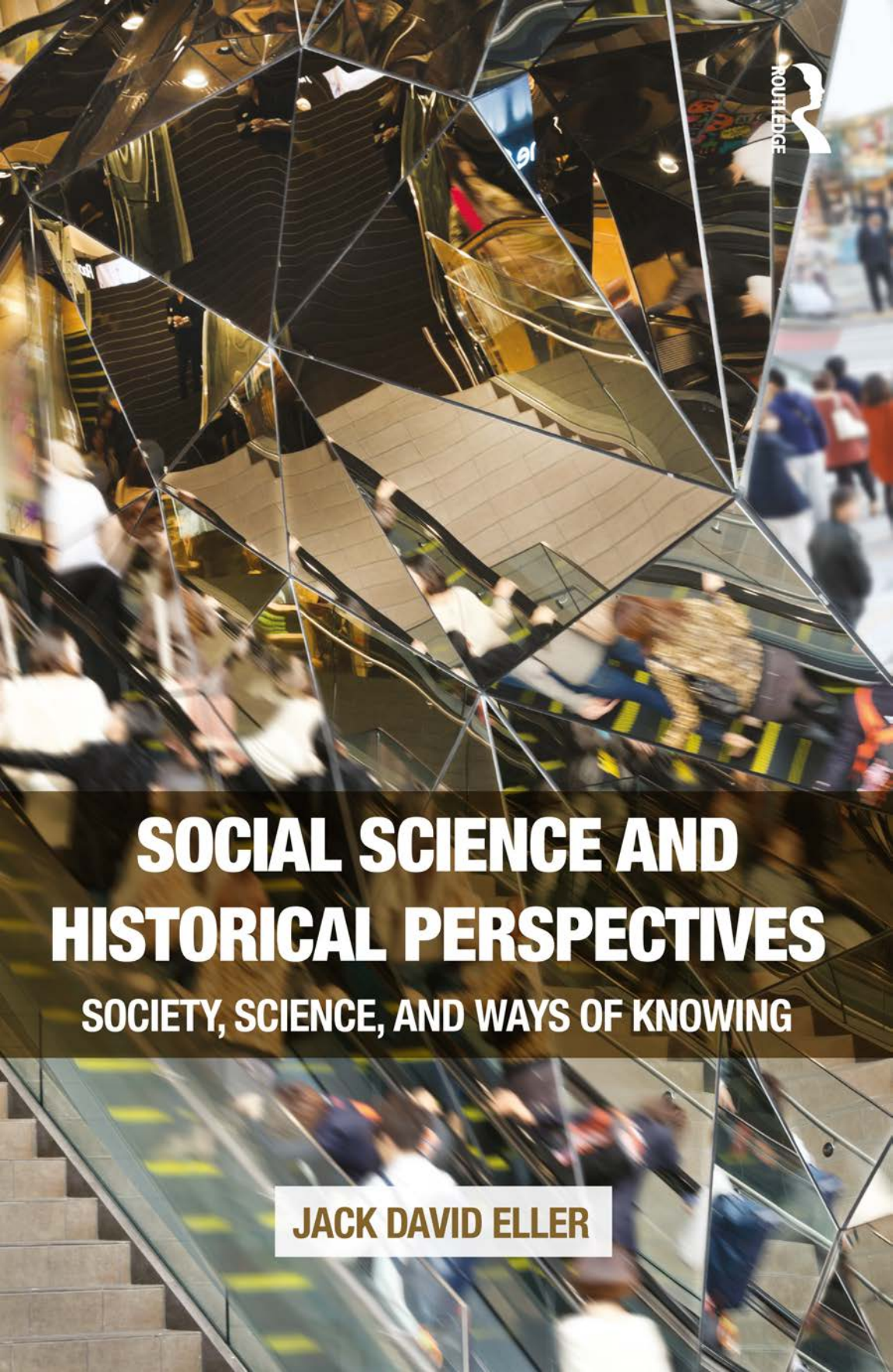
ROUTLEDGE
SOCIAL SCIENCE AND HISTORICAL PERSPECTIVES
SOCIETY, SCIENCE, AND WAYS OF KNOWING
JACK DAVID ELLER

Social Science and Historical Perspectives

> "Eller's book is a logically structured and highly readable overview of the key tenets of various social science disciplines."
>
> —Wendy Rouse, San José State University, USA

This accessible book introduces the story of "social science," with coverage of history, politics, economics, sociology, psychology, anthropology, and geography.

Key questions include:

- How and why did the social sciences originate and differentiate?
- How are they related to older traditions that have defined Western civilization?
- What is the unique perspective or "way of knowing" of each social science?
- What are the challenges—and alternatives—to the social sciences as they stand in the twenty-first century?

Eller explains the origin, evolution, methods, and main figures in each discipline, as well as the literature, concepts, and theories. The chapters also feature a range of contemporary examples, with consideration given to how the disciplines address present-day issues.

Jack David Eller is Associate Professor (Emeritus) of Anthropology at the Community College of Denver, USA. An experienced teacher and author, his other books for Routledge include *Cultural Anthropology: Global Forces, Local Lives* (third edition, 2016), *Cultural Anthropology: 101* (2015), *Culture and Diversity in the United States* (2015), and *Introducing Anthropology of Religion* (second edition, 2014).


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Society, Science, and Ways of Knowing

Jack David Eller

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Contents


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Introduction

Imagine that you were a car salesperson. You could be very successful at selling cars without any knowledge of how cars are manufactured, or how they work internally, or how they were invented in the first place. However, you might be curious to know more about the history and technology of cars, or you might hope someday to own your own car dealership or auto manufacturing plant. You might even have an idea for a better car or an alternative to cars.

Now imagine that you were not a purveyor of cars but of information, that is, a teacher. You could be very successful at teaching information without any real knowledge of how information is made, or how information works, or how the things we know or the particular ways that we organize and transmit information were invented in the first place. However, you might be curious to know more about the history and function of knowledge, or you might hope someday to be a school administrator or to open your own school. You might even have an idea about a better way to teach or run a school or an alternative to existing knowledge- or school-systems.

This book is about the knowledge that we have and teach in what we call the "social sciences." Social sciences are either a sub-type of science or a parallel field to the "natural sciences." They are also typically distinguished from, but also related to, the "humanities." Finally, "social studies" is a particular condensed and simplified version of (some of) the social sciences.

This book is not a presentation on methods for teaching the social sciences or social studies to any particular set of students. There are many books on social science teaching methods. This book is also not a survey of a specific social science, although it does discuss each of the major conventional social sciences. Texts providing "introduction to sociology" or "general psychology," etc. are readily available, and entire college courses serve to introduce students and future practitioners to the various disciplines.

This book does something more unusual, indeed rare, and there are few college courses that attempt precisely what we will attempt here. The best way to think of the project at hand is "sociology of knowledge," that is, the social organization of knowledge-making and knowledge-transmitting.

Knowledge, after all, does not grow on trees, and humans do not simply "find" knowledge lying about in the world around them. Humans have to not only discover but *construct* knowledge; at the very least, we must put facts together to draw conclusions and arrive at generalizations. But we must also perform certain actions to acquire facts and establish standards for *what counts as a fact*. One common action in science is the "experiment," but as we will see soon, not all sciences perform experiments, and experiments are not the only path to scientific knowledge.

Even more than gathering facts and spinning them into generalizations and conclusions (often and ideally "laws"), humans must organize themselves in some way to produce and disseminate knowledge. One familiar way to organize the production of knowledge is the research laboratory. One familiar way to transmit knowledge is the classroom and the academic discipline and department; another is scholarly writing. But these are only the beginning of an incredibly complex and controversial knowledge-construction process.

Obviously, different sciences and disciplines know different things. Indeed, each science and discipline was invented for the purpose of knowing different things. So each is a particular body of knowledge. But much more, each is a particular *way of knowing*. Each has its own language or terminology, its own questions, its own methods, its own literature, and its own disciplinary history. Each is a specific, though not isolated, "knowledge community," and, as scholars often complain, members of one knowledge community tend not to read the work or even talk to the members of other communities. Sometimes, the differences in language and questions make it difficult to talk to each other, and the burden of mastering and keeping up with one's own field leaves little time to follow the developments in other fields.

Science is a very powerful way of knowing. An interesting and important question is whether science is the *only* way of knowing. There are those who insist that only scientific knowledge *is* knowledge; we can, for instance, know scientific things about music or art, but music and art themselves contain and convey no knowledge. Others counter that music, art, literature, and perhaps religion have their own knowledge and their own unique and valuable ways of knowing.

Still more narrowly, there are also those who contend that only the natural sciences produce knowledge, in the form of theories and laws. Such people may reject the "social sciences" as poor imitations of "real" or "hard" science. Or social scientists may try to make their disciplines more "scientific" to meet the high standards of "hard" science. Others, though, may insist that social sciences do not have to copy natural sciences in language or method, arguing instead that the subject of social sciences (human beings and social action) is so different from the subject of natural sciences (matter and physical processes) that the social sciences demand their own approach.

Then there are those who assert that science is itself not a universal but a culturally-specific way of knowing. In particular, they contend that science is a Western or European way of knowing, one that discounts non-Western knowledge, whether that is knowledge from other civilizations (for instance, Asian, Indian, or Middle Eastern) or from the world's many indigenous peoples. Critics accuse Western science of dismissing these other bodies of knowledge and ways of knowing as non-scientific, as "traditional" at best and as mythological or false at worst. Non-Westerners and indigenous people often answer science's complaint by reminding us that science, despite its many successes, has also had some profoundly negative effects on the natural and social world.

