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Special Issue

Leviathan and the Air-Pump

After 40 Years: Reception, Criticisms and Impacts

Introduction

The Validity of *Leviathan and the Air-Pump*

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Argentina is passing through a very complex political conjuncture in which public universities and national organizations that bring together researchers (such as CONICET, but not only CONICET) are being attacked and defunded. Young researchers are being blocked from enrolling for research degrees. Other researchers are emigrating due to their meager salaries. It has been declared that the social sciences and humanities should not form part of accredited scientific research institutions. Those promoting these exclusions claim that the development of the social sciences and humanities has historically been in the hands of non-profit organizations, political parties, business organizations and associations, and that they should remain so. Researchers are subject to a degree of oversight by government institutions that exceed the usual oversight practices implemented to guarantee transparency. False dichotomies arise, such as the claim that if funding were given to social science research, it would reduce funding for research with strategic interests. With the aim of discrediting social scientific research, titles of articles published in these academic fields are cited with the precise aim of questioning their seriousness, appealing to a presumed common sense that understands the superficiality and lack of seriousness of the content from merely reading the title. The demand, invoked in the area of public popularization of science, that the public should know more about science so that it will have greater trust in scientists does not seem to be a solution if the public exposure of researchers only leads to expressions of impatience and anger toward them.

In the days during which I was writing this article, Mario Pecheny (2025), senior researcher in social sciences at CONICET and a member of its board of directors, warned the Science and Technology Committee of the Argentine Senate about the veiled and explicit threats researchers are facing from authorities. In addition to highlighting the extent of the destruction of the national research system, he contrasted the epistemic-moral authority of researchers with the lack of merit and the authoritarian nature of those in charge of state institutions: “They are achieving their goals of dismantling everything, of censoring thought

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and harassing (...). This authoritarianism and mediocrity, far removed from merit, have become acceptable and naturalized. Even the insulting and disrespectful language that governs public opinion today is no longer shocking.” His words reflect the speed with which a crisis of public trust in science has taken hold, as part of the fragmentation of and attack on democratic institutions. However, this process is not unique to Argentina. It is happening widely in different countries. The most important modern institutions are universities, argues Michael Anton (2023) –currently director of policy planning at the US State Department– and they are all evil. They are supposed to be repositories of knowledge, with the objective of seeking, finding, and communicating the truth, but they do none of those things. On the contrary, Anton argues, they invent and spread corrosive lies and indoctrinate students to hate their country and their civilization.

The right does not aim to rally people around a minimum of shared ideas. Rather, it seeks to exacerbate the tensions of the digital public sphere in order to fragment the entire public sphere. According to Giuliano da Empoli’s analysis (2019, 14), the right does not aim to win a majority by converging toward the center but by gathering at the extremes: “By inciting the anger of each group without worrying about the coherence of the whole, the algorithm (...) dilutes the old ideological barriers and rearticulates political conflict on the basis of a Manichean opposition between the ‘people’ and the ‘elites’.” This dichotomy transferred to scientific fields calls into question the expertise, trustworthiness, and authority of researchers’ testimony.

The question of (dis)trust in scientists is not unambiguous in scope. It involves personal morality, the personality traits that support scientific veracity, the endorsement of the scientific institution, or the epistemic relationships established between researchers. Shapin (1995, 390) states that “an important element of our response to the question “Why trust scientists?” proceeds from an understanding of what *kind of people* scientists are and how they relate to the sources of their knowledge and to other members of the scientific community.” This entails investigating the contemporary scientific way of life, just as *Leviathan and the Air-Pump* addressed the experimental way of life of an earlier epoch, namely: how knowledge was generated in seventeenth-century England alongside a new social order that regulates interactions within the scientific community and is postulated as a model for the general social order.

It is over 40 years since the publication of *Leviathan and the Air-Pump*, with the dictum “Solutions to the problem of knowledge are embedded within practical solutions to the problem of social order, and that different practical solutions to the problem of social order encapsulate contrasting practical solutions to the problem of knowledge.” (Shapin and Schaffer 2011, 15) In those 40 years, this *dictum* has been replicated and reflected upon. It implicitly entails a conception of testimonial knowledge and the ways in which epistemic authority and trust are configured. In this sense, the work of Steven Shapin and Simon Schaffer constitutes a fruitful tool for analyzing and intervening into the present of scientific knowledge based on an understanding of the history of science. *Leviathan* became a fundamental antecedent of some perspectives of the epistemology of testimony, such that a dialogue between this work, the later works of Shapin (1994; 1995; 2004) and social epistemology will allow us to examine the minimal agreements on scientific knowledge that are under attack in our current lives and the difficulties that arise when trying to understand the distrust in science in terms of the tension between laypeople and experts, as an extension of the people/elites opposition.

