CHAPTER EIGHT

There are Laws in the Social Sciences

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In 1973 OPEC drastically reduced the amount of oil that it supplied to the world, and in short order there were long lines at the gas pumps in the USA and a much higher price for gasoline. When the gasoline prices rose, sales of large gas-guzzling automobiles declined. At the same time, exploration of new oil sources increased and eventually the known world oil reserves remained steady, despite earlier widespread predictions that oil reserves would soon be depleted.

Why did these things happen? Economists claim to know why; the law of supply and demand governs market-oriented economies and thus we would expect just the kinds of cause and effect relations between supply, demand, and price that occurred after the OPEC boycott.

So it seems that the social sciences can and do describe laws. This chapter argues that this appearance is correct. Of course, this sketchy example will not convince skeptical philosophers, who will argue that the appearances are deceptive for various reasons. To turn this example into a compelling argument will require first a discussion of what laws of nature are and do, then a demonstration that the law of supply and demand has similar traits and functions, and finally a response to the many alleged obstacles to laws in the social sciences.

Clarification of the nature and role of laws is the task of the first two sections below. Section 8.3 will develop in detail an argument that there are laws in the social sciences, using the law of supply and demand as a paradigm case. Section 8.4 will answer various objections, both to the reasoning of section 8.3 and to very idea of social laws.

8.1 Initial Issues

Do the social sciences study natural laws? The answer seems obviously "Yes," because of the following argument: physics describes natural laws governing physical enti-

ties, human beings are physical entities and thus so are societies, and hence there must be laws that describe societies.

Unfortunately, the critic won't be convinced. She will respond by saying that maybe there are laws describing the behavior of social entities as physical processes, but that does not mean that physics can state those laws, and even if it could, that is far from having laws in the social sciences, disciplines that describe the world in an entirely different vocabulary than physics.

That's fine, but here is another reason to think that there are obviously laws in the social sciences: actual examples of such laws are easy to find. Here are two: (1) No nation–state survives intact for longer than 1,000 years. (2) Every human society is composed at least in part of humans (in part, because buildings, factories, and so on might be part as well).

Case closed? No, because, as in every philosophical debate, answering one philosophical question requires answering a host of others. In this case, two of these other questions concern what is a natural law and what role such laws play in science. Those questions arise because critics will not "like" our alleged laws – they will deny that a tautology such as (2) can be a natural law (since it is a logical truth) or that a tautology can be used to explain anything. They will deny that (1) is really a law because it holds by chance.

The moral is that before we can debate laws in the social sciences, we have to first discuss what we think laws are. This is the task of this and the next section.

The question "What is a law of nature?" is not one question but several. To see why, consider the following possible different answers to the question:

> Temperature is a function of pressure and volume.
> A universal statement that expresses a necessity.
> An exceptionless regularity between events.

The first answer provides us with an *example* of a law statement. The second answer tells us that a law is a piece of language – a statement. The final answer claims that a law is something in the world, something that presumably would exist if language had never been invented. Each answer seems to be independent from the others in that someone could give any one of the answers without being logically committed to the others: I might agree with the example of a law, but object to the other two answers (as many have) that try to explain what a law is. Likewise, I might accept that laws are universal statements but deny that they are about universal regularities. For example, "the electron is a fundamental particle" looks like a law, but it is not about a relation between events. So we have three different questions to answer about laws: What kind of thing in the world is a law? What are the kinds of statements that pick out laws? Which particular alleged statements of laws actually do so? Philosophical discussions of laws have not always kept these questions separate, perhaps in part out of confusion and in part out of the legitimate hope that there might be a systematic answer to all three questions.

These distinctions point out that the question "Are there laws of the social sciences?" raises at least two distinct issues. As things in the world, there might be laws that govern social phenomena. That claim could be true independently of social science's ability to find and state such laws.

There are likewise several issues at stake behind this second question as to whether social science can state laws. We can imagine two law skeptics, the moderate and the radical. The moderate claims that current social science has identified no laws. The radical claims that it never could.

So we have a series of progressively more substantial or logically stronger theses that a defender of social laws might propound, namely that:

(1) Laws of social phenomena exist.
(2) Social science can provide statements that pick out laws.
(3) There are specific parts of current social science that pick out laws.

In what follows, I defend laws in the social sciences by defending all three theses.

8.2 What is a Law?

Philosophers and scientists have given different answers to this question, even when they were aware of the different issues at stake. Hence any debate over laws in the social sciences is at the same time a debate over what laws are. In this section I discuss what laws do and do not involve.

