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## Special Issue

### *Leviathan and the Air-Pump*

### After 40 Years: Reception, Criticisms and Impacts

## The Social Value of the Trust-Truth Bond in a Post-Truth Era: Revisiting *Leviathan and Air-Pump*

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### Abstract:

Shapin and Shaffer's book offers a socio-historical approach that highlights the inseparable relationship between the processes of producing "true" knowledge and the constitution of the epistemic community that produces and legitimates that knowledge and takes responsibility for it. Such legitimacy and authority are being discredited by phenomena characterized under the label of "post-truth." The authors present their book as a study that characterizes the debate between Boyle's "experimentalism" and Hobbes's demonstrative method, as a response to the problem of assent and social order in the context of the Monarchical Restoration following the Civil War. I find an opportunity to reflect on the foundations of the acceptance of knowledge provided by the natural and social sciences in the current context of the post-truth phenomenon. The strategy is to follow our authors in the issue that has guided their research: How does a (scientific) community that works tirelessly to produce consensus around knowledge describe the knowledge achieved as given, rather than produced? The book reveals an interweaving between truth and trust. This will lead us to discourage dichotomies such as the given and the constructed, individualism-holism, fact-value, and move toward a consideration of "epistemic responsibility" within a communal framework.

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**Keywords:** Trust; Truth; Social Epistemology; Post-Truth; Production of Facts

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As we come to recognize the **conventional and artifactual status of our forms of knowing**, we put ourselves in a position to realize that **it is ourselves and not reality that is responsible** for what we know. Knowledge, as much as the state, is the product of human actions. Hobbes was right. (Shapin and Schaffer 2011, 399)

What we know of comets, icebergs, and neutrinos irreducibly contains what we know of those people who speak for and about these things, just as what we know about the virtues of people is informed by their speech about things that exist in the world. (Shapin 1994, XXVI)

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## Introduction

As detailed in the call for this dossier, there are diverse and inexhaustible ways to value, either critically or positively, *Leviathan and the Air Pump: Hobbes, Boyle, and the Experimental Life*. These can include its historical reconstruction of the debate between Hobbes and Boyle and the beginnings of the centrality of experimentation for the knowledge of nature or the detail and richness of the authors' presentations of the historical, sociological, and philosophical perspectives that guide them in reconstructing the specific historical case, summarized in the recurring slogan throughout the book, "Solutions to the problem of knowledge are solutions to the problem of social order" (Shapin and Schaffer 2011, XLI). I venture to say that such an explicit slogan accounts for the diverse reactions and receptions that Shapin and Schaffer address in the 2011 preface. Negative reactions have mostly arisen from those who reject the authors' adoption of a social epistemology as a metaepistemological approach to analyzing science (Kusch 2011, 879-870). On the other hand, the fact that this approach is realized through a thorough study of a specific historical case, supported by a solid documentary apparatus, accounts for the positive receptions. As a result of these, the discussions, rather than rejecting a priori the social dimension that constitutes scientific knowledge, focus on identifying the specific social factors to consider for understanding social phenomena, and on how human agency and responsibility are conceptualized in connection with the social context and the binding nature of norms. This has led, as Shapin and Schaffer themselves highlight, to more case studies, and to their approach becoming increasingly influential among a range of social historians concerned, for example, with retrieving the submerged perspectives of groups traditionally neglected by academic history, including those distinguished by class, race, ethnicity, and gender (2011, XLIV).

We must also note that each reaction or reception (whether positive or negative) will construct its own interpretation of the aspects of the book that are of most interest, depending on the reader's disciplinary interest or perspective. While a large part of the more negative reactions has stemmed from rejections of any sociological determinism or reductionism in a space - science - that is assumed and presumed to be immune to historical and social conditions,<sup>2</sup> in these cases the ignorance of the debates in the philosophy and epistemology of the social sciences regarding what is involved in understanding social phenomena is striking. This is crucial knowledge for appreciating the book we are celebrating today as an epistemological framing of what constitutes a "historical-social understanding" of "experimental life" in the seventeenth century, that is, the community-based production of knowledge about the facts of the world as a historical-social phenomenon. Personally, from the standpoint of an epistemologist of history and the social sciences, I have appreciated this book in particular and Shapin's work in general for its contribution to clarifying what is meant by social "order" and its understanding.<sup>3</sup> Linking the order of

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<sup>2</sup> For a detailed survey of both critical and positive receptions, I recommend reading the authors' introduction to the 2011 edition of the book celebrated in this dossier.

<sup>3</sup> I make this statement with the intention of writing this article, but I want to clarify that I am, first and foremost, a reader of history, and secondly an epistemologist of history, and my primary appreciation is as the former, being captivated by the reading of this great narrative from the beginning to the end of the book. As Hayden White has said of the great history books of the 19th century, "Historiographical disputes on the level of 'interpretation' are in reality disputes over the 'true' nature of the historian's enterprise..., disputes over what 'history' ought to be reflect similarly varied conceptions of what a proper historical explanation ought to consist of and different conceptions, therefore, of the historian's task" (1973, 13). Thus, when reading *Leviathan*, we are not only confronted with a great history book, a classic, but with the presentation of a substantive view of history and its dilemmas.

knowledge (particularly scientific knowledge of nature) with social order requires not only some familiarity with the natural science under study (whether in the history or philosophy of natural sciences), but also an understanding of the debates about different conceptions of the epistemic status of the social and historical sciences and the differences concerning what constitutes a social fact. It is essential to avoid being superficial or naïve in the social sciences and the philosophy of the social sciences, at the risk of falling into a sociological determinism that dissolves responsible epistemic agency or the idealization of an epistemic subject that is autonomous from all social or historical circumstances.