Finally, there are those who say that the current way of organizing knowledge—the contemporary academic disciplines, the existing school and university systems, and the traditions of article writing and book publication—are not the best way to construct and transmit knowledge. They may call for new research and information-sharing methods, perhaps using the Internet and technology or social networking media. They may urge the use of non-textual forms of knowledge such as video and photography. They may recommend more collaborative work, between practitioners of the same discipline, practitioners of different disciplines, or even members of different cultures and civilizations. At the extreme, they may challenge us to rethink existing disciplinary boundaries altogether, proposing new transdisciplinary ways of knowing or even the dismantling and reinvention of disciplines and institutions altogether.

While an ambitious project, the reinvention of the social sciences is not as preposterous at it sounds at first hearing. The truth is, as we will stress in this book, *the social sciences were invented very recently*, which means (1) that they have not always existed in their present form and therefore (2) that they need not always exist in their present form. In fact, we know that virtually all organizations and institutions are in an almost continuous cycle of self-examination and self-invention these days. Organizations and institutions are encouraged and required to assess themselves, to reconsider their policies and processes, to "think outside the box" and to incorporate perspectives from often neglected and invisible constituencies like subordinated races, ethnicities, languages, genders, religions, age groups, and so on. In other words, just because we have done things a certain way in the past—whether "we" are a business, a school, a country, or an academic discipline—does not mean that we must continue to do things that way.

Features of the Book

This book contains nine chapters, each of the middle seven chapters dedicated to one of the conventional social sciences. (Note that not all scholars agree on which fields count as "social sciences," and different colleges and universities arrange their departments differently.) We begin with a chapter exploring more deeply the construction of social knowledge and the recent invention of the contemporary social sciences, and we end with a chapter considering challenges to the received order of social science—and of science itself—in the form of alternative ways of knowing.

Each of the discipline-specific chapters includes a variety of kinds of information about that discipline. Key professional organizations and journals are listed, and the history of the discipline is discussed. The major figures who shaped the discipline into its current form are presented, as well as the central theoretical schools of thought and, when appropriate, the diverse "careers" offered within that discipline. The current predominant concepts and methods of the field are also described.

Readers will note that some thinkers have been foundational to more than one discipline, like Karl Marx or Adam Smith. Further, all current Western social sciences owe a debt to ancient thinkers like Plato and Aristotle, and these social sciences all emerged out of a common tradition of philosophy and theology, which marked them and still marks them today. Indeed, it will become clear that a driving concern, beyond merely learning true things and acquiring practical tools for managing society, has been *morality*, that is, conceiving and creating the "good person" and the "good society."

In addition to the presentations on each discipline, the chapters offer a comparative perspective on a specific significant social issue, in order to convey how the various disciplines think differently about any single issue. The issue chosen here is terrorism, but hopefully readers will quickly see how the diverse perspectives can be applied to any social topic and how each perspective brings something unique and valuable to the analysis, which in combination give us the most complete possible understanding of the matter. Finally, the volume includes a list of key terms and a bibliography of references cited.

My hope is that, through this text, readers will come to better understand how the knowledge that they read in textbooks and hear in lectures—and

that they themselves are called upon to preserve and transmit as teachers, as parents, or simply as citizens—is invented. And since knowledge is invented, or constructed as we social scientists like to say, then there are inevitable disagreements about that knowledge—about what is true, what is important, and about how it should be used. And since knowledge is invented, including the very boundaries between different kinds or fields of knowledge, it can always be reinvented. The reader him/herself may, in fact hopefully will, find him/herself engaged in precisely this negotiation and reinvention of knowledge and of knowledge disciplines and knowledge institutions in the future.

Key Terms

a priori	prior to experience; self-evident and necessary, even without empirical data
agency	the capacity to participate in society or history as a creative actor, rather than as a passive product or victim; the possession of intelligence or will or "intentionality" (the ability to act on your own intentions)
agnotology	the practices and tactics used by individuals and institutions to obscure or misrepresent knowledge for the purpose of breeding doubt and ignorance
collective memory	also known as social memory and first discussed in detail by Maurice Halbwachs, a follower of Émile Durkheim, the notion that a society possesses, perpetuates, and sometimes invents memories for its members, stored in various social practices like documents, stories, memorials, and of course the curriculum and canon
cultural relativism	the position that a society or an historical era can only be accurately understood in terms of (relative to) its own concepts, beliefs, and values
discourse	the language or ways of speaking (and therefore of thinking and acting) in a particular society, historical era, or academic discipline. Also sometimes described as a "discursive regime"
embodiment	the notion that culture is not merely "ideas" but is enacted in and through the body; social categories (like gender or race) are experienced through the body, "performed" with the body, and "inscribed" on the body; culture is not just thought but felt and lived

enskilment	the acquisition of practical "know-how" in addition to, or instead of, "factual" or "propositional" knowledge; skill in this sense often is not expressed in words and sometimes cannot be expressed in words
epistemic culture	according to Karin Knorr Cetina, the arrangements and mechanisms, which, in a given field, make up *how we know what we know*; the people, practices, and institutions that create and warrant knowledge—the premier knowledge institution being science
epistemology	the philosophical study of the nature of knowledge (i.e. how we know)
expert knowledge	greater or deeper knowledge of a subject usually resulting from training and experience and commonly conferring power and prestige
hermeneutics	practices of interpretation: at least, that interpretation is a problematic process; at the extreme, that all "facts" must be interpreted or are interpretations
indigenous knowledge	the things that native or indigenous peoples know, and more importantly the *ways in which they know*, based on unique local concepts, terms, values, practices, and institutions
normative	a statement that establishes, is based on, or implies a judgment or preferred standard of behavior (a "norm"); research that proposes or argues what should be, rather than that describes what is
positivism	the position that knowledge involves the accumulation of facts, and therefore that better knowledge means more and better facts
postmodernism	as formulated by Jean-Francois Lyotard and others (like Jean Baudrillard), the contemporary cultural moment and experience in which "truth" breaks down, "grand narratives" are no longer believed, "progress" is no longer assured if even possible, and in which perspective and subjectivity, emotion and irrationality, images (rather than words), and fragmented and reassembled experiences dominate

practice	the analysis and description of what members of a group or society actually do, as opposed to the abstractions that we call "culture" or "social structure"; practice is informed by culture and occurs within a social structure, but it is not pre-determined by those forces, instead depending on skilful and creative performance in social situations
reductionism	the practice of explaining a phenomenon in terms of (that is, reducing it to) some lower-level phenomenon (e.g. claiming to explain "life" in purely physical or chemical terms, or society in purely psychological terms)
representation	the choices and strategies concerning how to communicate or convey a set of information (for example, as a narrative or story, as "raw data" or mere facts, as equations and graphs, as pictures, etc.
social construction	the idea that humans create and perpetuate their social reality through culturally-informed interaction
social reproduction	the practices in a society that "reproduce" an existing community or society, that is, that perpetuate its relationships, institutions, beliefs and values, and inequalities
sociology of knowledge	the study of the social processes and practices by which knowledge is created, distributed, institutionalized, disseminated, and used
structure of scientific revolutions	according to Thomas Kuhn, the idea that science does not proceed in a straight line, getting better and better "facts" and "theories," but that scientific thinking jumps from one "paradigm" to another—each paradigm being a different way of thinking and talking about the world

1 What is Social Science?

Key organizations

National Social Science Association (www.nssa.us)
Consortium of Social Science Associations (www.cossa.org)
Academy of Social Sciences (www.acss.org.uk)
Social Science History Association (www.ssha.org)

Key journals

Contemporary Social Science
National Social Science Journal
Social Science History

> Society is our immediate everyday reality, yet we understand no more of it merely by virtue of living in it than we understand of physiology by virtue of our inescapable presence as living bodies. The history of [social science] has been a long and arduous effort to become aware of things hidden or taken for granted: things we did not know existed—other societies in distant places and times, whose ways of life make us wonder about the naturalness of our own; things we know of only distortedly—the experiences of social classes and cultures other than our own; the realities of remote sectors of our own social structure, from inside the police patrol car to behind the closed doors of the politician and the priest; things right around us unreflectingly accepted—the network of invisible rules and institutions that govern our behavior and populate our thought, seemingly as immutable as the physical landscape but in reality as flimsy as a child's pantomime.
>
> (Collins and Makowsky 1993: 1)

Humans always and everywhere have lived in societies, but they have not always taken the existence or nature of society as a mystery to be pondered,

let alone a question to be systematically investigated. In fact, for the majority of societies throughout history, and arguably for a majority of people today, society is opaque and taken for granted, in need of no analysis and sometimes beyond questioning. To be sure, people may wonder how to make a better life for themselves, but they typically do so within the familiar constraints of their society, without asking why their society exists in the first place or whether that society could be managed or fundamentally altered.

Society has always been there (in fact, many non-human animals also live in societies), but the scientific study of society is a remarkably new enterprise. "Social science," or perhaps more accurately "the social sciences" (because they are multiple and relatively distinct) were only invented in anything resembling their modern form in the mid-1800s, and they only reached their current form in the early 1900s. They certainly have much older roots, which is an important fact, but nobody was doing sociology or anthropology or psychology until very recently.