A quintessential example of a law of nature is Newton's law of universal gravitation: between any two bodies there is an attractive force proportional to their respective masses and inversely proportional to the inverse of the square of the distance between them. What kind of thing in the world does Newton's law pick out? The most natural answer is that it identifies a force. What is a force? It is a causal factor. A force is *causal* in that it influences something. It is a *factor* in that it need not be the only influence present. Modern physics, for example, identifies electromagnetic and nuclear forces that can be present at the same time as gravity. So a paradigm case of a law is a force or causal factor. (Smith (2002) is a good general defense of these ideas.)

Which statements then pick out laws? An obvious answer is that at least those statements that pick out causal forces are laws. The law of universal gravitation picks out gravitation forces, Maxwell's equations pick out electromagnetic force, the Darwinian law of the survival of the fittest picks out a force – fitness – that plays a major role in the biological realm, and so on. How then do we go about deciding if there are laws in the social sciences? The short answer is again by whatever means we can use to decide if there are causal factors influencing social phenomena.

It is important to note that I am not claiming that every law in science identifies a force, only that some of the clearest and most important cases of laws do. If we show that the social sciences can do something similar, we will have shown that there are laws in the social sciences.

There are obvious objections to this proposal. Answering those objections will further explore the view of laws that I favor, so I turn next to consider the following criticisms:

A law states a universal regularity, but statements picking out causal factors do not. Diet, for example, is a causal factor in health, but there is no exceptionless regularity that I can cite between diet and health outcomes.

Laws are different from accidental generalizations. (Lange (2000) is one of the more elaborate attempts to spell out this difference.) "All the coins in my pocket are copper" might be a true generalization, but it holds only by chance. It is not a fundamental fact about the world. However, statements that pick out causal factors might not be fundamental truths – they can be true because of the way the world happens to be. "The coins in my pocket interacted with sulfuric acid to produce copper sulfate" might be a true causal statement if I poured acid into my pants, but it would be accidentally true – true only due to the chance fact that all the coins in my pocket were copper.

Laws tell us reliably what would happen if things were different than they are (they "support counterfactuals" in philosophy lingo) *in a way that statements picking out causal factors do not*. I cannot infer that if I had poured acid into my pants yesterday, then copper sulfate would have been produced.

Laws allow us to reliably predict what unobserved events will look like, but statements citing causal factors may not. If I pour acid in my pants tomorrow, I cannot expect to produce copper sulfate.

Laws are universal in that they do not refer to particular entities. The law of gravitation does not mention any specific body, but the generalization about the coins in my pocket does. It is thus not universal in the way needed for a law. (Earman (1978) explores the issues in this criterion of lawfulness.)

Laws must state precise quantitative relationships; statements picking out causal factors need not.

There are laws in the natural sciences that do not refer to causes at all. Snell's law, for example, tells us the relation between the angle of incidence and the angle of reflection for a wave. Causes are not mentioned, only functional relationships.

Laws of nature describe fundamental causal forces that are not the byproduct of some deeper causal forces, but statements citing partial causal factors may be such byproducts.

Finally, identifying laws with statements that pick out causal factors doesn't explain laws. Any account of causation will need the notion of a law to explain it, and even if it doesn't, the concept of causation is just as obscure as that of a law.

I think that these claims are misguided in various ways. My responses to these objections are as follows:

Statements about causal factors need not entail universal regularities. Laws have no automatic connection to universal regularities. (Cartwright (1983, 1999) is a dedicated defender of this claim.) The inverse square law identifies the force due to gravity. However, it makes no mention of other forces. The actual behavior of objects will be

a resultant of all those forces present and thus we do not expect them to move as the law of gravity by itself would predict. The law at most tells us what regularities we would see if gravity were the only force; it does not tell us when or if that is the case and thus it does not generally entail any specific regularities on its own. It nonetheless allows us to explain and predict reliably when conjoined with other knowledge – and that is what we want laws to do.

The concept of cause is no clearer than the concept of law and/or presupposes it. Laws in the natural sciences need not be causal. I place these two objections together because they rest on a particular view of what a philosophical account ought to do, one that I reject. Traditionally, philosophers have hoped to define the concept "law" by giving a set of jointly sufficient and individually necessary conditions for being a law. That definition was to be tested by two means: (1) it was to count as laws as much as possible all and only those things that we now call or would call laws; and (2) the defining features of a law should not commit us to any philosophically questionable assumptions or concepts. For example, a tradition going back to Hume wanted an account that attributed no necessities to nature (on the grounds that all we have evidence for are regularities that happen, not that must happen) and did not invoke the notion of causation (because again our experience only presents evidence of regularities).