What Ideas Do We Share about Scientific Knowledge?

Shapin and Schaffer claim that in *Leviathan* they set out to make visible and understandable the proposition that “To have knowledge is to belong to some sort of ordered life; to have

some sort of ordered life is to have shared knowledge” (2011, xlix). More precisely, a society is everything its members know, including everything they know about each other and everything others know they know about each other. By learning what a society knows, its members, as a whole, constitute society itself as a distribution of knowledge, respond appropriately to it, and maintain it in existence. A society, then, is a self-referential distribution of knowledge (Barnes 1988).

The answer to the question of who is trustworthy involves the existence of a kind of shared knowledge and a certain system of shared social order:

Solutions to the problem of trust are necessary for building both social and cognitive order; Indeed, there must be such practical solutions as a condition for actors’ or analysts’ being able to recognize social or cognitive order. But it would be incorrect to assume that these solutions are distinct: the problems of social order and cognitive order are addressed together. (Shapin 1994, 27)

Shapin and Schaffer’s (2011) analysis of English experimental philosophy revealed trust in testimony to be a precondition for knowledge of the natural world. To argue that trust is a condition for the generation and stabilization of the epistemic-social order implies recognizing that testimony is constitutive of our knowledge. It would have been impossible to produce a body of knowledge without accepting the word of others. Experiments, which the Royal Society defended and praised for their “public” nature, could only be witnessed by a very small number of practitioners and were replicated in only a few situations; hence, Robert Boyle developed a literary technology with which he aspired to multiply the number of witnesses. Experimentally produced phenomena became part of the collective knowledge base largely thanks to the testimony of reliable authors (Shapin 1995).

Thus, our epistemic interdependence does not reside in the fact that we are individuals who receive and transmit information from other individuals. Dependence implies accepting the importance of testimony as a source of knowledge and recognizing its definitive social character. Giving and receiving testimony is a social process in which knowledge and an epistemic community are simultaneously generated (Kusch 2002; 2002a). In this sense, testimony is fundamentally permeated by cooperation. The constitution of an epistemic community, even in its minimal form, requires people who “know the same thing and mutually recognize each other as participants in that knowledge; in this way, each person can act on the basis of the other’s knowledge and can act cooperatively” (Welbourne 1993, 25). More precisely, to affirm that testimonial knowledge is an achievement attained in cooperation with others is to recognize it as: “the result of a complex cognitive capacity, the exercise of which requires the cooperative activity of speaker and audience” (McMyler 2011, 68). It requires a speaker who, in addressing an audience with their testimony in the broadest possible sense, assumes the epistemic responsibility of facing certain challenges that can be deferred to them, and an audience (listener or reader) who, by adequately recognizing the speaker’s assumption of responsibility, acquires the right to defer to them the epistemic challenges presented by a third party to their testimonial knowledge. The bond of cooperation lies in the fact that responsibility for testimonial knowledge is shared interpersonally (McMyler 2012). Without such shared responsibility, testimonial knowledge would be generated only with difficulty. In the same way, “the legitimate exercise of theoretical authority directly engages the agency of others by providing others with a reason for belief that presupposes the others’ competence to recognize and respond to the speaker’s address” (McMyler 2011, 169).

Furthermore, without testimonial knowledge, most scholarly relationships could not be established. Scientists could not do their work without presupposing the validity of much other research that they are unable, for reasons of competence and time, to validate

themselves. It would be impractical for a scientist to independently evaluate the evidence supporting the accepted beliefs in their field of research (Hardwig 1985).

