivism in Sociology of Science

There are so many varieties of social constructivism that for a novice reader it would be somewhat confusing to try to sort through them. We can better make sense of this heterogeneous population if we envisage social constructivism as an umbrella term for a myriad of approaches that is based on major assumptions about the constitution of social life, the making of meaning, and the nature of communication between individuals. Right now we witness the proliferation of approaches, spin-offs, and variations and versions of emerging or established methods, as well as eclectic compilations of epistemological and methodological components.

However, it appears that it has been this way for ever. It is even more baffling that many of these versions are not very long-lived and often their proponents offer newer theories even before fully exploring the potential of the initial ones. It almost seems that Henry Poincare [28] was right in observing that sociology is the discipline with the largest number of theories and the least results. He noted that almost every sociologist feels obliged to propose a new theory, which, however, he is very careful not to have to prove but leaves that to other scientists. Here is just a sample of several popular orientations within social constructivism.

The strong programme (Barry Barnes [13], David Bloor [14], or the "so-called "Edinburgh School") is a reaction against previous sociologies of science, which restricted the application of sociology to "failed" or "false" theories, such as phrenology. Failed theories would be explained by citing the researchers' biases, such as covert political or economic interests. Sociology would be only marginally relevant to successful theories, which succeeded because they had revealed a true fact of nature. The strong programme proposed that both 'true' and 'false' scientific theories should be treated the same way -- that is, symmetrically. Both are caused by social factors or conditions, such as cultural context and self interest. All human knowledge, as something that exists in the human cognition, must contain some social components in its formation process. The

presence of social factors alone is not enough to falsify a scientific theory.

Laboratory studies (B. Latour [15], S. Woolgar [16], K. Knorr-Cetina [17,18], M. Lynch [19]) is another cluster of methodologies that has gained prominence in current sociology of science. This group tries to follow scientists around in the laboratory and to use participant observation to reveal the messy social processes through which science "at the frontier, or 'in the making" happens, as opposed to "normal science" or "the core." Scientific facts are socially constructed through negotiations and persuasion and thus scientists move up on the "ladder of facticity." They use the accumulated credibility in their field as symbolic capital that they trade for resources to continue their "research."

The relativist model (H. Collins) claims that scientific knowledge is relative and contextual. Scientists select the most convincing explanation based on their background knowledge rather than inherent qualities of the natural world. In fact, from another position, they disregard a number of plausible explanations in favor of their preferred account of the phenomena and processes. In Collins's words, "… the natural world has a small or non-existent role in the construction of scientific knowledge [12, p. 1]".The effect of the relativist predispositions is demonstrated in the interest model (H.Collins [3], T. Pinch [20], and A. Pickering [21]). The assumptions of relativity of knowledge and the normalcy of scholarly bias lead to focusing on the cognitive and social interests of the scientists. The followers of the interest model believe that interests heavily influence the choice of scientific problems to study, the theory that wins out, and the success of knowledge claims.

The Discourse Analysis approach in sociology of science is represented by M. Mulkay, G. Nigel Gilbert [22], J. Potter [23], and S. Yearley [24]. They believe that the analysis of conversation and the writings of scientists should take precedence over other approaches, since this is the most important mechanism of creating, negotiating, interpreting, and accepting scientific claims. From a Discourse Analysis perspective, there is an amazing variety of accounts of what took place on the lab bench. Sociologists have to sort through them before they can understand how science is being made. Discourse creates the social environment in which science is being carried out, thus the linguistic repertoires and vocabularies utilized by scientists shape the creation of knowledge. This is also known as the "linguistic turn" in science studies.

Reflexivity (M. Ashmore [25] and S. Woolgar [26]) is another methodological approach. It advocates self-examination at every stage of doing research. Ironically, the reflexivity approach provides one of the most scathing criticisms of social constructivism: If scientific decisions and explanations are not influenced in any important way by evidence and logical argument, then why do constructivists bother to conduct empirical studies of natural science, to begin with?

5. Criticism of Social Constructivism

Despite of being the most common methodology in sociology of science, social constructivism has a number of detractors. This is natural, considering the object of study. Very often these sociologists study developments and new phenomena in the realm of the natural sciences. Bearing in mind the paradigmatic tradition of the natural sciences and the methods used, it is expected that social constructivism will meet strong opposition from these circles. In addition, mainstream sociologists are still prone to the influences and objectivist stances of positivism. In this respect, there are a number of critical statements coming from the realms of natural sciences and sociology.