I reject this picture of what philosophers should be doing in giving an account of laws for several reasons:

1 Few, if any, of our concepts are amenable to definition by necessary and sufficient conditions. (Stephen Stich's work (1990, ch. 4) is an interesting exploration of this claim and its implications for conceptual analysis is philosophy.) Instead, we work with paradigm cases and make rough judgments about how close specific cases are to that paradigm. There is no reason to think that the concept of law is any different.
2 Finding a definition that fit philosophers' or even scientist's intuitions about what we call laws need not tell us much about the practice of science. What gets called a law no doubt rests on the vagaries of convention and historical contingencies. The point of a philosophical account should instead be to shed light on the practice of science – in this case, on what role laws play in science. So the motivation for explaining laws as partial causal factors is not to provide a definition of the concept "law." That is a project of dubious merit. Rather, our project should be to get clear enough on how laws function in science to ask the question as to whether the social sciences can function that way as well. Then what role do laws play in science? Perhaps many, but above all, science produces laws to explain and reliably predict the phenomena. That is precisely what identifying causal factors should allow us to do. A claim to know a causal factor is dubious to the extent that it does not allow us to explain and predict. This is why we should care if there are laws in the social sciences. If the social sciences cannot explain and predict, then it is not clear that they are sciences at all.

3 The kinds of metaphysical constraints that an account of laws must meet cannot be determined *a priori* and independently of an account of how science itself works. If a philosopher's metaphysical ideals conflicts with the successful practice of science, I would give up the former, not the latter.

Perhaps some day a completely universal account of laws will be produced. If it is, I assume that it must count those parts of science that identify forces as laws. So if I can show that the social sciences can identify forces, then I will have shown that on any account of laws the social sciences produce laws. While I am dubious that we can provide a universal account in terms of necessary and sufficient conditions that actually illuminates science, my claim is nonetheless that identifying causal forces is a paradigm of law, not that all laws must do so:

Citing causal factors does not preclude referring to particulars, but laws cannot. Whether something does or does not refer to a particular entity depends on the language that we use. Darwin's laws of natural selection apparently refer to organisms on this planet. We can eliminate that reference by defining a "Darwinian system" as one with differential reproduction and trait inheritance. Then Darwin's laws stop referring to particulars. So the issue isn't referring to particulars.

Causes can be cited without identifying precise quantitative relationships. There are two responses to this worry: laws in the natural sciences don't always do so either and specifying precise quantitative relations is not essential for the role that laws play in science. Darwinian processes involving fitness specify no quantitative relationship – relative fitnesses have to be plugged in by hand and do not follow from any general theoretical claims made by Darwin. The central tenet of modern molecular genetics is that DNA produces RNA, which produces proteins. This tenet certainly explains much and has allowed for many successful predictions. Yet it is not quantitative either.

Claims citing causal factors may be picking out accidental truths that do not support counterfactuals and cannot predict unobserved phenomena. Behind this objection is a certain vision about the place of laws in nature and science that I reject. That vision sees a sharp division between laws and other parts of science. Counterposed to this vision, I urge the view that there is no fundamental divide between the laws of science and the other causal claims that it makes. The ability to predict unobserved phenomena and to support counterfactuals accrues to all causal claims, but to varying degrees; all causal claims hold to some extent by necessity; or, in other words, being an accidental generalization is a relative matter.

Consider first the ability to say what might have happened. Any time that we have good evidence for a causal claim, we have evidence for some claims about what might have happened. If an organism's fitness is a positive causal influence on the genes found in the next generation, then various counterfactuals are supported – for example, that if A had been less fit than B (contrary to fact), then A's genes would have been less well represented than B's. Whenever there is a causal relation, we know

that if the cause had not been present and everything else had been the same, then the effect would not have occurred.

Think next about whether laws are necessary. Let's assume that a relation is necessary when it holds across different possible arrangements of things. Then the claim that fitness is a causal factor in inheritance is also necessary to a degree. In any world in which there is differential survival and inheritance of traits, fitness is a causal factor – even if different species exist or even if those organisms have a different physical basis for inheritance than DNA/RNA. Yet the laws of evolution by natural selection are accidental in that they hold only of systems with the right inheritance and competitive characteristics. They need not describe other life forms that do not meet these criteria. Even the claim that "all the coins in my pocket are copper" looks less accidental if there is some causal mechanism that excludes noncopper coins – maybe my pocket has holes in it and only pennies do not fall out. And the basic laws of physics are accidental in that the values of the fundamental constants are apparently the result of chance events in the big bang that need not have happened.

