

TAKING INFERENCE SERIOUSLY

Remarks on Receiving the John Henry Wigmore Award for Lifetime Achievement in Elucidating the Law of Evidence and Process of Proof

Peter Tillers[†]

(with an introduction by D. Michael Risinger)

INTRODUCTION

Peter Tillers was born in Latvia in 1943 and came to the United States as a child soon after World War II. Like many for whom the United States has been a refuge, Peter managed to adapt and thrive in the face of difficult circumstances, mainly by dint of intellectual talent and hard work, which led him to Yale, from which he graduated in 1966, and Harvard Law School, class of 1969, a class that produced three “evidencers,” as William Twining refers to those in the evidence and inference game, Peter, Roger Park, and myself.

Peter was James Chadbourn’s research assistant at Harvard, and since Chad was the general editor of the *Wigmore* treatise,¹ doing revisions of various volumes, Peter became immersed in the work, taking to it like a duck to water, since he came to law school with a deep interest in the problem of knowledge. After graduation, Peter did a stint as a litigator, which showed him the problems of knowledge in practice all right, practical realities which he had never forgotten and always insisted on taking into account, even in the most theoretic settings. But then he turned toward the academy, which was his natural bent. Peter taught at a string of schools—Puget Sound, Boston College, Rutgers Camden, Colorado, and New England—before coming to rest at what

[†] For most of his distinguished scholarly career, the late Professor Peter Tillers, 1943–2015, served as a Professor of Law at the Benjamin N. Cardozo School of Law at Yeshiva University. For Cardozo’s memorial article, see *Professor Peter Tillers, Longtime Faculty Member and Scholar in Evidence, Passed Away at 72*, CARDOZO LAW, <http://www.cardozo.yu.edu/news/professor-peter-tillers-longtime-faculty-member-and-scholar-evidence-passed-away-72> (last visited Nov. 15, 2015).

¹ JOHN H. WIGMORE, *WIGMORE ON EVIDENCE* (Chadbourn rev. 1970).

was to be his permanent home, Cardozo, in the mid 1980s. In the late 1970s, Chadbourn commissioned Peter to revise Volume I of Wigmore's great treatise. Volume I is the foundational volume of the whole work; it deals with the fundamental issues of relevance, weight, and inference. Peter researched and marshaled information on those subjects from many disciplines, and rewrote the text to accommodate the new insights, expanding the volume into two separate volumes in the process. They were published in 1982. One of them, Volume IA, featured Peter's masterpiece on probability theories and the law of evidence.²

In many ways, Peter's revision of Wigmore's Volume I set the tone and the agenda for not only his own scholarly life, but for those who were touched by his pursuit of that agenda, as he not only wrote about it, but as he also organized conferences around it for the next twenty-five years, bringing together a heady mixture of different voices from different disciplines bearing on the nature of relevance, inference, argument, and the law of evidence. His writing has been important, but his facilitation of cross-fertilizing interdisciplinary conversations has been equally important. He has been the impresario of evidence and proof over decades, and there has been no other like him. Deservedly, Peter became recognized—both in the United States and abroad, including his native Latvia—as a key founder of the New Evidence Scholarship: a movement that shifted the direction of the study of evidence from formal doctrine to interdisciplinary investigations of proof processes that rely on probability theory, logic, and epistemology.³

For all of this, in January 2015, his colleagues in the Evidence Section of the Association of American Law Schools, chaired by Professor David Caudill of Villanova, bestowed on him the John Henry Wigmore Award for Lifetime Achievement in Elucidating the Law of Evidence and Process of Proof. Professor Tillers was too ill to attend the meeting or read his remarks himself, but he was connected by speakerphone, and could hear the applause of his colleagues and offer a few words of thanks directly to them. Professor Tillers' talk, *Taking Inference Seriously*, was his last work.

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² Peter Tillers, *Modern Theories of Relevancy, 1931-1981*, in 1A WIGMORE ON EVIDENCE § 37 (Tillers rev. 1983).

³ For another founder's description of this movement, see Richard Lempert, *The New Evidence Scholarship: Analyzing the Process of Proof*, 66 B.U. L. REV. 439 (1986).

TAKING INFERENCE SERIOUSLY⁴

I am deeply honored to be here—to be virtually here—to receive the Wigmore Lifetime Achievement Award.

