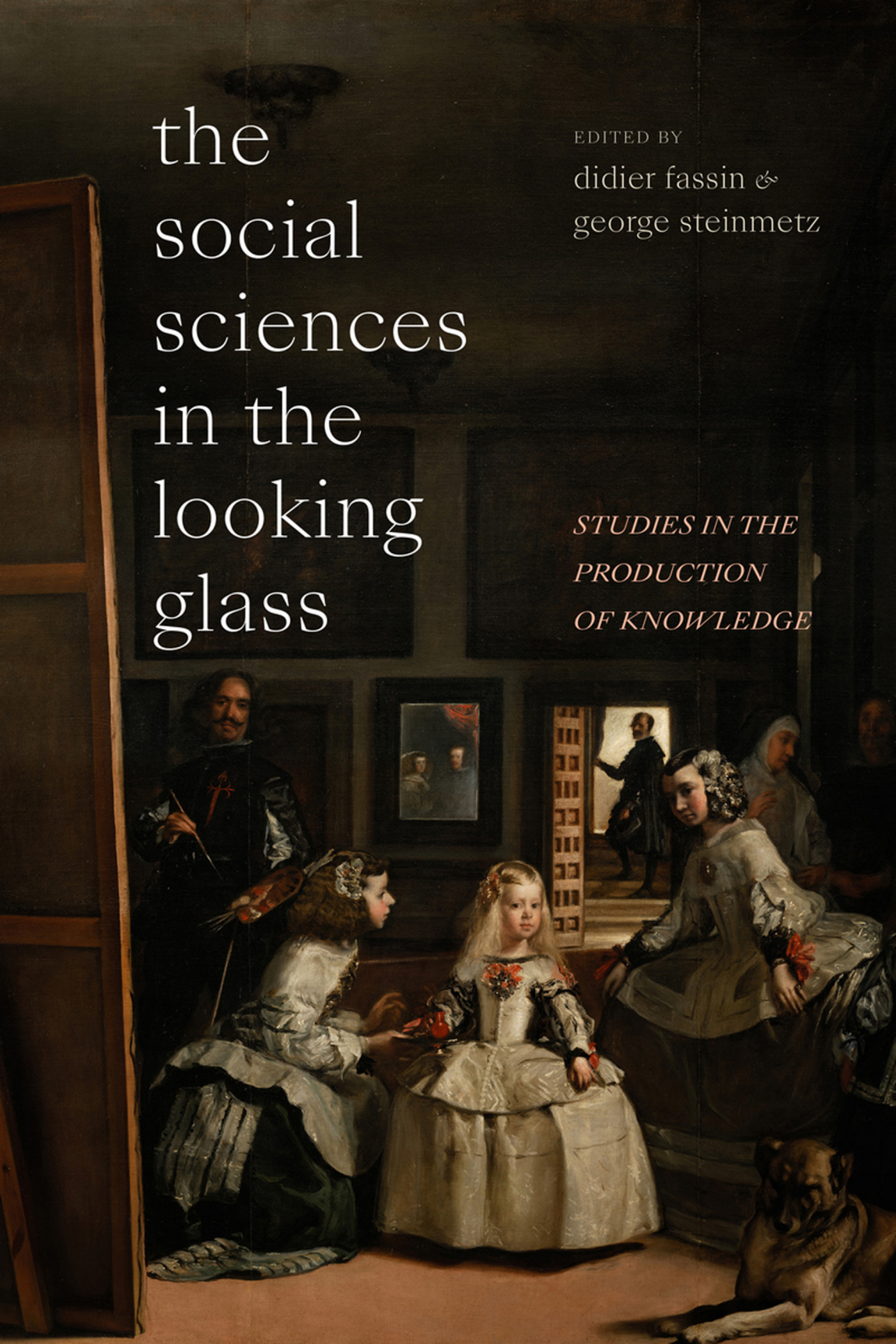
the social sciences in the looking glass

EDITED BY
didier fassin &
george steinmetz

STUDIES IN THE PRODUCTION OF KNOWLEDGE



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Cover art: Diego Velázquez, *Las Meninas*, 1656–1657. Oil on canvas, 10.4 ft. × 9.1 ft. Source: Wikimedia Commons.

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introduction

Toward a Social Science of the Social Sciences

DIDIER FASSIN AND
GEORGE STEINMETZ

One cannot talk about such an object without exposing oneself to a permanent mirror effect: every word that can be uttered about scientific practice can be turned back on the person who utters it. Far from fearing this mirror—or boomerang—effect, in taking science as the object of my analysis I am deliberately aiming to expose myself, and all those who write about the social world, to a generalized reflexivity.
—PIERRE BOURDIEU, *SCIENCE OF SCIENCE AND REFLEXIVITY*

OVER THE PAST HUNDRED YEARS, social scientists have conducted research on multiple social worlds of science and technology, even developing a prolific subdiscipline. But remarkably, their interest, which has covered a wide range of disciplines and practices, from physics to biology, from laboratories to scientific controversies, has largely avoided a similar exploration of their own knowledge and practice. Indeed, the history of science, and later the social studies of science, broadly speaking, have been primarily focused, since the creation of the journals *Isis* and *Osiris* in the early twentieth century, on the natural sciences. In recent decades, however, historians, sociologists, anthropologists, and others have begun to examine various aspects of the

social sciences, including their politics and ideologies, their epistemologies and methods, their institutionalization and professionalization, their national development and colonial expansion, their heterogeneous globalization and local contestations, and their public presence and role in society (e.g., Scott and Keates 2001; Porter and Ross 2003; Steinmetz 2005; vom Bruch, Gerhardt, and Pawliczek 2006; Fassin and Bensa 2008; Backhouse and Fontaine 2010; Danell, Larsson, and Wisselgren 2013; Rollet and Nabonnaud 2013; Backhouse and Fontaine 2014; Randeria and Wittrock 2019). Strikingly, this trend has been concomitant with a reconfiguration of the scientific landscape in which the social sciences are inscribed, a reshaping of their borders with neighboring fields such as literary studies and cognitive science, to take extreme examples, and a radical questioning of their very foundations, by feminist, postcolonial and posthumanist studies, as well as, from a symmetrical viewpoint, by so-called analytical approaches (e.g., Connell 2007; Joas and Klein 2010; Moyn and Sartori 2013; Kennedy 2015; Fassin 2017). It is therefore an interesting and challenging time to engage in what could be called a "social science of the social sciences." The object of this volume is to offer current social scientific perspectives (defined broadly) on this reflexive moment in which the social sciences begin to examine themselves in the mirror or looking glass—hence our volume's title.

As was famously formulated by Norbert Elias, the originality of the social sciences within the wider scientific field is that the observer and the observed belong to the same category, even when the latter is described in terms of professions, networks, ethnic groups, religious practices, or social fields: both are human beings. In contrast, in the natural sciences, the two are distinct, as human beings study black holes, tectonic plates, algae, genomes, or bosons. It is therefore easier for historians and sociologists of the natural sciences to distance themselves from their object of study. Not that natural scientists are entirely dispassionate in their research: the controversies around climate change are a reminder of how emotional certain topics may be. But in general, they are more committed to their discipline than to their object as such. On the contrary, social scientists are always caught in a tension between involvement and detachment, especially when their research deals with questions that have a moral or political dimension.[1] Working on abortion, inequality, democracy, terrorism, crime, or debt entails some form of personal "involvement," which can be referred to as belief, value, conviction, prejudice, ideology, or subjectivity, even when scholars feel committed to scientific "detachment," using surveys, statistics, models, theories, or fieldwork to approach objectivity. It might even be argued that the more

they try to achieve perfect detachment the more they are blind to their own involvement.

The project of a social science of the social sciences heightens this tension. It supposes that human beings study human beings who are themselves studying human beings. It should therefore not be a surprise that social scientists would have been reluctant to conduct such program, which renders detachment even more difficult and involvement even more hazardous. This reluctance should indeed be understood in light of the fact that research on the social sciences is inscribed in the same social space to which the researcher belongs. The ethnography, sociology, or history of a given domain of the social sciences supposes an investigation among colleagues, or scientific "ancestors," or, at least, within a scientific space characterized by competition and rivalry, friendships and allegiances, anxieties of influence, and inherited ideas of obscure provenance. These complications come at a cost for the student of this domain. Yet how could we defend the idea of a critical social science when the only area that would escape our inquiry would be precisely our own disciplines? Like others before us,[2] we therefore call, in this book, for a critical epistemology that applies to the social sciences the same principles and rigorous methods that are used to study other sciences as well as the other domains of social life beyond science.