Similar arguments can be made about the ability to predict unobserved events. To the extent that we think we have picked out a cause, we are committed to thinking that future instances of the cause in similar circumstances will produce similar effects. If there is a causal mechanism that explains why my pocket only has copper coins, then we can expect that future coins examined will be copper as well. Changes in fitness will predict changes in the distribution of traits of organisms. This is true despite the fact that not all pockets and not all possible living systems allow for such predictions:

Laws of nature describe fundamental causal forces that are not the byproduct of some deeper causal forces, but statements that cite partial causal factors may be such byproducts. The request that a law of nature be fundamental in this way eliminates many apparent laws in the natural sciences, and is at odds with the role that laws play as well. The gas laws tell us that a change in the pressure in a gas will cause a change in temperature if volume is held constant. This is just one of a number of thermodynamic laws that apply to aggregations of molecules. These laws describe causal processes that are the byproduct of processes at the molecular level. Other compelling examples of such laws come from chemistry, where laws of association were explained in terms of valence, a chemical force, as it were, that is the byproduct of more fundamental forces of quantum mechanics. The no-byproduct criterion asks too much.

Moreover, the citation of causes that are the byproduct of more fundamental causes can nonetheless explain and predict. The gas laws are a case in point. They identify causes and predict new changes – and they did so long before the underlying molecular details were explained in terms of Newton's laws.

The moral I then take from these objections and the answers to them is this: laws exist in one important sense where we can cite causal factors that explain and allow us to successfully predict. But not all statements that cite causal factors are alike – they vary in how broadly they apply, in how wide an array of changing circumstances they apply to, and in how they tell us about how the world might be or will be. In

general, our confidence that causal claims are true is a function of how widely they explain and predict. The key question thus is whether the social sciences provide causal claims that provide relatively extensive explanations and predictions.

8.3 Problems and Prospects for Generalizable Causal Knowledge

So far, we have argued that we can show there are laws in the social sciences if we can show that they pick out causal processes in a way that allows for significant explanation and prediction. This section first discusses how science in general goes about finding such processes, specific obstacles to implementing these strategies in the social sciences, and the ways in which the social sciences can deal with those obstacles. I then argue that empirical research on the force of supply and demand shows that the social sciences sometimes succeed in overcoming these difficulties.

What does it take to establish explanatory causal knowledge that allows successful prediction? In rough terms, here is how the sciences do so: they take background knowledge about causes, observe various changes in factors of interest, and infer what causes what. So, in an ideal experiment, all possible causes are known and all are held fixed but for one, which is varied in a specific way. The relevant changes in effects are observed and the cause inferred.

Such knowledge is strengthened and deepened by showing that similar effects are observed in repetitions of this setup, and that the causal knowledge generated can be combined with knowledge about other causes to produce successful predictions about different setups. In this way, explanations are broadened and new phenomena predicted.

So the question is whether the social sciences can meet this requirement for establishing causal claims. We should note immediately that one standard complaint about the social sciences – that they are nonexperimental and qualitative – cuts no ice once we see what causal claims require. Recall that we need to observe one factor varying while others remain constant. We can achieve this goal without performing experiments and without stating how much one factor influences another. In other words, we can observe so-called natural experiments – situations in which the factor of interest varies and everything else stays the same. Whatever consequences result we can attribute to the causal influence of the varying factor, even though we did not directly manipulate it or directly hold other things fixed and even though we do not measure the consequences in quantitative terms. Thinking about the nonexperimental natural sciences helps to show that this must be the case. Astronomy, cosmology, geology, ecology, and evolutionary biology all rely in large part on nonexperimental evidence, evidence that is often not quantitatively measured either. Of course, controlled experiments generally are a more reliable and efficient way of identifying fundamental causes, but they are not the only way or even always the best way to gain knowledge.

A second obstacle comes from the fact that social science research often relies on assumptions that are literally false. We can divide such assumptions into two rough categories: idealizations and abstractions. Both involve assumptions that are literally

false, but in different ways. Here is an example that involves both. The gas laws tell us that the temperature of a gas is a function of pressure and volume. This causal relation can be explained by Newton's laws of motion, by applying them to the motions of the particles in a gas and equating temperature with mean kinetic energy. Such an explanation assumes that particles are solid bodies and that gravitational forces are the only ones present. However, atoms are only approximately perfectly hard bodies and gravitational forces are not the only ones present. Our claim about atoms is an idealization in that atoms do approximately have the property in question. It is not even approximately true that only gravitational forces are present – we are in this case abstracting from such forces in that we are considering how particles *would* behave if gravity were the only force present. But in both cases we are relying on false assumptions. The social sciences rely heavily on both idealizations and abstractions.

How can we have knowledge of causes by using false assumptions? If our models only approximate the real world, should we believe them? If our explanations describe how things would be if the world were different, do they explain the actual world at all?