There is relatively little doubt that some of you associate my name with the so-called—and now not so new—New Evidence Scholarship. The New Evidence Scholarship began roughly in the late 1960s and early 1970s. Mathematics and statistics have played a prominent role in the New Evidence Scholarship, and a good deal, though by no means all, of the new scholarship whose study I have promoted over the years makes use of mathematics and statistics. The underlying reason for my interest was never just the idea that mathematical tools can shed light on the nature of evidence and inference. I have always had a broader and fuzzier goal, the goal of advancing the study of evidential inference by employing a wide variety of conceptual tools and branches of human knowledge, including, but not limited to, mathematics, formal logic, and matters of that sort.

In my own work I have used mathematical tools only sparingly, and generally I have used only very simple mathematics (primarily arithmetic and simple algebra). When I have used mathematical tools, I have used them, in the main, not to construct models of the world but, rather, to explore the nature of *argument* from and about evidence. Mathematics is, among other things, a special grammar or language that can be used to construct *arguments*. When I have used mathematics in my work, I have used it primarily to explore the nature of evidential *argument*.

It is fortunate, or perhaps it was just inevitable, that evidential argument has been the focus of my sporadic efforts to use mathematics in my scholarship. The role of argument in inference has been my focus because I strongly believe that human beings do not directly perceive the world that they believe surrounds them; I have long believed that human beings use their minds, brains, and senses to construct the world, to form images of the world that they believe or assume surrounds them. Given this, it should be apparent why I think that argument—including mathematical evidential argument—is *subjective*. And given this, you can understand why I reject the notion that an argument about evidence couched in mathematical language is an algorithm, or a fixed formal recipe for the solution to an evidential problem. Logically valid arguments can and do produce false

⁴ Remarks delivered by speakerphone at the 2015 Annual Meeting of the Association of American Law Schools on Jan. 3, 2015.

conclusions. For example, a formally valid argument may rest on false premises. Finally, it should now also be apparent why I do not believe that an evidential argument couched in mathematical language is necessarily a “model” of actual evidential inference. The reason is the same as before: an argument is an argument—whether mathematical language is used to make the argument or not. For me, mathematics is a guide to the nature of certain kinds of argument.

Although I believe evidential argument and evidential inference are necessarily subjective, I do not believe that inference from evidence is or should be nothing more than an act of free creation or pure invention. I am too much of an admirer of science and common sense to believe any such thing. In most legal settings the aim of factual inference is to produce factual conclusions that have a good chance of being true—that have a good chance of approximating actual events and states of affairs in the world. For this reason, if for no other, it is fortunate that legal systems worthy of the name demand that important factual conclusions must rest on at least some evidence: a requirement of evidentiary support imposes at least some veritistic, truth-seeking constraints on fact-finding.

But although I concluded that evidence and argument are two essential ingredients of reliable factual inference, I also reached the conclusion that these two ingredients cannot by themselves explain how human inference in legal settings actually works or how it should work. Although the requirement of evidentiary support ensures that some of the premises of an argument about facts have a basis in evidence, a bare requirement of evidentiary support allows the formation of distinct valid inferential arguments that lead to a variety of factual conclusions, including disparate factual conclusions. This consideration, along with my experience as a litigator in law practice and my experience more generally as a human being in the world, led me to the conclusion that any adequate account of the actual or proper working of factual inference must take *intuition* into account.

But to assign intuition a central role in fact-finding in the legal process is almost a show-stopper. That’s because “intuition” seems to refer to beliefs, principles, propositions, and other such matters, or matters that are not arrived at through conscious deliberation but are simply given or implicit, that just happen to be there in our minds, in our brains, or somewhere else in ourselves. If this is what intuition is, and if fact-finding in the legal process is importantly driven by intuitions, it hardly seems possible to regulate fact-finding in a rational fashion. The notion of rational intuitive inference appears to be an oxymoron! This is the puzzle I have wrestled with most of my working life.

Although I may strike you as an unduly obsessive fellow, allow me to say that I believe and I hope I have made some progress in solving the puzzle about the relationship between reason and intuition in inference. One of my insights, which is not necessarily an original insight, is that the answer to the question of the role of reason and intuition in inference cannot be given in either/or form: the correct answer cannot be that inference is always driven either by reason or intuition but not by both. Reason and intuition both play a central role in inference.

In addition, the boundary between intuition and reason is not fixed; it is not immutable. When I engage in introspection, I often conclude that many of my intuitions are at least in part a product of my earlier conscious ruminations—sometimes, to be sure, very fragmentary and disordered ruminations, but conscious ruminations nonetheless. If my experience is not atypical and if it is not a product of delusion, perhaps it is possible to get decision makers who are involved in the legal process to reflect on and sometimes revise the intuitions with which they begin; evidence and argument can be directed at such intuitions.