More, a discipline like history or psychology or anthropology is not just a body of facts to know. It is *a specific way of knowing*, in a number of senses. First, somebody had to divide knowledge into "historical knowledge" and "psychological knowledge," and "anthropological knowledge" etc. Then each discipline must discover—or construct—its knowledge, based on its particular interests and questions, its terminology and theories, and its methods and tools. Further, each discipline must enshrine its knowledge—and its territory or "turf," if you will—in specific institutional forms and perpetuate those institutions over generations. Social scientists refer to this process of the creation, perpetuation, transmission, and institutionalization of their own knowledge, and that of other sciences and of informal non-scientific knowledge, as the *social construction of knowledge*.

Before we can discuss how each social science constructs knowledge in its own distinctive way, we must first understand how knowledge is constructed in whatever field or domain—social science, natural science, or non-science. It may turn out, in the final analysis, that it is less proper to speak of knowledge than of diverse *knowledges*, each constructed by its own knowledge-practices and knowledge-traditions.

The Sociology of Knowledge

Knowledge, and even its building block, namely "the fact," is not so much found as made; the very word "fact" actually derives from the Latin *factum* for "something done" (more basically from the verb *facere* or "to do"). We might define a fact as a true statement, but such a definition begs the question of what is true and how we know it.

As science marched along allegedly discovering more facts, scholars began to notice that our knowledge is not as factual or objective as we tend to think. Sociologist Karl Mannheim was one of the first to suggest a social approach to knowledge, including knowledge that is not about society. For

Mannheim and the early sociology of knowledge, the fundamental question was "how the social location of individuals and groups shapes their knowledge" (Swidler and Arditi 1994: 305).

One of the early topics for Mannheim was the relation between knowledge and age or generation. In a 1923 essay, he urged us to consider that one's generation profoundly affects one's individual knowledge, because the individuals who occupy a generation share "a common location in the social and historical process" and therefore "a specific range of potential experience" (1952: 292). People of the same age, having lived through the same events, have in common "possible modes of thought, experience, feeling, and action" (292), resulting in what he called "the 'stratification of experience'" (297), virtually guaranteeing that members of a society would not possess the same knowledge, perspectives, and attitudes.

The sociology of knowledge has grown since its first days, and Swidler and Arditi asserted that the "new sociology of knowledge" that emerged by the 1990s was interested in the more general question of "how kinds of social organization make whole orderings of knowledge possible"; further, it investigated all sorts of knowledge, "political and religious ideologies as well as science and everyday life, cultural and organizational discourses along with formal and informal types of knowledge" (1994: 306). Ultimately, it expanded "the field of study from an examination of the contents of knowledge to the investigation of forms and practices of knowledge" (304).

Teachers are especially aware of the social-knowledge function of schools and of themselves as agents of social knowledge. In a series of publications from the 1970s to the 1990s, Basil Bernstein studied the social processes of educational knowledge. Central to his analysis is the notion of the school as a "social classifier," of both people and knowledge, through the three "common message systems" built into the school institution, which make it "an agency of socialization and allocation" to produce and reproduce social differences and boundaries (Bernstein 1975: 199).

The first of the three message systems is the *curriculum* or the "contents" of education. Someone must select, from among all of the possible things to know, the things that are worth knowing and appropriate for the level of the knower. We also refer to this as the "canon," the body of information that "counts as" knowledge, that has been officially sanctioned for knowing and therefore for teaching. The canon of literature in America, for instance, contains Shakespeare and Dickens and other prominent authors; it does not contain Danielle Steele or James Patterson. In history, too, choices must be made about which events to include and exclude, how to emphasize them, and how to interpret them. There is no objective or non-social way to make such decisions, and they are therefore ripe for disagreement and controversy (see Chapter 2).

The second message system is *pedagogy* or teaching methods. Any academic institution, and any individual teacher, must decide how to teach, whether to encourage rote memorization or critical thinking, whether to

employ textual or visual materials, whether to promote group work or individual work, what kinds of homework to assign, and so on. Finally, Bernstein listed *evaluation* as the third message system, including "testing" but also all of the other ways in which teachers evaluate students—and teachers are evaluated by administrators and parents.

Taking his thinking further, Bernstein identified two dimensions of the organization of knowledge itself. The first was *classification*, by which he meant the boundaries between subject areas in the curriculum, for instance, how firmly we separate math from history from art. These borders might be weak or strong. The second was *frame*, a variable of pedagogy, referring to teaching practices such as the degree of control that the teacher exercises over the learning process (e.g. the order and timing of activities). When classification and frame are both strong, Bernstein suggested that learning operates on the "collection code," meaning that areas of knowledge are kept neatly apart and study is highly specialized, with loyalty to a subject expected by professionals (that is, a person becomes *a* psychologist or *a* sociologist). In the "integrated code," when classification and frame are weak, subject-boundaries are porous, individuals and ideas can move across or between disciplines and perspectives, and students and professionals are freer to create, combine, and question knowledge.

Expert Knowledge

Knowledge is not only socially constructed but also socially distributed. Different individuals, groups, and communities within a society know different things or know things at different depths. One of the most important distinctions in the knowledge distribution, especially in regard to science, is that between the "expert" and the novice or merely the average member of society. Of course, experts exist not only in the natural and social sciences but in every walk of life, from music and law to sewing and sports.

According to Marissa McBride and Mark Burgman, expert knowledge is

> what qualified individuals know as a result of their technical practices, training, and experience. It may include recalled facts or evidence, inferences made by the expert on the basis of "hard facts" in response to new or undocumented situations, and integration of disparate sources in conceptual models to address system-level issues. . . . Experts are usually identified on the basis of qualifications, training, experience, professional memberships, and peer recognition.
>
> (2012: 13)

Expert knowledge is often "domain specific," that is, limited to a specific subject area, but it can also be more general and integrative, crossing subject boundaries.

Construction of Knowledge in Early Childhood: Kindergarten as Boot Camp

"Student" is a specific social role, and elementary school is one location or site of social knowledge. No one is born knowing how to be a student, but it is a role that must be learned early and securely. Harry Gracey (1968) characterized the first year of formal schooling, kindergarten, as a kind of "boot camp" for future schooling and future life, in which the new recruit to the educational system had to master the basic skills of a student. Indeed, he claimed that kindergarten existed to teach the student role and its standard repertoire of behaviors and attitudes more than to teach any particular information. Conducting field observations inside kindergarten classrooms, Gracey determined that most of the teachers' energies were dedicated to training young children in "school routines," which were drilled into the students as surely as any military routines into a new soldier. Among the resources utilized by teachers were the physical structure of the classroom, with its different spaces and functions, and the social structure of interaction, with its timed and organized activities. Spontaneity had to be replaced with discipline, and one of the primary characteristics of this discipline was its arbitrary quality: teachers started and ended activities at their own time, and most of these activities were literally meaningless to the students. Gracey mentioned routines like pledging allegiance to the flag, which young students did not understand (and often garbled), as examples of routine for routine's sake, but much of the "academic" experience was equally capricious, such as learning particular facts about foreign countries. The point of much of the activity in the kindergarten classroom—and in classrooms throughout secondary and even higher education—consisted of tasks assigned by the teacher and performed by the students simply *because* they were assigned. The "meaning" of the work to the students was often the fact that the students had to do it. But there was one other meaning to these routine tasks: once the students graduated from and left the school institution, they would find themselves increasingly in institutions (like the workplace) where they were expected to conform to routines imposed by authorities that had little meaning or sense for them. Thus, Gracey concluded that kindergarten "can be seen as preparing children not only for participation in the organization and structures of large modern school systems, but also for a lifetime of employment in the large-scale organizations and offices of modern society" (1968: 71).

Expert knowledge of this sort is obviously social in a number of ways, with several crucial social consequences. For instance, as already mentioned, the initial source of much expert knowledge is education, which depends on schools, teachers (themselves ideally experts in a subject and in teaching methods), and textbooks (ideally written by experts). In other cases, the acquisition of expertise involves learning techniques from a "master" of those skills. Brian Moeran (2014), for instance, describes his apprenticeship in Japanese pottery, during which he acquired expert knowledge in multiple aspects of the art, from selecting clays to heating the kiln to shaping the designs and even displaying and selling the wares. Further, experts often work in groups, and those groups may establish specialized sites of practice (like the laboratory) and professional organizations including guilds, unions, and academic departments. Experts commonly if not normally act as masters and trainers for the next generation of experts, transmitting their expert knowledge and shaping the subjectivity (the thoughts and feelings) of novices.

Experts provide services for the wider society. At the very least, they serve as repositories of knowledge which other members of society do not have but which they can call upon; a good example is the "expert witness" in court trials. Experts can apply their knowledge to answer specific questions or render judgments. Experts of course can and often do produce new knowledge, from scientific discoveries to technological breakthroughs. Individuals who are recognized for possessing expert knowledge enjoy a certain prestige and power, although not without some resistance (see later discussion): experts are often paid well for their expertise, and ordinary people often defer to and obey the recommendations of experts, even outside their area of expertise. Albert Einstein's celebrated genius lent gravitas to his views on war and nuclear weapons.

Finally, in an attempt to quantify expert knowledge, Marie-Line Germain also suggested a number of social or personality qualities about the expert in addition to the obvious intellectual and technical competencies. To be sure, in her sixteen-item Generalized Expertise Measure (2006), the expert has knowledge and education, symbolized by formal credentials, but s/he is also "charismatic," "self-assured," "self-confident," and "outgoing."

