Philosophy 324A

Philosophy of Logic

2016

Note Twenty-one

AN UNNOTICED ANOMALY IN THE LOGIC OF CRIMINAL VERDICTS: AN INVITATION TO FURTHER ENQUIRY

ABSTRACT

My purpose here is largely exploratory. It is easily demonstrated that, in wide-ranging instances juried verdicts at the bar of common law criminal justice are inconsistently based, even if each individual member of the jury were to have arrived at this same verdict from different but consistent subsets of the total evidence. In such cases, the jurors' consistent subsets of the evidence will not only differ one from the other, but each one of them will be logically inconsistent with the evidence-sets of at least one of the others. Embarrassing on its face, the fact that juries arrive at verdicts for inconsistent reasons is made all the more vexing by the further fact that, if any evidence-set is inconsistent in any small particular, it is easily shown that it is inconsistent in every particular whatever. This latter fact (or purported fact if one prefers) is a heavily litigated one in logical theory. To the best of my knowledge, neither part of this embarrassment (real or merely apparent) has surfaced in a unified and principled way in the writings of lawyers, jurists, and legal theorists. The purpose of this note is to extend to the legal community an invitation to bend its talents to this matter. The urgency of the invitation is spurred by the further fact that, irrespective of whether either aspect of the inconsistency problem is known to the public at large, or to legislatures and benches, the view of virtually everyone at large is that within a quite narrow margin of error juries in common law jurisdictions convict the right persons.

1. *Criminal jurisprudence: Some orienting remarks*

Common law jurisdictions embody the English law, varyingly so to some extent. English law (I now speak generically) should be of considerable interest to logicians and epistemologists.[1] Of particular note is the criminal proof standard, which requires that the guilt of an accused be proved as charged, and proved beyond a reasonable doubt. The standard is usually held to be a very high one, and it has long been questioned whether courts and juries have the demonstrative wherewithal to meet it. The question is made all the more pressing by the law's stout resistance of the expectation that so centrally important a notion would be given a clarifying definition and the standard's fulfillment criteria properly set out. In trial settings, the natural place for such tutelage would be the judge's opening remarks and his later charge to the jury. The law's disinclination to oblige this expectation strikes the layperson as extremely odd

[1] An accessable survey can be found in John Woods, *Is Legal Reasoning Irrational? An Introduction to the Epistemology of Law*, volume 2 of the Law and Society series, London: College Publications, 2015. Notwithstanding strong appearances to the contrary, my answer to the book's title is "no".

and unhelpful, and the logician or epistemologist as disturbingly evasive. Even so, in Oklahoma and Wyoming, a judge's instruction on the meaning of the criminal standard is automatic grounds for *reversal*, never mind the probative merits of the cases advanced at trial.[2] This is not to say that judges decline to try to help jurors in understanding what the law asks of them. The usual way of doing this is not by definition or the orderly specification of the criminal proof criteria. A fairly common way of proceeding can be (loosely) described along the following lines: "Pay careful attention to what goes on here, and keep an open mind. You must also keep your own counsel and not discuss the case with anyone, not even the juror sitting next to you, until you retire to consider your verdict. Take special pains to suppress or bracket any biases you might have, and under no circumstances rush to judgement about any element of the case. When you retire to the jury room, confine yourselves to the evidence at trial. Aided by your overall experience of life in general.[3] If you are entirely satisfied that the case against the accused is legally conclusive, you must vote to convict, and otherwise you must vote to acquit." This is perfectly reasonable advice. But it is advice without specificity. It is advice of a kind that no physical chemist would dream of giving to a fledgling researcher, or any macroeconomist either. The question here is whether this matters and, if so, what is to be done about it.

