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Towards an Empirical Theory of Science? Lessons from the History of the Philosophy of Social Science

*Peter Fischer**

Abstract: »Auf dem Weg zu einer empirischen Wissenschaftstheorie? Lehren aus der Geschichte der Philosophie der Sozialwissenschaften«. While focusing on the possibilities of an empirical theory of science I question whether there are some lessons to be learned from the history of the philosophy of science. In a first step I reflect the complicated and somehow muddled relationship between the natural and social sciences with focus on Thomas Hobbes. He already learned that there are two types of research-objects which follow different logic: natural and social bodies. Within the process of the institutionalization of the social sciences one could see an ongoing import of metaphors and methods from the natural sciences, but no methodological compatibility between these two varieties of science. Therefore, a philosophy of science (*Wissenschaftstheorie*) in philosophy differs from the newer Philosophy of the Social Sciences; this could also be understood as an outcome of the increasing self-consciousness of the social sciences and their long-lasting tradition. Their history of the empirical observation of the world illustrates that – developing Hobbes thoughts further – there are not only natural and social bodies, but also mixed forms: socio-natural bodies. Here we meet limitations to social-science research, which will be outlined in short. I conclude with some remarks advocating for an empirical theory of science taking the research as a whole seriously and helping to understand what we do when we do social science.

Keywords: Two cultures debate, natural body, social body, socio-natural objects.

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1. Natural and Social Bodies

The principal parts of philosophy are two. For two chief kinds of bodies, and very different from one another, offer themselves to such as search after their generation and properties; one whereof being the work of nature, is called a natural body, the other is called a commonwealth, and is made by the wills and agreement of men. And from these spring the two parts of philosophy, called natural and civil.
(Hobbes 1913, 15)

Tracing back the history of modern sciences to the times of early modernity and the scientific revolution, one will sooner or later come across the paradigm of mechanic or mechanistic philosophy. This worldview fostered by many prominent European philosophers since the mid-16th century is discussed in natural philosophy (*Naturphilosophie*). Or even more precise: modern natural philosophy, which finally led to the establishment of empirical-based and law-generating natural science, started with the broad discussion of mechanics. A culmination of that discourse is discernible with Isaac Newton (1642–1726), who set the physical foundations of the mechanistic worldview, but the discussion already started in the mid-16th century with the followers of Copernicus and with Kepler (Hessen 2009, 73).

What is often ignored in the discussion of the scientific revolution in Europe is the fact that this event was not only a renewal of natural philosophy but also of social philosophy. “From the first mobilization of the ‘New Science’ of the seventeenth century, its spokesman contended that science and society must interact synergistically for mutual benefit” (Porter 1996, 33). This idea of progress put social philosophy in a prominent position. Thomas Hobbes (1588–1679) noted in the quotation above that there are two streams of philosophy. These were bracketed within “*Naturphilosophie*,” soon propelled by the new paradigm of mechanistic. Modern natural and social sciences have a common starting point.

The study of natural bodies includes natural phenomena like stars, animals, motion, light, etc. The study of civil, or social, bodies focuses on government, the commonwealth, and the order of society. But the two streams of philosophy evolved with different speeds. On the one hand, natural philosophy, e.g., astronomy, pushed mathematics to a higher level not known before, led to experiments in several fields, and fostered empirical investigations of the motion of the stars, which was eased by the invention of the telescope at the beginning of the 17th century.¹ On the other hand, the progress of social philosophy was slow – in spite of pressing social problems of war, government, and poverty, no simple or quick solutions were found, nor was it easy to give

¹ A good overview from a critical point of view on classic interpretations of the scientific revolution can be found in Teich 2015, from the sociology of knowledge point of view; Shapin 1996, also Fischer 2023a.

order to the struggling society. For an astonishingly long time period – from Nicolaus Kopernikus (1473–1543) to Auguste Comte (1798–1857) – the philosophy of nature imported the idea of the unity of philosophy, where social and societal phenomena are part of nature and therefore are submitted to the same rules as natural phenomena. In this sense, natural philosophy can be interpreted as a switch for 19th-century positivism. Or, as Lindberg puts it: “the universal belief that the seventeenth century, employing the methods of Bacon and Galileo, had at last produced firm and permanent foundations, which might require adaption and minor remodeling but no major reconstruction” (1990, 10). This was true for social philosophy within the realm of natural philosophy as well, so that social phenomena were expected to be explored with the tools, methods, and metaphors of mechanistic. Sure, there were alternative approaches like ethics and covenant or legal theories of the social, but the mechanistic worldview was the most successful and promising in Europe of the 17th and parts of the 18th century. Kersting even speaks from the 17th century as of a century of the unity of scientific-philosophical method (1988, 126).

