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Discussion paper: The structure and the logic of proof in trials

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If one travels across time, continents and cultures, one needs to attend to the interests and attitudes of one's audience. If one does not do so, one risks being thought strange. Of course, the same may hold true if one travels just from New York City to Texas (a mere 1600 miles or so). Many years ago I traveled from New York City, where I was teaching at the time, to Houston, Texas, to give a talk at one of the law schools in Houston. At the time I was much preoccupied with the work that had been done by people in artificial intelligence. I was interested in such stuff because I wondered about the possible applications of that research to the study of evidentiary processes in litigation and adjudication. In my talk in Houston, I tried to explain my tentative conclusion that artificial reasoning methods (including statistical methods) could not supplant ordinary methods of reasoning. After the talk, it soon became apparent that some or much of the audience viewed me as closely akin a man from Mars.[1] In this paper, I will use some words—words such as 'ontology'—that may seem strange or repellent to some or many readers. So I thought I would begin by talking briefly about some of my motivations for talking in ways that may seem strange or unpleasant to some or many readers.

Several decades ago I revised the first volume of John Henry Wigmore's multivolume treatise on the law of evidence.[2] Being a reviser is both harder and easier than being an author of one's own book. It is easier because one can, if one wishes, take the position of a critic and commentator rather than that of author. And in dealing with some or many of the theoretical portions of Wigmore's magnum opus, I often did exactly that. However, after finishing my revision, I agreed to write a successor to my revision. Now, after a delay of many years, I am doing that. The job of this successor volume, like part of its precursor, is to examine 'theoretical considerations' that bear on the law of evidence and proof. This means that I can no longer just be a commentator. Now I must present my own 'theory of proof'.

In looking at what others had done in trying to develop a theory of the law of evidence and proof, I saw many impressive accomplishments. I also saw a variety of approaches. On the one hand, some of the authors seemed to focus on the abstract logic of uncertain reasoning; and their theory of the law of evidence and proof (a theory that they often called a theory of 'relevance') effectively amounted to their view of the nature of logical thinking about uncertain factual propositions.[3] It seemed to me then—and it seems to me now—that there is something wrong with this approach. Above all, I wondered and I wonder still how it can be confidently said that the methods of reasoning and demonstration in a particular legal system (such as the American one) rest on and express such logic.

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[1] I did not get the job. But I had the good sense to withdraw my candidacy before the school had a chance to reject me.

[2] 1 & 1A Wigmore on Evidence (Little Brown & Co.: Peter Tillers rev. 1983).

[3] See, e.g. Edmund Morgan, Basic Problems of Evidence 183–188 (Joint Committee on Continuing Legal Education, ALI & ABA: 2d ed., 1962).

On the other hand, other American Evidence scholars (too numerous to mention here) seemed to do little more than catalogue some of the features they thought and said were characteristic of the American law of evidence and American methods of proof. These catalogues, taken as such, were sometimes interesting. But I could not see and I still cannot see how such catalogues, in of themselves (if taken at face value), could be a considered a 'theory' of the American law of evidence or American methods of proof. Catalogues, taken as such, are mere lists of things, not explanations.

In more recent years, some legal scholars have charted a middle course between these two extremes. Legal scholars such as William Twining, Paul Roberts and Adrian Zuckerman have not tried to reduce the systems of proof they studied either to logic or to contingency. These scholars have instead emphasized what might be called the force of cultural and normative ideals in the workings of the law of evidence and of evidentiary processes in settings such as criminal trials.[4] However, these same scholars (particularly W. L. Twining) are generally not willing to regard the law of evidence in this or that country as nothing more than a cultural artifact. For example, Twining apparently thinks that logic is also at work in the proof process in law—at least sometimes and to some degree.[5]

I think this third way of looking at juridical proof—as being neither pure logic nor pure accident—is, roughly speaking, the correct one. But to say that is not to say a whole lot. Where do we go from here? More specifically, where do I go from here? What if anything can I add to what insightful and masterful scholars such as Twining, Roberts and Zuckerman have said and written?

I yearn to extract 'timeless' lessons—or, in any event, 'relatively' timeless lessons—from my study of juridical proof in America. If I am to have any hope of doing that, I think I must turn to ontology—that is to say, I think I must talk about the fundamental nature of things, including the fundamental nature of the human animal. However, if an ontology is to be of any substantial use to me, it cannot amount to the teasing out of the necessary consequences or implications of the unchanging nature of things and human beings. That sort of ontology would likely generate an ideal model of juridical proof, but not an explanation of actual systems and practices of juridical proof. I want and need an ontology—a theory of nature and of human nature—that allows for contingency as well as necessity. In addition to that, however, I yearn for an ontology that allows reason to exist in contingency and accident (to exist, i.e. in contingency, not just 'co-exist' with it).