This critical epistemology takes various methodological forms and can adopt diverse theoretical frameworks. In a time when, as the coronavirus pandemic has shown, sciences in general and the social sciences in particular are disputed, we have privileged in this volume a discussion respectful of epistemological diversity and attentive to distinct theoretical foundations. It is our endeavor here to bring together multiple scientific traditions—history of science, intellectual history, sociology of knowledge, political sociology, cultural anthropology—so as to illustrate the richness and diversity of the research being conducted in an emerging domain, rather than proposing or imposing a unitary paradigm—a temptation that has sometimes led to unfruitful disputes and divisions in the social studies of the other, "exact" sciences. This being said, we must acknowledge that the very foundation of our collective endeavor—the critical reflexivity of the social sciences, expressed through the metaphor of the looking glass in the title—has a clear affinity with the historical sociology of knowledge developed by Pierre Bourdieu and his colleagues, of which it is possible to find variable degrees of presence across the chapters. All of us consider that the social sciences tend to be constituted as fields and institutions and are embedded in national contexts and inscribed in historical moments, and that they can therefore not be apprehended without taking

into account these multiple dimensions. All of us agree that it is important to study social scientific practices in relation to both the form and content of the research produced and to study social scientists' positionality not only from an intellectual but also from a social and political perspective. These elementary principles are however freely applied by each author.

The social science of the social sciences and the humanities emerges at an interesting juncture for these disciplines, and from this viewpoint, it is without doubt timely. On the one hand, these arenas have come increasingly under fire from several directions, particularly political and scientific ones. In the political realm, social science has been attacked on three fronts. First, neoliberal criticism judges them unproductive, considering that the only useful social sciences are those that contribute to the wealth of nations. Second, authoritarian criticism deems them too critical, especially in their analysis of power relations and hidden interests. Third, an ad hoc criticism that has recently flourished on both sides of the Atlantic accuses the social sciences of finding excuses for deviance and crime, because they analyze the structural causes underlying these phenomena. In the scientific domain, they have been attacked by two important currents composed of two distinct sets of disciplines that nevertheless share a similar vision of science, according to which science can only talk about facts that can be established through empirical evidence, allowing us to formulate objective and verifiable truths. The first set of critiques comprises mainstream economics, much political science, and large segments of sociology, using modelization and mathematical formalization, quantification, and experimental designs grounded in rational-actor theory. The second set encompasses cognitive sciences broadly speaking, including experimental psychology, analytic philosophy, evolutionary theory, and neuroimaging, which have in common strong universalistic claims about the functioning of the brain and its implications for social life. The former represents a form of social science positivism inherited from the twentieth century but with increasingly potent tools. The latter illustrates a form of neopositivism of the twenty-first century mobilizing increasingly sophisticated technologies from the life sciences. Beyond their differences, these strands tend to question inductive, interpretive, qualitative, and critical social sciences as unscientific, ideological, or flawed.

At the same time, these latter approaches have experienced in the past decades a renewal and enrichment of their objects, approaches, methods, theories, and one might even say: paradigms. The scope of interest among social scientists has expanded beyond human beings to the study of animals, nature, life, infrastructures, cyborgs, and the planet. Feminist studies, race

studies, and postcolonial and decolonial studies have shaken well-established approaches to social knowledge in all domains. Political scientists and legal scholars have begun to practice forms of ethnography. Just as artificial intelligence has become a method for some, it is also now an object of study for others. In sociology, actor-network theory (ANT) coexists with the new institutionalism and the social field approach, while cultural and historical sociology flourishes aside economic sociology. In anthropology, ontological, structuralist, historical, neo-Marxist, and neo-Foucauldian strands cohabit in conflictive but often productive ways. In philosophy, the divide between analytic and continental branches remains, but with some bridges being built between them. In sum, there is no homogenous field of social sciences and humanities but a bountiful and turbulent intellectual space of analysis and reflection about human beings and beyond.

It is at this juncture that we inscribe our book, as a "defense and illustration" of a critical social science, to paraphrase Joachim Du Bellay's famous sixteenth-century essay on language and poetry. Beyond their diversity of themes and contexts, the common thread of the book's contributions is a critical approach to the politics and practices of the social sciences. This does not simply mean that it is critical of social science, as with works that uncover the history of eugenics, counterinsurgency research, colonial social science, or social science under authoritarian regimes (e.g., Strauss 1952, 22–37; Klingemann 1992; Kojenikov 1999; Carson 2007; Rohde 2013; Steinmetz 2013, 2022; Mastnak 2015; Morcillo Laiz 2016; van Eekelen 2016). It means above all that this reading of the social sciences can contribute critically to the politics and practice of social science itself, and beyond that, to the understanding of social processes. In particular, it can unveil the hidden genesis of currently accepted concepts and languages; disinter forgotten works that remain valuable in the present; and question the foundations of our thinking about societies and about the specific place occupied by human beings in our comprehension of the world. And since the social sciences are thoroughly entangled in the social facts they describe and analyze, only by singling out the former can we understand why our world looks the way it does.

Such critical endeavor is significantly facilitated in this volume by two elements. First, the confrontation between authors from various social sciences allows for a multiplication of perspectives, while it is more frequent to have scholars from a single discipline represented.[3] The chapters have for their object history, sociology, anthropology, legal studies, cognitive sciences, animal studies, and religious studies, and in some cases, interdisciplinary spaces or the social sciences as a whole. Second, the geographical scope of

the chapters covers five continents and the movements of ideas, scholars, and scientific resources among them, whereas many existing studies have focused on a single country or on nation-state comparisons.[4] Our scope thus generates two complementary results. On the one hand, the examination of similarities and differences between national traditions from various continents leads to a critique of the epistemological and conceptual self-evidences of the social sciences. On the other hand, the study of the internationalization, globalization, and hegemonization of theories and methods underscores the dynamics of encounters, exchanges, appropriations, and contestations in various historical periods.

Our collective work is the result of a one-year collaboration. Indeed, an international group of scholars from across continents as well as disciplines of the social sciences and humanities gathered at the School of Social Science of the Institute for Advanced Study during the academic year 2017–18 to explore a variety of topics such as the constitution and transformation of scientific fields, their national specificities and asymmetric forms of internationalization, their material and epistemological conditions of production, the crises and controversies they go through, and the relationships they have with society at large. Our book is thus the outcome of regular exchanges and multiple interactions generated by this long-term residence.

THE VOLUME IS DIVIDED into three parts, exploring successively the temporal, spatial, and liminal dimensions of the social sciences. The first section deals with the making of disciplines from a historical perspective, combining theoretical, epistemological, and material angles. Indeed, these disciplines as we know them today are the product of social, political, financial, and intellectual contexts. The chapters therefore bring together studies of the evolution of the history of the social sciences, the ambiguous role of private donors, the emergence of scientific concepts, the interactions among neighboring disciplinary fields, and the reassessment of methodological approaches. The second section examines how the social sciences are shaped by national contexts and affected by supranational institutions and global transformations. They are thus analyzed in the contexts of postwar socialist Poland, in Japan at the time of the 1968 protests, and in India during the long period following its independence, as well as under the constraints of European programs and in the unequal conditions of world competition. The third section explores the connections of the social sciences with bordering disciplines and knowledge constellations. More specifically, the chapters focus on the influence of the critical humanities and subaltern studies, the frictions between the

social and cognitive sciences, the debates on animal cultures, and the infinite expansion of the social scientific field beyond the human.