A relevant example of the mechanistic worldview as a guideline for social philosophy is Thomas Hobbes's *Leviathan*, first published in 1651. It is often cited that Hobbes's method is operating “more geometrico,” and one can find proof in his wide use of mechanical metaphors and arguments throughout this work. Hobbes insists that social bodies like the commonwealth are based on the same principles as natural bodies. In his own words: “The skill of making and maintaining Commonwealths consists of certain rules, as does arithmetic and geometry” (1651, 129). Simply put, one could argue that Hobbes only had the methods of natural philosophy to investigate social research, but that would not hit the mark, because Hobbes was a true believer in mathematics as *geometrica philosophia*. This new mathematics is state of the art at his time and has a close affinity to the mechanistic of René Descartes (1596–1650). To be sure, there were critics and opponents to the new world view and their mechanical methods. It is important in this context to note that even Comte, the archetype of a positivist, was critical about the role of mathematics in the system of natural philosophy (1880, 44). In the heydays of mechanistic critique, Montesquieu (1689–1755) was among others who were aware of the limits of mathematics and the flexibility of social and societal bodies. He used the idea of “laws of nature” in a different way than in the mechanistic discourse. For Montesquieu, law assigns a relation between things (1899, 9) that first of all shows varieties of adjustment of society to different forms of nature, like climate and geographies. Montesquieu sees the necessity to distinguish different laws: laws of nature, divine law, law of nations, political laws, etc. (1899, 326). Montesquieu's thoughts were suppressed and only much later recognized as an important step towards social science (Durkheim 1960); meanwhile, the attractiveness and success of mechanistic philosophy

affected much of social philosophical thinking. Tracing back the history of the Philosophy of Social Science to the time of the scientific revolution, one could find some insights that can be summed up as follows.

Social philosophy as a precursor for the social sciences is part of natural philosophy, as well as the natural philosophy in a narrower sense, that deals with natural phenomena. Society and the social are therefore part of nature and treated for quite some time as equal. In this long tradition of the social sciences, some remarkable theories – like that of Hobbes – were generated, but the different logic of social and natural bodies emerged pretty soon, so that progress within the realm of philosophy was hindered and the attractiveness of mathematics led to a wrong track. Social science, as social physics based on natural philosophy, did not work, and it was necessary to break with the tradition of natural philosophy to establish a true social science doing justice to the reality of the social world and its phenomena.

In the long run, this leads to the need for an independent philosophy of the social sciences. I will show in the following sections that this development begins with a critical relationship between the social sciences and philosophy on the one hand, and between the social sciences and the natural sciences on the other. Within this relationship, the philosophy of science, mostly adopted from philosophy, was seen as imposed and therefore limiting the scope of the social sciences. The consequence, which marks a second step in this development, is a philosophy of the social sciences *suis generis*, which can be further described as a theory of the social sciences. A theory of social science does justice to the logic of social objects and the interests of the social researcher, but it is still a theoretical standpoint. The third step in the development of the philosophy of social science is an empirical turn. An empirical theory of science is able to test existing theories and to focus on the process of doing science.

2. Critical Relationship between Social Sciences and Philosophy and between Social Sciences and Natural Sciences

No wonder, then, that in the early stages of the development of any science different man confronting the same range of phenomena, describe and interpret them in different ways. What is surprising, and perhaps unique in its degree to the fields we call science, is that such initial divergences should ever largely disappear.
(Kuhn 1970, 17)

The break with natural philosophy gave social philosophy the chance to go back to other traditions and to see social bodies, or rather social phenomena, in its own right. An early example of a social phenomenon is Hobbes's *Leviathan*, whose specificity is to be built out of the actions and rules of the people.