However, this collaborative work in knowledge generation does not require consensus. While there are a number of common myths that characterize scientific cooperation as derived from consensus, the latter is not necessary for collaborative work in solving scientific problems. Scientific research does not lose its diversity in cooperation. The generation of new knowledge depends as much on communication as on creation (Star 1993). Thus, testimonial knowledge implies cooperation without consensus: the bonds of responsibility between witnesses and listeners (or readers) constitute an epistemic community, but this cooperation does not eliminate the heterogeneity of the different communities of practice that pursue multiple objectives and pose and solve diverse problems based on shared testimonial knowledge.

The contemporary scientific way of life constitutes a social framework around testimonial knowledge that demands responsibility, cooperation, trust, authority, and multiplicity. The attempted expulsion of the social sciences and humanities from the body of scientific disciplines, the dispersion of the community, defunding, dismantling, harassment, and surveillance beyond reasonable limits are ways of bombarding these basic cores shared by this way of life. Without testimony, there is no knowledge, and without trust in that testimony, social bonds are impossible. Distrust in scientists does not promote the generation of more reliable knowledge but rather the elimination of science.

The attack on the scientific way of life in Argentina is not exclusively intended to destroy public institutions so that knowledge generation is confined to private organizations—although this is evidently a cherished objective, as it is noted that only projects capable of attracting private investment can be considered truly relevant (Fundación Libertad y Progreso 2025). This attack entails the denial of epistemic interdependence, the vindication of epistemic autonomy, and, with it, the postulation of a joint shift in the notion of rationality and social order. The postulation of epistemic agents who are exclusively responsible for justifying their own beliefs and actions attacks the idea that human rationality is constitutively dependent on the social relations of authority and responsibility we have with others. According to the right-wing perspective, testimony would only be a legitimate source of beliefs if it were divorced from authority and we justified testimonial beliefs by our own means. According to this individualist epistemological perspective, “testimony does not constitute communities; it is nothing but the transmission of a complete (pre-existing) item of knowledge from one individual to another” (Kusch 2002, 11). However, the rhetoric of epistemic individualism

fails to represent the realities of scientific practice. Science is a trusting institution. Trust is not an epistemic problem for science (...). It is only by trusting others that scientists hold the vast bulk of their knowledge, that their knowledge has scope, that they can know things they themselves have not experienced, and, indeed, that they can be effectively skeptical when they wish to be. The very existence of highly interdependent, specialized, and differentiated knowledge-communities testifies to the real extent of that trust-dependency. (Shapin 1995, 402)

The demand for epistemic autonomy is an attempt to make invisible the fact that the collective nature of the construction of epistemic authority and trust is being attacked, completely denying that our relationships with others generate genuine epistemic reasons for belief. Epistemic autonomy entails the proposal for a change in the social order of the scientific community: researchers will be the leaders and owners of their projects, something which will favor competition (Fundación Libertad y Progreso 2025). This epistemic-social order entails a set of dichotomies that establish the criteria for delimiting science from non-science and that present the second pole of each dichotomy as what should be excluded:

expertise/ideology (ideological biases); productivity-competitiveness/human rights-gender and diversity (they argue that the social sciences have confined themselves to researching these topics, which are alien to social utility and discredit scientific institutions); entrepreneurship/job security; equality/privileges. These dichotomies aim to reinforce prejudices and encourage hostility among different social sectors, restructuring the political conflict of science based on the opposition between “good people” and the elites²: “The form of life in which we make our scientific knowledge will stand or fall with the way we order our affairs in the state” (Shapin and Schaffer 2011, 344).

Good People versus the Caste

Forty years after the publication of *Leviathan* we can describe our present situation by means of the words that close the book by Shapin and Schaffer:

Our present-day problems of defining our knowledge, our society, and the relationships between them center on the same dichotomies between the public and the private, between authority and expertise, that structured the disputes we have examined in this book. We regard our scientific knowledge as open and accessible in principle, but the public does not understand it. Scientific journals are in our public libraries, but they are written in a language alien to the citizenry. We say that our laboratories constitute some of our most open professional spaces, yet the public does not enter them. Our society is said to be democratic, but the public cannot call to account what they cannot understand. (Shapin and Schaffer 2011, 343)

The extension of the good people/elites opposition to the field of scientific research in terms of the separation between laypeople and experts opens up further space for reflection on how the right pushes toward extremes in search of political support. The epistemic-social order they propose seeks to strengthen the authority of science in technical expertise and the capacity to effectively intervene in the world. In contrast to the complexity involved in analyzing the public understanding of science, they exhibit transparent criteria, such as social utility or profitability. Based on epistemic individualism, they denounce scientists' self-attribution of theoretical authority, understood as a particular kind of epistemic privilege. In this way, the lay/expert opposition is presented in terms of an elite defending its privileges against a public that neither understands science nor has access to the spaces where it is generated.