Verdicts are constrained in other ways. Jurors have a sworn duty to predicate their decisions solely upon what they see and hear at trial – the reading of the charge, the accused's plea, the trial judge's opening instructions, the opening statements of counsel, what witnesses swear to under direct and cross-examination, the closing arguments of counsel, the judge's charge to the jury, and the to-and-fro of what goes on in the jury room once the judge has given the case to the jurors. Taken all together, there is a lot of information that a juror is obliged to consider.[4] Call this the *total evidence.* Part of the total evidence is evidence in a legal sense or, as I shall say, *witness evidence.* Witness evidence is the sum total of the questions witnesses are asked and answer. Witnesses swear (or affirm) that what they say in response to a question is "the truth, the whole truth, and nothing but the truth".[5] When a witness answers a question, she "swears a fact into evidence." All that this means is that she has answered a question having committed herself to answer it truthfully and fully. Nothing is witness evidence unless sworn or affirmed.

Facts sworn in evidence need not be genuine facts, and frequently are not. Even when a witness gives a lying answer, she swears a fact into evidence, albeit a defeasible one in this technical meaning of "the word". (She could be impeached under skillful cross-examination.) Witness evidence also includes information immediately inferable from answers to questions, supplemented by any further information of which it can be presumed the judge will have taken "judicial notice", for example the fact that water is wet. There is enough apparent vexation in the intersices of total and witness evidence to keep a logician gainfully employed for years.

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[2] *Pennell v. Oklahoma* (1982), and *Cosco v. Wyoming* (1974).

[3] In legal terms, what is common knowledge for a jury is that body of fact of which "it may be deemed the judge to have taken judicial notice."

[4] In some situations the trial judge is also the trier of fact; these are non-jury trials. In all jurisdictions, the prosecutor's opening remarks are obligatory. Defence counsel needn't open with a statement of defence or may ask permission to delay it until the prosecution has rested. This is allowed without judicial permission in the City and County of San Francisco, for example. Neither is it necessary for the defence to mount a contrary case of its own.

[5] When a witness takes an oath, he swears by Almighty God. If he prefers to affirm his intention, he does so in his own name. False oaths and affirmations, and certain classes of false answers, are subject to the criminal laws of perjury. Theologians have their own views about how the Almighty deals with such transgressions.

To the best of my knowledge, the concept of total evidence has yet to surface in a theoretically unified and systematic way in the lawyerly and academic writings on the jurisprudence of trials. If true, this would mean that when a judge tells a juror that he is duty-bound to base his decision on the evidence and nothing else, he might be unacquainted with the equivocality of their instruction.

This bears directly on the proof standard. If, on the judge's instructions, jurors were to pay no attention to anything they've seen or heard at trial unless it's been given in the propositional content of an answer to a question put to a witness by counsel, it would make other structural aspects of a criminal trial inexplicable. What would be the point of having (or permitting) the closing arguments of counsel and a judge's own summary of the evidence, given that none of what would be said in such deliverances would be in sworn response to any question put by either counsel? And if it isn't evidence, why would jurors feel duty-bound to heed it?

The plain fact is that no juror, judge, lawyer or citizen at large has ever taken these components of a criminal trial to lack for an intuitively motivating rationale. So we may infer from this that what is seen and heard of such contributions passes routinely into the trial's total evidence, and that it is upon *this* – the total evidence – that the jury performs its sworn duty.

A further element of importance is what a juror *sees* when listening to what goes on at trial. The public visibility of the proceedings is a bedrock principle of common law justice. When a witness gives an answer which is implausible on its face, sometimes its credibility will hinge on the manner in which it was given. Was the answer convincingly paced in the context of its delivery, neither too rushed nor too hesitant? What about tone of voice, clarity of diction, the respondent's facial expression or body language? Equally, a perfectly plausible answer might be delivered unconvincingly, owing to some visible feature of the answerer's manner. Often the significance of the answer – I mean its effectiveness – will rest on a combination of its audible and visual characteristics. There are no algorithms for how best to take the probative measure of a witness's manner, certainly none known to any judge or juror. Such methods of credibility-assessment are not in the least peculiar to trials. They are part of the basic cognitive equipment of the man or woman at large. However, several other features of how trial evidence is collected, introduced, responded to, and judged for credibility, are indeed peculiar to legal contexts. Let me turn to some of these now