But this did not denote that mathematics turned irrelevant. On the contrary: social philosophy, in its way to social sciences, became a mixture of different traditions, where the methods of counting and comparison and of handling quantitative and qualitative data play a remarkable role. Mathematics is part of the methodological toolkit of the modern social sciences at least since Adolphe Quetelet's (1796–1974) introduction of social statistics (Porter 1985), but the importance of math for society was already obvious in the discussion of scientific revolutions new philosophy, which laid foundations to the technical needs of modern capitalism (Schuster 1996). But does mathematics help in the complicated process of interpretation, explanation, and understanding of social phenomena?

As I have shown rudimentarily in the first section: the founding of social science is a process of detachment from philosophy. Autonomy is not only necessary for the philosophy of nature, but for philosophy as whole. This process of gaining independence raises theoretical and methodological questions, from which some are still discussed today. In a copped form: how much philosophy is needed to do social science? The answer could only be given with some explanatory notes to the history of the philosophy of science.

Initially, there is a notable difference in the philosophy of science (*Wissenschaftstheorie*) between the philosophical and social science points of view. This is not only due to the different logic of the scientific objects, but due to different traditions of reasoning. Ontology, for example, is only of limited interest in social science, but refers to a long tradition in philosophy. Nevertheless, there are ontological questions, which can be submitted to social science research. Ritsert (2002, 17) has shown for Durkheim and Adorno that both deal with ontological assumptions about the nature of the social or the society. These questions are worthy of consideration when dealing with the interest, scope, and aim of social science theories and approaches, but they have little to do with the tradition of a philosophy of being and of entities, or a “first philosophy.” Epistemology – the discussion of the question, what can be known – is always empirical in the social sciences. The history of the social sciences is marked by different methods to gather such knowledge, but social sciences show less concern about the idea of the nature of knowledge or about the discussion of the possibility of knowledge in general.

So why is this relationship critical? – Social sciences claim autonomy but are historically and theoretically coined by philosophy. Two examples can help to illustrate the tension between philosophy and social sciences. Social sciences today are still struggling with the problem of normativity. No clear answer is given, how to handle the postulate of value freedom of justice (*Werturteilsfreiheit*) since the seminal discussion of Max Weber (Weber 1988; Schurz and Carrier 2013), whereas philosophy is willing to give normative guidelines. This leads to conflicts and misunderstandings, as in the infamous debate over positivism between the Frankfurt School and Critical Rationalism

of Popper (Adorno et al. 1971). The core of this dispute, which ended up in reciprocal ignorance, could be seen in the incongruous positions of methodological normativity on the one hand, and societal dialectic logic on the other. Another tension is that philosophy in the tradition of a philosophy of science discussed methodological questions first and foremost in relation to logic, mathematics, and physics. This could be explained with the importance and achievements of natural science since the scientific revolution and the need to discuss these achievements and to balance further methods of research. The focus on natural sciences in the philosophy of sciences was intensified with Kuhn's work on scientific revolutions, first published in 1961 and surprisingly successful for a book² that is interested in scientific progress and that deals mostly with case studies of mechanistic and mechanical philosophy. It is not necessary to discuss the details of Kuhn's theory of scientific revolution here, but it is noteworthy to see that Kuhn is only talking about "normal sciences" (1970, 23) or "mature science" (1970, 24) reaching the status of paradigm-oriented research. He states, that "it remains an open question what parts of social science have yet acquired such paradigms at all. History suggests that the road to a firm research consensus is extraordinarily arduous" (1970, 15). Normal or mature sciences are oriented towards a paradigm. Following Kuhn's argument, this status is not yet reached or at least questionable for the social sciences. This sounds like an echo of Hobbes's identification of different speeds of evolution. However, there is still no disappearance of divergences in the field of the social sciences. On the contrary: the structure of the social sciences is characterized by multiple partly overlapping, partly separate paradigms. Reading Kuhn from a social science point of interest reassures that classic philosophy of science is not very helpful for the purpose of social science research. Nor is Kuhn's assumption inevitable that the development of natural science since the scientific revolution is an indicator for the development of the social sciences.

One consequence of the discomfort with the philosophy of social science from a philosophical point of view is a philosophy of social sciences in a less philosophical, more reflexive and pragmatic manner, so to say a theory of social sciences.³ This is the former mentioned second step in the development. Thus, it focuses on research practices and methods, but also on theories and their philosophical foundations, limits, and range of coverage from a social science perspective itself. Norbert Elias describes this undertaking as a "science of science" (1985, 95) instead of a regulating philosophy of science. This investigation into the science of social science methodology is also a consequence of its long tradition of increasing self-confidence. As a matter of course, the engagement with the theory of social science leads back to the

² See the 50th anniversary edition: Kuhn 2012.