Opening the first part with an extensive review of the corresponding literature, George Steinmetz argues that the history of the social sciences has not been a smooth and linear one but has evolved via major theoretical jolts, which he calls "concept-quakes" in reference to Friedrich Nietzsche's phrase. The first shift was the move from the classical history of sciences to the Marxist understanding of science as being intimately connected with its socioeconomic context. The second caesura was the invention of the sociology of knowledge, which looked beyond the capitalist contexts of knowledge emphasized in Marxist accounts to include everything from the state to religion. The sociology of knowledge, largely the heir of idealism, gave rise to a sociology of science that was attentive to historical and cultural contexts while also informed by content-oriented approaches, thus combining externalist and internalist readings of science. Several different strands appeared after the sociology of knowledge, including the Mertonian sociology of science, the French historical school of epistemology, and the cluster of approaches known as science and technology studies (STS), the sociology of scientific knowledge (SSK), and ANT. With respect to the *social* sciences, however, the third shock was the passage from the social studies of science, dominated by the ANT developed by Bruno Latour, to the historical sociology of the social sciences, which received a decisive impulse through Pierre Bourdieu's field theory. Steinmetz argues that several of the tenets of ANT and science and technology studies can be internalized by a neo-Bourdieusian field theoretic approach, while others are incompatible. The range and depth of knowledge generated by studies of social science using Bourdieu's approach is the best indicator of its usefulness.

Rarely able to finance themselves through the market, the social sciences rely on public and private funding to exist. Focusing on the contribution of the Rockefeller Foundation in the development of international relations at the Colegio de México during the time of the Cold War, Álvaro Morcillo Laiz analyzes the role of philanthropy in the development of the social sciences. To do so, he uses the method of the counterfactuals, imagining what would have happened in the absence of this private patronage. This allows Morcillo Laiz to argue against "internalists," who believe that scientists follow their own intellectual logic independently of the support they receive. In the case examined here, the Rockefeller Foundation was decisive: first, in allowing the Center for International Studies to flourish, while the Center for Social

Studies, deprived of such funding, ended up closing; and second, in separating international relations from political science in Mexico. Beyond this specific example, it is undeniable that major private foundations from the United States have played a significant role in the fate of the social sciences in Latin America and beyond (Turner and Turner 1990; Tournès 2010; Krige and Rausch 2012).

Like money, ideas and the words that represent them circulate across space and time. Using as a case in point the notion of "creativity," which is overwhelmingly present today in the public sphere as well as the scientific domain, Bregje van Eekelen shows that such concepts have a history from which much is to be learned. Thus, the theme of creativity appeared in the United States at the heart of the industrial and military complexes in the middle of the twentieth century, that is, in a time of intense competition with the Soviet Union in terms of economic influence and the armaments race. But beyond these immediate strategic implications, creativity was also regarded more broadly as an alternative to the utilitarian approaches predominant in the economic and bureaucratic realms at the time. Indeed, brainstorming seemed more exciting and promising than traditional methods for generating innovations in the system of production. Creativity soon became a keyword at the interface of the corporate and academic worlds, with the enlisting of social scientists to legitimize it as a concept via the multiplication of "creativity studies" and "creativity experts." It would be wrong however to view the social life of such concepts as linear, since there have been numerous variations and inflections in the meanings, connotations, and uses of the word.

The same can be said of theories, as shown by Carel Smith in his analysis of the critique of legal theory and legal practice by the social sciences. The dominant view within legal studies has been for more than one hundred years that law was a rule-governed activity, either in its European form, "legalism," or in its US variation, "case law method." However, at the beginning of the twentieth century, this dogma was questioned by the Free Law Movement in Europe and by Legal Realism in the United States, which considered that judging resorts to forms of knowledge that exist beyond the system of rules and that involve politics. The social sciences therefore became an indispensable complement to legal scholarship, and were used to unveil the hidden ideologies behind adjudication. The balancing of interests came to be viewed as an attempt to take into account the conflicting viewpoints involved in any case. Such "social scientific" approaches were in turn criticized as irrational by scholars who continue to see law as a self-sufficient discipline. Beyond the specific example, the outcome of this battle shows that deductive reasoning

continues to be understood as the neutral and universal "gold standard" in science, whereas other forms of reasoning, which are context-sensitive, always remain second best from a positivist perspective.

Yet the formation of social science is very much dependent on the contexts of its genesis as Amín Pérez shows in his consideration of the fieldwork conducted by Pierre Bourdieu with Abdelmalek Sayad in Algeria at the time of the war of independence. This research was pivotal in the later development of the Bourdieu's thinking. In this troubled context, ethnography, pragmatically combined with interviews, census, mapping, and photography, allowed Bourdieu to refine his analysis of social change and his critique of domination. It also made him realize, through a comparison of his personal experience and his early works in Béarn, that peasants on both sides of the Mediterranean were facing some similar issues and were responding to them in analogous ways. Moreover, the political tensions and military conflict at that time made Bourdieu acutely conscious of the inherent commitment of scholarship, thus avoiding both "academism" and "revolutionarism," and providing instead a practice faithful to the principles of science while not eluding social responsibility.

In the second part, several national and historical contexts come under scrutiny. Using the case study of the University of Łodz, Agata Zysiak analyzes the fate of sociology after the Second World War under the Communist regime. Following the interwar period of institutionalization of the new discipline with towering figures such as Florian Znaniecki, the postwar period was one of Soviet-style reform in academia, according to which higher education had to be oriented toward the advent of state socialism. Characterized as "bourgeois" despite its progressive engagement for the most part, classical sociology was banned from universities and replaced by forms of knowledge more closely aligned with the Stalinist project. Interestingly, however, the disappearance of sociology from academia was mostly nominal, as former sociologists created, or found refuge in, departments with different names and continued their research and, more broadly, their professional activities in universities. The discipline thus demonstrated its resilience even under ideological and political hardships, which explains why it had less difficulty than was the case in other Eastern and Central European countries to recover during the post-Stalinist thaw. Thus, while Polish sociology shares certain features with sociology emerging from the rest of the Soviet bloc, it is also unique in its strong identity and its capacity to withstand.

In the case of Indian anthropologists, there is an apparent paradox, since they have long avoided a reality that was overwhelming society: violence. As

the Partition was accompanied by extreme brutalization, as Sikh and Muslim minorities were assaulted, as Naxalites were rebelling, anthropologists, in the tradition of their colonial predecessors, remained focused on tribal groups and the caste system, traditional themes that also constituted the main interest of their British and French colleagues. As Chitralekha argues, the anthropology of violence became a major theme of research some time later, notably with Veena Das, who examined the painful legacies of the Partition; Dipankar Gupta, who explored the militancy of the Sikhs; and Rabindra Ray and Bela Bhatia, who analyzed the Naxalite revolt, among others. Working on these contentious topics was not without risks for their authors, she reminds us. In the present context of exacerbated nationalism, social scientists who do so are exposed to threats and sanctions.

The development of the social sciences in Japan, as recounted by Miriam Kingsberg Kadia, has been no less influenced by their inscription in the national history and also by their transnational conversation with the United States. During the first half of the twentieth century, Japanese social scientists increasingly participated in Western-dominated international networks, a trend that was not reversed by the defeat of Japan and its occupation by the United States military. But the positivist orientation of Japanese researchers left them impervious to the flourishing of critical thinking in the West, whether in relation to the imperialist dark side of their own history or regarding the problems of their own society. The student movement of 1968 led to substantial transformations, particularly with the replacement of the older scholars by a younger generation. Paradoxically, however, many among the latter embraced the conservative idea of Japanese exceptionalism linked to an essentialization of the nation and its culture, which was only abandoned recently with the decline of the Japanese economy.

Moving to a supranational level, that of the European Union, Kristoffer Kropp shows that, contrary to expectations, apparently transnational research instruments may in fact be very locally produced, thus reflecting parochial ideas. Such is the case of the European Values Study, an important moral and political survey designed for the most part by members of two Catholic universities, one in Belgium, the other in the Netherlands, with a conservative agenda based on the idea that European Christian values were being corroded by individualization. Catholic sociology had connections with Christian Democratic parties, and under the veil of its apparent neutral approach, the opinion poll on European values essentially promoted certain moral and political ideas. With time, the survey was modified in an effort to give it a more solid theoretical basis and scientific credibility, but its reli-

gious legacy and conservative affinities never entirely disappeared. Far from depoliticizing the social sciences by removing possible nationalist excesses, supranational institutions can thus repoliticize them in other ways.