Perhaps the biggest and most epistemologically interesting feature of trial evidence is the extent to which it seems *by design* to violate the Principle of Best Evidence, by which all scientific enquiry is disciplined and held to account, as are a good many of the argument-making and investigative practices of everyday life. This prompts some critics to think that "evidence-based" criminal proceedings are more rhetorical, theatrical, and artificially final than altogether rational. Another way of stating this difference is that not one shred of the evidence amassed in the police investigation on which the present indictment rests is admitted in evidence at trial – not even the gun that discharged the fatal rounds – except on the *testimony* of a witness in answer to juridically permissible questions. Nothing a policeman knows of the facts of the case is heard or seen in court unless sworn into evidence by a witness, of whom he himself might be one. When this happens, a police officer is never permitted to just sit back and say his piece. Whatever he says is significantly constrained by the scope and parameters of each of the carefully planned questions put to him by the lawyer who questions him. No answer will stand unless it stays within the confines of the question.

Neither judge nor jury will have had – or would be allowed to – any prior acquaintance with the case, in respect of which they are, so to speak, babes in the woods, wholly reliant on the

sayso of strangers with no prospect of direct observational confirmation or disconfirmation of what has been said.

The common law is highly risk-averse to false convictions, and makes considerable effort to keep them to a minimum. The policy is reflected in the holy writings in which it is better to have rescued one lost lamb than to have kept safely intact the other ninety-nine.[6] It is a policy with a cost directly mandated by the duties of justice. The cost is that the rate of false acquittals will substantially out-pace the rate of false convictions. Some critics – albeit a minority among social justice theorists – hold that asymmetries as stark as this one are an intellectually and morally untenable over-reach of the undeniable moral necessity of matching legal convictions to the genuinely guilty.[7]

Judges, too, have a highly filtered relationship to the evidence. Unlike civil code systems, common law judges have no role in the investigatory phases of criminal cases. No judge has the discretion to determine what is to be presented in evidence, beyond her legal authority to rule on the admissibility of a question or of a given answer to it. Admissibility decisions are taken solely on the merits of the question – its relevance to the matter at hand and its material significance. A judge cannot summon a policeman to her chambers. Neither can she command the presence of an accused. In whichever ways she performs her duties, she has no option but to do so at *one remove or two* from the realities of the case on the ground. If a judge happened to think that if she herself were prosecuting this present case she'd have produced a different and much better prosecution, that would be of no matter here. Only if she determined the prosecutor's case to have been manifestly inadequate on its own merits, could she have anything to say or do about it. It is the same with how a judge might perceive the case for the defence. It is of no consequence at all that she might think that, had it been her show, a much better defence would have been provided. Only if she thinks that on the merits of the case actually advanced, the accused hasn't had a competent defence, is this one any business of hers.

This same critical factor of *distance* pervades the workings of the jury. Normally jurors will be strangers to one another and to the other parties at trial. There is some question of what, if anything, a juror must do when one or more of the witnesses is known to him. For example, an expert witness might be a juror's cardiologist. The safe course is to require disclosure and leave it to the judge's discretion to determine the likelihood of bias, and then to proceed accordingly. Enshrined in the accused's right to be judged by his peers is the idea that a peer is any person at large with sense and good-will enough to come to a decision based on the total evidence at trial and his general experience of life, and nothing else. Flowing from this is the supplementary principle that an ideal juror will have no expert knowledge of any subject-matter having a relevant bearing on any material element of the case. If, for example, the case at hand rested upon psychiatric considerations – as when a defence of diminished responsibility is offered – no psychiatrist can sit on the jury. Accordingly, not only is the evidence once or twice removed from the realities of the situation on the ground, and all sayso evidence immune from direct observational confirmation or disconfirmation, the twelve people who decide the case are

[6] "Acquitting the guilty and condemning the innocent – the Lord detests them both", *Proverbs* 17:15. As the later writings avow, the Lord detests them unequally.