Can I have all that I want? That remains to be seen.

We all know what some of the necessary starting points must be. We must concede, I think, that human beings have limited amounts of time and limited resources. Furthermore, we must now concede, I think, that all or almost all factual questions have uncertain answers and that nothing we can do can eliminate all uncertainty about most factual hypotheses.

So far so good, yes? But what does this tell us about the nature of juridical proof?

[4] In Criminal Evidence (Oxford: 2004), Paul Roberts and Adrian Zuckerman use invoke five central principles to explain, they say, the main features of the law of criminal evidence in England. Id. at pp. 18–22. In Rethinking Evidence: Exploratory Essays (2nd ed., 2006) (as well as elsewhere), William L. Twining describes what he calls the 'rationalist' tradition of evidence scholarship. At page 76 of that book, he even provides a helpful table that summarizes the properties that scholarly tradition ascribes to the methods of inference and proof used in trials following the common law tradition. (But he views these attributes of inference and proof as forming an 'ideal type' rather than an actual and precise characterization of any actually existing system of juridical proof.)

[5] In various works, William Twining advocates the use of neo-Wigmorean analytical methods to advance what he presumably views as 'rational' methods for lawyers to participate in the process of juridical proof. See, e.g. Terence Anderson, David Schum and William Twining, Analysis of Evidence (2nd ed., 2005). However, Twining has relatively little to say about the rationality or irrationality of specific rules of evidence such as the hearsay rule and the best evidence rule.

Perhaps it tells us quite a bit. One might argue that given the realities of human existence that have been recognized so far, we know that a system of juridical proof must draw uncertain factual inferences about factual questions in a limited amount of time and with limited resources—and, knowing that, we at least know that if we are to understand factual proof we must understand the logic of uncertain inference and the workings of the logic of inference under resource and time constraints. So, to understand proof, we must understand the logic and economics of uncertain inference. There are, of course, quarrels about the nature of the logic of uncertain inference and about how scarcity constrains and channels uncertain inference. But at least—so it might be argued—we know what we have to study and understand if we are to understand juridical proof.

But there is something wrong with this hypothesis. The error is hinted at by one question: How do we know that actual systems of juridical proof (if, i.e. they deserve to be called 'systems') aim at establishing the truth about the world? Furthermore, even if we concede that truthfinding is one of the aims of any system of juridical proof, how do we know how important—how comparatively important—that aim is?

These questions point to an important feature of actual systems of juridical proof: Proof practices in legal settings are social and cultural phenomena that have multiple purposes; when viewed from the perspective of the norm of truthfinding, juridical proof has many 'accidental' features—and nothing in heaven (or on earth) dictates what those 'accidental' purposes are, how important they are or what the trade-offs are between such accidental purposes and truthfinding. Given these realities, it is probably not possible to deduce the necessary characteristics of juridical proof (except at a very abstract level, one from which deductions about specific historical proof practices can rarely be drawn).

Are we then reduced to embracing the question-begging proposition that ontology reveals the nature of juridical proof to the extent that juridical proof seeks to establish the truth about the world?

I think that is not the limit of what ontology has to teach us about the actual and necessary workings of juridical proof. I say that because modern ontology teaches us that the human animal is an 'evolving intelligent organism'. This feature of our existence (in addition to the features of time and resource constraints) also has some necessary implications for the workings of rational juridical proof.

I cannot spell out all the implications in this short paper. Permit me to mention just two possible implications of this fact about the present character of human existence.

First, because human beings are natural organisms, human beings will and must use tacit, ingrained and subterranean knowledge and 'information processing mechanisms' to reach conclusions about the world.[6] This fact in turn has a variety of implications. For example, it generally means that no conceptual apparatus can hope to replace the inferential mechanisms that human beings use to draw conclusions about the world; and it means that, in general, the job of explicit inferential methods is, to the extent possible, to make the relatively implicit, the partially submerged, more explicit and less submerged. The person who more than any other has adopted roughly this perspective on representations of evidential inference is Timothy van Gelder. Van Gelder views such representations as tools that can 'augment' existing human cognitive capacities—rather than as devices that replace defective human cognitive processes. At the very beginning of a seminal article[7] about

[6] The epistemological and inferential theory I sketch here builds on the neo-Aristotelian theory I mentioned in my essay Peter Tillers, Crime, Procedure, and Evidence in a Comparative and International Context 179 (Hart, 2008).