However, as Shapin (2004, 46) states: “Despite widespread current unease about a climate of mistrust in authenticated experts (...) the present-day problem is (...), rather, a problem in deciding who the scientific experts really are”. He warns of the difficulties that arise not only when analyzing the authority of knowledge and of researchers in terms of the layperson/expert dichotomy, but also when considering that technical expertise provides an adequate basis for public trust in science.

One of the difficulties lies in the fact that the terms “layperson” and “expert” do not constitute stable social categories. Their meaning is relational and presupposes precisely the constitutive role of testimony in knowledge. As we noted above, within the scientific community, epistemic dependence is a condition for the generation and justification of knowledge, so it is important to avoid thinking of laity as “other people.” Even expert scientists are laypeople with respect to the technical knowledge of another field of research not specific to their discipline.

²The current president of the Argentine Republic, Javier Milei, uses the opposition “good people versus the caste.”

Expertise cannot be directly known. It belongs to other people, and the problem lies precisely in how to recognize it. This recognition is further complicated because “Recognition of expertise can safely rely upon a prior ability to trust those who testify to where expertise lives” (Shapin 2004, 47). This observation by Shapin is fundamental; learning to recognize who is an expert depends on the testimony of others. But then, the recognition of expertise involves the resources of familiarity with those who taught us where and how to identify expertise.

The same is true in cases where science participates in political decision-making processes. In these situations, it becomes clear that disagreement among scientists is constitutive of science. Researchers’ political intervention requires decisions about which experts to trust. Testimonial knowledge about expertise requires relationships of responsibility and cooperation, but also familiarity with the experts.

The sense of community and the resources of familiarity that contribute to the recognition and trust in expertise also seem to be dismissed by the right, which identifies technical expertise with the practical scope of greater impact on society at large. Knowing more would be associated with being able to do more. However, as Shapin points out, the shift from knowing something to being able to do something has a moral-political character:

Technical expertise (...) is a necessary but not a sufficient condition for effective action to achieve the ends you might wish and think to be good. (...) In order for trust in experts to have their practical grip, we have to be satisfied not just that certain individuals know more but also that they are well-intentioned, and that, if we trust them, they will try their best to do the right thing, even if –just because they are human– they cannot always bring about the right result. At a practical level, the evaluation of expertise contains within it a moral evaluation. (Shapin 2004, 48)

Technical knowledge is only as secure as the moral economy in which it is produced. However, the moral economies of technical expertise are contingent and, as such, contestable and changeable. So we return to the beginning: What are the shared commitments in our society to scientific knowledge that the right attacks? The answers to the questions about what kind of people scientists are and how they relate to the sources of their knowledge and to other members of the scientific community show the irrevocable nature of reliance on the testimony of others in the processes of creating, maintaining, and extending scientific knowledge.

The strategy of bombing a common center of agreement leads the right to increase the separation that arose in the late twentieth century between technical expertise and moral authority. Researchers are ordinary people. Epistemic individualism and a moral economy governed by institutions that restrict the free action of their members with the utmost vigilance and orient them toward profitability prevail, fueling distrust and anger. However, seeking to impose skepticism and distrust as common practices in science is working to dismantle the structure of scientific knowledge in exchange for ignorance, not to achieve more effective knowledge. The solution to these problems of our democracy is not in sight, nor is it the objective of this work to point it out.

The articles which make up this dossier are a demonstration of *Leviathan and the Air-Pump*’s analytical power. The opportune occasion of the fortieth anniversary of its publication has called for a philosophical and historiographical analysis of the problems of the present. From the field of the humanities of Argentina and Uruguay, the authors have enlivened this controversial book with the commitment to understanding the complex relationship between the history of science, knowledge and truth for our Latin American societies. I invite readers to explore *Leviathan* through the new problems that animated its rereading and to discover in the interviews with Schaffer and Shapin the frameworks of the

particular time in which they wrote this book and the stimulus to pose new questions about scientific knowledge and the society that we build and inhabit.

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