

Beyond Stamp Collecting
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Ronald Coase, whose work serves as much of the foundation of modern law and economics, frequently quotes the British physicist Ernest Rutherford for the proposition that all science is either physics or stamp collecting. Coase adds that the same is true for all social science: it is either physics or stamp collecting. Then Coase concludes: "And law is definitely stamp collecting." I would like to use this talk to praise stamp collecting. I also want to show that law – or more precisely, legal scholarship – is also physics.

By stamp collecting, Coase means the organization and classification of things – or, as he puts it, operating a filing system. The law does that, as does much of legal scholarship. Although purely doctrinal scholarship has been decreasing in both quantity and in prestige for decades, there is still much writing that analyzes cases by ordering them with other cases, even scholarship that we would consider non-doctrinal. This is, contrary to Coase's implication, a good thing. Classification is a way to bring order to what could otherwise be chaos. Even more importantly, classification permits reasoning by analogy, one of the primary types of legal analysis. With scores, sometimes hundreds, of cases relevant to an issue, coherent analysis would be impossible without some way to organize the cases.

Let me give an example of how classification brings order to one area of the law – section 1 of the Sherman Act. Although this statute makes agreements "in restraint of trade" illegal, this antitrust law cannot really do what it literally says. Many agreements that restrain trade benefit a market economy, that is, they are pro-competitive. For example, when you accept a job, you restrain trade because you have removed yourself from the employment market. When someone sells a business, say a bakery, and promises not to compete with the buyer, the seller has restrained competition in the bakery business. These restraints were permissible under the common law before the enactment of the Sherman Act, and it was obvious that Congress did not intend to make them illegal with the Sherman Act. Since the statute could not be interpreted literally, what was the Supreme Court to do?

For over 20 years, the Court tried different approaches for identifying illegal restraints without much consistency. Finally, the Court agreed on a classification scheme that has worked quite well. The scheme divides economic agreements into two categories: The more pernicious ones (like pricefixing agreements) are automatically illegal under the "per se" rule. All other agreements are judged under the "rule of reason," which requires an assessment of the competitive effects of the agreement. As the scheme proved to be too inflexible for some cases, the Supreme Court made three modifications. First, it crafted a middle category (called the "modified per se" rule) for two special types of agreements. Second, it established a subcategory of the rule of reason (the "quick look" rule of reason) for certain restraints that lack a procompetitive justification. And third, the Court created a formal process for funneling agreements into the appropriate category. The

end result is a classification scheme, with four categories and a funneling rule, that makes it much easier to analyze the hundreds of different types of economic agreements, with a good degree of predictability. Without a scheme like this, the law of the Sherman Act would be uncertain and potentially chaotic.

A good part of the natural sciences has involved classification and organization as well. The study of life and of this planet have depended upon adding to organized data. Geology, biology and even the human genome sequencing project are examples of this in the natural sciences. Physics depends on classifying and ordering data in order to find patterns and irregularities. The periodic table, an important part of chemistry and other natural sciences, is one of the great classification schemes of all time.

Before I explain why law is physics as Coase and Rutherford use the term, I want to say a little about science. There is far from any universal agreement about what makes something a science rather than part of the arts or the humanities. In my mind, science is a spirit of investigation and learning. At its core, it requires a search for theories and fundamental principles. Science also entails the rigorous use of methods in a collective enterprise, in which researchers build upon the works of those who came earlier. It is this collective, rigorous search for theories and underlying principles that distinguishes science from the arts and the humanities.

Social science is as much science as natural science. Prior to the nineteenth century, few would have distinguished natural from social science. As Friedrich Hayek has written, "During the first half of the nineteenth century ... [t]he term science came more and more to be confined to the physical and biological disciplines which at the same time began to claim for themselves a special rigorousness and certainty which distinguished them from all others. Their success was such that they soon came to exercise an extraordinary fascination on those working in other fields, who rapidly began to imitate their teaching and vocabulary. Thus the tyranny commenced which the methods and techniques [of the natural sciences] have ever since exercised over the other subjects. [Social scientists] became increasingly concerned to vindicate their equal status by showing that their methods were the same as those of their successful sisters rather than by adapting their methods more and more to their own particular problems. ... [T]his ambition to imitate [natural] science in its methods rather than its spirit has now dominated social [science]."

Hayek wrote these remarks 50 years ago, but they ring just as true today. Mathematics dominates Economics. Quantitative methods are becoming dominant in Political

Science. That is fine, so long as the methods are used in the search for theories and underlying principles, and not just in a glitzy demonstration of method. As Bob Fogel (the economic historian who received the Nobel Prize with Doug North) has said, "Not all mathematics is theory, and not all theory is mathematics."