Moving one step further, Johan Heilbron examines the meaning and implications of the globalization of the social sciences. Cautioning against a Western and presentist perspective, he reminds us that since antiquity there have been multiple centers of production of knowledge and numerous forms of circulation among them. Concentrating on the specificity of the recent period, Heilbron argues that it is characterized by a shift from the "international" level, marked by the creation of disciplinary associations, to the "global" level, with a more systematic interconnection across the planet facilitated by new media of communication. But far from the hopes of democratization raised by this evolution, Heilbron shows that the core-periphery structure remains and has become even stronger, as revealed by the mapping of citations. Euro-American dominance continues, even if it is challenged here and there by scholarship from the periphery. Moreover, the expansion of transnational circulation has not reduced but rather augmented the hegemony of the United States. For example, the American Sociological Association has three times more members than the International Sociological Association. In the end, instead of enriching the social sciences, their globalization is weakening the weakest among social scientific cultures by impoverishing local knowledge, imposing dominant models, and debilitating public presence. The universalizing of a single scientific language and the homogenizing of publication norms marginalize other modes of expression and reflection. This realist analysis invites social scientists to a engage in a more critical reflexivity on their own practice.

Introducing the third part, Jean-Louis Fabiani wonders precisely whether such critical forms of reflexivity do not often come from outside the social sciences. Mentioning Michel Foucault, Judith Butler, and Edward Said, among many others, he suggests that philosophers, literary scholars, and postcolonial and gender students have shaken the self-evidences of social sciences in past decades. To address this bold question, Fabiani presents three configurations of knowledge, each corresponding to a particular structuration of agents, positions, objects, concepts, methods and social practices in a given moment. Focusing on the French social scientific arena, he examines the making of critical sociology in the 1960s, the triple heritage of Georges Canguilhem, and the critique of the critique of Orientalism. While each case is singular, all of them call for a recognition of the external influence of critical humanities on the social sciences.

From that perspective, India has been one of the most interesting sites of renewal of the social sciences. As analyzed by Peter D. Thomas, subaltern studies has recovered the voices and experiences of subaltern groups, particularly peasants. The influence of this approach has reached far beyond the domain of South Asian studies, opening up new research programs sensitive to oppression and domination as well as to resistance and consciousness. But as Thomas demonstrates, this exceptionally fertile movement, initiated by Ranajit Guha, has not entirely done justice to what had been its intellectual inspiration: Antonio Gramsci's theory of subalternity. Returning to this source via a fresh reading of the latter's works allows us to account for the greater complexity and present relevance of the concept. From this perspective, subalterns are neither positioned against nor outside hegemony or the state; subalternity is the complement of the hegemonic and an integral part of the modern state. This opens new ways of considering subalterns not from the viewpoint of their exclusion, in Partha Chatterjee's words, or incapacity, as argued by Gayatri Spivak, but as one of the realizations of the condition of citizens. Returning to Gramsci thus revives the promise of subaltern studies.

The chapter by John Lardas Modern examines the cognitive science of religion, an extension of an evolutionist theory according to which animals have an adaptive inclination to presume the presence of intelligent agents such as predators even when they are not visible, therefore adopting a behavior of prudence. This capacity of "agent detection" is a survival strategy also among humans, leading them to imagine ghosts, spirits, and gods, according to the anthropologist Pascal Boyer. Religion thus represents an "evolutionary advantage," with humans thinking of these supernatural beings in anthropomorphic terms, yet also as being endowed with superpowers. This model is subsequently mobilized to apprehend the resurgence of religious fundamentalism and combat jihadist terrorism on the basis of a cognitive understanding of their "apparently absurd beliefs." By inscribing religion in the brain, cognitive science therefore annihilates not only its spiritual experience but also its sociological and anthropological interpretation.

With primate sociology, it is the very human subject of the social sciences that disappears. As Nicolas Langlitz notes, this is a particularly fascinating domain, since primate sociology is situated at the interface of the natural and social sciences—indeed, it questions the very existence of this divide. Thus, the discipline's "prosocial turn," which affirmed the preeminence of solidarity and cooperation over selfishness and competition, was essential not only for the understanding of animal life but also for the establishment of common ground between animals and humans. Yet, as shown by the dispute between

a comparative psychologist, Michael Tomasello, and a field primatologist, Christophe Boesch, who belong to the same institution, the debate is still ongoing. It continues between those who consider, like Tomasello, that altruism is what ultimately distinguishes apes and humans, and those like Boesch, who think that both species are capable of sharing and caring. The disagreement is both ideological and methodological, since one of the researchers works in the confined conditions of a lab while the other studies primates in their natural forest environment.

The most recent critique of the social sciences, posthumanism, is also the most deliberately radical, since it undermines the foundations not only of the social sciences but also of what is sometimes designated more broadly as the human sciences so as to include the humanities. Although it is an extraordinarily heterogeneous movement, in which little commonality can be found between the idea of the extension of the human via biological mutations, bodily prosthesis, or artificial intelligence, and the defense of the nonhuman world, be it animals, plants, nature, objects, or the planet, the core of posthumanism, according to Didier Fassin, has two components. First, it is a rejection of anthropocentrism, understood as both an epistemological and a moral critique of the centrality and superiority of human beings. Second, it is a dismissal of a series of dichotomies that have nourished a long tradition of thinking, such as subject/object, self/other, culture/nature, or mind/body. While it has been initially developed within literary, gender, and animal studies as well as within philosophy, anthropology is a latecomer to what is designated as its "ontological turn." Within a particularly complex and disparate field, it is possible to distinguish a soft posthumanism, whose ethical dimension invites humans to care for nonhumans, and a hard posthumanism, which renounces the principle of a common humanity or even speculates a dehumanized world. In both cases, the ambitious posthumanist project is at risk of relinquishing history and politics at the very moment when their importance has to be recognized to address the numerous threats that human beings, the most vulnerable in particular, are facing.

There are thus many reasons why a reflexive and critical—but sympathetic—inquiry into the social sciences is not only important but also timely. The world is rapidly changing, with deepening inequalities, political uncertainties, demographic instabilities, and environmental perils, as well as ever more invasive forms of surveillance and subject formation, which renders the sorts of critical knowledge produced by the social sciences all the more essential. It is just as essential that scholars continue to investigate the ways in which social science emerges from and sometimes contributes to social pathologies. The

social sciences have once again come under internal and external pressures—from cognitive sciences broadly speaking and from reinvigorated positivist social sciences as well as from politicians who reject the very idea of studying, analyzing, interpreting, or explaining human social existence. As the scientization of the social proceeds apace, in multiple new forms, it remains as crucial as ever to understand the scientific as well as the social aspects of this relationship, which calls for the critical awareness that can be provided by a social science of the social sciences.

Notes

The Institute for Advanced Study has generously provided the space and time to develop the fecund and friendly exchanges from which this volume stems. In particular, we want to thank Donne Petito, for having facilitated our work all year long; Laura McCune, for organizing our final workshop; and Munirah Bishop, for her careful copyediting of the manuscript. The two anonymous reviewers have provided invaluable comments that have been critical to the revision of the manuscript, and we are grateful to them for their engagement with our collective work as well as to Kenneth Wissoker for his early expression of interest in it.

1 See Elias 1956. According to Elias (1956, 227), involvement and detachment "seem preferable to others which like 'subjective' and 'objective' suggest a static and unbridgeable divide between two entities 'subject' and 'object.' . . . A philosopher once said, 'If Paul speaks of Peter he tells us more about Paul than about Peter.' One can say, by way of comment, that in speaking of Peter he is always telling us something about himself as well as about Peter. One would call this approach 'involved' as long as his own characteristics, the characteristics of the perceiver, overshadow those of the perceived. If Paul's propositions begin to tell more about Peter than about himself the balance begins to turn in favor of detachment."

2 Foundational studies by Wagner and his collaborators (Wagner 1990; Wagner et al. 1991), focused on relations between the social sciences and states or policy-making.