It is precisely my interest, not only in issues concerning the epistemic status of historiographical narratives, but also in the narratives themselves that the historiographical community (as a scientific community) constructs about its research activity, its authority, and its responsibility regarding the knowledge of the past, that led me to discover the writings of Shapin, Schaffer, Barnes, and Bloor (figures associated with the Strong Programme in the Sociology of Knowledge). It is precisely their social and historical approaches that highlight the inseparable relationship between the processes of producing “true” knowledge and the constitution of the epistemic community that produces and legitimates that knowledge and takes responsibility for it. Such legitimacy and authority are being discredited by phenomena characterized under the label of “post-truth”.

Shapin and Schaffer present their book as a study that characterizes the debate between Boyle’s “experimentalism” and Hobbes’s demonstrative method, as a response to the problem of assent and social order in the context of the Monarchical Restoration following the Civil War (2011, 21).<sup>4</sup> That is to say, the grave situation of the times made it necessary to offer strategies for social consensus. For both Hobbes and Boyle, the consensus achieved through the investigation of nature would exemplarily contribute to the achievement of social peace. In this presentation, I find an opportunity to reflect on the foundations of the acceptance of knowledge provided by the natural and social sciences (history) in the current context of the post-truth phenomenon. On the other hand, this is the kind of reflection in which Shapin himself became involved (2019). The strategy is to follow our authors in the issue that has guided their research: How does a (scientific) community that works tirelessly to produce consensus around knowledge describe the knowledge achieved as given, rather than produced? The book’s response addresses the revelation of an interweaving between truth and trust. This will lead us to discourage dichotomies such as the given and the constructed, individualism-holism, fact-value, and move toward a consideration of “epistemic responsibility” within a communal framework.

The article is divided into seven parts. The first presents the contemporary issue of post-truth. The second provides details on the kind of social-historical approach to the Hobbes vs. Boyle debate. The third focuses on Shapin and Schaffer’s account of the production of the experimental fact. The fourth suggests appreciating the book from the perspective of the objectivism-subjectivism debate in the social sciences. In the fifth, we revisit the topic of post-truth in a renewed way. In the last two sections, I analyze two specific cases.

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<sup>4</sup> In chapter VII, the authors outline the political and ecclesiastical context of the Restoration in the 1660s. The experience of the Civil War and the Republic in the preceding decades demonstrated that contested knowledge led to civil strife. This helps explain why the restored regime focused on methods to prevent a relapse into anarchy by exerting discipline over the production and dissemination of knowledge.

## Post Truth, Alternative Facts and Fake News

Let's start by considering how post-truth is defined in some of the most influential language dictionaries. The Oxford and Cambridge dictionaries agree on the idea that “The **Post Truth** term is introduced with the aim of denouncing the manufacture and diffusion of **fake news** and the strategic use of **emotion**. That is, it denotes circumstances in which **objective facts** are less influential in shaping public opinion than the appeal to emotion and **personal belief**”.<sup>5</sup> Lee McIntyre's popular book, *Post-Truth* (2018), focuses its research on the question on how we arrived at a post-truth era, when “**alternative facts**” replace **actual facts**, and **feelings** have more weight than **evidence**. The way in which the topic appears in academia and the mass media points out that we are living in an era of post-truth in which distinctions between the true and the false, the given and the invented, so valuable for science and politics, are no longer important. As a result, the Post-Truth Era is a target for all those who consider democracy as the only system that guarantees the development of science and the defense and promotion of human rights (two areas where the corroboration of objective facts is crucial), as we will see in the final section.

Here lies the presupposition of a distinction between “given facts”, on one hand, and forgeries, lies, or falsehoods, on the other, of a manufactured nature that obscures their artifactuality. The effectiveness of these “fakes” in presenting themselves as truths is largely established through countless reproductions on social networks and in the media, which are added to or accompanied by the words of political leaders or media personalities (influencers) who function as authority figures.<sup>6</sup>

Surprisingly, the history told in *Leviathan and the Air Pump* narrates how the “objective facts” that form the foundation of natural scientific knowledge are not given, but “manufactured,” “produced” by a community of responsible epistemic agents who trust one another. From this perspective, “objective” and “produced” would not be antagonistic, as the objective cannot be grounded in individual experience, in what has been “given” to each person. However, a difficulty arises in that, in common sense vocabulary, the expression “production of fact” is associated with inventing something that did not happen, with deception. In the words of Shapin and Schaffer,

In our culture, saying that knowledge is artifactual and conventional is tantamount to saying that it is not authentic knowledge at all. This general disposition accounts for the fact that academic exercises concerned to uncover and display the conventional bases of knowledge, such as Wittgenstein's, are dealt with as if they were attempts at

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<sup>5</sup> The Oxford Dictionary: Relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief (Available at: <https://en.wikipedia.org/wiki/Post-truth> / consulted March 17, 2025).

The Cambridge Dictionary: relating to a situation in which people are more likely to accept an argument based on their emotions and beliefs, rather than one based on facts (Available at: <https://dictionary.cambridge.org/dictionary/english/post-truth> / consulted March 18, 2025).