It is important to remember that natural scientists have the luxury of being able to isolate their experiments and study from the rest of the world. This difference makes some of the methods of natural science inappropriate for various research in the social sciences. Without the luxury of being able to isolate and study one variable in an experiment disconnected from the complexity of the world, research in social science is less verifiable, which gives results that are more subject to skepticism than findings in the natural sciences. But this does not make the social sciences any less of a science than natural science. It is only a different kind of science.

There are disciplines in natural science that suffer the same problems of social science. Bob Watson, the Director of the Human Genome Project here at Washington University, has described biology as "chaotic and unpredictable," which he contrasted with physics. Meteorology must involve similar problems because it is so difficult to study the weather in isolation and because the weather is so chaotic.

Let me give you an example of how research in the law can be scientific research.

A German lawyer and I set out to compare how the German and U.S. constitutions protect property rights. Although we expected to find significant differences, we were surprised at the great similarities between the two laws – despite very different provisions in the two constitutions, despite very different structures of the German Constitutional Court and the United States Supreme Court, and despite different histories and cultures of the two countries. Our task now is to explain the reasons for the similarities. Doug North would say that it stems from both countries having a well-functioning market system. Perhaps it results from a shared Western-liberal tradition, or from both legal systems descending from Roman law, or from the influence German law had during the formative years of English common law. To put it in more scientific terms, our observation of data yielded a surprising result that we are now trying to explain as a function of a number of independent variables. This is part of an attempt to develop a theory explaining constitutional property rights protection.

It is important to note that this research project is not atypical. There are many legal scholars in this room who are pursuing similar programs of research, looking for explanations of regularities or of anomalies, and striving to develop theories or determine fundamental principles. There are many more legal scholars throughout the country doing the same kind of research – research that I believe is properly described as science.

I am not claiming that all legal scholarship is science. During the last dean search for the School of Law, one candidate told the Search Committee that law is properly viewed as part of the Humanities. Needless to say, that candidate did not get past us social scientists on the committee. But the more I've thought about his remarks, the more I've come to realize that there was truth in what he said. A defining characteristic of social science is an attempt to explain the real social world. Legal social science attempts to explain the relationship between law and the real world – not between law and an abstract, artificial or hoped-for world. A substantial amount of legal scholarship does not focus on the real social world and therefore is not social science. Let me give some examples.

Some scholarship is exegesis of legal texts, a valuable enterprise but one confined to the world of words on a page. Still other scholarship is political or social commentary based on the author's view of the world – normative writings. Neither of these is social science. Instead, they are the kind of scholarly work that are characteristic of the Humanities. I'd bet that many of the other social sciences also include scholars who prefer this kind of research. It is a scholar's own choice whether to write as a social scientist or as someone in the Arts. Both kinds of scholarship can be valuable. There is a danger, however, of being unable to distinguish between the two types of scholarship.

Sometimes the casual readers disregard information that shows the author's intent in writing the work. It is probably the case that some authors are unaware – maybe even unconcerned – about whether their scholarship is social science or part of the Humanities. The existence of two distinct types of legal scholarship may give an inaccurate picture of legal writings. The danger is that some observers will focus on the non-scientific and assume that all legal scholarship is either not part of social science or is very shoddy social science.

In the mid-80's, Richard Epstein, a very distinguished law professor at the University of Chicago, wrote a magnificent book on the protection of property rights under the takings clause of the constitution. It was an intellectual tour de force – an elegantly reasoned, comprehensive examination of takings opinions and scholarship over two centuries. But it was fiction – fiction in the sense that it did not deal with reality.

Epstein began his analysis by stating that he viewed takings law to be based on principles of tort law. He stated that whatever legal principles governed a person's harm to the property of another, those same legal principles should govern the government's harm to a person's property. Epstein acknowledged that this starting point had no support in

history, that there was little support in the law, and the two situations differed vastly because the government had very different interests at stake than a person who harmed a neighbor's property. Nevertheless, he wanted to examine the takings cases from this prospective. He spent the next 300 pages rigorously examining all aspects of takings law from a tort law perspective – and then reached his conclusion that all of the New Deal legislation was unconstitutional, which is also not true. It is a wonderful book that should be classified as jurisprudence, political philosophy, or social theory. But it is not a work of social science.

At the time, the book had great play in academia – especially among economists and other social scientists who had a conservative bent. I think they liked the conclusions about the unconstitutionality of the New Deal. These readers did not, however, pay attention to the artificial foundation upon which Epstein's analysis was built, even though Epstein clearly explained this aspect of his work. These readers treated the book as social science.