3 Camic, Gross, and Lamont (2011), for example, has sociologists as editors and as the majority of its contributors. It is more common to focus on a single discipline—e.g., Stocking 1968; Fabiani 1988; Mirowski 1989; Park Turner and Turner 1990; Hands 2001; Calhoun 2007; Herman 2009; Heilbron 2015; Dayé and Moebius 2015.

4 For studies of the human and social sciences that break with methodological nationalism, see Pollak 1979; Gerhardt 2007; Heilbron, Guilhot, and Jeanpierre 2008; Steinmetz 2010; Pérez 2015; Baring 2016; Boldyrev and Kirtchik 2016; Kropp 2017.

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disciplines in the making

PART ONE

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1

concept-quake

From the History of Science to the Historical Sociology of Social Science

GEORGE STEINMETZ

History *must* itself resolve the problem of history, knowledge *must* turn its sting against itself.—FRIEDRICH NIETZSCHE, *VOM NUTZEN UND NACHTHEIL DER HISTORIE FÜR DAS LEBEN*

The social history of social science, so long as it is also considered a science of the unconscious . . . is one of the most powerful means of distancing oneself from . . . the grip of an incorporated past which survives into the present.—PIERRE BOURDIEU, "A LECTURE ON THE LECTURE"

All sociology worthy of its name is "historical sociology."—C. WRIGHT MILLS, *THE SOCIOLOGICAL IMAGINATION*

THE HISTORY OF THE SCIENCES has slowly given rise to a historical sociology of the social sciences. There are now professional associations for the history of the social sciences, dedicated journals in English, German, and French, and a growing body of monographs, taking various forms: individual biographies; studies of schools, institutions, generations, and subfields; international comparisons and transnational studies; and handbooks and edited collections like the present one. Yet one should not imagine that this

is a well-established area of study. The emergence of the practice of studying the social sciences historically and sociologically was the result not of a quasi-natural evolutionary process but of a series of conceptual ruptures, or concept-quakes.[1] These intellectual turning points have reconfigured the contextual preconditions that shape historical writing on the social sciences.

This chapter will use these concept-quakes as a starting point for asking a set of historical, theoretical, and philosophical questions about writing on the history of social science. When and how did the history of social science emerge? How have analysts explained the genesis, development, forms, and contents of the social sciences? What political, ethical, and metascientific goals have scholars pursued in writing the history of social science? And what are the ultimate contributions, the promises, of this research?

First I briefly examine the evolution of writing on the history of the natural sciences.[2] I then turn to the emergence of more contextual and ultimately sociological approaches to the history of science. Several clues pointing in this direction already emerged in the writing of Hegel and Marx, whose ideas, taken together, constitute the *first* concept-quake.

The next important development occurred in the first half of the twentieth century with the invention of the sociology of knowledge. This is the *second* concept-quake. The sociology of knowledge looked beyond the capitalist contexts of knowledge emphasized in Marxist accounts to include everything from the state to religion. Relations between society and knowledge were analyzed as reciprocal rather than unidirectional ones.

The main reason for the backlash against the sociology of knowledge among American sociologists and postwar German sociologists was the perceived threat to absolute ethical values and objective scientific truth. The early writing of the American sociologist of science Robert K. Merton was linked to his antifascist democratic politics (Hollinger 1996), and while Merton was open to some Marxist ideas, he was also at the center of the negative response to the sociology of knowledge more generally. Merton's own work after World War II became narrower, less historical, and more focused on the "middle-range" level, as it adapted itself to professional academic sociology (Sica 2010). The social scientific response to the sociology of knowledge was the development of a "Mertonian" sociology of science (Barber 1990, 11), which avoided the dangers of relativism, explaining the *contents* of science sociologically by focusing on scientists' values and "institutionalized arrangements," competition and stratification, evaluations and awards, and publications and citations, and adopted methods of citation analysis and "content analysis"—reducing texts to data (Merton 1977, 22–23).

The *third* concept-quake was the emergence of a historical sociology of the social sciences that took seriously the analysis of texts and intertextuality as well as their social contexts, at all scales of analysis. This program was actually announced in 1959 by Merton, who now presented a framework for the "comparative investigation of sociology in its social contexts" (Merton 1959, 22) that integrated textual analysis ("the historical filiation of ideas considered in their own right"); the immediate sites of knowledge production ("the social processes relating the men of science"), and macro-level contexts ("the structure of the society in which it is being developed"). Not coincidentally, Merton's Columbia University colleague C. Wright Mills had been examining the sociology of US sociology in various publications, culminating in *The Sociological Imagination,* which was also published in 1959. There Mills moved from first exploring sociologists' ideas and mapping the polarized intellectual structure of the disciplinary field, to a meso-level analysis of educational and scientific institutions, culminating in discussion of macro-level structures, including informal US imperialism, that were shaping social science. The genie was now out of the bottle: social science could be analyzed historically and sociologically in ways that combined all of the aspects that previous writers had sorted into the intellectual histories and the so-called internal and external contexts of science, overcoming that distinction.

The next section discusses several strands of writing on the history of social science that have appeared since this third caesura. In studies of ancient Greek thought, European Marxism, and American sociology, Merton's neo-Marxist student Alvin Gouldner (1965, 1970, 1980) integrated the three analytic levels that Merton had discussed in 1959. A different approach to the historical sociology of social science emerged from the French historical school of epistemology (Bachelard, Koyré, Canguilhem). A third set of approaches grew out of, and in reaction against, the Mertonian sociology of science: science and technology studies (STS), the sociology of scientific knowledge (SSK), and actor-network theory (ANT). The useful elements of these latter approaches, I will argue, can be integrated with Bourdieu's field-theoretical approach, while their problematic aspects should be jettisoned, including tendencies toward ontological empiricism, an epistemological stance of anticontextualism, and a normative stance of axiological neutrality that opposes critique and fails to seriously engage with issues of methodological reflexivity.[3]

I then discuss of the Bourdieusian historical sociology of the social sciences, which represents the most recent concept-quake. This Bourdieu-inspired research integrates (1) intellectual history, with close attention

to texts and intertexuality; (2) a theoretically more adequate and realistic framework for analyzing the meso-level realm of scientific fields; and (3) the full array of macro-level or "external" contexts impinging on scientific fields. This perspective is far from static and is better characterized as "neo-Bourdieusian." In the spirit of this essay, the Bourdieu-inspired research certainly cannot be described as the final telos of the intellectual history described here. Yet it offers the best current response to the aporias of social theory (structure vs. agency, social change vs. social reproduction, rational vs. irrational explanations of action, explanation vs interpretation, etc.), while simultaneously placing the history of sociology at the center of its understanding of scientific reflexivity.

The last part of the chapter discusses four additional uses of the history of social science, in addition to reflexive vigilance (Bourdieu 2022): (1) disciplinary anamnesis; (2) illuminating historical transitions; (3) understanding the conditions for the flourishing of knowledge, including social science; and (4) explaining modern social processes that are codetermined by social science.

The Development of the History of Science

The historiography of science is an "ancient pursuit" that was "born as the history of ancient science," specifically mathematics and medicine (Daston 2001, 6842; Zhmud 2006). This history of science remained part of science itself through the nineteenth century, and it was mostly written by scientists themselves. Until well into the twentieth century, most of this writing was triumphal and progressivist (L. Laudan 1977), taking the form of a grand narrative whose dramatis personae were scientific men of genius. The earliest histories of science grew out of *heurematography*, the study of *protoi heuretai*—scientific and technical inventors and discoverers (Zhmud 2006). Members of the Peripatetic school wrote histories of the sciences, closely following "Aristotle's favorite idea of all arts and sciences as gradually approximating to perfection," and carrying out a program he set in motion in the last decade of his life (Zhmud 2006, 15, 140). There was a shift in the postclassical era from the study of "who discovered what" and "the invention of various sciences" to "the transmission of knowledge from one people (or author) to another," but this orientation was still compatible with a cumulative view of science (Zhmud 2006, 149, 297). Histories of science in the Renaissance took the form of genealogical histories and biographies of scientists. Jean Bodin's *Methodus* (1576) offered a history of science rooted in belief in the progress of knowledge

(Keller 1950, 237–39). The earlier history of *protoi heuretai* resurfaced as the study of the *ars inveniendi* (Leibniz, cited in Kragh 1987, 5).