RAE: Distorsión deliberada de una realidad, que manipula creencias y emociones con el fin de influir en la opinión pública. *Los demagogos son maestros de la posverdad* Available at: <https://dle.rae.es/posverdad> / consulted March 18, 2025 [Deliberate distortion of reality by the manipulation of beliefs and emotions, with the aim of exerting influence over public opinion and social attitudes. *Demagogues are masters of post-truth*. My translation]

<sup>6</sup> For example, Trump saying during ABC's presidential debate, “In Springfield, they are eating the dogs. The people that came in, they are eating the cats. They're eating – they are eating the pets of the people that live there” (Available in: <https://www.youtube.com/watch?v=9gEuUp2Um3E> / consulted March 17, 2024). Another example, Argentinean president Milei saying, during 2025 Davos Economic Forum, that “Gender ideology is, plain and simple, child abuse; they are pedophiles” (Available at: <https://www.youtube.com/watch?v=MAIkQaX35zc> / consulted March 17, 2024).

exposé or disparagement. In everyday life, we ourselves diminish knowledge-claims by showing their constructed nature or their conventional bases. (2011, 150)<sup>7</sup>

In strict truth, all facts, as “objective” facts, are produced and not given. We are faced with a paradox: in order for facts to be objective, they must be produced communally, so that they are not dependent on an individual, yet the production of this “independence” from the individual obscures their status as products. It is in the face of this paradox that the need for a social epistemological approach becomes evident. I propose differentiating a certain stereotypical image of the sociology of knowledge, associated with the attitude of the “intellectual of suspicion”, and focusing on what I term “dense sociologies of knowledge.” The first assumes that, in the face of debates about truth and the objectivity of scientific knowledge, the sociologist’s interest requires distancing himself or herself and adopting an ironic attitude toward the futility of the discussion itself.<sup>8</sup> The second requires the descriptive and narrative unfolding of the value, interest, and social and personal consequences at stake in epistemic disputes, as Shapin explicitly outlined in the subtitle of *Never Pure* (2010). *Historical Studies of Science as if It Was Produced by People with Bodies, Situated in Time, Space, Culture, and Society, and Struggling for Credibility and Authority*. As we will see in the following sections, *Leviathan and the Air Pump* is an exemplary dramatization of this approach.<sup>9</sup>

## Stereotypical versus Dense: The Sociology of Knowledge

In their dense reconstruction of the debate between vacuism and plenism, led by Boyle and Hobbes, Shapin and Schaffer reveal that the dispute involved, on one hand, deep differences about what the method of natural science or natural philosophy (as it was termed at the time) should be.<sup>10</sup> Therefore, Hobbes’s “plenist” claims must be understood within the

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<sup>7</sup> A rather extensive interpretation of various constructivist movements in the twentieth-century philosophy –such as the linguistic turn, social studies of science and neo-Pragmatism and Narrativism in the New Philosophy of History-, makes them the principal agents responsible for the degradation of truth in general and of scientific and historical knowledge in particular. While these movements have questioned the possibility of distinguishing for example, the empirical from the theoretical and evaluation from description outside of and independently of any social and historical context, they are charged as promoting not only relativism but also a kind of skepticism and nihilism. These “philosophically” conservative reactions appear not only in the media but also in academia. See, for example, the heated academic debate regarding the responsibility of the SSKT in the challenges to climate change, between Sismondo, Fuller, Collins, and Lynch (Lynch 2017). For an in-depth discussion of the consequences of constructivism for historiographical research, as well as the realism vs. anti-realism debate, see volume 18, issue 4 of *The Journal of Philosophy of History* (2017). The volume is entirely dedicated to this topic with contributions by Jouni-Matti Kuukkanen, Paul Roth, Frank Ankersmit, and Chiel van der Akker in response to Branko Mitrovic’s recent attack on constructivism and the *Journal of Philosophy of History* itself.

<sup>8</sup> Note that I am not referring to any particular sociological theory or sociologist of knowledge; I am simply clearing up the potential stereotypical view that all sociological approaches to knowledge are necessarily dismissive of the claims to objectivity and truth. For further reading on this, see Habermas 1971 and 1985, and Barnes 1977.

<sup>9</sup> The term “dense” is used by the authors in the 2011 preface. “The dense accounts of the Hobbes-Boyle disputes were indeed meant to retrieve many past specificities. At the same time, those dense accounts allowed the display of knowledge- and order-making forms which, the authors suggested, feature in making all sorts of knowledge, in all sorts of settings” (XLIII). The term is deeply akin to Clifford Geertz’s notion of “thick description,” used to characterize the practice of conducting thorough and detailed ethnography in the field of anthropology.

<sup>10</sup> This observation is commonplace to those of us who study the philosophy of history. The historical statement is both about the past and about the way of talking about the past. In “Literary Theory and

framework of his demonstrative conception of the method. The precise meaning of Boyle's "vacuism" is inaccessible unless his experimental conception of the practice of natural inquiry is brought to light. In Wittgensteinian terms, understanding the meaning of their respective natural philosophies requires understanding the rules of the game of inquiry promoted by each to produce knowledge.<sup>11</sup> On the other hand, Shapin and Schaffer's dense social epistemology compels them to delve into the value that such knowledge holds for people's lives. As Peter Winch has put it, "... the discussion of what an understanding of reality consists in merges into the discussion of the difference the possession of such an understanding may be expected to make to the life of man..." (1990, 23-24). Therefore, the depth of the differences between Boyle and Hobbes will not be fully appreciated unless the larger socio-political context is understood. Conversely, the unfolding of the broader socio-political context will allow for an appreciation of the undeniable political and social value that scientific knowledge holds.