The point that I have been making, that law is part of the social sciences, is not novel. When Oliver Wendell Holmes wrote in 1881 that "[t]he life of the law has not been logic: it has been experience," he was directing us to look at how the law interacted with society. His great work, *The Common Law*, was based on anthropology, as well as legal history. Roscoe Pound, in his book *Spirit of the Common Law*, published in 1921, expressly called for "sound theories" explaining both the law's origination and its effects on society. In comparing the jurists of the 19th century with those of the early 20th century, Pound wrote:

"In the past century we studied law from within. The jurists of today are studying it from without. ... Where the last century studied law in the abstract, they insist upon study of the actual social effects of legal institutions and legal doctrines. ... Where the last century held comparative law the best foundation for wise lawmaking, they hold it not enough to compare the laws themselves, but that even more their social operation must be studied and the effects which they produce. ... Such is the spirit of the 20th century jurisprudence."

The interaction of law with society can be studied more rigorously in the 21st century than in Pound's time because of the many advances in the other social sciences. Without a doubt economics has had the greatest impact on legal analysis. Some of the greatest economists have built their theories by looking at history – Adam Smith, Joseph Schumpeter, and Doug North, to name three. Some social science scholarship is based on the application of narrow concepts or theories, such as transactions costs or principle/agent effects. Finally, the models and mathematics of neo-classical price theory came to dominate antitrust theory and also law and economics scholarship. But economics is not the only social science with an impact on legal scholarship. Related fields, like finance theory, public choice theory, and game theory, have influenced the law. The use of empirical methodology by Lee Epstein and her colleagues in Political Science, to study the courts and judicial decisionmaking is making inroads within law schools. Cognitive science and behavioral psychology are increasing in importance. Legal scholars seem to be combing the halls of the other social sciences looking for the methodology or techniques that can make them just as famous as neo-classical price theory made Richard Posner. This is a desirable enterprise because it will make legal study more rigorous.

Law professors do not invent the social science methods they apply to legal analysis. Rather they borrow ideas, methods and techniques from the other social sciences. That fact does not make legal research any less of a science. The history of the natural sciences has been scientists using inventions, processes, and techniques developed by others to make momentous discoveries or create great theories. Joel Mokyr, an economic historian who has studied technological advance, says that "genius is in the application" – in the application of the inventions and processes, not in their development. For example,

the telescope was originally only a curiosity used by artisans to create new illusions. It was first marketed as a military device for spying. Then Galileo turned a telescope on the heavens and revolutionized the theories of astronomy and the nature of scientific scholarship. Even Einstein's great Special Theory of Relativity was developed by applying techniques created by others. Einstein used a "relativity principle" developed by the great mathematician Henri Poincare. (By the way, Poincare first disclosed his relativity principle here in St. Louis when he delivered the keynote lecture at the International Congress on the Arts and Science held as part of the 1904 Worlds Fair.) The next year Einstein published his great paper.

The use of methods from other disciplines is prevalent throughout the natural sciences. Geology relies on chemistry and physics; biology relies on chemistry; chemistry relies on physics; and physics relies on mathematics. It may be that, in this sense, mathematics is the only "pure" discipline, not relying on any other. So we researchers in the law act no differently than researchers in the natural sciences when we borrow ideas and methods. Our goal, in Mokyr's terms, should be to show genius in the application of other people's work.

This brings us to the importance of the Center for Interdisciplinary Studies here in the law school. When legal scholars strive to be social scientists and to write about the law's interaction with the real world, it is important for them to understand the social science concepts and techniques that are available and to understand how to use them properly. The Center for Interdisciplinary Studies can help with that, by encouraging law professors to learn from the other social sciences. This is a two-way street, however. Scholars from the other social sciences who write about the law need to be as well educated as possible about legal matters. Richard Posner, who has thought more about interdisciplinary legal scholarship than any other living person, believes that some legal questions can be better answered by experts in other disciplines than by law professors. He also believes, however, that the vast majority of social scientists do not know enough about the law to answer them. I hope that the Center for Interdisciplinary Studies can help with that, too.

I want to end by returning to Coase's comment about the law being stamp collecting. There is truth in what he said, although legal scholarship has always contained a strain of physics. The natural course of legal research has been to become more of physics than of stamp collecting, at least since economics stuck its head in law schools over 30 years ago. My hope is that the Center for Interdisciplinary Studies can accelerate that move towards physics. All of us legal scholars are stamp collectors, but many of us want to be physicists, too.

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