[7] The leading and most effective proponent to date of this critical assessment is the philosopher of science and legal scholar Larry Laudan. See his *Truth, Error, and Criminal Law: An Essay in Legal Epistemology*, New York: Cambridge University Press, 2006, and *The Law's Flaws: Rethinking Trial and Errors?*, London: College Publications, volume 3 of the Law and Society series, 2016.

required to have no specialized means of doing so. Taken severally and together, it is little wonder that the epistemologist and the logician would be found to think that the management of trial evidence routinely violates the Principle of Best Evidence.

By tradition and policy trials at the criminal bar of common law are civilized versions of trial by combat. Unlike the original, the blood spilt at a modern criminal trial is metaphorical. In its bloodless version, the weapons of combat are words spoken in patterns of attack-and-defend exchanges regulated by the court's rules of procedure. This feature of trials matters in a specific way for the material significance of evidence. Given the adversarial nature of the attack-and-defend milieu, it is virtually guaranteed that the trial's witness testimony will in various places be inconsistent, and all of it will have arisen in answer to tendentiously intended adversarial questions. By inconsistent I mean logically so. What a prosecution witness might say about a point of material significance will often be outright contradicted by what a defence witness says. In each instance, a fact is sworn into evidence, albeit a fact that is both contradicted and contradicting. Since witness evidence is a foundational part of the total evidence, the inconsistency of witness testimony leeches into the total evidence as well.[8] It is virtually always the case in contested criminal trials that the total evidence on which a juror is sworn to reach his decision will be in one way or another logically inconsistent. For any logician, this is a matter of considerable significance, not only in respect of the law's rationality, but also its obligations to justice.

2. *The inconsistency of verdicts*

An especially tough requirement – tough and I would say unrealistic – is that juries are given one of only two pre-set verdicts to arrive at, guilty or not-guilty. There are no intermediate options.[9] What is more, there is no verdict, for or against, unless there is unanimous support for it. No other decision-method in criminal law is subject to so heavy a requirement, not even in the highest court in the land when it decides the constitutionality of an existentially explosive and furiously disputed practice on a five to four split. It bears on this that any matter put to a jury will be an existentially stirring one. Indictable crimes are not easy things to be indifferent to. Neither are the deprivations of liberty and treasure, and the collateral ones of destroyed reputations, collapsed marriages, and deep and prolonged wretchedness. It is well known that the more a disputed matter is existentially fraught, the lower the likelihood – indeed the practical possibility – of arriving at an unanimous bimodal decision about it. Another complicating factor is the sheer size of the decision-instrument. Even big courts have nine judges at most, as for example in Canada and the United States. Juries have twelve, which is another third more.

We have already touched on the entirely routine inconsistency of the evidence on which such bimodal unanimities are to be forged. It is widely believed that no juror would ever, in all intellectual conscience, be able to base his own decision on reasons he knows to be inconsistent.

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[8] Since the total evidence includes everything seen and heard at trial, two jurors might honourably disagree about the believability of a witness's answer, based in part upon the equivocal manner in which she was seen to having delivered it. In which case, an inconsistency could be lodged in the total evidence independently of the plausibility of the *content* of the witness's spoken answer.

[9] In Scots law (which is not common law) a third verdict is of *not proven* is permitted. Sometimes a common law jury does indeed have a third option of a kind. In certain instances, it can acquit the accused of the crime he's being tried for and convict him of a lesser contained offence. It is also true that a common law jury will sometimes to try to persuade the trial judge that they are incapable of reaching agreement. No judge will release a deadlocked jury before repeated exhortations to reconvene and break it on their own. Common law judges greatly dislike hung juries and take emphatic steps to prevent them.