Let's examine it in detail. *Leviathan and the Air Pump* presents Boyle's experimentalism and Hobbes's demonstrative approach as contending against or competing with each other so as to provide solutions to the problem of order and to clarify the nature and bases of assent (Shapin and Schaffer 2011, 21). That is, it is unquestioned that the research is guided by the aim of achieving assent to what is true or objective. But this assent does not occur by being magically illuminated by the "truth"; rather, it is the result of collective work—meaning, it is made, not given. What gives substance to this general philosophical claim is that the five hundred pages of the book detail the socio-political context in which the debate took place: The Monarchical Restoration that ended the civil war, which had caused so many bloody confrontations. In a substantive sense, Boyle and Hobbes offered different programs for the production and protection of social order. Assent in matters of natural philosophy was to serve as an exemplary civic model for all intellectual or political debate. Now, in the slogan "Solutions to the problem of knowledge are solutions to the problem of social order", the back-and-forth between the two extremes of the equation becomes clear. The problem of generating and protecting knowledge is a problem in politics, and, conversely, the problem of political order always involves solutions to the problem of knowledge.

One solution (Boyle's) was to set the house of natural philosophy in order by remedying its divisions and by withdrawing it from contentious links with civic philosophy. ... (Hobbes's) demanded that order was only to be ensured by erecting a demonstrative philosophy that allowed no boundaries between the natural, the human, and the social, and which allowed for no dissent within it. (Shapin and Schaffer 2011, 21)

Boyle's strategy focuses on the production of a fact that does not generate endless disputes, a fact about which we collectively have moral certainty. It is grounded in a fallibilist view of

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Historical Writing", Hayden White says that thanks to modern literary theory "It is now possible to recognize that in realistic, no less than in imaginary, discourse, language is both a form and a content and that this linguistic content must be counted among the other kinds of content (factual, conceptual, and generic) that make up the total content of the discourse as a whole. ... and permits the analyst of historical discourse to perceive the extent to which it constructs its subject matter in the very process of speaking about it" (White 1999, 4). At the same time, White remarks that "philosophers such as Quine, Searle, Goodman, and Rorty were showing the difficulty of distinguishing what was said from how it was said (5).

<sup>11</sup> The influence of Wittgenstein is explicit in *Leviathan* and throughout the work of Shapin: "If there was originality in what they did, it may have been the tightness of their focus on disputes over the "rules of the game" as well as on the rightness of moves within a largely agreed knowledge-game" (2011, XLIII). For more details, see Martini 2023.

knowledge, meaning it is only moral certainty, or a high degree of probability, that is sufficient to make decisions. In contrast, Hobbes focuses on that knowledge which is achieved (collectively or universally) through absolute certainty, merging the conventional nature (we make it) with the rational (the exercise of the demonstrative faculty).

It modelled itself on the demonstrative enterprises of geometry and civic philosophy. And, crucially, it produced assent through its demonstrative character. Assent was to be total, and it was to be enforced. (Shapin and Schaffer 2011, 19)

It is extremely interesting to note that Hobbes presents an idea which is a precursor of the principle of *verum ipsum factum*, which the Neapolitan philosopher Giambattista Vico, a critic of Descartes' rationalism, formulated a century later, thus laying the foundations for a humanist conception of the social sciences.<sup>12</sup> However, there are three aspects that justify why, in this paper, we are more interested in the presentation that Schaffer and Shapin make of Boyle's solution rather than that of Hobbes's. First, in both the natural and the social sciences, the goal is not to achieve certainty; fallibilism is also part of the non-naturalistic humanist trends in social studies. In the second place, reflections on evidence in history and the social sciences are nourished by reflections on observation and experimentation in the natural sciences (not in demonstrative processes). Finally, what is at stake in the post-truth era is precisely the facts (natural, social, and historical).

Taking all this together as background, we can now ask: what are those facts, according to Schaffer and Shapin, that Boyle produced with the air pump, and what can we learn for our understanding of scientific practices in our contemporary world? The answer is that for there to be facts, there must be witnesses who communicate their experience. Ultimately, the understanding of the rules of science is not independent of the understanding of the ideal kind of person who practices it (order of knowledge - social order). However, the intrigue that Shapin and Schaffer's study seeks to unravel lies in how the role of individuals is rendered invisible in our conception of scientific knowledge. In the next section, we will follow our authors in this process of invisibilization.

## Social Production of Objective Experimental Fact

Boyle proposed that matters of fact be established by the aggregation of individuals' *beliefs*. ... Members of an intellectual collective had to assure themselves and others that belief in an empirical experience was warranted. ... In that process, a multiplication of the witnessing experience was fundamental. An experience, even of a rigidly controlled experimental performance, that one man alone witnessed was not adequate to make a matter of fact. ... The foundational item of experimental knowledge, and of what counted as properly grounded knowledge generally, was an artifact of communication and whatever social forms were deemed necessary to sustain and enhance communication. (Shapin and Schaffer 2011, 25, my emphasis)

To understand how the experimental program contributed effectively to the establishment of matters of fact, according to the authors, Boyle utilized three interacting technologies: "a material technology embedded in the construction and operation of the air-pump; a literary technology by means of which the phenomena produced by the pump were made known to those who were not direct witnesses; and a social technology that incorporated the conventions experimental philosophers should use in dealing with each other and