We have good reason to think these are not insurmountable obstacles. After all, as the example of the gas laws illustrates, the natural sciences rely widely on idealizations and abstractions. Perhaps the most famous example concerns explanations in mechanics where more than three bodies are interacting. We do not have the mathematics to solve the equations that describe such situations, and we are forced to use approximations. Nonetheless, we can use Newtonian mechanics to land space probes on Mars. Obviously, not all false assumptions are an obstacle to causal knowledge.

So the interesting questions are: How do the natural sciences manage to produce knowledge of basic causal processes while using idealizations and abstractions? and Can the social science do something similar? The key issue is this: when a theory or model involving idealizations or abstractions seems to successfully predict and explain, how do we know that its success is not due to the falsity of its assumptions rather than to the truth of its causal claims? How do we know that results are not spurious?

The answer is that the natural sciences use a variety of techniques to show that the postulated causes are responsible for the data despite the false assumptions involved in obtaining them. For example, we can show that as approximations are reduced, the predictive accuracy of our theory improves, or we can show that the causal factors that we left out would not change the predictions that we derived from a theory that abstracts. So, for example, in the explanation of the gas laws, the walls of the container holding the gas are assumed to be perfectly rigid. If we allowed for walls that absorbed some energy and our resulting predictions improved, we would have evidence that our results were not spurious. Similarly, we might use our knowledge of atoms and of the gas in question to argue that the nongravitational forces present – that is, electromagnetic forces – had a constant effect regardless of temperature or pressure, and thus that changes in temperature were caused by changes in pressure.

So the question is now whether the social sciences can in principle and in practice make the same kind of arguments. We know that the nonexperimental natural

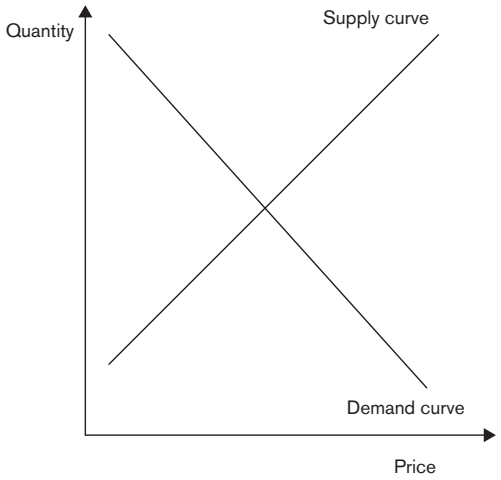

Figure 8.1 Curves representing the amount supplied and demanded for each specific price.

sciences can, so that gives some reason to think the social sciences can as well. Better evidence would come from showing real cases in the practice of social research. Our next task is to provide such an example.

Perhaps the most successful piece of social research around comes from the body of work describing the "law of supply and demand." The law of supply and demand tells us that the aggregate demand for a good, the aggregate supply for that good, and the good's price are causally interdependent. More precisely, it tells us that:

> Changes in price cause changes in quantity demanded and quantity supplied.
> Changes in supply and demand curves cause changes in price.

A demand or supply curve graphs how much individuals are willing to produce or buy at any given price (see figure 8.1). When there is a shift in price, that causes corresponding changes in the amount produced and purchased. A shift in the supply or demand curve is a second causal process – when it gets cheaper to produce some commodity, for example, the amount supplied for each given price may increase, so that the entire supply curve shifts from S_1 to S_2 (figure 8.2). A shift in the supply curve causes a change in price toward the point at which supply and demand match. In reality, both processes interact, leading to the causal interdependence between changes in demand, supply, and price.

This "law of supply and demand" does just what we argued earlier that a law does – it picks out a force or causal factor. It does not describe an actually existing regularity that relates events, since supply and demand is not the only causal factor. For example, if people experience a drastic drop in income at the same time that the price of a commodity drops, the quantity purchased might decrease instead of increasing, as the law of supply and demand on its own would predict. What the law of supply and demand instead asserts is that there exists a causal force in certain circumstances

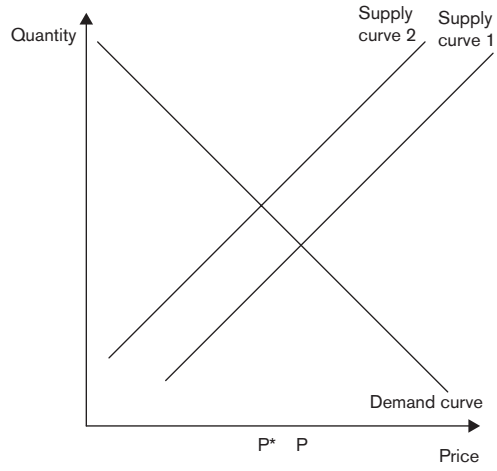

Figure 8.2 Change in price from P to P* due to a shift in the supply curve.