One often raised criticism against the constructivists is that they are trying to explain something when they themselves are not competent enough to even understand some of the theories and experiments they are trying to interpret. Such attacks come from natural scientists and philosophers and historians of science [27, 29]. The discontent is not without reasonable foundations. There are a number of embarrassing gaffes made by social constructivists partly because of the reasons that scientists put forward and partly because the relativist stance of the constructivist way of thinking. We will mention here the Science Wars and Sokal's hoax [27].

Another criticism is that social constructivists take to the extreme the notions that the natural world is also socially constructed and that there is no such thing as "an objective reality out there." Opponents bring forth some simple examples with "natural experiments." If a relativist-constructivist jumps from a skyscraper and "constructs the reality as non-gravity" will he/she land softly or are we going to hear a loud "thud?" In such cases we witness the paradigmatic wars in science and how each party imposes charges on the other side. We have to point here that scholars from the natural sciences very often dismiss any suggestion that their research behavior influences the objects they study and produces results that otherwise would not appear.

Critics accept that the choice of problems to study, the rate of scientific advance, and the everyday making of science are indeed influenced by the social context. However, they emphasize that the content of what constitutes the "core" of science (accepted theories) is undoubtedly constrained by nature. Their position is that the ontological basis exerts much stronger influence than the epistemological and methodological choices made by scientists.

The main criticism [3] is that it is impossible to explain just by social factors why the "frontier knowledge" wins a place in the "core" without referring to the cognitive characteristics of scientific contributions. This is actually a good example of the paradigmatic differences that lead to totally opposite interpretations of the same situation. Objectivists are firmly convinced that the ontological bases constitute the most substantial differences regarding

findings and theories. Social constructivists, true to their beliefs and assumptions, claim that the process of appropriation of frontier knowledge has social nature and is strongly influenced by the zeitgeist and a number of social and intellectual developments that precipitate the incorporation of new knowledge into the science "core."

Another argument against the constructivist method is pragmatic. Detractors point that if the constructivists are right and the reality is socially constructed, chances for applicability of scientific knowledge are not that great. Currently, we are witnessing a surge in applicability and an incredibly short time lag between scientific discoveries and their practical utilizations in engineering and manufacturing. If reality puts no constraints on our knowledge claims, how do we explain the tremendous practical applicability of science? In principle, critics hold onto the old adage that truth is in the pudding.

There are also considerable methodological allegations and criticism based on extremely different paradigmatic positions. In the sciences, generalization is typically made on the basis of a representative sample. Constructivists work very often with methodologies that accept as legitimate a sample of one. Their approach to understanding the world is very unusual and confusing for positivists. As a rule, constructivist scholars of science tend to overreach in terms of generalizing based on a single case study or very few cases (e.g., the "transepistemic communities" and the "collective consciousness" identified by Knorr-Cetina [17, 18] based on a single, although large high-energy physics experiment). They even don't bother to make a case for their method and to communicate the epistemological grounds of their approach to the scientific community. In most cases, constructivists are not concerned with explaining the limits of their findings and the way they need to be interpreted.

6. Discussion: The Constructivist Nature of the Study of Culture

Our goal here is not so much to weigh in on the advent of social constructivism in sociology of science, but to render it comprehensible and to make sense of why it is happening. With this intent we actually have already taken sides. Talking about understanding and meaning rather than measuring and quantifying presupposes particular paradigmatic affiliations, propensities to think in a particular way, and inclination to accept certain points of view and ideas over others. However, we have tried to stay largely impartial, which discloses our belief in such a possibility and our conviction in particular scientific values.

The advent of Postmodernity and the new Deconstructivist intellectual environment have brought a number of changes in the way people conceptualize the world around us. It is more common to refer to our everyday life as praxis, our routines have become practices, and correspondingly, science is a practice of its own. Thus, sociology of science has the opportunity to treat its subject matter as the social aspects of the scientific practices. This approach allows for borrowing from a myriad of Deconstructivist developments and for infusing sociology with concepts and terminology from history and the humanities. Besides, Kuhn [11] proved to be exceptionally instrumental in this process, introducing the historians' humanistic way of perceiving the world, the history of ideas, and social practices. The success of his conceptualization of science has built a bridge to new disciplinary domains where the subjective has never been a vice and the objective has existed only in the realms of pure fiction. So much for ultimate objectivity. In some sense, it has never existed.