Power and Practice

Bernstein's conceptualization of educational knowledge together with the sociology of expert knowledge raises issues of power and of practice. One of the most influential thinkers of the late twentieth century, Michel Foucault, stressed the *techniques of power* by which individuals, groups, institutions, and societies shape the knowledge and actions of others. Such techniques certainly include curriculum, pedagogy, and evaluation but also include more subtle tactics such as labeling and less subtle tactics such as punishment and physical constraint. Each particular social site or

institution, from the school to the mental hospital, has its own repertoire of techniques of power (schools after all have detention and formerly had paddling), and such techniques for Foucault are also forms of knowledge. As the saying goes, knowledge is power, and also power is knowledge, and, as Swidler and Arditi put it, "New forms of knowledge also create new sites where power can be applied (and where resistance can form)" (1994: 315). For example, new economic knowledge can be applied to public policy and government, and those who hold such knowledge can establish organizations to exercise their knowledge-power (like think tanks) and control access to their organizations (through credentialing or admissions and membership qualifications).

Foucault was thus very interested in how the techniques of power and knowledge change over time and how they become "regimes of truth." Foucault referred to the knowledge/power system of any given society or historical period as a *discursive regime* or an *episteme*, the ancient Greek term for knowledge. An episteme is not only what people in a time or place know but *what it is literally possible to know or think*. It is the very limits of the knowable or thinkable for an individual or society, usually unconscious but definitely learned and definitely evolving over time. For instance, at one time the notion of germs as the cause of disease was unthinkable; for most of us today, spirit possession or witchcraft as the cause of disease is unthinkable.

As discussed earlier, expert knowledge is a particularly powerful type of knowledge, but even among experts—and certainly among the general public—much knowledge "remains informal, primarily because it is typically not documented and remains tacit until its expression is demanded in specific applications" (Perera, Drew, and Johnson 2012: 4). Many social scientists have since pursued the notion that much of what we call "knowledge" is less a matter of explicit cognitive or verbal information than of practical skills and learned intuitions—more inscribed in the body (we literally sometimes refer to "muscle memory") than processed by the mind. Moeran's research and experience in Japanese pottery is again an illustrative example: master potters typically do not "teach" in the familiar and formal sense but instead force the apprentice to observe (often for months or years) and then to emulate, absorbing the skills and abilities of the master—a process that we call *enskilment*—by doing.

Jean Piaget was among the first to notice that children develop their knowledge of the world through physically interacting with objects and people. In his model of "genetic epistemology," children at various levels of maturity construct embodied (sensory-motor-cognitive) strategies or *schemas* for understanding the world, such as that liquid poured from one container to another retains its volume. The systematic mistakes of judgment that children make at different ages, which indicate what they can and cannot think about (e.g. object permanence or conservation of matter, not to mention morality and other people's feelings). Pierre Bourdieu borrowed the

term "habitus" from earlier sociologist Marcel Mauss to name this acquired but largely unconscious embodied knowledge that makes social action possible. In his famous *Outline of a Theory of Practice*, he defined habitus as "systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles of the generation and structuring of practices and representations" (1977: 72). To make a difficult idea somewhat simpler, Bourdieu considered knowledge to be less about facts and more about "skills" that individuals possess and use more or less masterfully to act in society. John Scahill (1993) suggested that Bourdieu meant "outlooks, opinions, and embodied phenomena such as deportment, posture, ways of walking, sitting, spitting, blowing the nose, and so forth." A valuable example of Bourdieu's thinking is the question of "taste," as he wrote in his 1984 *Distinction*. From foods to clothing to music to art, humans learn "taste," which is a form of social knowledge. Moreover, in line with Mannheim, the tastes that we acquire reflect not only our society but our position or location in society—our gender, class, age, and such.

As all of these streams of thought suggest, some of our most profound knowledge is informal if not unconscious. Social scientists from Antonio Gramsci to Harold Garfinkel have focused on informal, sometimes even invisible, forms of knowledge/power, the most pervasive of which Gramsci called *hegemony*. Like Foucault, Gramsci saw much knowledge/power as utterly taken for granted, as even more than common sense but as the very horizon of the thinkable. It is the knowledge and perspective of a particular society—or a particular group or class within society—made "natural." Garfinkel, the inventor of the approach called ethnomethodology, examined the multiple small, everyday knowledge and skills that members of society exercise in their interactions, from taking turns and participating in conversations to (most famously) standing in elevators.

The Contestation of Knowledge and the Pursuit of Ignorance

The process of acquiring knowledge and submitting to those with knowledge (the "experts") is not automatic or passive. There is sometimes disagreement about who actually is an expert, and experts frequently disagree with each other (this is why there are commonly competing "schools of thought" or "theoretical schools" within a science or discipline). Matters of interest and power can intercede in matters of knowledge. It is often assumed that all people are honest brokers in the pursuit of knowledge and truth. A sociological approach to knowledge suggests, to the contrary, that knowledge or truth may be to the benefit of some individuals, groups, institutions, or societies and not others. Undoubtedly, people can sincerely disagree on the facts and/or their ramifications. From some social positions, though, not knowing the facts—*or not letting others know the facts*—might be desirable or advantageous. People can even argue over what the facts are.

Science is often portrayed as a steady march from non-knowing to knowing; ignorance is thus the simple absence of knowledge. But there are many alternatives to full knowing, including secrets, silence, and active suppression of knowledge. An exciting and important new field of *agnotology* has emerged lately to study these processes. Derived from the roots *a-* for "no/without" and *gnosis* for "knowledge," agnotology is the investigation of the causes and effects of ignorance or knowledgelessness. Robert Proctor, for one, has insisted that ignorance is not merely the absence of knowledge, but is a social product as much as knowledge is, often by means of the same techniques of power. Ignorance may be our native or default condition (before we know, we do not know), or it may be a result of losing knowledge (e.g. by forgetting), but it can also be "a deliberately engineered and *strategic ploy* (or active construct)" (2008: 3).

Some knowledge-claims contradict, threaten, or undermine cherished knowledge, belief, values, or interests. Obviously, if cigarette smoking is dangerous for human health, admitting that fact goes against the interests of tobacco companies. Corporations that do not want to curtail their polluting ways, or consumers who do not want to forfeit their lifestyle, may resist the science of climate change (global warming). Supporters of abstinence-only programs may dismiss evidence that such programs fail or actually backfire. And people who subscribe to a creationist view of life would understandably contest the facts of evolution.

David Michaels (2008) has quite critically researched how corporations and governments traffic in ignorance in his *Doubt is Their Product: How Industry's Assault on Science Threatens Your Health*. Discussing tobacco, occupational health standards, and illegal drugs among other subjects, Michaels identifies some of the motivations and strategies for "manufacturing uncertainty" among the public. He and others have warned about the practice of using industry- or government-hired "experts" to disseminate disinformation, while attacking the credibility of reputable scientists. The tobacco industry, he reports, went so far as to publish its own "scientific journal" called *Tobacco and Health Research* to refute evidence of the harmful effects of smoking.

Among the other tactics employed in what we might call *agnomancy* or the conjuring of ignorance, are accusations of conspiracy ("the scientists are trying to fool you"), selective picking of evidence, censorship, and encouraging doubt or insisting that doubt exists ("scientists do not agree" or "the evidence is inconclusive"). Probably the most sophisticated treatment of ignorance is Michael Smithson's *Ignorance and Uncertainty: Emerging Paradigms*, in which he explained that ignorance can be much more than mere absence of or uncertainty about knowledge. He argued that there are two subtypes of ignorance—error and irrelevance. Instances of irrelevance include those claims that are off-topic, undecidable, or taboo. Under errors, there is distortion and incompleteness, as follows:

- distortion
    1. confusion
    2. inaccuracy
- incompleteness
    1. absence
    2. uncertainty
        a. probability
        b. ambiguity
        c. vagueness (including fuzziness and nonspecificity)

(1989: 9)

Obviously then, ignorance, like knowledge, is more diverse and more intentional and motivated than we might think. It is important to bear this idea in mind as we proceed through the book.

Social Construction of Scientific Knowledge

Turning to science, three widely-held assumptions about knowledge are that:

- scientific knowledge inexorably "progresses," that is, each day science has more and better knowledge than the day before;
- scientific knowledge is superior to other forms of (or spurious claimants to) knowledge because of its "method"; and
- scientists are particularly conscious of both.

The notion that science (or any pursuit of knowledge) is simply a matter of getting more and better facts is called (and often condemned as) *positivism*. From the position of positivism, knowledge equals facts. However, social scientists and philosophers of science have become crucially aware that science is not and cannot be the pre-social search for facts, that the "scientific method" is neither as distinct from ordinary knowing as scientists tend to believe nor that it is used as singularly as they believe, and that science does not progress in a straight line as much as we believe.

Ludwik Fleck: Thought Collectives and Scientific Facts

Among the first scientists to ponder how scientific facts come to be was Ludwik Fleck, whose 1935 *Genesis and Development of a Scientific Fact* was overshadowed by the work of Thomas Kuhn (see p. 11) thirty years later. Writing from his experience with research on syphilis (specifically the development of the Wasserman test), Fleck noticed that scientific discovery was not a straightforward asocial process. Rather, essential for the production of knowledge are what he called "thought-collectives" and

"thought styles." Thought, he asserted, is always a social or collective activity: people do not know in isolation but as members of a community of thought or thought-collective, that is, a collection of people who share ideas through their social and intellectual interaction. Thought-collectives exist outside of science too, but a team of scientists and members of a scientific discipline or profession definitely constitute a thought-collective.