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<sup>12</sup> See Auerbach 1984, White 1985, Roldán 1997.

considering knowledge-claims” (Shapin and Schaffer 2011, 25). The differentiation is analytical but not functional; the handling of the air-pump (its design, construction, maintenance, and operation in the laboratory or in the public space) crystallized specific forms of social organization, distributing roles and hierarchies of responsibility. Furthermore, “these valued social forms were dramatized in the literary exposition of experimental findings” (25). Against the assumptions of a clear division between knowledge and the diffusion or popularization of science, Shapin and Schaffer claims “the literary reporting of air-pump performances extended an experience that was regarded as essential to the propagation of the material technology or even as a valid substitute for direct witness of experimental displays” (25-26). The report was constitutive of the pursued objectivity of the fact.

We now arrive at the key point of this story. The book details the strategies (technologies) that allow for the production of objective facts as non-made, and the creation of discourses about those facts as if they were merely a reflection of reality. According to our authors, the effectiveness of these technological operations is materialized in the creation of “the illusion that matters of fact are not man-made, on the contrary, they are given items” (Shapin 2010, 115). In the end, how could we consider matters of fact to serve as the foundation of knowledge and secure assent from the community if we accepted that they are man-made? The guarantee lies in the word of certain reliable witnesses. The assent to objective facts rests on trust in the word of certain members of the intellectual community who, without any personal, political, or economic interest, arbitrate beliefs about phenomena based on the phenomena themselves and take responsibility for it. The objectivity of experimental facts is guaranteed by the “disinterest” of those who conduct the research.

We encounter the paradoxical point that the respect for and continuity of the achieved consensus seem to depend on showing some foundation independent of the consensus, and that makes its artifactuality invisible. I propose to redescribe this enigma in terms of the more general issue of the foundation of obedience to social norms. In strict terms, the paradox of social life is: how can we guarantee the obligatoriness of the norms we give ourselves, norms invented by ourselves? The issue of assent to objective facts is part of the more general problem of the obligatoriness of social norms. Let us see how the social and humanistic disciplines deal with this issue.

## Coercion and Normative Responsibility

When we embark on reading a historical text (as in our case) or any text from the social and human sciences, it is helpful to use the lens that Anthony Giddens provides when reflecting on the dilemmas of all research into and reflection on human affairs (Giddens 1982). In particular, the dilemma is sometimes referred to as action-structure, sometimes as subjectivism-objectivism, and sometimes as individualism-holism. Research in the human and social sciences is interested in “knowing” what the people we study knew, in this case, understanding or knowing “the same” as the actors involved in the experimental life of the 17th century. This task has been described by some social theorists as understanding the concepts, abstractions, meanings, and typification that the actors themselves make of their actions and lives, (Schütz 1972) or as learning the rules of the game (both tacit and explicit) that guide, orient, and normalize good and bad actions (Winch 1990). And we must also include, as mentioned in the previous section, the value these rules hold for the lives of those people. On the other hand, the social and human sciences are also interested in understanding the unknown conditions and unintended consequences of actions. This implies that the interpretive task is carried out with the advantage of retrospection, assuming



a reflective and distanced role so as to highlight the rules that tacitly govern the game, as opposed to the participatory role in the game (way of life).

Shapin and Schaffer, following Schütz, use the metaphor of the “foreigner” to differentiate the attitude of those involved in a game or social practice from the attitude of someone studying or reflecting on that practice.

We need to *play* the stranger, not to *be* the stranger. A genuine stranger is simply ignorant. We wish to adopt a calculated and an informed suspension of our taken-for-granted perceptions of experimental practice and its products. By playing the stranger, we hope to move away from self-evidence. We want to approach “our” culture of experiment as Alfred Schütz suggests a stranger approaches an alien society, not [as] a shelter but [as] a field of adventure, ... the stranger is in a position to know that there are alternatives to those beliefs and practices. The awareness of alternatives and the pertinence of the explanatory project go together. (2011, 6)

Another way of describing the two attitudes (the involved and the reflective), also considered by the authors, is provided by the sociologist Garfinkel and his ethnomethodological approach. Through what is known as “breaching experiments”, the tacitly accepted rules of the game, followed by the actors involved in everyday interpersonal interactions, are brought to light (Garfinkel 1984, Heritage 1987). The coercive efficacy of these rules becomes explicit when someone “steps out of the game”, so to speak, as this efficacy relies precisely on the tacit acceptance and the invisibility of their conventional origin and contingent nature. Now, what is broken by someone who steps out of the game is trust. In Garfinkel’s words, “trust” is a condition of stable concerted action (1963). We could say that “tacit acceptance” is another way of saying that we trust that we are all playing the same game without the need to constantly make the rules explicit. There is an important difference between failing to follow the rules (making a mistake, acting wrongly, violating a rule) and stepping out of the game. Someone who steps out of the game has broken the trust pact, questioning the legitimacy and authority of the community to which they belong. Of course, when faced with concrete abnormal or unacceptable behaviors, the decision as to whether it was a mistake or whether someone stepped out of the game is not clear or definitive; it will be decided in the specific situation or may even present an opportunity for reforms, changes, or a renewed strengthening of the rules.