³ The term "theory of science" will be used subsequent for the renewed philosophy of science from a social science point of view.

founding fathers, is connected to the sociology of knowledge, and nowadays to science and technology studies (STS). Disregarding the times of the institutionalization, where methodological questions were necessary to set the agenda of the disciplines, a theory of the social sciences never reached systematic character or a prominent place in the curriculum. I will come back to this point in the concluding chapter.

What can we learn from the history of the philosophy of science outlined here? First, there has been an entanglement of the natural and social sciences since their common point of modern origin. Second, despite the exchange of metaphors and the entanglement of social and natural phenomena in the world, there is very little common ground in terms of methods and theories between the natural and social sciences. Third, there is a clear division between social and natural objects, a division that is necessary from the perspective of the theory of science to make social science work. Fourth, attempts to model the social sciences on the ideal of the natural sciences have not worked.

On the other hand, there are slight changes of direction in the philosophy of sciences as well. The reference only to the normative accuracy of methods of research is no longer solid. Reflecting the changes in the field of science and especially the strengthening of the social sciences since the mid-20th century, Hoyningen-Huene (2008, 2015) developed a knowledge-based approach to the question “What is science?” with a focus on scientific practice. Here, the methods still play a role in the process of knowledge generation, but this process is again only part of other criteria that identify science. Hoyningen-Huene names: descriptions, explanations, predictions, the defense of knowledge claims, epistemic connectedness, an ideal of completeness, knowledge generation, and the representation of knowledge (2008, 4). What Hoyningen-Huene calls systematicity deals finally with the nature and scope of scientific knowledge in relation to other forms of knowledge.

The relationship to the natural sciences today is identified by a vivid metaphor- and concept-import, but there is no methodological compatibility. The idea of a social science according to the ideal of natural science is still attractive, and otherwise natural sciences are dealing with social phenomena.⁴ Positivist social science is seeking closeness to the techniques and methods of the natural sciences (Saalman 2020). Looking back into the history of the social sciences shows some disillusion adopting the proceedings of natural science. The positivist vision of Comte to integrate sociology into the realm of natural philosophy did not work, and the renewed positivism of the Vienna school, the so-called “logical positivism,” had only limited acceptance in the social sciences. Even Popper, who was falsely ascribed to positivism, never accepted its suppositions (Sigmund 2018, 348). Also, the Marxist notion – to

⁴ See, for example, the “social physics collective,” which is trying to establish a social physics of collective behavior using physical laws (Perc 2019).

name just another positivistic vision – to establish materialism as the core theory of social science, like Newton’s physics was the core theory for science, did not work.

The outcome of this is that at least some minimum skepticism from a philosophy of science point of view is appropriate. Whereas social science is interested in change, variation, and the new, natural science is looking out for laws, similarities, and the general. Held up with the words of Bailey and Eastman, who discussed the influence of classical positivist thought of Comte, Mill, and Marx on psychology: “There is a reason to believe that human behavior violates the requirements necessary for scientific investigation. That is, individual and collective phenomena are less enduring than physical and biological phenomena, and as such do not fall under the purview of traditional scientific assumptions” (1994, 517). This aspect can be illustrated by means of a discussion about the agenda setting of the social sciences in the early 20th century.

The yardstick for social science, like the natural sciences, is the empirical observable world. The German discussion of Windelband, Rickert, and others, at the beginning of the 20th century, nevertheless shows that the label of empirical research is not sufficient. This meaningful debate in the philosophy of science, dealing with the problem of understanding (*Verstehen*) and the methods of hermeneutics and interpretation, made some fundamental differences in the sciences beyond an empirical bracket visible. Heinrich Windelband (1848–1915) sees logic as a core element of the natural sciences in opposition to the ways of understanding in the liberal arts (*Geisteswissenschaften*). On the one side, there are laws, based on general phenomena; on the other side, there are historical events that need explanations. Hereupon Windelband draws the famous distinction of nomothetic and ideographic sciences (1894, 13). In a similar way, Heinrich Rickert (1863–1935) unfolds his arguments. He questions the methodological relationship of natural and social, or rather cultural, sciences. Nature and culture belong to different realms of the world, with objects of culture on one side and objects of nature on the other side. In contrast to nature, culture is based on values and meaning, or in the words of Rickert: in every process of culture, an aspect of value, approved by man, is involved (1926, 37).