– roughly, where there is a market. Supply and demand influences what happens even if it need not be the only influence.

What is the evidence for the law of supply and demand? Of course we have lots of common-sense experience that seems to support it. Economists have gone far beyond that, however. They provide evidence of two sorts: deductions of what must happen from intuitively obvious assumptions about individual behavior, and detailed observational studies of price, supply, and demand in particular markets. The deductive evidence shows that to the extent that individuals maximize what they have or get, then we can expect price, supply, and demand to interact as the law of supply and demand describes. The observational evidence comes from many studies of diverse commodities – ranging from agricultural goods to education to managerial reputations – in different countries over the past 75 years. Changes in price, demand, and supply are followed over time. Study after study finds the proposed connections. (Deaton and Muellbauer (1980) is a good general survey. Early systematic work was undertaken by Stone (1954), and Pollack and Wales (1992) present some of the more sophisticated recent research.)

Such studies do not, however, work simply by observing that an increase in price results in decrease in quantity demanded, and so on. The law of supply and demand does not claim to identify all forces that influence price and we do know that other forces can interact with it. So to confirm that the supply and demand force is at work in any given situation requires taking those other factors into consideration. Observational studies of specific commodities do precisely that, and have done so with increasing sophistication as research has progressed. Changes in income, in the price of substitutes and complements (Pepsi is a substitute for Coke, chips are a complement of both), in tastes and technology, and in a host of other factors have been observed along with data about price, supply, and demand. By including these factors, economists help to rule out confounding factors and more strongly confirm the existence of the supply and demand force in economic affairs.

These practices are examples of the methods described earlier for dealing with idealizations and abstractions. Economists have refined their evidence in part by moving from studies of highly aggregative to disaggregated data – for example, from studies of the demand for food to studies of specific foods. The former studies assume that food is homogeneous with a single price; the latter drop that idealization for a more realistic picture. Abstractions are, of course, being dealt with as economists factor in other causal factors, such as income, in applying the law of supply and demand.

8.4 Objections

I want to finish my case for laws in the social sciences by considering a number of objections that have not been addressed explicitly already. Some are objections to the reasoning given above; others are directed toward the conclusion that there are laws in social science. Answering them will give my main thesis further credibility, and simultaneously tie the debates about laws to other debates about the social sciences.

A common objection to laws in the social sciences is that the laws that the social sciences produce are bound to have exceptions, exceptions that social scientists cannot identify in advance. In philosopher's lingo, any law claim in the social sciences must be qualified with the phrase "*ceteris paribus*" – other things being equal. This alleged fact raises doubts of varying sorts – that all such claims are "vacuous" or "meaningless; that they are trivially true or tautologies ("A causes B unless it doesn't"); and that they cannot be confirmed or disconfirmed because of the open-ended escape clause. (Many of these worries are discussed in Earman and Roberts (1999), as well as in Roberts' contribution to this volume – chapter 7.)

The first thing to note is that these charges are not mutually consistent, even though they are sometimes made by the same authors. If a *ceteris paribus* law cannot be confirmed, then it cannot be a tautology and vice versa; if it is trivially true, then it cannot be meaningless. We should also note that this problem of exceptions should not be unique to the social sciences. Some have argued that even the most fundamental laws in physics are qualified *ceteris paribus*. However, we don't need that radical claim to make the point. Outside of fundamental physics, most natural science deals with complex phenomena in which it is hard and sometimes practically impossible to control, or even know, all of the possible interacting causes. Yet they produce reliable causal knowledge nonetheless.

Various defenders of laws have tried to provide an account of the *meaning* of *ceteris paribus* laws in order to defer objections to them. (Hausman (1981) is an early systematic attempt; more recent accounts are surveyed in Earman and Roberts (1999).) That is a project that is perhaps best left unpursued, for it assumes there is a unitary meaning to be found, and that the scientific problem of idealizations and abstractions could be solved by analyzing the relevant concepts. The problem of analyzing *ceteris paribus* laws can be ignored, because we need not think of laws in the social sciences as qualified *ceteris paribus* in the first place. Recall the picture of laws described in section 8.2. A law picks out a causal force or factor. The law of universal gravitation, for example, asserts that there exists the force gravity. It does not describe a regularity, for gravity is not the only force and the law of gravity is silent on how other

forces might combine with it. Since it does not claim to cite a regularity without exceptions, there is no reason to think of the law as qualified *ceteris paribus*. The law is true if there is indeed a gravitational force. Laws in the social sciences work in the same way: they claim to identify causal factors and make no commitment by themselves to what other causal factors there might be and how they might combine.