In *Leviathan*, “truth”, “adequacy”, and “objectivity” are treated as accomplishments, as historical products, as judgments and categories of the actors. (2011, 14) By emphasizing that epistemic judgments are actions of actors within a shared game of tacit and explicit rules, who are or should be the spokespersons of those judgments, and who constitutes the community of legitimation (social order), it becomes constitutive of the true, the objective, and the adequate (knowledge order), and not merely secondary to it. Expressed in the words of Shapin’s 1994, accounting for the social base of scientific knowledge is nothing more than recognizing that in producing knowledge, we rely on the word, the testimony of others, and cannot disregard this foundation—our trust in others. This century has been prolific in what is known as the epistemology of testimony, with Shapin being a key figure in its development (Kusch 2011). Benjamin McMyler (2011) delves deeper into these considerations, stating that as members of society and epistemic agents, we are entitled to defer relevant challenges back to the original speaker, to the person in whom we trust. In short, testimonial knowledge is an “epistemic right of deferral” of one’s own epistemic responsibility.<sup>13</sup>

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<sup>13</sup> According to McMyler, testimonial knowledge is interpersonal; moreover, it is something that constitutes us as persons. See McMyler 2011, especially the introduction and chapter 2.

I return to the authors' concern (reinforced in Shapin 1994) for the persistence of the asymmetry in the dominant characterizations of the sources from which our factual knowledge arises (individual experience and reason) and the ways in which we actually attain that knowledge (based on testimony). Much of the explanation lies specifically in the characterization of the reliable agent, the ideal witness, as disinterested. In the seventeenth century, this figure was embodied in the gentleman, while in the contemporary world, it is embodied in the expert.<sup>14</sup> I maintain that this phenomenon is a case of the more general phenomenon of the guarantee and effectivity of the compulsion of social rules and norms. The norms and rules that regulate social practices are both conventional and coercive; those who do not follow them are sanctioned, while those who do follow them are rewarded (Winch 1990, Bloor 1997). Even more, although we acknowledge that it is we who invent the rules (as Hobbes maintained), respecting them is our agency's responsibility because failing to follow them or violating them dishonors us. The "illusion" of the "given" facts (the experimental fact resulting from the experimental practice, from conducting the experiment in front of a community of witnesses, Shapin 2010, 91) can be rephrased in terms of the compulsion of the rules of the game. To assent to the "given" is to have followed, without any personal or political interest, as a real gentleman, the community's rules of the game, because disinterest is a guarantee of objectivity. Disinterest manages to obscure what is constructed and contributes to giving the illusion of the given.

In sum, the credibility of the scientist lies in their complete personal disinterest in the effective adherence to the rules of the game. The challenge to be addressed in the post-truth era, with its skepticism toward science, is to reconsider who constitutes that community of reliable witnesses and how the valuation of disinterest as a guarantee of objectivity has had exclusionary effects.

## Trust and the Social Value of Truth

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Let us revisit what has been discussed so far. Shapin and Schaffer's dense socio-historical approach reveals the inseparable framework connecting the processes of producing "true" knowledge and the constitution of the epistemic community that produces and legitimizes that knowledge, while taking responsibility for it, all the while rendering this framework invisible and giving rise to the illusion of "the given". Methodologically, this implies a thorough investigation of 1) the specific community norms followed in the production of knowledge. This, however, this cannot be appreciated without accounting for 2), who those trustworthy individuals are that make up the community of production, earning the trust of others, and 3), the value (social, political, and personal) that the knowledge collectively attained holds for the lives of those who produce and benefit from it. True knowledge of facts (objective facts) is produced, and its production and acceptance are valuable for the life of the community, involving not only a commitment to its production but also its protection (consent).

Let us begin with the third point. In this respect, it will be enlightening to follow Rorty's observations on the predicate "being true," indicating that in order to understand it, we should analyze its uses instantiated in linguistic exchanges (written and oral) within society. For example, when we say that "snow is white" or "the revolution failed," we are merely asserting (emphatically) that sentence; we are not saying anything further. We are not attributing the "property" of being true to the sentence, as we would when attributing the property of being white to snow. By asserting the "truth", we can do two additional things. On one hand, we can provide validation, support, or emphasis to what someone else has said, or what we have said. In Shapin's terms, this implies that the person is credible or

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<sup>14</sup> See especially "Epilogue the Way We Live Now", Shapin 1994. The subject is revisited in Shapin 2019

trustworthy. On the other hand, we can signal that while what has been said may be justified, it may still be incorrect. One who asserts something as true takes responsibility for what they say and is prepared to respond to challenges to their belief or assertion<sup>15</sup>. These observations do not discredit the use of “true” or the distinction between false and true; rather, they make evident that when we say that “a sentence is true” is a short way to assert that the rules of the game have been followed and that it is both socially and personally valuable to have done so.

