

# Introduction\*

Much has been written on the present and future interactions between science and law, less so of their past. This issue brings together scholarship from history, anthropology, philosophy, and social studies of science in the attempt to add a much-needed historical perspective to the important discourse concerning the relations between science and law. The issue consists of nine papers arranged in chronological order, except for the two synthetic papers that open and close it. The papers vary widely in subject and approach. However, out of this diversity several themes emerge.

Scientific expert testimony has been a cause of much concern lately in Anglo-American courts. It is a commonplace today that “junk science” introduced into the courts by partisan scientific experts presents a dramatic new problem that demands immediate redress. However, in the opening article, I show that discontent with scientific expertise has existed ever since there were scientific expert witnesses in the courts. Tracing the development of scientific expert testimony in eighteenth- and nineteenth-century England, I demonstrate that the debate over the meaning of conflicting scientific expert testimonies and the ways to resolve the conflicts had acquired by the mid-nineteenth century all the features that today are blithely assumed to be new.

The courts’ ability to handle complex science-rich cases has been constantly called into question. Critics have argued that judges cannot make appropriate decisions because they lack technical training, and that jurors do not comprehend the complexity of the evidence they are supposed to analyze. Paternity cases in which men were determined to be fathers, even though blood tests could prove that biological paternity was impossible, have served as a much-cited example of the judicial misuse of science. However, analyzing the role paternity blood tests played in divorce cases throughout the twentieth century, Shari Rudavsky shows that judicial distaste for science in paternity cases does not come from a failure to understand science. The goals of the law, Rudavsky reminds us, are not always consistent with those of science. And when the interest of a child is at stake, the courts often prefer a social definition of paternity to a biological one.

The courts, then, are not neutral gatekeepers that simply exclude from the courtroom unreliable scientific testimony, but rather active partners in the production and maintenance of credible scientific evidence. As such, the courts prefer

---

\* It gives me great pleasure to acknowledge the generous support of Dibner Institute for the History of Science and Technology, without which this interdisciplinary effort would not have reached fruition.

sometimes to ignore certain kinds of legitimate scientific evidence, while privileging other sorts of a more questionably scientific nature. Fingerprint evidence, perhaps the most popular sort of scientific evidence in the twentieth century, is a good example. The community of fingerprint experts was always troubled by the lack of an easily articulated scientific foundation for its practices. Tracing the century-long debate over the “scientific” nature of fingerprint evidence, Simon Cole describes how the community of fingerprint experts was able to keep its lingering disagreements private, thereby maintaining its authority in the courtroom. In doing so, Cole suggests, fingerprint experts were allowed remarkable leeway by courts who were interested in preserving a credible technique for criminal identification.

The legal application of scientific evidence involves not only the determination of its scientific status but also of its legal status. For example, the legal status of medical images has always been fraught with innate contradictions. On the one hand, they seem to allow the jury to eliminate the witness and see the “bare facts” with their own eyes. On the other hand, they have been recognized as prone to deceit and manipulation. Understood the first way, medical images are primary evidence, affording the greatest certainty about what they depict. Understood the second way, they are, at best, secondary evidence, only resorted to out of necessity in cases where primary evidence is insufficient. Addressing the history of medical images in the courts, from late nineteenth-century radiography to twentieth-century computerized tomography (CT) and positron emission tomography (PET), Joseph Dumit describes the ways in which these images came to be understood in court. The late twentieth-century interpretation of intricate representations as real and objective, Dumit suggests, exacerbates the innate contradictions that have always accompanied the use of scientific images in the courts and brings the issue to a point of crisis.

Science has influenced not only legal fact-finding and decision-making procedures but also legal education. During the nineteenth century many jurists hoped that, like geometry, the law too could be reduced to first principles from which all necessary consequences could be deduced. Others yet hoped that, like geology and biology, the law could be explained developmentally through the history of its empirical content. Howard Schweber examines the particular conceptions of “science” in antebellum America that were incorporated into the idea of “legal science.” In the 1870s, Schweber suggests, these conceptions were incorporated into Christopher Columbus Langdell’s famous case method, which continues to influence both legal education and jurisprudence to this day.

Of course, law has affected science no less than science has affected law. For example, the conception of scientific information as a tangible asset ushers in the whole legal apparatus designed to deal with issues such as who owns it, how is it transferred, and who is allowed to use it. We are accustomed to think of legal disputes over the ownership of scientific knowledge as a relatively modern phenomenon. However, as James Voelkel demonstrates, such disputes stretch back at least to the early-modern period. Describing a legal dispute during the opening

years of the seventeenth century between Johannes Kepler and Tycho Brahe's heirs over the right to capitalize on Tycho's astronomical observations, Voelkel shows how the legal dispute determined Kepler's choice of research, and, more particularly, the way in which that research was presented in his revolutionary *Astronomia Nova* (1609).

With the advent of twentieth-century biotechnologies, the transformation of science from intangible knowledge into tangible commodities has taken a bizarre turn. Revisiting the much-critiqued case of *Moore v. Regents of the University of California*, in which John Moore claimed property rights in a patented cell line made from his spleen, Hannah Landecker maps the nexus of science, law, and commerce in which human tissue is transformed into a patentable cell line. Tracing the intertwined development of the relevant scientific and legal discourses, Landecker shows how legal reliance on scientific explanation can lead to uncritical adoption of ethical and political biases already built into the objects and practices of contemporary biotechnology.

The negotiation concerning the proper relations between legal and scientific authorities, and how much deference science should command in relation to other modes of knowledge are at the center of Jessica Riskin's paper. Riskin describes a legal dispute in 1780 France between an amateur *physicien* and his neighbors who demanded that he remove a lightning rod he had put on his chimney. This most local of disputes turned into a three-year court battle concerning the proper relations between facts and theory, between center and periphery, and between legal and scientific authorities. The case launched the career of a young and unknown lawyer, Maximilien Robespierre, who argued successfully against the need for expert mediation between the judges and the facts. A decade later, Riskin suggests, this view became the official policy of the newly founded Republic, leading to the abolishment of scientific expertise from French officialdom.

Finally, in the paper that closes the volume, Yemima and Hanina Ben-Menahem examine the philosophical bases for our expectations that science and law provide uniquely correct answers to the problems they address. Comparing the different ways in which philosophers of science and philosophers of law have approached this requirement of "one uniquely correct answer," Yemima and Hanina Ben-Menahem suggest significant analogies between the two disciplines, and offer important insights into their practices and philosophies. Both law and science, Yemima and Hanina Ben-Menahem conclude, have developed surprisingly similar strategies to cope with indeterminacy, thereby preserving the legitimacy of their fact-finding and decision-making processes.

The relationships between science and law over the past centuries have been varied and complex. As the essays in this volume demonstrate, the study of this relationship allows us to address the ways in which society in different epochs has constructed its ideas about who is entitled to represent nature, what constitutes legitimate scientific and technological knowledge and practices, the criteria by which these are evaluated, and the social role of expertise — in short, how we have

understood and deployed truth, justice, knowledge, proof, and property. More research is needed before the interplay of science and law is sufficiently elucidated. It is my hope that the papers in this volume suggest the richness of this picture that has yet to emerge.

*Tal Golan*  
*Dibner Institute for the History of Science and Technology*  
*Massachusetts Institute of Technology*