Every thought-collective or knowledge community also has its distinctive thought style. Like any style in any human endeavor, a scientific thought style

> consists of a certain mood and of the performance by which it is realized. A mood has two closely connected aspects: readiness both for selective feeling and for correspondingly directed action. It creates the expressions appropriate to it, such as religion, science, art, customs, or war, depending in each case on the prevalence of certain collective motives and the collective means applied. We can therefore *define thought style as [the readiness for] directed perception, with corresponding mental and objective assimilation of what has been so perceived*. It is characterized by common features in the problems of interest to a thought collective, by the judgment which the thought collective considers evident, and by the methods which it applies as a means of cognition. The thought style may also be accompanied by a technical and literary style characteristics of the given system of knowledge.
>
> (Fleck 1979: 99)

Among the ingredients of a thought-style are what Fleck called "pre-ideas," those ways of thinking that predate knowledge—often inherited from long ago—and shape how we think and know about specific scientific topics today.

Fleck's conclusion was that scientific knowledge, even the scientific "fact," is not an absolute, eternal, and presocial thing. Any scientific fact is a *historical and social* achievement, the history of which can be investigated (100), and as an accomplished fact or bit of knowledge it is always "a supplement, development, or transformation of the thought style" of a practicing thought collective (92).

Thomas Kuhn: Paradigms and Scientific Revolutions

Thomas Kuhn's 1962 book *The Structure of Scientific Revolutions* is a much better-known analysis of the scientific process. Noticing that the path of scientific knowledge from, say, Aristotle to Newton to Einstein is not a straight one—not just a matter of accumulating more facts—Kuhn posited that scientific "progress" was actually a series of "revolutions" or changes of fundamental worldview. A scientific revolution or change of scientific worldview is, in Kuhn's words, a shift of *paradigm*.

A paradigm for Kuhn is more than a theory; it is the context of ideas that makes a theory possible and sensible. At any given moment, scientists, he asserted, operate within a particular paradigm. A paradigm is a model of reality at the fundamental scale, shared ideas about what kinds of things exist and their qualities and characteristics. Even more, a paradigm carries with it a set of methods and practices, including tools and instruments: if you think, for instance, that there are microscopic organisms in the world, then a microscope is a necessary technology for knowing them. Likewise, if you are an alchemist then you have "methods" for turning lead into gold, and if you are an astrologer, you have tools and methods for charting and reading horoscopes.

Even more, each paradigm is distinguished by its own unique questions and problems. That is, if a particular scientific paradigm holds that light is a wave, then its specific questions will involve the wavelength of light, etc.; if the paradigm holds that light is a particle, then the question of the mass of the particle is important. But if light is a wave, then the mass of light is not only unimportant but unthinkable. At the deepest level, each paradigm has or is a "language" or terminology: alchemists and modern chemists, or psychoanalysts and experimental psychologists, literally do not speak the same language. (By extension, psychologists do not speak the same language as anthropologists or geographers, and none of them speak the same language as artists, philosophers, or theologians.)

Most of the time, Kuhn reasoned, scientists work within their established paradigm, doing what he called "normal science," defined as "research firmly based on one or more past scientific achievements, achievements that some particular scientific community acknowledged for a time as supplying the foundation for its further practice" (1970: 10). Doing normal science means solving the problems that the paradigm poses, perfecting the measurements that the paradigm has already made, and adding new knowledge within the existing paradigm. In this sense, normal science is actually rather conservative: "No part of the aim of normal science is to call forth new sorts of phenomena; indeed those that will not fit the box are often not seen at all" (24) or if seen may be thrown out as exceptions or experimental errors.

However, sometimes scientists inadvertently encounter phenomena that cannot be easily accommodated in the reigning paradigm, like the discovery of X-rays. On other occasions, exceptions and anomalies pile up until the old paradigm becomes shaky. What happens then is a "paradigm shift": someone, often a young scientist who is not completely socialized into and committed to the inherited paradigm, offers a new view. The best example is Albert Einstein, who radically re-envisioned the universe as not Newtonian flat space but as a curved time-space continuum. When the old parad-igm becomes untenable, there is a struggle between new competing parad-igms, until the evidence (at least for a time) settles the question in favor of one of the rival new paradigms. We can then say that a paradigm shift has occurred.

One crucial aspect of science is that when a new paradigm triumphs, the old one as well as its rivals are typically discarded. (By contrast, religions, philosophies, and social science theories tend to multiply rather than substitute.) As Kuhn expressed it, defeated paradigms "disappear to a very considerable extent and then apparently once and for all" (17). A second significant effect is that the new paradigm launches a different project of normal science, now solving the problems and answering the questions raised by the new models, theories, instruments, and language.

The consequence for science, and for us in this book, is that holders of a paradigm constitute a Fleckian thought-collective and are often intellectually and even emotionally committed to their paradigm. They talk to each other, work together, and found institutions on and for the paradigm, from scientific organizations to training facilities. And they often do not—and cannot—talk to holders of other paradigms. At least to a certain extent, the differences between paradigms "are both necessary and irreconcilable" (103). The gap between paradigms is not just a difference of opinion; it is a difference of language and even of facts themselves. "The proponents of competing paradigms are always at least slightly at cross-purposes. Neither side will grant all the non-empirical assumptions that the other needs in order to make its case" (148), which may lead to actual disagreements about what the facts are or what the facts mean. It is fair to say that, more than being unable to talk to each other, radically different paradigms cannot even quite argue with each other, their realities being so incompatible. In the end, "there can be no scientifically or empirically neutral system of language or concepts" (146). Again like Mannheim and others contended, where you stand affects what you see, even in science.

Since the seminal work of Kuhn, historians, sociologists, and philosophers have explored how scientists actually do science and *how they produce scientific knowledge*. This often entails conducting observations of scientists at work in their laboratories. One of the most famous studies is Bruno Latour's *Science in Action: How to Follow Scientists and Engineers Through Society*. Observing the process rather than the product of science (what we might awkwardly call "sciencing"), Latour insisted that we "study science *in action* and not ready-made science or technology; to do so, we either arrive before the facts and machines are blackboxed [that is, before the knowledge-production processes become invisible] or we follow the controversies that reopen them" (1987: 258). He concluded that humans and their technology interact in a complex network of relationships and "a gamut of weaker and stronger associations; thus understanding *what* facts and machines are, is the same task as understanding *who* the people are" (259). At bottom, then, the trail of science "is in a large part the history of the resources scattered along networks to accelerate the mobility, faithfulness, combination and cohesion of traces that make action at a distance possible" (259). That is, individual scientists do not make knowledge, and machines alone do not

make knowledge, and certainly facts themselves do not make knowledge, but knowledge is a contested product of human-machine-fact interaction.

Karin Knorr-Cetina: Epistemic Cultures

Developing the insights of Kuhn, Latour, and others, Karin Knorr-Cetina insisted that different sciences or even different subfields within a science function as discrete knowledge communities. Knorr-Cetina introduced the term *epistemic culture* to refer to

> those amalgams of arrangements and mechanisms—bonded through affinity, necessity, and historical coincidence—which, in a given field, make up *how we know what we know*. Epistemic cultures are cultures that create and warrant knowledge, and the premier knowledge institution throughout the world is, still, science.
>
> (1999: 1)

Comparing the work of high-energy physicists with that of molecular biologists, she debunked the common conception that different sciences or specialties within a science all follow the same scientific method, that is, that there is one single universal version of science. Instead, close inspection "reveals the fragmentation of contemporary science; it displays different architectures of empirical approaches, specific constructions of the referent, particular ontologies of instruments, and different social machines. In other words, it brings out the *diversity* of epistemic cultures. This *disunifies* the sciences" (3). She thus falsified the presumption that "there is only one kind of knowledge, only one science, and only one scientific method" (3)—which would hypothetically also have to be applied to human behavior and social systems. In other words, as we will discuss shortly, social scientists have often been told and convinced that they must adopt the same epistemic culture as natural scientists. However, if Knorr-Cetina is correct, the natural scientists do not even share a single epistemic culture; physicists have theirs, biologists have theirs, and presumably chemists and astronomers, etc. have theirs. It would make sense, then, that social science would have an appropriate epistemic culture of its own and that each social science (history, psychology, political science, and so forth)—and maybe even each subdiscipline (clinical psychology versus experimental psychology, or cultural anthropology versus physical anthropology)—would have a disciplinary epistemic culture all its own.

The Idea of Social Science

As we said at the outset, humans have always had society, but we have not always had a systematic study of society (any more than we have had a systematic study of the human body even though we have always had

The Pluralism of Scientific Methods

Taken together, the work of Fleck, Kuhn, Knorr-Cetina, and others indicates that there is no such single thing as "science" and no single "scientific method." Within different sciences, different methods (including different instruments) are appropriate and necessary, and the tendency to view physics and/or math as the paradigm of all sciences is inaccurate. For instance, in their *A History of Chemistry* (1997), Bernadette Bensaude-Vincent and Isabelle Stengers posited that chemistry has a distinctly different and underappreciated history and way of thinking. In his magisterial *Styles of Scientific Thinking in the European Tradition* (1994), Alistair Crombie identified six different scientific styles—postulation, experimentation, hypothetical modeling, taxonomy, statistical analysis, and historical derivation. Later, Ian Hacking (2002) added the "laboratory" style and explained that each style creates its own knowledge and even its own objects of knowledge and is "self-authenticating" (i.e. contains its own standards of validation). Unlike Kuhn's paradigms, however, these styles can communicate with each other, and any one science may use multiple methods, just as non-sciences may also use these methods.

bodies). And even when humans first began to ponder society, they did not do so in a "scientific" way, since science as we know it did not yet exist.