A lot has changed in the field of science⁵ since that time, but the principles of different realms seem to still be valid, at least from a philosophy of science point of view. Even more, the different realms of social and natural sciences are necessary to make science work. The second step towards a theory of science from a social science point of view is therefore a consequence of its growing autonomy. Social sciences are not willing or able to discuss the

⁵ The term “social sciences” is vague itself. What counts as social science is different in every country, and there is mixed science with a social core, but with a natural mode of research and explanation like psychology and economy.

movements of natural bodies. But there is another story, that makes scientific work complicated. The “two cultures” discussion of the 1960s (Snow 1959), where an increasing divide between scientists and intellectuals was monitored, seems no longer reasonable. There is a versatile entanglement of society with technology and science; everyday life is more and more filled up with technical and computer-based handling. In that sense, more specialized skills, the domain of experts (Kübler 2009, 134), became a fundamental part of knowledge society. As a result of that process, social sciences are trying to understand the entanglement of society with technology and science. Social science today is more interdisciplinary than ever and has an intermediary function between the natural sciences on the one side and society on the other side. The rising interest in science and technology studies (STS) (Fuller 2006) in the last twenty years and an increasing amount of socio-historical analysis of science may be seen as proof of the entanglement as well. Sociology and social science today deal at least partly with the utilization of scientific products. But that new task of social sciences as intermediate actors does not imply that there is a change in focus. Social sciences are still interested in the social world, and the capabilities to understand natural phenomena are limited. It is just that the social world changed. This changing social world with more and more hybrid objects should not lead the social sciences to try to take over the role of the natural sciences in explaining non-social phenomena.

I have shown that social sciences have gained independence and self-confidence that led to a critical relationship with philosophy and natural sciences. On the other hand, the development of modern society compels an interdisciplinary approach to social reality.

3. Socio-Natural Bodies and the Limits of Social Sciences

The deep entanglement of societies and their environments over time shows that human action has been a major force in nature’s evolution, thus making it increasingly difficult to sustain a clear separation between these two realms. It can even be said that nature has been morphed into human environment. To a great extent, the objective nature that existed long ago has been integrated into human history through labour and cultural appropriation—in a process that can very well be accommodated into an evolutionary account of the species.
(Arias-Maldonado 2015, 55)

Hobbes was right to recognize two different forms of philosophy, and therefore to distinguish two different kinds of bodies: natural bodies, such as planets, and social or artificial bodies, such as the commonwealth. From the point of view of the philosophy of science, this distinction is fundamental and

makes it possible to understand social phenomena. In the process of academization and institutionalization, a clear field of expertise was established to distinguish it from other existing fields of science. However, as we have learned from the discussion of the Anthropocene, society and nature are interwoven and interdependent. There is no society without a material and natural basis. Arias-Maldonado speaks of the transformation of nature into society; in other words, one could say that a second nature has emerged since the time of the scientific revolution. Hobbes was unable to recognize this aspect of nature, but a process was set in motion with the application of the findings of the scientific revolution. What is more, knowledge in the scientific revolution was produced for practical reform (Shapin 1996, 121) and that was to understand the mechanisms of nature. Second nature or cultural nature emerged as an ongoing process of understanding, domination, exploitation, and appropriation of nature for the object of humanity (Fischer 2023a, 275). In a broader sense, second nature can be used to describe the transformation of nature and the mechanization of the world. Latour sees the outcome of natural science as a method of purifying and separating the realms of the natural and the social. In this regard he states: “The laws of nature allowed the first Enlightenment thinkers to demolish the unfounded claims of human prejudices. Using this new critical tool, they no longer saw anything in the hybrids of old but illegitimate mixtures that they had to purify by separating natural mechanisms from human passions, interests or ignorance” (Latour 1993, 35).

As a result, one could question the notion of a separate natural and social world. Based on the limits of human understanding or the scientific division of labor, there are social and natural sciences, but only one world, in which a clear cut between nature and culture could not be made. From a constructivist point of view, one therefore could assume that nature is constructed. In the last two decades, social science has learned to deal with this socio-natural problem. The separation of the social from nature is hardly considered to be real. But the crucial argument here is that the world of science is different from the world of everyday life, and therefore objects look different from a scientific point of view than they do from an everyday point of view. With the discussion of the Anthropocene as a crisis in the relationship between society and nature, nature is being rediscovered as the material basis of society (Becker 2016), but also society as a vital part of nature itself (Latour 1993).