The history of science in the Age of Enlightenment was "unequivocally depicted as the history of progress" and "was not in a position to recognize science as a proper historical phenomenon" (Kragh 1987, 4, 6). Some authors in the French Enlightenment and some Scottish moral philosophers were "aware that a wide range of social, economic, and political factors shape . . . human consciousness," but this "did not result in a more systematic examination" of the contextual questions that were at the center of later historical sociological thinking on the subject (Stehr and Meja 2005, 2). An exemplary Enlightenment work is Condorcet's *Esquisse d'un tableau historique des progrès de l'esprit humain* (1795), a history of science intended to demonstrate reason's power to transform society. Condorcet saw historical progress "as an essentially unilinear, incremental process, dependent upon the steady accumulation and ordering of knowledge," with new technologies leading to advances in knowledge and the dismantling of prejudices (Baker 1975, 375). Fontenelle (1790, 42) was similarly confident that "there is an order that regulates our progress." Savérien explained that he had expunged from his *History of the Progress of the Human Spirit in the Exact Sciences* all of the scientific errors committed by earlier scholars in order to focus attention on those who had "contributed to the veritable progress of Science," since "what is more splendid, in effect, than a chain of immutable and eternal truths!" (1766, 1: vii–viii). Priestley wrote around the same time that he adhered to the rule in writing the history of science "to take no notice of the mistakes" (1775, xi). This tradition continued into the twentieth century, when the English mathematician and philosopher Alfred North Whitehead intoned that a "science which hesitates to forget its founders is lost" (1917, 115).

Many historians argue that science proper—science "as we now know it"—is "an endeavor born of the nineteenth century" (Dear 2012, 197), and the same can be said of histories of science as "distinct from scientific publications" (Daston 2001, 6842). There was a marked increase in the number of histories of science published in the 1800s as compared to the previous century (see table 1.1). According to one estimate, "over a thousand substantial histories of science" were published before 1913 (R. Laudan 1993, 1). The narrative of science as surging inexorably forward continued to dominate most works during the nineteenth century, which were written in the frameworks of French positivism or English Whig historiography (McEvoy 1997; Yeo 1991).

Table 1.1. Books on History of Sciences in All Languages

MATH	1700–1799	204
	1800–1899	770
	1900–1999	7,119
MEDICINE	1700–1799	1,065
	1800–1899	2,538
	1900–1999	19,699
PHYSICS	1700–1799	106
	1800–1899	430
	1900–1999	4,819

Source: WorldCat, www.worldcat.org, accessed August 4, 2022

Two of the most influential nineteenth-century influential historians of science, offering very different interpretations of that same progressive history, were Auguste Comte and William Whewell. The British polymath Whewell greatly admired Kantian philosophy, which pushed his thinking away from a more sociological analysis of science. He regarded past science "as a story of heroic individuals—usually great *men*—wresting secrets from Nature" (Yeo 1993, 5). As for Comte, he was a "prophet of progress," for whom the highest forms of progress were situated in the realm of science and morality (Pickering 2009, 356). According to Comte, "On ne connait pas complètement une science, tant qu'on n'en sait pas l'histoire" (1852, 66). Comte argued that the sciences all developed following an invariable Law of Three Stages (1855, 25):

> From the study of the development of human intelligence, in all directions, and through all times, the discovery arises of a great fundamental law, to which it is necessarily subject, and which has a solid foundation of proof, both in the facts of our organization and in our historical experience. The law is this:—that each of our leading conceptions—each branch of our knowledge—passes successively through three different theoretical conditions: the Theological, or fictitious; the Metaphysical, or abstract; and the Scientific, or positive.

For Comte, the sciences were arranged in a hierarchy, differing in terms of their decreasing generality and the increasing complexity of their corresponding objects. "Each science depended on the preceding one and prepared

the way for the one that came after" (Pickering 2009, 420). Comte also anticipated a period in which scientific development would be managed by political power, one in which sociology, as the most complex science situated at the pinnacle of the hierarchy, would play a central role in directing the lower sciences. Insofar as Comte argued for relations of mutual dependence between specific types of knowledge and specific forms of social structure (Znaniecki 1940, 2), he resembled Hegel (see below) and anticipated the later sociology of science.

Ernst Mach, Paul Tannery, and George Sarton are transition figures between these nineteenth-century historians of science and the twentieth century. Mach believed that the study of "the rejected and transient thoughts" of scientists could be "very important and very instructive," as it "not only promotes the understanding of that which now is, but also brings new possibilities before us, showing that which exists to be in great measure conventional and accidental" (quoted in Kragh 1987, 10). At the same time, Mach subordinated his historiography to his philosophy of science, which was one of the building blocks for twentieth-century epistemological positivism (Steinmetz 2005). The French mathematician Tannery established "the vision of an *histoire générale des sciences* that should be not merely the separate histories of the particular sciences but a history of scientific thought studied in the context of society and ideas" (Crombie 1963, 1). Sarton played a key role in establishing the history of science as a discipline by creating the journals *Isis* and *Osiris.* His own approach was primarily internalist and progressivist, but Sarton mentioned some "economic and social factors," albeit in "a subordinate role" and as having "no deep influence on the life of science" (Frängsmyr 1973, 106; Kragh 1987, 18).

While these nineteenth-century historians did not leave the production of natural science completely untheorized, neither did they propose fully contextualizing accounts. There is an important exception to this rule in the nineteenth century, however, and it was located in the historiography of the *human* sciences—the specifically, the history of philosophy—as pioneered by Hegel.

The First Concept-Quake: Contextual Readings of Science by Hegel and Marx

Hegel and Marx were perhaps the first to approach knowledge and science, especially the human and social sciences, in a thoroughly contextualizing manner. Hegel *rehistoricized* the sciences, including philosophy itself

(Jaeschke 1993). Hegel lectured more frequently on the history of philosophy than any other topic. Clearly, these lectures were aimed at justifying Hegel's own system and at legitimating philosophy in general. In those respects they were nothing new in methodological terms. After all, others before Hegel had tackled the history of philosophy, including Stanley (1656), Brückner (1791), and Kantians such as Tiedemann (1794) and Tennemann ([1816] 1832). In its main aspects, however, Hegel's approach was completely novel. For Hegel, the history of philosophy paralleled world history itself, as "the medium of the development of the world spirit" (Jaeschke 1993, xvi). Hegel argued that each generation received all that each past generation had produced in science and in intellectual activity" as "an heirloom." All of this was then "changed, [as] the material worked upon" was "both enriched and preserved at the same time" in dialectical fashion (Hegel 1995, 1:3). Every past philosophy therefore "has been and still is necessary," and "thus, none have passed away, but all are affirmatively contained as elements in a whole" (Hegel 1995, 1:37). Philosophers needed to study "the essential ideas of philosophers in the past" because they "are all too prone to forget the origins and context of their own doctrines" (Beiser 1995, xxvii, xxviii). In sum, "the course of history does not show us the Becoming of things foreign to us, but the Becoming of ourselves and of our own knowledge" (Hegel 1995, 1:4). Contrary to views that wanted to discard past science or study it only to understand the source of errors, Hegel argued that knowledge of scientific history was an essential part of (scientific) self-consciousness.

This line of reasoning still bore some resemblance to Kant's vision of the history of philosophy as a chronicle of the progress of reason itself, but Hegel broke with Kant in insisting that each philosophical school had to be understood on its own terms and "in the context of its own time, as the self-awareness of the ideals and values of its age" (Beiser 1995, xv): "There is a definite Philosophy which arises among a people, and the definite character of the standpoint of thought is the same character which permeates all the other historical sides of the spirit of the people" (Hegel 1995, 1:53). One should not assume that one's own "principles are somehow natural, divine, eternal, or innate, when they are in fact only the product of a specific time and place, the self-awareness of the values and ideals of a specific culture" (Beiser 1995, xxvii). Hegel's contextualism was different from twentieth-century versions. He was *not* arguing that "political history, forms of government, art and religion" were "related to Philosophy as its causes"; rather, he was saying that they had the "same common root" as philosophy, namely, the *Weltgeist* or spirit of the time (Hegel 1995, 1:54).

