

Review for THES (submitted 20/09/03)

By John Adams

Law, Probability and Risk: A journal of reasoning under uncertainty

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“You’ve listened to the testimony and you’ve had the law read to you and interpreted as it applies to this case. It now becomes your duty to try and separate the facts from the fancy. ... If there is a reasonable doubt – then you must bring in a verdict of ‘not guilty’. If, however, there is no reasonable doubt – then you must, in good conscience, find the accused guilty. ... The death sentence is mandatory in this case.”

By a stroke of serendipity I began reading the first three issues of this journal on a train to Edinburgh where I witnessed a riveting Fringe production of *Twelve Angry Men*. The words with which this review begins are the words of the judge in the play instructing the jury about to begin its deliberations.

The play encapsulated vividly everything that the title of this journal suggests it ought to be about: the law and *reasonable doubt* – a term that encompasses all the other key words in its title – “probability”, “risk”, “reasoning”, and “uncertainty”. Implicit in the journal title, and explicit in the judge’s instructions, is the point that the circumstances in which these words are invoked frequently lead to consequences of great significance. Lives and fortunes, happiness or misery all depend on the constructions placed on these words.

On the train back to London I continued my reading. And when I got home I typed the key words of the title into Google. For “law” I got 61 million hits; for “risk” 29 million; for “probability” 5 million; and for “uncertainty” 3 million. Cyberspace is awash with concerns about the subject matter of this journal. And a superficial sampling of these millions of hits confirmed that each of these key words means different things to different people. There is clearly a place for a new journal that will bring coherence to this important but inchoate subject. Is this it? My verdict is that it could be.

The journal’s guidance to would-be contributors says that the readership includes people “interested in the evaluation, interpretation and presentation of evidence.” I began applying the “angry man” test to each of the articles I read. I became a lay juror, enjoined to make sense of the information presented to me – for those who have seen the film of the play, I became the juror acted by Henry Fonda.

For those who have seen neither film nor play allow me to explain. After hearing all the evidence and the judge's instructions, the jurors enter the jury room convinced, 11 to 1, of the guilt of the accused. The sole dissenter (Henry Fonda in the film) is not convinced of his innocence, he merely "doesn't know". What follows is a wonderful tutorial on the shades of meaning embodied in the term "reasonable doubt" – a tutorial that culminates in a unanimous verdict of not guilty. As an exploration of the difficulty of "reasoning under uncertainty" I found the play more incisive and instructive than most of the articles encountered in the first three issues of *Law, Risk and Probability*.

"Presentation" comes a poor third to the clever exploration of the technical problems of "evaluation" and "interpretation". Although the inaugural editorial stresses the multidisciplinary nature of the journal – its target readership consists of academic lawyers, legislators, statisticians, probabilists and forensic scientists – in its guidelines for would-be authors it retreats from the aspiration of mutual intelligibility: "the Editors accept that not all papers need be entirely intelligible to all readers."

This is a pity. There are hundreds of journals in which lawyer can speak unto lawyer – with as many *res ipsa loquitur*s and other Latinisms as they want – and statistician can speak unto statistician with their hieroglyphics (e.g. " $N \cap X \cap (f_1 \cap f_2 \cap f_3 \cap \dots) \rightarrow H$ path (A)") and arcane dialects. What would be really useful would be a journal that played the Henry Fonda role – a journal that specialised in translating the evidence of the specialists into a language that a legislator or juror might find intelligible.

In the first three issues I found nine (seven of which were book reviews) out of twenty one articles that passed the angry-man test. The first article in the first issue was not one of them: by eminent (I assume) academic lawyer Prof. D.H. Kaye, it proposes (I think) that the established view that plaintiffs in civil litigation must prove their cases by a "preponderance of evidence" (what he calls the $p > 1/2$ rule) should be modified to take account of the monetary value of the losses at stake. In making this argument he takes a genteel swipe at the equally eminent (I assume) Prof. R.J. Allen whom he accuses of misrepresenting one of his arguments in a previous edition of his (Allen's) text book. A year later (vol. 2 no.1) Prof. Allen is given the right of reply in the lead article. Allen notes that the present edition of his book "removes the offending reference of Professor Kaye's work." Here the debate becomes difficult to fathom. Allen appears unrepentant. Did Kaye threaten to sue? So far as I can follow the argument Allen wins. And it is always entertaining watching lawyers wrestling in mud. But applying my "angry man" hat I ask what does it matter? I struggled to imagine a case in which it would.

Another complaint relates to the journal's treatment of "uncertainty". Over 80 years ago Frank Knight in *Risk, Uncertainty and Profit* made a very useful distinction between risk and uncertainty. "Risk" is where you know the odds, "uncertainty" is where you don't – often not even the sign. None of the mathematical/statistical papers thus far deal with true uncertainty. Without numbers their methods are of no use, so they assume or invent numbers to turn uncertainty into risk.

I now turn to the good part of this curate's egg – the book reviews. The first issue presents *four* reviews of one book – *Breaking the Deadlock* by Richard Posner. The deadlock was the Gore/Bush election in which the result was determined by the counting (or not) of hanging chads. Here we have a momentous issue overhung by great uncertainty, and four impressively articulate people to address it. I imagine myself being on a jury (or perhaps a member of the Supreme Court) addressed by these four advocates. They all had compelling arguments.

They all acknowledged (implicitly) that they were dealing with the much more difficult problem of uncertainty. Risk problems can be judged mechanically by invoking the “balance of probabilities”, risk greater than 50%, or “reasonable doubt” – some much higher, but arbitrary, probabalistic threshold. But uncertainty leaves judges, and jurors to agonise – and in this case to wrestle with their political consciences. What made these reviews particularly compelling was that, at the time of writing, many of the same arguments were being re-run in California.

Should the editors decide to redirect the academic lawyers, statisticians, probabalists and forensic scientists to their specialist journals, and concentrate on publishing articles of the quality of those found in the reviews of the Bush/Gore election – jargon-free articles that agonise articulately about uncertainties in a way accessible to an attentive jury - I might become a subscriber.

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