For most of human history, our institutions and practices (language, government, religion, gender roles, etc.) were taken to be either natural or supernatural. If natural, then our way of life was just "the way it had to be"; there was nothing in particular to understand and certainly nothing to change. If supernatural, then the conclusion was much the same: our way of life was given to us by non-human agents (spirits, ancestors, gods), and knowledge of this supernatural authorship of our society was sufficient; it was definitely beyond human capacity to change—or even fully know—society.

From either of these positions, there was little to learn about society—and virtually nothing to learn about other societies. Being "good" meant basically obeying your society's rules and fulfilling your nature- or supernature-given obligations. To the best of our knowledge, the first people to speculate about society, and to consider their own and other (even imaginary or possible) societies, were the ancients, especially the Greeks. This general rumination about human life and social organization is called today, and was called then, philosophy, from the Greek *sophia* for "wisdom" and

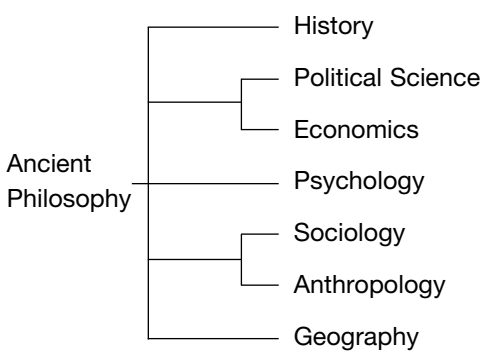
St. Augustine: Strive Not for Knowledge

Some major religious thinkers have actively discouraged human curiosity and the pursuit of knowledge. In his seminal *Confessions* (Book Ten, Chapter 35, section 54), St. Augustine wrote, "in addition to the fleshly appetite which strives for the gratification of all senses and pleasures—in which its slaves perish because they separate themselves from thee [God]—there is also a certain vain and curious longing in the soul, rooted in the same bodily senses, which is cloaked under the name of knowledge and learning; not having pleasure in the flesh, but striving for new experiences through the flesh. This longing—since its origin is our appetite for learning, and since the sight is the chief of our senses in the acquisition of knowledge—is called in the divine language 'the lust of the eyes.'"

philo- for "love." The philosopher was the person who sought wisdom, usually for its own sake, rather than accepting the popular or traditional views about things. The assumption, expressed best by Plato in his renowned Parable of the Cave, was that we are often ignorant of or blind to truth and wisdom, literally taking shadows and lies for reality.

The social sciences as we know them, however, had not yet been invented, and even terms, which were in use at the time, such as "history," "politics," "economics," and "geography" tended to have different meanings than they have in the modern social sciences. This is why the box below depicts some

The Modern Social Sciences



of the contemporary social sciences having an ancient pedigree and others having a much more recent origin. It also depicts political science and economics as developing out of a common background, as well as sociology and anthropology sharing common roots.

The Science in Social Science

In a leading textbook on the social sciences, John and Erna Perry say that the

> purpose of the social sciences is to study systematically all aspects of the human condition and of human behavior, using a methodology borrowed from the physical sciences wherever possible. This insistence on systematic and methodical study is what distinguishes the social sciences from philosophy, art, and literature, which also comment and reflect on all facets of the human condition.
>
> (2012: 2)

Philosophers and artists might take exception to those remarks, and physical scientists might dispute them; even social scientists themselves might object. And as we have seen, since the physical or natural sciences do not actually have a single methodology or epistemology, the assessment is highly problematic.

So the first question to confront is why the social sciences—at least in name and often in practice—have attempted to be "scientific" in ways that, say, philosophy and art have not. Part of the answer, of course, as Alfred Schutz reasoned, is that the natural sciences "have brought about such magnificent results" (1954: 257), and there can be no doubt that science has achieved great things and answered many previously unanswered (and even unasked) questions. In both empirical knowledge and technical application, there really are signs of progress—more productive factories, safer cars, faster computers, and such. Because of its spectacular accomplishments in solving problems and clearing away the debris of myth and falsehood, Schutz saw that it was easy to conclude that the practices of natural science "are the only scientific ones and that they alone, therefore, have to be applied in their entirety to the study of human affairs. Failure to do so, it has been maintained, prevented the social sciences from developing systems of explanatory theory comparable in precision to those offered by the natural sciences" (257).

It is fair to say that science enjoys a high reputation for most people, and in the modern world it is prestigious to be "scientific" and dubious to be "unscientific." Consider, for example, how a certain brand of religion dons the mantle of "creation science." Calling one's activity "science," or ideally actually doing it "scientifically," lends an aura of legitimacy. In the strongest interpretation, knowledge is either scientific *or it is not knowledge at all*.

So, to be "scientific" has so far largely meant to be like the natural sciences, which are the "real" and the most successful sciences. Yet curiously Theodore Porter and Dorothy Ross, in the introduction to their edited volume on the history of the social sciences, contended that "theology had a better claim to the status of science during the Middle Ages than did the study of living things, or even the study of matter in motion" (2003: 3). It is worth remembering that "science" is simply the Latin word for knowledge (*scientia*, from *scire*, "to know"), and little was actually known about the material (or social) world until surprisingly recently.

In fact, the word science was not immediately applied to the new study of material and biological phenomena, which was first called "natural philosophy" or "natural history" or "experimental physics." Porter and Ross taught that it was only around the year 1800 that science "emerged as the standard name for the organized pursuit of knowledge," and since the social sciences were born in the same era, "it was not immoderate for inchoate fields like sociology, anthropology, or statistics to march under the same banner" (3–4). On the flip side, the "modern practice of attacking fields of inquiry by denying their scientific credentials was uncommon until late in the nineteenth century, and it remains more plausible in English than in most other languages" (4).

What is it exactly that makes science scientific? As Knorr-Cetina insisted, it is not a single universal method or epistemic culture; nor, as Kuhn proved, is it linear progress. It is also not experimentation and laboratories, since some bona fide sciences do not and cannot use them (like astronomy), and there are also legitimate scientific fields like theoretical physics that work without laboratories or experiments.

The philosopher of science Karl Popper argued influentially that science is unique among thought-systems because it offers propositions that can be *tested and falsified*. If a statement is not testable and potentially falsifiable, it is by definition not scientific (we could say that it is no better than a guess, since how could we ever know if we are wrong?).

Fundamentally, science as it has developed in the modern era is characterized by two key concepts—*law* and *cause*. Science clearly pursues the discovery of facts, but facts are part of a much more ambitious project, to identify and specify the "laws of nature." A law in science (as opposed to politics and jurisprudence) is a description, ideally in mathematical form, of the operation of a phenomenon or a relation between phenomena. It is a statement of regularity. The best example is the "law of gravity," which states that the force of gravity, F, equals the product of the masses of two bodies times the gravitational constant, divided by the square of the distance between them. With this precise equation, we can predict the gravitational force between any two objects and use that prediction to generate other knowledge and to make practical applications (like space flight).

"Cause" in science refers to the necessary (and ideally mathematically specifiable) relationship between two variables or events, such that if one,

A, occurs then the other, *B*, will occur. Although there are arguably other kinds of causes, the most basic and "scientific" causal relationship can be stated simply, *If A, then B*. Such causal knowledge can also be used to generate new knowledge (e.g. what happens if *A* does not occur?) and to design applications and to control phenomena (e.g. if we do not want *B*, do not allow *A*).

It is a simplification, but a useful one, to view science as the enterprise that searches for facts in order to discover laws and causes. Further, the value of laws and causes is the capacity *to predict and control* future events and phenomena. In the process, science dispels preconceptions and errors about how things work and how things are related.

Early social thinkers like Auguste Comte (1798–1857), who coined the term "sociology" (see Chapter 6), very much aspired to a science of society. In his *The Course of Positive Philosophy*, published serially between 1830 and 1842, Comte explained that "the first characteristic of the Positive Philosophy"—what would come to be called social science—"is that it regards all phenomena as subjected to invariable natural laws. Our business is . . . to pursue an accurate discovery of these Laws, with a view to reducing them to the smallest possible number" (1855: 28). John Stuart Mill, an eminent scholar in his own right and an admirer of Comte, endorsed his colleague's project "to 'remedy' the 'backward state of the moral sciences' by 'applying to them the methods of physical sciences, duly extended and generalized'" (Porter and Ross 2003: 1).

What Comte and many later social scientists envisioned was literally a "Social Physics," and he believed that he had made a significant contribution to the formation of a physical science of society by discovering the "law of human progress," namely, that "the human mind, by its nature, employs in its progress three methods of philosophizing, the character of which is essentially different, and even radically opposed: viz, the theological method, the metaphysical, and the positive" (1855: 25). By "positive" he meant positivism in the sense described earlier, that is, based on facts rather than beliefs and faith (theological) or philosophical speculation (metaphysical).

Is Natural Science the Best Model for Social Science?