Hegel's historicist approach was emulated by German historians of other disciplines, who began to examine their own past "for its own sake, to see events in context, and to fathom the deeper motives for actions" (Beiser 1995, xi). In this respect, the German history of science partly diverged from the British and French versions in the nineteenth century. The book series *Geschichte der Wissenschaften in Deutschland* published studies of the history of political science (Bluntschli 1864), legal science (Stintzing 1880–1910), and other humanities and social science disciplines. Many of these books followed a conventional approach, focusing on the key doctrines, discoveries, and personalities, without making an effort to connect them to social contexts. Yet a few authors pursued a more "Hegelian" line. As Lindenfeld (1997, 162) points out, the "number of lectures on the history of economic thought" increased sharply in Germany in the wake of the 1848 Revolution. Wilhelm Roscher, a founder of the historical school of economics, explored the relations between economic thought and politics, arguing that Fichte's entire philosophy, including his economics, "bore the unmistakable imprint of the democratic-revolutionary era"—that is, the French Revolution (Roscher 1874, 639).

The most famous Left Hegelian, Karl Marx, presented an analysis of science that veered between an Enlightenment-style vision of science marching inevitably forward and a proto-sociological approach. Like Condorcet, Cuvier, and d'Alembert, Marx frequently suggested that science develops autonomously and is not shaped in fundamental ways by its social and historical contexts. This is true even if those contexts provide necessary support for science. The progression of science is congealed in the "forces of production," which undergird the epochal rise and fall of entire class structures and superstructures. This is the essence of Marx's thesis of the "primacy of the productive forces" (G. A. Cohen 2001, chap. 6). The forces of production—and therefore science itself—are the opposite of epiphenomenal. They are the unmoved mover, the unstoppable conatus of history.

Alongside this dramatic heightening of the Enlightenment glorification of science, however, Marx allowed that natural science was socially determined in several different ways. First, as a form of thought, science has to be influenced by material social relations, since "the ideal is nothing but the material world reflected in the mind of man, and translated into forms of thought" (Marx 1976, 102). Second, capitalist social relations cause technology to advance dynamically by speeding up cycles of accumulation and generating new needs. Capitalism therefore stimulates science above and beyond any putative human baseline orientation toward material improvement (G. A. Cohen 2001; Mulkay 1979, 5). Third, Marx's theory of history suggests that social structures

can sometimes *fetter* the advance of technology, and presumably science as well. Technology's advance is hobbled at particular historical junctures by class relations; this leads to revolutionary ruptures and the replacement of old class relations with new ones (Marx, in Marx and Engels 1978, 3–6). A fourth way in which social context encroaches on science involves the translation of science into technological applications. In *Capital* Marx writes in general terms about the "separation of the intellectual powers of production from the manual labour, and the conversion of those powers into the might of capital over labour," a process that is "finally completed by modern industry erected on the foundation of machinery." The "special skill of each individual insignificant factory operative vanishes as an infinitesimal quantity before the science . . . embodied in the factory mechanism," which embodies the power of the "master" (Marx and Engels 1978: 409). Later Marxists developed these ideas into theories of the separation of science from technology (Hessen [1931] 2009; Zilsel 1942), a separation taking dramatic forms such as automation, Taylorism, operations research, numerically controlled machine tools, and digital surveillance capitalism (Noble 2011; Zuboff 2019).[4] Marx thus acknowledged in various ways that science and technology were, in fact, shaped by social factors.

It is equally important that Marx follows Hegel in analyzing the human sciences "sociologically." Here too Marx sometimes expresses a more conventional view of the human sciences as eventually converging with the natural sciences, like Wilson (1998) and other advocates of "consilience." Yet this idea is contradicted at numerous points in Marx's writings, which can be mined for a rudimentary sociology of social knowledge and an antinaturalistic philosophy of science.[5] According to Marx and Engels, the history of ideas cannot be "torn away from the facts and the practical development fundamental to them" but is grounded in modes of production, in the "real premises . . . [and] real individuals, their activity and the material conditions under which they live" (Marx and Engels 1978, 167, 149). Intellectuals in general belong to the ruling class, they argue, but there is a "division of mental and material labour" *within* the bourgeoisie, such that "inside this class one part appears as the thinkers of the class (its active, conceptive ideologists, who make the perfecting of the illusion of the class about itself their chief source of livelihood), while the others . . . have less time to make up illusions and ideas about themselves" (Marx and Engels 1978, 173). The "individuals composing the ruling class," therefore, "rule also as thinkers, as producers of ideas" (Marx and Engels 1978, 173). Academic intellectuals are mainly producers of "ideology"—that is, representations in which "men and their circumstances" are not described accurately but "appear upside-down as in a *camera*

obscura" (Marx and Engels 1978, 154). The historians in each epoch "*share the illusion of that epoch*" (Marx and Engels 1978, 165). Engels described socialist theory itself as "a reflex, in thought," of the fundamental "conflict between productive forces and modes of production," although this was an exceptional form of thought that somehow escaped distortion, inversion, and illusion (Engels 1910, 97). Accurate social knowledge is therefore possible, given the proper political orientation or social positionality—an argument developed further by Lukács and later by feminist standpoint theory (Harding 2003) and postcolonial theory (Agblémagnon 1965).

Marx and Engels therefore argue in various writings for the existential connections between science and the social conditions in which it arises. These connections do not need to take the form of mirroring or reflection but may take less direct forms. They suggest several ways in which science may *fail* to correspond to the mode of production or class relations. First, the cleavage between capitalists and ideologists within the ruling class may sometimes "develop into a certain opposition and hostility" (Marx and Engels 1978, 173). Second, philosophy sometimes registers *emerging* contradictions between social relations and "existing forces of production." Philosophical ideas sometimes *compensate* for social realities rather than simply legitimating or mirroring them. In Germany, "mental developments" such as young Hegelianism "serve as a substitute for the lack of historical development" (Marx and Engels 1978, 169). Such anticipatory philosophy may also arise when social relations inside one nation come into contradiction with "the practice of other nations" (Marx and Engels 1978, 159). This argument points to Marx's effort to situate intellectual production in multiscalar geospaces that encompass local, national, and international levels. In the afterword to the second edition of *Capital,* Marx connects national and historical variations in economic theory to differing contexts of social class formation and struggle, and suggests that the international migration of ideas can lead to disjunctures between ideas and their immediate social context (Marx 1976, 95–98). A third hypothesis concerns the relative autonomy of cultural production. Near the end of his life, Engels hypothesized that some forms of culture were more autonomous from capitalism than others, writing, "The further removed is the sphere we happen to be [in] from the economic sphere and the closer to the purely abstract, ideological sphere, the more likely shall we be to find evidence of the fortuitous in its development, the more irregular will be the curve it describes."[6]

Social theorists have tended to reject Marx's theory of ideology as tying culture, politics, and science too closely to political economics. At the same

time, however, Marx and Engels followed in Hegel's footsteps in pouring the foundations for a sociology of social science. They did this by arguing that social thought is shaped by social determinants, and that it evolves in international as well as national and local arenas, and that it can be compensatory, anticipatory, legitimating, or relatively autonomous of social reality. It is not surprising, then, that Karl Mannheim, J. D. Bernal, Edgar Zilsel, Joseph Needham, and other pioneers of the historical sociology of knowledge and science traced their intellectual lineage to Marx. As Robert Merton wrote in 1949, "Marxism is the storm-center of *Wissenssoziologie*" (1949b, 462)—shortly before he turned against Marxism, at least in print.

The Second Concept-Quake: *Wissenssoziologie* (the Sociology of Knowledge)

Hegel and Marx provoked the first concept-quake by adumbrating a contextual, historicist account of science, social science, and thought. They were not alone in the nineteenth century, however. Other signs of a critical approach to science saw the light of day, especially in Central Europe. One source of this critique was the intellectual radicalization of German idealism and Romanticism in response to the Napoleonic Wars. This movement was analyzed by Karl Mannheim in his brilliant habilitation thesis on conservatism (Mannheim 1926) as having nourished a spectrum of philosophies skeptical of universalism, rationalism, and the Enlightenment. The previous section discussed the manner in which Hegel combined an account of the progress of philosophy-qua-reason with a historicizing view of influence of historical and geographic contexts on philosophical ideas. Nietzsche also contributed to the idea of a sociology of knowledge. Nietzsche's supposed irrationalism is linked to his early criticism of science as a threat to culture and his ethical and epistemological perspectivalism. At the same time, Nietzsche represents a continuation of Marx, insofar as his works endeavor to identify "the historical and social roots from which particular perspectives, ideas, and interests emerge" (Payne 2019, 204).