As I struggled to work out the role of intuition in fact-finding in the legal process, it became apparent that such insights, even if valid, do not guarantee that fact-finding in the legal process will be accurate. For even if some intuitions are penetrable by reason, human beings seem to have some or many intuitions that are largely impenetrable to introspection and deliberation; many of the intuitions that play a role in fact finding probably lie entirely beneath reach of conscious thought. So I was forced to confront the following question: even if we recognize that both intuition and reason play a role in factual inference, and even if we acknowledge that we can consciously evaluate some of our intuitions, are we forced, in the end, to conclude that no matter how much we human beings reflect and deliberate, our factual inferences are generally not trustworthy because at least some of the premises of our inferential processes are largely or entirely beyond the reach of conscious thought—and, *for that reason*, are therefore necessarily untrustworthy?

As I struggled with this question intermittently, for literally decades—I consulted literature in fields such as neuroscience, artificial intelligence, psychology, and cognitive science. I was trying to find out whether there is much reason or logic involved in subconscious inferential processes. And much of the literature I examined does assert or assume that some sort of logic or logics control, regulate, or structure subconscious inferential processes. To be sure, some of the literature that I examined emphasizes the fallibility of subconscious and conscious human judgment, inference, and deliberation. Moreover, none of that literature asserts that human judgment is infallible. But at least some of

the literature asserts that at least some subconscious human judgments about at least some aspects of the world are not only produced by natural processes that are governed by some sort of logics but are also, in the end, *miraculously enough*, fairly reliable.

But after reaching these conclusions, I was left with a nagging question: how does the recognition that (a) subconscious inference exists—and is omnipresent in human inference—and (b) some sort of logic or logics are involved, bear on the puzzle I posed earlier, that is, does the unavoidable role of intuition in human inference necessarily frustrate any effort to make the process of factual inference in the legal process both rational and reliable? Eventually I arrived at two conclusions that are pertinent to this puzzle—but, as you will see, they are not entirely reassuring conclusions.

First, although there is ample reason to believe that a logic or logics of some kind play a critical role in subconscious inference, the nature of that logic or logics is not yet well understood. If that is true, the notion that we might use some sort of logic-based technology to improve subconscious human inference in general is only a fantasy at this point in human history.

Second, even if we grant the general supposition that subconscious human inference is “fairly reliable,” we cannot extract from this fuzzy general supposition: (a) exactly how reliable subconscious human inference is, and (b) the circumstances that render subconscious human inference either more or less reliable. Given these two desultory conclusions, does it follow that my extended exploration of the literature in fields such as artificial intelligence and cognitive science was pointless?

I am inclined to think that the literature I examined offers rational grounds for the hope that two important propositions about human inference are true:

First, as I have already said, many of our subconscious or tacit inferences are “fairly reliable.” Unlike some students in the fields of “heuristics and biases” and behavioral economics, I am impressed by how often human beings get their inferences right rather than by how often they get their inferences wrong. A belief in the reliability of much subconscious inference counsels against too strong a general distrust of the substrate of subconscious human inference.

Second, as I noted earlier, even if one supposes, as I do, the existence and omnipresence of subconscious inference in human inference, it does not follow that *all* subconscious human inference is entirely inaccessible to conscious thought. Although the structure of some subconscious human inferential processes is likely to remain entirely impenetrable to conscious human thought, it is possible as I said earlier, and even likely, that there are degrees of subconsciousness,

and that careful and persistent deliberation can bring to consciousness some thoughts and feelings that initially lurk largely beneath conscious awareness, that swim between consciousness and unconsciousness. If so, as I noted earlier, it is possible that actors in the legal process can, with effort, make themselves more conscious of, more attentive to, more aware of, some of the intuitions that seem to play a role in their thinking about evidence—and it is possible, though not inevitable, that by doing this such actors will improve the quality of their inferences.

Of course, even if I am right about all of this it remains true that a vast number of subconscious inferential processes will remain largely beyond the reach of conscious human deliberation and introspection, and such subconscious inferential processes will remain, by definition, impervious to conscious critical examination. But perhaps this is a limitation that we must just accept; perhaps all that we can ask of human actors is that they deliberate as carefully as they can about their intuitions and, taking whatever advice they can from other people and outside sources, decide as carefully as they can. For the foreseeable future, fact-finding in the legal process necessarily involves human actors. It is too much to ask human beings to do more than the best that they can, but perhaps these insights can help us better understand what constitutes the best that human beings can do.