In general, shying away from outliers, science is concerned predominantly with explanation and quantification of phenomena in a way that will make it possible to use scientific knowledge in engineering. This has been dominating the intellectual landscape for at least two centuries, considering the developments in science and technology after the Industrial Revolution. During the Modernity, when science emerged as a social institution, rationality has enjoyed an exceptional status. Objectivity, measurability, and predictability have become major objectives in the world of science and technology. This has brought into existence a particular value system, a way of thinking, and a system of corresponding practices. There have been times when measuring has been a major challenge and therefore its success was considered an important contribution. People also have strived to learn how manipulating one variable will affect the behavior of another variable. That way of thinking has allowed them to predict the relationships between inputs and outputs, to control processes and outputs, and most of all, to engineer artifacts that will produce the desired outputs. Such thinking has worked very well and has been very productive in mechanical engineering and other comparable practices.

However, it has been clear for a long time that this type of rationality would not help much in understanding cultural phenomena, the world of ideas, and the realm of thinking and creating new ideas. The sciences of culture (Kulturwissenshaften) from the time of Alexander von Humboldt have reached a competitive position before the Industrial Revolution and have attempted to produce a high standard for scholarly behavior. However, they have experienced a relative decline after the euphoria with the ability to manufacture quickly, with little physical effort, and with a very high reliability. Nowadays, the Postindustrial society has brought a turn and contributed to a pendulum effect that we experience as a novelty, infusion of new ways of thinking, and a major threat to established and institutionalized ways of producing knowledge and ideas. Actually, humankind has used its collective memory and has returned to prior ways of thinking.

Our interpretation of the developments in sociology of science is based on the perception that this is actually a

specific instance of sociology of culture. From this position, the whole mystery with social constructivist ways of thinking dominating sociology of science is easy to untangle. The study of symbolic culture takes a very different shape than the study of the material phenomena. This is even more pertinent when our goal is to understand the emergence and change of scientific thinking, the interaction of values and ideas, the development of normative systems and standards of behavior, and a myriad of related issues. Our previous text demonstrated that the concept of paradigm has a similar nature and coverage. This is one more reason to perceive the penetration of social constructivism in sociology of science as a natural and comprehensible development.

7. Conclusion

Our project started with the idea of historical contextualization of the social constructivist approaches in sociology of science so that we can create a platform for grounding future epistemological discussions in that domain. The intent was to foster methodological awareness and spur discussions, to encourage a critical analysis of the discipline, its present, and its future. These intentions guided our presentation of the material, the selection of analytical aspects, and the reflection on the social underpinnings of the new epistemological situation in sociology of science. In the process of our work, several complimentary concerns emerged, as we discussed them in the introduction. All these considerations created a guiding system that brought about the current selection of issues and ideas, as well as the direction of analysis and reflection.

We have contextualized the development of social constructivism in sociology of science through a brief historicist foray. This approach allowed us to inform the reader about the advent of social constructivism in this domain and to present in a nutshell its claims of contributions, as well as to mention the criticism levied against it. We have extended our contextualization even further in time and in space. We have related these new developments to the history of humanistic paradigms and the study of cultural phenomena like the world of ideas, knowledge, and science. Our intent has been to provide a platform for reflecting over these developments and to create a system of reference points for orientation in the realm of sociology of science thought.

We hope that this article will contribute to the emergent discussion on constructivism in general, on constructivism in sociology of science, as well as on the positioning of constructivist agendas across disciplines. We believe that the present discussion will increase the methodological awareness of practicing scholars and will make them reflect on their own methodological affiliations, preferences, and biases. It is our deep conviction that in such a way we can contribute to the advancement of an epistemologically sophisticated scholarly community that navigates with ease the murky waters of methodological decision-making.

As we mentioned in the introduction, this project can be substantially augmented and elaborated in several directions. We can delve deeper into the peculiarities of each constructivist approach, analyzing more extensively the epistemological foundations, as well as the contributions and deficiencies of the methods used. The current article can also serve as a precedent for analogous studies in other disciplines and knowledge domains. There are other fields that are charged with way more controversy because of a fierce competition between almost equally powerful epistemological communities; or emerging trends driven by epistemological fads; or the struggle of invisible colleges that are infused with politics. We do not exclude the probability of developing these ideas in a number of other directions that will emerge in the process of expanding and diversifying the project. This will contribute to the epistemological reflection in sociology of science, as well as many other fields of social research endeavor.

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