Skepticism about science reached a crescendo in the years before and after World War I, permeating the arts, philosophy, and politics. According to Gaston Bachelard, there was a "devalorization of objective and rational life" in interwar Europe more generally, "which . . . declare[d] science to be bankrupt" ([1938] 2002, 186). The apocalyptic industrial carnage of World War I, and the crises that followed in central Europe—hyperinflation, the collapse of empires, mass statelessness, the rise of fascism—fed this rising fire.

Stefan George, the charismatic figure whose intellectual circle in Weimar Germany included one of the founders of the sociology of knowledge, Max Scheler, proclaimed that "there is no path leading from me to science" ("Von mir aus führt kein Weg zur Wissenschaft"; Salin 1948, 256; Breuer 2012, 1168). The dominant intellectual tendency in Weimar Germany "was a neoromantic, existentialist, 'philosophy of life,' reveling in crisis and characterized by antagonism toward analytical rationality generally and toward the exact sciences and their technical applications particularly" (Forman 1971, 4). German sociology, the discipline in which contextual approaches to analyzing knowledge and science were best represented, understood itself as a "science of crisis," or *Krisenwissenschaft* (Frisby [1983] 1992, 107ff.; Weiß 1995).

The sociology of knowledge represents the second concept-quake in the emergence of a historical sociology of social science.[7] Scheler presented himself as an anti-Marxist, but as Bukharin noted, Scheler in fact borrowed "a number" of his "basic principles" from Marxism (1931, 17n13). Although Scheler "flatly repudiates all forms of sociologism," Merton noted that he also "indicates that different types of knowledge are bound up with particular forms of groups," including social classes (Merton 1949b, 472). In his famous book *Ressentiment* ([1912] 1972), for example, Scheler argued that we may find that "a particular literary work" (or work of social science) "is the product of a deeply rooted *resentment* that the author has for certain social strata" but that we must then seek to "discover the sociological genesis of this resentment within the system of social stratification with which the author found himself confronted" (De Gré 1941, 111). Scheler argued that "even some quite formal types of thought and valuation vary according to social class" (Scheler 1926: 204–5). Among the thought forms that took opposing forms among lower and upper classes, Scheler counted pragmatism versus intellectualism, milieu-theoretical thought versus nativist thought, and an optimistic view of the future combined with pessimistic retrospection versus a pessimistic view of the future combined with optimistic retrospection of the "good old days" (Scheler 1926, 204–5). Finally, Scheler argued that modern science emerged from the combination of "two social strata that were originally separate": a group of educated upper classes involved in "free contemplation" and another "class of people who have rationally accumulated the experiences of work and craftsmanship" (Scheler 1925, 142). This thesis about the origins of science was subsequently repeated by a number of Marxists, including Zilsel, usually without attribution.[8]

The aim of the sociology of knowledge, according to Karl Mannheim, was to trace the connections between "the social position of given groups and

their manner of interpreting the world." It was significant that Mannheim defined this perspective as taking both the *forms* and *contents* of knowledge as its objects and that he was interested in the reciprocal relations between knowledge and the social world. Mannheim credited Marx with the "uncovering" (*Enthüllung*) of the class interests behind ideologies and analyzing culture's reification (*Verdinglichung*) under capitalism (Mannheim [1929] 1959, 277, 309–10).[9] Mannheim credited Nietzsche with ascribing "certain modes of thought" to aristocratic and democratic cultures and analyzing certain ideas as instruments of a will to power (Mannheim [1929] 1959, 310). A third influence on Mannheim was the Budapest "Sunday Circle," also known as the Lukács group, whose discussions during World War I circled around the idea of how knowledge depended on social position (Kettler 1971, 37; Karádi and Vezér 1985; Gluck 1985; Gabel 1991). Mannheim went beyond Lukács and Hungarian Marxism, however, in attending to the role of "generations, status groups, sects, occupational groups, schools, etc.," alongside capitalism and social classes (Mannheim [1929] 1959, 276). He also went beyond most Marxists in refusing to draw a sharp distinction between science and ideology, and in explicitly analyzing the social determinants and applications of social science (but see Lukács 1954).

What was the place of science in Mannheim's sociology of knowledge? Merton claimed that most students of *Wissenssoziologie*, including Mannheim, "neglected the analysis of the more firmly established disciplines" and exempted "the 'exact sciences' . . . from existential determination" (Merton 1937, 494; 1949b, 470).[10] Yet Mannheim was also accused of making the opposite mistake, namely, arguing that "even scientific thought, and especially in the social sciences," is "inescapably bound up with and 'corresponding' to the social position of the thinker" (von Schelting 1936, 665). This challenge to the objectivity of scientific truth was anathema to most American sociologists and post-1945 German sociologists, and the mini-struggle over Mannheim and the sociology of knowledge constituted an early front in sociology's perennial *Positivismusstreit*.[11] Yet this critique of Mannheim conflated the *philosophy of science*, which distinguishes between better and worse scientific practices, and the *sociology of science*, which seeks to explain the evolution of actually existing science. Mannheim had taken courses with Heinrich Rickert, the leading thinker of the German Southwest neo-Kantian school, for whom the distinction between the human and natural sciences was a central theme (Maquet 1951, 19; Oakes 1987; Köhnke 1991). Mannheim agreed in distinguishing epistemologically between the natural and the human sciences. He does not claim that the exact sciences are completely immune from social

determination, although he allows that they progress over time, in contrast to the "cultural sciences."[12] But these are separate issues: even natural science may be shaped in its empirical development by social factors. Most relevant in the present context is the fact that Mannheim anticipated Foucault's critiques of discipline and governmentality by discussing (in *Man and Society in an Age of Reconstruction*) the ways in which various human and social sciences (pragmatism, behaviorism, psychoanalysis) were being deployed to shape social behavior (Mannheim [1935] 1951).

The first fully sociological account of natural science was presented by Émile Durkheim. In *Elementary Forms of the Religious Life* (1912), Durkheim traced the basic epistemological categories of modern thought, including scientific thought, such as time, space, number, cause, and force, to religious social practices and structures. Durkheim also argued that "modern science was an eminently social thing . . . because it was the product of an extensive cooperation . . . [and because] it involves methods and techniques that are the product of tradition and impose upon workers an authority comparable to that which is invested by legal rules and morals" (Durkheim 1910, 44).[13] This Durkheimian foundation of a *sociologie de la connaissance* can be traced through the works by Halbwachs on collective memory, Granet on the relations between Chinese social structure and the structures of Chinese thought (*La pensée chinoise*), Lévi-Straussian structuralism (*La pensée sauvage*). A full-fledged *sociologie de la connaissance* came into existence in Francophone sociology after 1945 (Maquet 1951; Bastide 1967), while a Francophone *sociologie de la science* had to wait even a bit longer (Pestre 1995; Lamy and Saint-Martin 2015).

Some of the earliest sustained efforts to create a sociology of natural science were carried out by Marxists. The "classic programmatic texts of Marxist historiography of science" are associated with the Soviet delegation to the second International Congress of the History of Science and Technology in London in 1931. The Soviet Union "was the first country in the world to create an institute or university department for the study of the history of science and technology"—the Commission on the History of Knowledge at the Soviet Academy of Sciences (Graham 1993, 137; David-Fox 2016). The commission was initially headed by Vladimir Vernadskii, a non-Marxist geochemist who focused on political and social conditions and religious factors in explaining scientific change while also paying attention to individual genius, as in traditional approaches (Graham 1993, 138). In 1930, Nikolai Bukharin became head of the commission, now renamed Institute for the History of Science and Technology. Bukharin headed the Soviet delegation to the London