Even if there is no society without nature, there are socio-natural bodies, hybrid objects of various kinds. There is no need to discuss this issue at length, but I will give one brief example to show the relevance of this point for the theory of science. The human body is itself a product of nature and society. The human body has a biological and sociological quality, bodies are born, age, fall ill, and die – a biological process par excellence. On the other hand, the body is a social issue where cultural aspects are represented,

transformations, body building, and body work take place. It is not necessary to emphasize that the human body is a central concern of the social sciences, but the body has gained a lot of interest in recent years. Social aspects are projected on the body, the body is a social mirror. However, it is enough to recognize the human body as a socio-natural phenomenon. Shilling (2012, 102) speaks of the human body as an emergent socio-natural “phenomenon that cannot be located exclusively in the social or natural world.” The body lies between the natural and the social. But there are also hybrid bodies of nature and technology. Donna Haraway described the cyborg over 30 years ago: “A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction” (Haraway 1991, 149). Today, body enhancement and robotics are much more present, but we still do not interact with cyborgs. But in the social world there are natural objects and finally artificial bodies or objects that play a crucial role in personal and social life. Where does this lead us? One suggestion from the point of view of the theory of science would be not to confuse the goals and scope of the social sciences with those of the natural sciences.

Now to return to the theory of the social sciences, where this reality of social-natural bodies needs to be caught up with. Today we are confronted with a remarkable amount of highly specific methods of measuring, counting, and calculating empirical data. Research has become more and more interdisciplinary, at least partly because of political will, but also because of the changing world. But the core of the social sciences is still the social world, society, its parts and mechanisms. Nevertheless, it is important not to overlook the limits of social science in understanding hybrid objects.

An example from the study of the human body will help to illustrate this. The “Decade of the Mind,” a political project in the USA in the 1990s, was followed by a more interdisciplinary project: the “Decade of the Brain,” which involved at least some social sciences as well as neuroscience, cognitive science, computer science, engineering, and mathematics. The “sociology of the mind” (Cerulo 2012), developed by the “Rutgers school,” is an example of how the social sciences can only scratch the surface of cognitive science and then try again to add some sociological knowledge dealing with catchwords of cognition. In the end, the “sociology of mind” could not say anything about the mind or its functions, but a lot about social action and social processes. Some exciting findings could not hide the fact that sociology is not a neuroscience and that most trained sociologists have little understanding of the mechanisms of the brain. The ability of social science to explain natural phenomena is limited, but when a hybrid or socio-natural object such as the human body is studied, the social aspects of that object can be grasped.

4. In Need of an Empirical Theory of Science? Concluding Remarks

I have argued that there are socio-natural objects and an entanglement of the natural and the social. Perhaps for this reason the Hobbesian distinction between natural and social bodies needs some correction, insofar as there are natural and social aspects of bodies or objects. Nevertheless, from a philosophy of science point of view, the distinction is reasonable. Natural and social bodies require a different approach to research and follow a specific logic. An examination of the philosophy of social science showed that the roots of modern social science can be traced back to the early modern period of the scientific revolution. The application of mechanistic philosophy to social bodies did not work, nor did the interests of the natural sciences help to fully understand these phenomena.

The process of separation from philosophy and natural science, which was at least determined by a new level of mathematics and new formulas that did not work for the social world, made it possible to draw on other traditions and to build and institutionalize social sciences in their own right. This also required a new philosophy of science, so that for the founding fathers and classics of the social sciences, such as Max Weber, Emile Durkheim, Georg Simmel, or Ferdinand Tönnies laying ground for methodological research, different from the classical philosophy of science. Unfortunately, this theory of science was – and still is – only partially integrated into the scientific field and appeared only in a few major debates about positivism or the value freedom of scientific judgement (Fischer 2023b).