Of course, like the natural sciences, the social sciences do have to worry in each particular situation that there is sufficient evidence that the causal factor in question is operative – in other words, they have to worry about confounding causes. Those worries are dealt with by the various means that we described earlier for handling idealizations and abstractions. But those are methods for applying the relevant laws, not *ceteris paribus* clauses attached to the laws themselves.

Another long-standing objection to laws in the social science complains that a "social physics" misses what is uniquely human about us. On the view defended here, the social sciences are very much like physics in the sense that both describe causal forces. But humans are not inert objects or automatons – they make choices and actively interpret the world. Human behavior is free and meaningful, and thus not amenable to natural science style explanations. Explanations in the social sciences are interpretations, not the citing of causes. Arguments in this vein come from defenders of "hermeneutic" or "interpretivist" social scientists and like-minded philosophers (Geertz, 1973; Taylor, 1971, 1980).

These worries, even if they were entirely convincing (they are not), might not undermine the claims of this chapter. We have defended the claim that the social sciences produce some laws, not the claim that the social sciences only explain via laws. It might be that some social phenomena – for example, aggregate economic activity – are best explained by identifying causal factors and that other phenomena – for example, symbolic rituals – are best explained in terms of meanings. However, interpretivists usually defend the more radical view that the meaningful and/or the free nature of human behavior undermines any noninterpretive social science. Moreover, if large parts of social behavior were not amenable to explanation in terms of causes, then the conclusions of this chapter would be less significant. So we must take these arguments seriously.

Let's begin with the worry that human free will makes laws in the social sciences impossible. Causal laws should allow for prediction of future events. But if human actions are free, the argument runs, then they are not fixed in advance. This argument has two serious flaws: it assumes a particular and controversial notion of human freedom and it presupposes that the social sciences are essentially about individual behavior.

Consider first the notion of freedom needed for this argument to work. There are two competing notions of freedom discussed in debates over freedom and determinism, the libertarian and the compatibilist. The libertarian holds that human actions are in some way uncaused – at least, uncaused by anything outside the agent. The compatibilist holds that free will and causal influences on behavior can coexist. They can do so because being free requires that your choices make a difference – that if you had chosen otherwise, it would have influenced your behavior. So changes in price cause changes in consumption, but my choice is free in that if I had chosen to

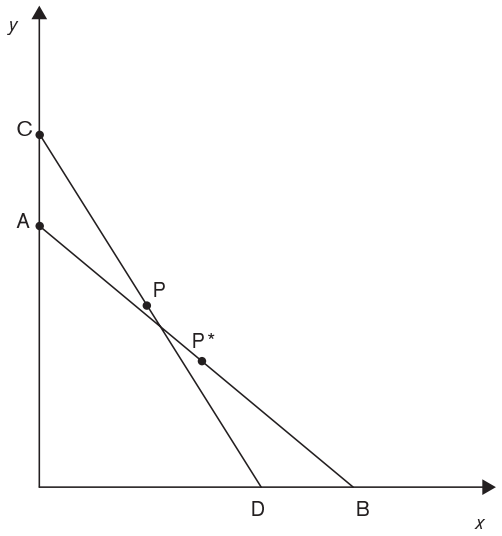

Figure 8.3 P and P* are the average quantity demanded of x and y as x becomes more expensive when consumers choose at random.

spend my money differently I could have. Obviously, the argument against laws only has force if we assume the libertarian conception of free will.

However, the libertarian conception is quite problematic. The main problem raised in debates over freedom and determinism is to specify a sense of freedom that anyone could actually have and that would really be free will. If our actions are uncaused in the sense of random, then it is hard to see that these are free acts. But if our actions are free in that we are the full cause of our actions, then it seems we must have created ourselves – if something else made us the way we are, then we are determined. But the notion of self-creation is of dubious sense and is not something that is reasonably attributable to humans.

The argument from freedom against laws also fails because it presupposes that the social sciences are only about individual behavior. That presupposition is needed for the argument because it is possible that each individual act might be uncaused and yet that there be causes of the aggregate behavior of individuals. Why? Because, as Marx succinctly put it, "men make their own history, but they do not make it as they please." We can't avoid death and taxes, as the saying goes. Individual decisions must be between the real possibilities; the facts about those possibilities may allow us to identify causal patterns in the combined behavior of individuals.