One of the other great founders of modern social science, Émile Durkheim (1858–1917), was also committed to the notion of the "social fact" (see Chapter 6), which he conceived as independent of biology or psychology, shared within a society, and exerting an external pressure on the individual. Nevertheless, many scholars have questioned the appropriateness of natural science as a template for social science. Alfred Schutz objected to modeling social science after natural science on the grounds that "there is a basic difference in the structure of the social world and the world of nature"; for one thing, as he said in slightly difficult language, "the social sciences are idiographic, characterized by individualizing conceptualization and seeking

The Return of Social Physics

While the notion of social physics might sound quaint or even misguided, it has reappeared in the twenty-first century, aided by the possibilities of massive data-collection offered by computer technology. In his 2014 book actually titled *Social Physics: How Good Ideas Spread—The Lessons from a New Science*, Alex Pentland correctly observes that, although we occupy society, we still do not really understand society, and clearly do not control it. Worse but true, our present "ways of understanding and managing the world were forged in a statelier, less connected time. Our current conception of society was born in the late 1700s during the Enlightenment and crystallized into its current form during the first half of the twentieth century" (2014: 2). Indeed, Comte and others whom we will meet in future chapters were the makers of this stately social theory. Instead of these old outdated models, Pentland proposes a new social physics, which will be

> a quantitative social science that describes reliable, mathematical connections between information and idea flow on the one hand and people's behavior on the other. Social physics helps us understand how ideas flow from person to person through the mechanism of social learning and how this flow of ideas ends up shaping the norms, productivity, and creative output of our companies, cities, and societies. It enables us to predict the productivity of small groups, of departments within companies, and even of entire cities. It also helps us tune communication networks so that we can reliably make better decisions and become more productive.
>
> (4)

Pentland declares that the dream of scientific social knowledge that affords us prediction and control is within reach finally because the "engine that drives social physics is big data: the newly ubiquitous digital data now available about all aspects of human life. Social physics functions by analyzing patterns of human experience and idea exchange within the digital bread crumbs we all leave behind us as we move through the world—call records, credit card transactions, and GPS location fixes, among others" (8). Sifting through this data, which he calls "reality mining," will expose "micropatterns" of human activity that were previously invisible and perhaps unimaginable. In short, and not to be flippant, better social knowledge—indeed, a true social science—only needs more facts. A sign of the growth of this perspective is three new academic journals, *Journal of Big Data*, *Big Data & Society*, and *International Journal of Big Data Intelligence*.

singular assertory propositions, whereas the natural sciences are nomothetic, characterized by generalizing conceptualization and seeking general apodictic [certain, necessary] propositions" (257).

In plainer and more contemporary language, it can be argued that social sciences call for a different methodology—one that might not exactly qualify as "scientific" (at least by natural science standards)—because the subject matter of natural science and social science are so different. Experts these days use the term *agency* to express this difference. Agency is the capacity to have subjectivity, will, or desire; an agent has its/his/her own perspective and intentions. Agents have "personality," feelings, and perhaps above all else, *meanings*. As Schutz said firmly, "The world of nature as explored by the natural scientist does not 'mean' anything to the molecules, atoms, and electrons therein" (266). Nor do atoms want or will anything.

As another founding figure of the social sciences, Max Weber, recognized in his aptly-named *On the Methodology of the Social Sciences*, in an essay first published in 1904, humans do not merely or ordinarily act *because of* some prior condition but *in order to* attain some future condition. That is, human behavior cannot be explained so much in terms of "cause" as in terms of "ends" or "purposes," so any "serious reflection about the ultimate elements of meaningful human conduct is oriented primarily in terms of the categories 'end' and 'means.' We desire something concretely either 'for its own sake' or as a means of achieving something else which is more highly desired" (1949: 52).

What this signifies is that "cause," a precious term for natural science, may not be the right term for social science. Since an atom or gravity or electricity has no agency (at least in the scientific worldview; see Chapter 9), any behavior of these phenomena can be (and theoretically can only be) explained in terms of cause. They have no intentions or meanings of their own. The same is not true of human beings.

Even more, since an atom has no agency, every atom in the same circumstances exposed to the same conditions should behave the same (within the limits of the "uncertainty principle"). This is also not true of human beings. Therefore, generalizability—that is, *law*—is not as easy to apply, if applicable at all, to human behavior. First, each individual human has his or her own perspectives, meanings, and reasons; two different people in the same circumstances may not behave the same. "All knowledge of cultural reality," Weber concluded, "is always knowledge from *particular points of view*" (81); thus the social scientist has a double burden, to describe and explain the action *and* to describe and explain the *particular points of view* of the human actors.

Second, the human social world is infinitely more complex than the physical world, if only because each individual has his/her own perspective, not to mention the myriad and diverse rules, roles, groups, and institutions within which they live and act. Justifiably, Weber asked, "how is the *causal explanation* of an *individual* fact possible—since a *description* of even the smallest slice of reality can never be exhaustive?" (78).

Third, since human actors have their individual (yet socially constructed and shared) perspectives and reasons, and since human action and society are infinitely complex, much if not most human action is not replicable. That is, the specific conjuncture of individuals and circumstances may only happen once. This makes generalization almost impossible. We might, for instance, investigate what happened to the Roman Empire and what individual Romans did in the past, but to generalize those actions and events to other times and places, let alone to all times and places (as Comte attempted to do) is absurdly difficult. Add to that problem the fact that many social phenomena cannot be observed at all (e.g. those that occurred in the past), and social science faces unparalleled challenges as science.

Therefore, Weber judged that the ultimate "presupposition of every *cultural science*" lies not in collecting brute social facts, and definitely not in judging any society better or more valuable than another, "but rather in the fact that we are *cultural beings*, endowed with the capacity and the will to take a deliberate attitude towards the world, and to lend it *significance*. Whatever this significance may be, it will lead us to judge certain phenomena of human existence in its light and to respond to them as being (positively or negatively) meaningful" (81).

A half-century later, Peter Winch, contemplating "the idea of a social science," proposed that the central concept in human behavior is the *rule* rather the law or the cause. A rule (or we might say a norm), according to Winch, is a meaningful guide for action and therefore a commitment to act in a certain way, based on prior knowledge (whether that is tradition, education, or personal experience): "all behavior which is meaningful (and therefore all specifically human behavior) is *ipso facto* rule-governed" (2003: 51–2). To explain his point, Winch employed an analogy that has become very common in the social sciences—the analogy between social rules and the grammar of a language:

> In learning to write English there are a number of fairly cut-and-dried grammatical rules which one acquires. . . . In terms of correct grammar one does not have a choice between writing 'they were' and 'they was': if one can write grammatically the question of which of these expressions one should use just does not arise. But this is not the only kind of thing one learns; one also learns to follow certain stylistic canons, and these, while they guide the way in which one writes, do not *dictate* that one should write in one way rather than another. Hence people can have individual literary styles but, within certain limits, can write only correct grammar or incorrect grammar. But it would plainly be mistaken to conclude from this that literary style is not governed by any rules at all. (53)

These social rules or norms account for the regularity that we see in human action. Yet, the rules can never specify every possible action, which relates

to Bourdieu's concept of *habitus*: *habitus* is learned skills and dispositions, like grammar, that allow us to produce an infinite array of original actions (and utterances). That is why he called it a structured structure that operates as a structuring structure: our knowledge, skills, and dispositions are structured by prior action and then structure—but never determine—subsequent action.

But since human action is never completely determined, it cannot be reliably predicted. As Winch added,

> sometimes even if *O* knows with certainty the rule which *N* is following, he cannot predict with any certainty what *N* will do: where, namely, the question arises of *what is involved* in following that rule, e.g. in circumstances markedly different from any in which it has previously been applied. The rule here does not specify any determinate outcome to the situation, though it does limit the range of possible alternatives; it is made determinate for the future by the choice of one of these alternatives and the rejection of the others—until such time as it again becomes necessary to interpret the rule in the light of yet new conditions.
>
> (92)

In short, Winch insisted "that the central concepts which belong to our understanding of social life are incompatible with concepts central to the activity of scientific prediction" (94).

In a filmed interview, the Noble-prize winning physicist Richard Feynman called social science "a kind of pseudo-science" because social scientists "do not do science" although "they follow the forms" of science (www.youtube.com/watch?v=HtMX_0jDsrw). He granted that they collect data, but "they don't get any laws." "They sit at a typewriter and make up all this stuff." "I might be quite wrong," he confessed, "maybe they do know all these things, but I don't think so" because "I know what it means to know something."

Inventing the Social Sciences

Somewhere between Richard Feynman's condescension and Durkheim's nineteenth-century ambition for a study of society "that is objective, specific, and methodical" (1982: 35) reside today's social sciences. As mentioned several times already, most of these disciplines are quite new, although they all have deep roots in Western civilization, and they surely did not evolve

spontaneously. They are instead the end-results of sustained efforts to create and perpetuate distinct intellectual spaces—to separate the social sciences from other previous and contemporary scholarly undertakings and to separate each social science from the others.

While there were no familiar social sciences in the ancient world, there was teaching and writing, under the general rubric of philosophy. Much of philosophy speculated on the natural world, asking what matter was composed of and how it changed or moved; Pythagoras led a school of thought examining numbers and mathematics (although in a mystical way). Closer to social science were the political and social searchings of Socrates and Plato. Socrates was an itinerant teacher who wrote nothing (and was tried and sentenced to death for his impious questions). Plato, like other successful intellectuals of his time, opened a teaching institution, the Academy around 387 BCE, which lasted for nearly a thousand years until shuttered by the Christian Roman Emperor Justinian I in 529 CE.