In “Is There a Crisis of Truth?” (2019), Shapin addresses the topic of post-truth from the line of Rortyan observations and presents a perspective different from that of Lee McIntyre and others who assume that the foundation of scientific knowledge is something given, as opposed to something constructed. What we are currently experiencing, Shapin suggests, is not a Truth Crisis or even a Scientific Authority Crisis. It is rather “*those rights to speak and judge in science that are now being so powerfully contested*” (2019, 3 and 7). This leads us from point 3 to point 2. Shapin urges us to distinguish between scientific topics of public interest that call into question the credibility of experts and those scientific topics of public indifference. While there is a strong presence on social networks, in the media, and through certain leaders in challenging scientific experts on issues like climate change and anti-vaccine movements, these challenges are not directed at “truth” or science itself. Both sides of the dispute cite credentials of expertise and claim to have followed the “rules of science”, that is, to rely on objective facts rather than personal interests, accusing the other of holding their assertions for dubious motivations.<sup>16</sup> The question then is who we believe. Along the same lines, Nguyen (2020) proposes illuminating the post-truth and fake news phenomena by means of credibility vocabulary rather than the objective evidence-manipulation of emotions oppositions. Being more specific, he proposes to rethink it in terms of manipulating our credit-discredit attitudes. From this point of view, the fake news and post-truth phenomena are conceptualized in terms of the role that social media fulfill in building validation for and dissemination of close networks’ beliefs to validate and disseminate factual beliefs. Facebook and Twitter contribute to guaranteeing, like never before, a trustworthy, safe environment, something which seems ideal for searching for proper beliefs and information while rejecting those that are not. We might be tempted to think that communication technology would make us much more aware of new information and willing to change in the face of emerging truths and facts. However, people tend to associate with those with whom they share truth and authority networks. This has given rise to what communication theorists call the “filter bubble” and the “echo chamber”.<sup>17</sup> In other words, belonging to a community provides safe modes for crediting-discrediting sources. This finally takes us from point 2 to point 1, leading us to consider a way out so as to avoid the manipulation of the credibility of science. It involves understanding the rules of the community and learning how to play the game. What do these rules consist of? They consist of learning *whom to trust*.

Therefore, the contribution that science can make in combating the phenomenon of post-truth or the crisis of truth does not lie in having more people possess expert scientific knowledge, but, as Shapin states “...*knowing where science lives, how it works, who to recognize as knowledgeable and reliable; who to trust; which institutions to consider as the*

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<sup>15</sup> Rorty differentiates three uses: endorsing, cautionary, and disquotational (1991, 128).

<sup>16</sup> Generally related to commercial (e.g., laboratories), geopolitical, or ideological interests. On the other hand, researchers working at public universities or governmental institutions are accused of working not for the truth, but for the salary.

<sup>17</sup> A filter bubble is a social epistemic structure from which other relevant voices have been left out, perhaps accidentally. Filter bubbles exclude through omission, so ignorance can be fixed with simple exposure. Nguyen renamed it “epistemic bubble”. An echo chamber is a social epistemic structure from which other relevant voices have been actively excluded and discredited, while simultaneously amplifying the member’s epistemic credentials (Nguyen 2020, 141).

homes of genuine knowledge...” (2019, 7-8). In McMyler’s terms, I would say it involves learning the game of those to whom we have the right to defer epistemic responsibility, which is why we should also become familiar with the personal characteristics and material interests of the spokespersons for these institutions and those who testify to their qualities.

Scientists themselves should promote these community narratives that make explicit the networks of trust that underpin the production of truth or knowledge and extend this network of trust to the audience. However, there is always the danger of the echo chamber and the epistemic bubble.

In order to know the Truth, in order to have right belief, people must, essentially, be very much like us — not to know facts and theories as their personal possession (since most of us don’t either) but to trust the people and institutions that we trust. (Shapin 2019, 9)

## Trust and Truth During the COVID-19 Pandemic

In this final section, I would like to show how the observations of this dense social epistemology can help us analyze two current cases where science is in the public sphere and how it could contribute to combating the phenomenon of credibility manipulation. I am referring to the COVID-19 pandemic and historical *Negationism*. I will present them briefly, focusing on some experiences in my country. The first will illustrate how the media dissemination of science contributes to learning how to exercise the right to defer. The second will address the phenomenon of the echo chamber and the danger of the denial of epistemic agency.

The unprecedented pandemic that we went through in 2020 and 2021 brought to the forefront the day-to-day work of scientific research. We could see scientists working and responding to society and government agencies, as perhaps we had never seen before.<sup>18</sup>

Fundamentally, there were the comings and goings in COVID-19 diagnosis, recommendations on how to avoid contagion, the design and dissemination of all kinds of diagrams and statistics to analyze data, and discussions about the reliability of those diagrams, statistics, and data. **We could say: if there is a notion that the “modernist pandemic experience” (in White’s terms<sup>19</sup>) leaves out of the game, it is that of “certainty”. We have witnessed how, in scientific validation procedures, the “appeal to evidence” is an appeal to the authority of scientific institutions, legitimated by the scientific community.** This social legitimation shapes a network of laboratories, institutes, publications, and government and international control agencies (which in turn legitimize each other, and which establish what must be taken as evidence). This procedure could hardly be translated into the belief that each one of the individuals who make up the scientific community has individual access to the evidence.

The life of the community unfolds through the responsible exercise of granting the right to speak and being recognized as a responsible agent, delegating epistemic

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<sup>18</sup> In Argentina, during the two years (2020 and 2021) that the pandemic and the periods of quarantine lasted, there was a notable proliferation of journalistic reports on television, radio, newspapers, and social media, interviewing scientists from prestigious institutions in my country: CONICET, public and private universities, research institutes with dual affiliation (CONICET with public or private universities, or CONICET and private laboratories), and Argentinean scientists working at renowned institutions abroad.