The law of supply and demand discussed earlier provides a nice illustration of how this can happen. That law implies, among other things, that an increase in price means a decrease in the quantity demanded – a move along the demand curve. There is good reason to think that this relation would hold for aggregate markets even if individual choices are free in the libertarian sense, because consumers are still constrained by relative prices (having free will does not entail the ability to determine what things cost!). (So far as I know, this argument occurs first in Becker (1976).) Figure 8.3 illus-

trates the relative prices of two goods x and y – it gives the relative amounts of x and y that can be bought with the same fixed budget. On curve CD, x is more expensive relative to y than on curve AB (you have to give up more x to get the same amount of y). Assume that the libertarian notion of freedom implies that the choices of how much individuals will consume are unpredictable – that any choice along the line is equally probable. Then the average of the choices when the price of x to y is represented by AB will fall in the middle at P*. When x increases relative to y, the new price is represented by CD and the average choice will become P. But at P less of x is consumed than at P*. Random choices facing a fixed budget and changing prices will demand less when the price increases.

Is there some reason to think that the social sciences can only be about individual behavior? There is a doctrine – sometimes called methodological individualism – that claims that this is so. (The classic statement is Watkins (1973) and a more recent defense is Elster (1985).) Yet the social sciences seem often to be about things other than individual behavior: the nature of institutions, the causes of unemployment and economic growth, the class structure of society, and so on. It takes a long and widely criticized story to get around these apparently obvious facts (see Ruben, 1985; Kincaid, 1996, 1997).

Let's turn now to the second version of the interpretivist objection. The second objection to laws stems from the fact that human behavior is meaningful. These are complicated issues, in part simply because the notion of "meaning" has proven hard to clarify. Thus, below is a sketch of how the defender of laws can respond, not a definitive treatment.

The root idea in these objections is that human behavior essentially involves interpretation in two senses:

1 Subjects interpret the world through their own categories, unlike inert objects.
2 What subjects do and say has to be interpreted. Unlike with inert objects, categorizing behavior involves determining the meaning of the behavior.

Given these two senses in which meaning is involved in the social sciences, the question is how these facts preclude finding confirmed and generalizable claims about causal factors.

One influential argument (Taylor, 1980) asserts that interpreting behavior always must be done with the aid of some previous categories on the part of the investigator. Unlike the natural sciences, there are no "brute data" in the social sciences. So the social sciences cannot be about the objective confirmation of causal claims.

A first problem with this version of the argument (and with all others) is that it seems to rule out causal explanations in some natural sciences as well. For example, when applied to the higher mammals, ethology and behavioral ecology seem to be at risk. Mammals seemingly interpret the world too and in categorizing their behavior – its point – we seem to use prior notions about what the animal is trying to do, how it reads stimuli, and so on.

In fact, there is a deeper objection lurking here; namely, that all science approaches the data in terms of previously assumed categories. In short, there are no brute data in natural science either, because data do not come precategorized and individuated.

Taylor's argument attributes to the natural sciences a very sharp distinction between theory and data that is now widely rejected.

Another common argument from the meaningful nature of human behavior claims that interpreting a subject's behavior must be done in the subject's own categories and thus makes the social sciences interpretive, not causal. We need to ask about this argument, first, whether it is true that we must use the subject's own categories and, secondly, just how that implies that causal explanations are inappropriate.

Mandating that we always explain in the subject's own categories implies that individuals never misunderstand their own behavior. That is a drastic assumption which much evidence belies – there is good evidence, for example, that individuals' conceptions of their own attitudes and beliefs are only weakly associated with their actual social behavior (Liska, 1975).

We might nonetheless grant that the subject's categories are at least important evidence, even if not infallible. But the question is then how this implies that ordinary causal explanation is impossible. There are good arguments to show that reasons and beliefs can be causes of behavior (Davidson, 1980; Henderson, 1993). A standard view on the opposite side holds that it takes a special kind of empathetic insight to grasp the subject's take on the world, and that this precludes the objective confirmation needed to establish causal claims. Perhaps intuitive insight is important evidence, but it certainly is not infallible and it must be checked against other kinds of data – by how it fits with what we know about human psychology in general, with various actions that we want to explain, and so on. Taken this way, it is just one species of evidence about causes, not a mystical fusion of observer and observed that would make the social sciences beyond the pale of generalizable causal knowledge.

8.5 Conclusion

Those parts of science that pick out forces are a paradigm case of laws in the natural sciences. Forces are partial causal factors. Some causal factors are more basic than others, but laws in the natural sciences are not restricted to only the most fundamental causes; identifying causes at all levels does what we want laws to do, namely explain and predict. The social sciences do not always tell us all relevant causes when they pick out a specific force, but then neither do the natural sciences – witness the law of gravity. The key question is whether other complicating causes can be handled in way that allows reliable causal knowledge. Arguably the social sciences can do so, as the law of supply and demand illustrates. There are various arguments that allege that humans are special and could never be explained by identifying the causal forces governing their social behavior. However, those arguments are unconvincing. While the complex nature of social phenomena certainly presents difficulties, there is good reason to think that laws in the social sciences are possible both in principle and in practice.

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