Plato's Academy was exclusive and closed to the public but did not charge tuition or fees. Neither did it have formal teachers and students or a set curriculum. Instead, at least in Plato's lifetime, the master would pose questions or problems to the junior members of the club, which were studied and debated. Occasional lectures were given, but more commonly participants engaged in the "dialectical" method of give and take, argument and counter-argument. Philosophical topics were the main fare of the Academy, although mathematics was also discussed, as well as subjects that would be considered scientific today, such as the motion of the planets.

Aristotle codified much of ancient knowledge in a series of writings in the fourth century BCE, on politics, ethics, poetics, metaphysics, and nature; we will encounter many of Aristotle's contributions in the following chapters. As indicated by Justinian's closure of the Academy, such free inquiry fell out of favor in the Christian-Roman era, and learning settled into two channels—a repetition of Aristotle's teachings and, of course, Christian theology. The questions that scholars pondered for a thousand years in Europe focused on proof of God's existence, speculations on God's nature, expositions of Christian belief, and interpretation of Christian literature.

A new form of education began to emerge in the early second millennium, modeled after Islamic universities. The oldest continuously-functioning university in Europe, the University of Bologna, was opened in 1088; in this and similar institutions, students "sought out eminent scholars and after learning everything the teacher could offer, received a prized certificate. Bolognese masters charged students what they thought the traffic would bear and collected their fees" (Byrd 2001: 2). The medieval university, however, "had no campus," and "each master made his own arrangements for renting lecture halls" (3). These early universities mostly offered training in professions such as law, medicine, and theology.

In the late medieval period, and especially during the Renaissance, subject-areas referred to as the "liberal arts" were added to the university

curriculum. As the name suggests, the liberal arts were somewhat freer of Church authority, freer from specific professional careers, and intended to generate freer minds. In the standard medieval curriculum, the liberal arts consisted of seven disciplines divided into two sets:

- *Trivium*, a collection of three verbal arts including grammar, rhetoric (the art of persuasion or public speaking), and dialectics or logic
- *Quadrivium*, an assortment of four technical subjects including arithmetic, astronomy, geometry, and music.

Universities, of course, continued to offer degrees in the professions.

As much of ancient philosophy had done, the university curriculum and wider Christian education was especially committed to "moral" matters. By "moral" we mean morality both in the familiar and narrow sense (e.g. sexual chastity, marital fidelity) and in the widest sense of the formation of the "good person" and the "good society." Indeed, it could be argued persuasively that education then (and now) was largely dedicated to the construction of moral persons and the establishment and stability of moral society.

As we will see in the later chapters, around the 1600s recognizable political and social philosophy began to appear, in the works of René Descartes (1596–1650), Thomas Hobbes (1588–1679), Francis Bacon (1561–1626), Blaise Pascal (1623–62), Baruch Spinoza (1632–1704), and John Locke (1632–1702), to name but a few of these "Enlightenment" thinkers. Significantly, a timeline of philosophers or social scientists usually shows a yawning gap between the ancient era and the Enlightenment, as if no original thinking was happening at all.

These intellectual figures and those to come in the 1700s and 1800s were products of turbulent social forces in their own lives and societies. Religious turmoil caused by the Protestant Reformation and the subsequent religious wars; colonialism and the discovery of many previously owned lands and peoples; the emergence of capitalism and dramatic changes in work and wealth; urbanization; political upheavals and revolutions; and of course industrialization and the many changes that it wrought on society must be understood as the backdrop against which social sciences were born.

Much of this incipient social science had a distinctly practical purpose. The area of "political economy" promised ways to better understand and manage national economies and promote national wealth. History, as we will see in the next chapter, served a useful function in creating national identity and national pride. Later, sociology would promise tools to direct the forces of social change, anthropology would provide useful information for administering global empires, and geography would prove to be a valuable resource for global trade and war.

It was not immediately apparent what the new emerging social sciences would be or even what they would be called. Porter and Ross reminded us

that in the English-speaking world, " 'sciences of man,' 'moral sciences,' 'moral and political sciences,' 'behavioral sciences,' and 'human sciences' have been among [the] predecessors and competitors" of social science (2003: 1). Meanwhile, in France by the late 1700s the terms *sciences morales et politiques* were in use, and later the word *Geisteswissenschaften* or "spirit/mind-science/knowledge" was introduced in German. Many of these names indicate more clearly than the phrase "social science" that "such studies had a moral and spiritual character, quite unlike the sciences of nature" (1).

It was also uncertain in the initial stages of social science whether there would be one unified social science or multiple discrete social sciences. "For a time, it seemed possible that social knowledge would not require such synthetic labels" as sociology and economics and psychology and anthropology, "because it would be united in a single field" (2). In France in particular, this single field was conceived as the *sciences humaines* (human sciences) or the *sciences de l'homme* (the sciences of man).

But the specialization inherent in the modern era would triumph over the budding unified social science, partly because each discipline had to carve an intellectual and administrative space for itself. "Political economy" thus split into political science and economics. Psychology largely grew out of medicine, both neurology and the clinical treatment of "mental illness." Sociology, most explicitly in the case of Durkheim, struggled to separate itself from both philosophy and psychology, and anthropology wrestled against history.

The bigger point here is that, just as knowledge in general (or ignorance) is socially constructed, so specific fields of knowledge are and must be socially constructed. It took and takes concerted effort to formulate and professionalize a new science or academic field, to differentiate it from other previous and concurrent fields. The first thing that such an effort requires is some energetic champions, some early heroes and founding fathers. Students of the various social sciences learn about these heroic founders, such as Adam Smith and David Ricardo in economics, Émile Durkheim and Max Weber in sociology, or Franz Boas and Bronislaw Malinowski in anthropology. Some deeply influential figures like Thomas Hobbes, Karl Marx, Immanuel Kant, and even Durkheim and Weber straddle disciplinary boundaries.

These founding fathers (almost all of them male) set the central questions of the embryonic fields, as well as their distinct methods. Recall, for instance, how both Durkheim and Weber tried to formulate the correct methods for social science. Such individuals tended to gather a coterie of followers around them, acting as the mentor (like Plato) to train the next generation of practitioners. Often charismatic persons, their influence cannot be left to charisma alone. Instead, for a discipline to survive and flourish, it must be institutionalized, turned into enduring forms that give the discipline its boundaries, its characteristics, and its means of self-replication. Among the standard techniques of disciplinary institutionalization are:

- academic departments and teaching chairs
- journals and newsletters
- professional organizations
- national, international, and local conferences
- research institutes
- debates and controversies
- funding sources (grants, prizes, and sponsorships)
- a literature, consisting of all of the previous writings of members
- textbooks
- in the twenty-first century, websites, blogs, online courses, and more.

As a result of strategic and successful implementation of these means, the familiar standardized social sciences crystallized in the late 1800s and early 1900s, but not without disagreement and contention. Those disagreements and contentions persist today, as specialists seek to redefine their disciplines, expand or contract their boundaries, cross disciplinary lines, invent new disciplines, and/or secede from the existing social sciences—or from the family of "social science"—altogether. Porter and Ross indicated, for instance, that some psychologists prefer to think of their field as closer to natural science (e.g. biology) than to social science. Similarly, economics cannot "be described straightforwardly as a social science, and economists often claim a higher standing for their field" (2003: 2). Meanwhile, historical processes have often left strange bedfellows uncomfortably within the same disciplines and departments, such as cultural anthropology, physical anthropology, and archaeology under "anthropology." And, as further proof of the constructed and contingent nature of social sciences, not all colleges and universities agree on how to organize them: where I went to college, anthropology and sociology were grouped in a single department, but my graduate school housed cultural anthropology in a separate department from archaeology, and we cultural anthropologists literally had no interaction with the archaeologists.

As we will see as we proceed through the chapters of this book, the social sciences share an epistemic culture that distinguishes them from the humanities and the natural sciences. Further, each social science discipline has its unique epistemic culture (sometimes more than one, separating subdisciplines, theoretical schools, and various "careers" within the discipline) distinguishing it from the others. Each social science also has its particular "biography" or disciplinary history, sharing some elements with some other disciplines while claiming other elements as unique to itself. All of the social sciences significantly bear the mark of the wider civilization—Western, Christian civilization—in and from which they were born. Finally, as we will consider in the final chapter, each social science, and social science as a whole, *and even science itself*, has undergone and is undergoing diverse challenges from other fields and from other societies and civilizations to rethink and reinvent itself once again.

From Social Sciences to Social Studies

> "Social science" is a moniker worn in higher education and in professional research. At the elementary and secondary school level, it is uncommon to find explicit coursework or literature in sociology or anthropology or psychology, etc. Instead, a condensed and simplified version of social knowledge dubbed "social studies" is characteristic of the lower curriculum. "Social studies" borrows widely from the various social sciences to teach grade-appropriate social knowledge. Indeed, the National Council for the Social Studies has defined social studies as the integrated study of the social sciences and humanities to promote civic competence. Within the school program, social studies provides coordinate, systematic study drawing upon such disciplines as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural science. The primary purpose of social studies is to help young people develop the ability to make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world.
>
> (Task Force of the National Council for the Social Studies 1994: 3)

Further, the same organization has promulgated ten central themes for social studies, including culture; time, continuity, and change; people, places, and environments; individual development and identity; individuals, groups, and institutions; power, authority, and governance; production, distribution, and consumption; science, technology, and society; global connections; and civic ideals and practices.

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