<sup>19</sup> In “The Modernist Event”, White introduces the notion of “*modernist event*” in relation to 20th-century events such as the Challenger explosion and the attack on the Twin Towers, whose occurrence is inseparable from their reproducibility and media accessibility (1999).

responsibility to the words of others whom we recognize and honor as responsible agents. Those trained in science learn the game of distributing trust and responsibility. The public communication of science merely shares this learning. The equation of “disinterest-objectivity” has little to offer here. On the contrary, scientific practice is permeated by the exercise of all sorts of rituals of recognition and legitimization: individual and institutional awards, rankings of educational institutions, laboratories, and scientific journals and editorials. Idealizing the practice as carried out by disinterested individuals would make the rituals of recognition and the awards that, in many cases, provide funding for ongoing research and the economic support of scientists, incomprehensible. Ultimately, without this understanding, laypeople would scarcely know how to defer responsibility, and governments and companies would not know how or to whom to provide funding.

The honeymoon between science and public opinion that prevailed during the pandemic changed drastically with the arrival of Milei’s far-right government. A critic of state and government funding of science and education, he stigmatized those who work in public institutions as forming a “privileged caste”. These kinds of attacks have also been extended to public human rights policies, seeking to dismantle organizations dedicated to preserving memory, prosecuting perpetrators, and providing reparations to the victims of state terrorism regimes, which has led to various forms of *Negationism*. What really rings a bell and must therefore be addressed is how frequently information concerning facts that contradict “scientific and historical knowledge,” which relies on social consensus (sometimes strong enough for that knowledge to be part of elementary education programs), is massively disseminated. We must then carefully consider how to address the challenges to such consensuses. Let’s examine the Argentine case in more detail.

## Memory, Truth, and Justice Under the Light of Trust

Forensic science, through the Argentine Forensic Anthropology Team (*Equipo argentino de antropología forense*, EAAF), has been working since the eighties on the identification, in clandestine graves, of the victims of state terrorism executed by the last civil-military dictatorship (1976-1983). On the other hand, progress in DNA analysis has become key for tracking and recovering children of disappeared persons (*desaparecidos*), illegally appropriated by the dictatorship.<sup>20</sup> The “Memory, Truth and Justice” slogan clearly expresses the value that the establishment of truth based on evidence has for the future of democracy in my country. Moreover, the “Never Again” slogan expresses not only an imperative to prevent the return of state terrorism, but also the confidence that this imperative is based on the memory of what has been established with certainty. It is the memory of objective truth, it is not forgetting what we have evidence of, which contributes to the progressive strengthening of a democracy that respects human rights.

Now, in the era of fake news, the return of fascist regimes, the chronic attempts in Argentina to close the cycle of trials for genocide, the questioning of the characterization of the last military dictatorship as state terrorism, invite us to think whether we are facing only and exclusively a problem of truth versus falsehood. I am convinced that this issue demands that we look into the magnitude and weight of the power of the bot-and-troll technology that spreads fake news. This does not mean we ought to forget the more traditional mass-

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<sup>20</sup> For a detailed report on the process of identifying the remains of the victims of the dictatorship, as well as the search for children born in captivity, see <https://www.argentina.gob.ar/ciencia/bndg>, and <https://www.abuelas.org.ar/nietas-y-nietos/buscador>. As of today, 138 of the approximately 500 reported cases have been resolved. Of the 138, 120 were found alive and returned to their biological families.

media manipulation mechanisms, present, for instance, in prime-time news and midday shows. Their role in shaping opinions is undeniable, but their ability to do the same with testimonial authority or credibility is even more relevant. Hence, what is of more importance is not only what is said but who says it, to whom it is directed, and the challenges or arguments it addresses.

In other words, as Collingwood and Dewey have pointed out, merely adducing facts and producing evidence are not the ultimate goals of scientific inquiry. Rather, scientific inquiry in general, and historical inquiry in particular, follow a logic of questions and answers. Then, aware of the risk of the encapsulation of science and history in an echo-chamber, we cannot establish in advance and forever the questions and challenges that will be raised by future researchers and the general society. This means that today's established truth can and will be challenged in the future, yet not because new evidence backing up alternative answers to the same questions might appear, but due to the changing of the questions, as they are reformulated following different interests and expectations, while the actors of the equation change as well.

The *Never Again* slogan and the claim of *Memory, Truth, and Justice* should be disengaged from what has been established forever. Questions and challenges are always related to social and historical contexts. Furthermore, any rational consensus reached around human rights can always be challenged.<sup>21</sup>

You can rightfully object to me that maintaining a debate against people in such extremist positions, people holding huge fake news-generating power, is not feasible. However, my proposal does not aim at the conversion of these extremist and powerful adversaries (echo-chamber leaders like Trump, Milei, Musk). Instead of thinking of public interventions as a type of strategy designed to convince and convert our adversaries, let's ponder their educational value towards the addressed audiences. The public invariably changes, and new generations entering the public sphere are not as acquainted with history or politics as activists and academics are. Risking the adoption of echo-chamberesque practices, *Nunca Más* and *Memoria, Verdad y Justicia*'s activists would do well to not put the recent past in a sacred place, answering instead all kinds of challenges, even the malicious and cynical ones.

Of course, the fight (class struggle or master and slave dialectics) is not merely discursive and the differences with our adversaries are not mere "rhetoric", but the only available weapons in democracy are the discursive strategies with which to win the necessary votes. Reducing the conflict by claiming that our adversaries lie and appeal only to emotion while we tell the truth does not seem like a promissory strategy.

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<sup>21</sup> For a constructivist and performative interpretation of this banner of struggle, which is so important for Argentine democracy, see Tozzi 2012.

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