[7] Timothy van Gelder, 'The Rationale for Rationale,' 6 Law, Probability and Risk 23 (2007).

his software Rationale—and, more generally, about formal representations of evidential inference—van Gelder tellingly quotes, with approval, a passage by D.A. Norman:

> The power of the unaided mind is highly overrated. Without external aids, memory, thought, and reasoning are all constrained. But human intelligence is highly flexible and adaptive, superb at inventing procedures and objects that overcome its own limits. The real powers come from devising external aids that enhance cognitive abilities.[8]

As this quotation makes plain, van Gelder most definitely does not abjure logic. But he does believe that representations of logical evidential inference can complement naïve cognitive capacity. In an e-mail conversation with me, he referred to such representations as 'extrospection'—as contrasted with introspection. This neologism (which he claims he did not invent) evokes what I have in mind when I talk about the implications of thinking of individual human beings as 'evolving intelligent organisms', for the enterprise of constructing formal representations of evidential inference.

Second, the material that the human mind must excavate to guess at the proper workings of the human mind is not just the workings of one's own psyche and mental processes. The philosophical investigator must entertain the hypothesis that at least some human 'social' practices, like individual mental processes, are to some extent rational truthfinding practices and that social factfinding processes, like individual psychic and mental phenomena, can suggest or hint at important characteristics of the proper logic of evidential argument, or factual inference.[9]

My vision of (wo)man and his(her) world is neo-Aristotelian. I do not believe in the radical separation of descriptive inferential theory and normative inferential theory. I believe that the ideal workings of human inference must be and are rooted in the actual workings of human inference and that human intelligence consists in part of the ability to see when actual inference works well and when natural inference works in a degraded or imperfect fashion. The function of reflection and conscious thought is, to the extent possible, to perfect—and, very occasionally, to transcend—the excellence of natural human thought.

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This—what I have just said—is the nub of what I wanted to say here. After I shared an earlier version of this argument with several close friends, I got two very interesting reactions.

One friend (Bruce Hay) wondered about—well, in truth, he vigorously challenged—my treatment of 'the question of universality/necessity vs. accident/contingency'. He wrote that he wondered whether my premises imply that legal factfinding systems would evolve towards the same end, that they would all eventually become more or less the same or whether, instead, my principles or premises suggest or imply that 'our limitations naturally evolve us toward very different cultural results'. Am I suggesting, i.e. that 'if we were all infinitely rational beings we would presumably

[8] Id. at 24 (quoting D.A. Norman, Things That Make Us Smart: Defending Human Attributes in the Age of the Machine (Reading, MA: Addison Wesley, 1994)).

[9] In an abstract of another paper (a still-unwritten paper that prompted the argument sketched in this paper), I offer three examples of the possible epistemological lessons of actual human social-legal practices. For example, I suggest that American proof practices, if viewed as resting on truthfinding considerations, harbour some possibly very important epistemological lessons about the relationship between truthfinding, multiple investigative hypotheses and resource constraints. See Abstract, http://tillers.net/abstract.html (July 19, 2010). Cf. Peter Tillers, 'The Fabrication of Facts in Investigation and Adjudication' (1995, 1998 and 2007) (see especially '§5. Implications of Interpersonal Variability in the Formation of Conjectures and Hypotheses: Let a Hundred (Discordant?) Flowers Bloom in Investigation and Proof?') at http://tillers.net/fabrication.html

have the same practices; but we aren't, so we should expect very different, localized, contingent, accidental adaptations in the matter of proof, as in other matters'?

I answered in part by saying the following:

> You raise a question I didn't try to answer, the question of the universality or non-universality of my theory of proof. I recently told a good friend … that I had made a mistake in originally conceiving of [this paper] as sketching the outlines of a theory of proof.
>
> My focus is in part on human social-legal practices as offering "hints" of rationality. This business of hints has an obvious and intended link to the Peircean … idea that evidentiary trifles are sources of inspiration for abductive inferences. …
>
> Decades ago I was a neo-Hegelian. (That was before I decided that any kind of Hegelian logic is a dead end.) If I were still a neo-Hegelian, I might venture to guess that different societies largely-unwittingly experiment with, or at least try out, different visions of inferential rationality.[10]

Two other friends—good friends both (Scott Brewer and Federico Picinali)—raised another question. They raised this second question in different ways but they raised essentially the same question.