The situation for the social sciences today is challenging not only because of the multiple crises that need to be addressed but also because of the shift from a strong societal belief and trust in science to mistrust and hostility (Druckman 2022). For this reason, it seems important to rethink the methodological positions and limits of the social sciences. Challenges and threats to the sciences are unlikely to be answered by politicizing the sciences, but rather by reflecting on what we do when we do social science. In this sense, the focus of a theory of science shifts from the question of how we should do science to a reflexive tool for analyzing the different steps in a research process (Bourdieu and Chamboredon 1991; Knoblauch 2021).

I have shown that a process of increasing autonomy in the social sciences goes hand in hand with changes in methodology. The separation from philosophy also necessitated a separation from the philosophical theory of science. A theory of the social sciences is fundamentally different from a theory of the natural sciences. Social objects and the peculiarities of the social scientific research process required a genuine theory of science. Revising, adapting,

revising, or testing this theory in research practice is a next step that is currently being discussed with the empirical theory of science.

There are at least three lessons to be drawn from the history of the philosophy of the social sciences.

- Much of the modern natural and social sciences began as joint enterprises.
- Despite a long tradition of exchanging metaphors and concepts, there is little methodological common ground between the natural and social sciences.
- A division of objects that is necessary from the point of view of the theory of science.

The entanglement of the social and natural sciences in the era of the scientific revolution, but also the early rise and success of the natural sciences, inspired the social sciences to model their research interests and scopes on those of the natural sciences. This led to a dead end and required a separation from the natural sciences, but also from philosophy, in order to establish a social science. The attractiveness of the natural sciences led to several debates about whether the social sciences could produce exact results and laws like the natural sciences. What has been called positivism since Auguste Comte is countered by improving the original methods and methodologies for the social sciences.

In the end, there are not only social and natural bodies, but also socio-natural bodies, or in other words: hybrid objects. I argued, not to transgress the limits of the social sciences with their focus on the social world. Hybrid objects are at least partly social, and this is the place where social sciences can start their research. The human body was used as an example for a socio-natural object, which is in itself of interest for the social sciences. The brain and its function, on the other hand, is not a case for the social sciences.

A theory of science is currently a desideratum in the social science curriculum and conspicuously unloved by students and academics. Drawing on science and technology studies, ethnomethodology, and classical methodological studies, I see an opportunity for an empirical theory of science to bridge questions of how science is done with the problem of public acceptance of social science research. At the very least, an empirical theory of science is a chance to strengthen the autonomy of an existing philosophy of the social sciences. This resolution should consider going back to the history of the philosophy of the social sciences.

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Special Issue: Towards an Empirical Theory of Science? Challenges and (Possible) Standards of Scientific Research Across Disciplines and Cultures.

Introduction

Hubert Knoblauch, Nina Baur, Silke Steets & Séverine Marguin

Towards an Empirical Theory of Science? Challenges and (Possible) Standards of Scientific Research Today.

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Contributions

Peter Fischer

Towards an Empirical Theory of Science? Lessons from the History of the Philosophy of Social Science.

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Hubert Knoblauch

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Jörg Niewöhner

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doi: [10.12759/hsr.50.2025.16](https://doi.org/10.12759/hsr.50.2025.16)

Jakkrit Sangkhamanee

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Cornelia Schendzielorz & Martin Reinhart

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doi: [10.12759/hsr.50.2025.18](https://doi.org/10.12759/hsr.50.2025.18)

René Wilke

Vernacular Videos as Research Data: Audiovisual Self-Representations and the Epistemology of Social Science Knowledge Production.

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Meike Haken

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doi: [10.12759/hsr.50.2025.20](https://doi.org/10.12759/hsr.50.2025.20)

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doi: [10.12759/hsr.50.2025.21](https://doi.org/10.12759/hsr.50.2025.21)

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doi: [10.12759/hsr.50.2025.22](https://doi.org/10.12759/hsr.50.2025.22)

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Introduction

Christian Schmidt-Wellenburg & Vincent Gengnagel

On the Relational Power of Economics: Economists between Academia, Government, and the Economy. An Introduction.

doi: [10.12759/hsr.50.2025.23](https://doi.org/10.12759/hsr.50.2025.23)

Contributions

Maria Caramenz Carlotto

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doi: [10.12759/hsr.50.2025.25](https://doi.org/10.12759/hsr.50.2025.25)

Fernán Gaillardou

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doi: [10.12759/hsr.50.2025.27](https://doi.org/10.12759/hsr.50.2025.27)

Rouven Reinke & Laura Porak

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