Scott Brewer was particularly upset by what he thought were the anti-critical implications of my argument, by what he thought was the implication that human beings should tolerate and accept their error-prone ways of reasoning about evidence and facts. Federico Pincinali raised this same question in a different way. I answered as follows:

> The question of the relationship between native or inherited reasoning, on the one hand, and artificial or new forms of reasoning, on the other hand, is central. It certainly is the case that in some domains (e.g. the realm of chemistry) we have improved our reason. It is also the case in other domains (such as law) that we hope to improve on our prior and inherited reasoning. It is rare that we can entirely escape from inherited (and often tacit) reasoning. But we can improve or we hope to improve how well our inherited conceptual, reasoning, sensory etc. equipment works. I see the human animal as in part a self-organizing creature. But the human creature must work with [the equipment] it has at any given moment. There is a mystery here: The human creature has the power to use what it has to become more than it was. This applies to reasoning and inferential ability. But history proves that this can happen. Else how does one explain the existence and power of methods such as calculus?

These two general questions—one question deals with humanity writ relatively large (sociolegal methods of factual inference and proof) and the other with single human creatures (the methods

[10] Earlier in this paper, I spoke of my yearning to extract 'timeless' lessons—relatively timeless lessons—from ontology. One possible (relatively) timeless lesson from the evolving nature of human creatures and societies may be that different individuals and societies can and will entertain different ideas about how to best find the truth about facts and about how best to reconcile the search for the truth with other objectives, preferences and aspirations. Compare my concluding comments here about the question of the eventual convergence or nonconvergence of individual or sociolegal methods for getting at the truth about facts. Simply stated, I am agnostic on the question of where all of us are headed.

individuals do and should use to draw inferences from evidence)—these two general questions may be related. I confess I hesitate to discuss how they may be related because I fear that I am wading into deep philosophical questions that are better addressed by theologians or cosmologists than by parochial lawyers such as me. But the persistent nagging of my friends has forced me into this corner. So please bear with me while I venture a few extremely speculative thoughts.

In both cases—both in the case of humanity writ large and in the case of humanity taken singly—I assert that it may be possible, appropriate and perhaps even necessary to wrest rational methods for dealing with uncertain factual propositions out of our existing or inherited human thought practices. The fragility of this hypothesis in either case (in the collective case or in the case of the individual) is exposed by the following question: By what right can we or should we believe that anything in our existing way of thinking or in our existing way of doing things (dealing with factual issues) is rational and what is the process by which we supposedly improve on the hypothetically half-baked rationality of our existing modes of thought and action, which may not partake of rationality to begin with?

My answer to this is a concession that I have no demonstrably correct solution to this difficulty. But I do say that what we see in ourselves (either taken singly or taken collectively) does sometimes appear to us to be rational and sensible and that when we reflect on what we presently do and the way we presently think (process information), we sometimes seem to make our half-conscious but rational inferential practices more explicit and thereby—it seems to us—sometimes make our existing ways of thinking and acting work better—and that sometimes we are even able to decide to modify the way we think and act (as well improve the working of our ways of thinking and acting) and that sometimes (but not always) by doing so we are able to become more rational in the way we draw conclusions about facts. I also say that I am not alone in believing that such things happen. But I readily concede that this is not conclusive proof that such things do actually happen. Moreover, I concede that even if I am correct—even if such things do happen—I am not in a position to say whether we are all evolving towards becoming better and more rational beings or whether something like a divine or cosmic spirit or substance has implanted within us some budding rationality together with the ability to develop our incipient and imperfect rationality and sometimes even transcend it. But I am entitled to hope!

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My thanks to Bruce Hay, Scott Brewer and Federico Picinali for their perceptive comments on an earlier version of this discussion paper. Their criticisms, questions and suggestions have already prompted me to make some changes in my argument. But I have no particular reason to think that the changes and additions I have already made will satisfy these friendly but critical caveators and interrogators. Furthermore, I do not expect that my argument as now formulated will meet with general approval from students of epistemology, evidence, inference and juridical proof. Instead, I am inclined to think that many such scholars will have grave doubts about my argument. Nonetheless, I believe the argument presented here holds promise. I recognize that the argument presented here is a mere argument sketch. This is a reason why I would like to have a discussion—in print—to see whether and how my argument might be developed and refined—or whether the argument made or sketched here ought to be abandoned.