It would therefore appear that even though the total evidence is inconsistent and that juries must consider it all, an individual juror will reach his decision on some *consistent subset* of that total, corresponding roughly to which parts of it she believes with highest material confidence. As various commentators have supposed, if this were so, two things would have to have happened. Each individual juror would have divided the total evidence into all its consistent subsets, from which she would then have selected the largest consistent subset in which she reposes her most confident material belief. Two problems are therewith occasioned. One is the question of how a jury's most-assured *belief* that there is no reasonable doubt of the accused's guilt as charged rises to the *proof* of guilt required by the criminal standard. I shan't take up this question here,[10] and want instead to turn our attention to a second difficulty. It is actually two related ones.

One pertains to how the partitioning of an inconsistent evidence-set into all its consistent subsets is actually brought about. The other is how an evidence-set is to be scanned for consistency. Whatever the manner in which these objectives might be achieved in theory or principle, they are manifestly beyond the conscious powers of any human being doing the best that's humanly possible. While part of the problem is the daunting size of the evidence generated by a trial, that is not the heart of the matter. Suppose that the neurotypical human's belief-system harboured a scant 138 logically independent atomic beliefs. A consistency check of that slender set would require "more time than the twenty billion years from the dawn of the universe to the present."[11] This is a problem of long standing in research communities that investigate the computational capacities of real-life cognitive agents. There is a further problem which, so far as I have been able to learn, hasn't yet surfaced in the legal literature. It will help in framing the problem if we allow ourselves the hopeful assumption that somehow or other in some *subconscious* manner, the human reasoner actually does manage to achieve the partition of the inconsistent total evidence into each of its subsets, and is also able to run a consistency check on each. An even more simplifying assumption is that the partition task is surplus to need, and that what more plausibly happens is that an agent's *belief-forming* mechanisms scans the inconsistent evidence-sets and extracts the largest subsets that are reasonably believable. The consistency of these subsets would presumably flow from the reasonability of their belief-worthiness. That, of course, is little more than a guess, perhaps not much more than a wing and a prayer in an aerial dog-fight in the London blitz.

The second and largely unnoticed problem flows directly from the logical structure of unanimity in hotly contested and existentially fraught decision spaces. Finding out will require the services of a unanimity logic, or at least would if we had one on hand. Consider a hypothetical case. When the jurors begin their deliberations, they are often doubly conflicted. They disagree about the accused's guilt and innocence – I mean, of course, his legal guilt or innocence as determined in light of what the jury makes of the total evidence. Moreover, even those jurors who agree on guilt and innocence, will frequently disagree on the evidential basis on which their respective conclusions are arrived at. In the first instance, if the case has been contentious and strongly and capably fought by both sides, evidential subset-inconsistency is virtually assured. When this happens, the union of the twelve evidence-sets in which the verdict

[10] A fuller discussion can be found in chapter 21 of *Is Legal Reasoning Irrational*?, entitled "An epistemology for law".

[11] Christopher Cherniak, "Computational complexity and the universal acceptance of logic", *Journal of Philosophy*, 91 (1984), 739-758; pp. 755-756. Of course, "the present" of the Cherniak reference was 1984. These thirty-two years later, things have got no better.

is grounded is inconsistent. Negotiation enters the picture in a way that I'll caricature in an over-simplified dialogue between two jurors.

> *Juror one*: Don't you see that even on your reading of the evidence, Guilty [not-Guilty] is the right verdict.
> *Juror two*: Thanks for your help in getting me straight about that.
> *Juror one*: Thanks in turn for being so open-minded.
> *Juror two*: I was just doing what I'm supposed to do.
> *Juror one*: Now that we've agreed on the verdict, there's only one other thing to clear up. Although it supports what we agree is the correct verdict, your reading of the evidence is in certain respects at odds with my own. Obviously, a verdict based on incompatible supporting evidence cannot be allowed to stand. So what will it take to bring your reading into line with mine?
> *Juror two*: Look, we both want agreement on the verdict, but if the cost of having it is that I adopt your reasons for supporting it, I cannot in all conscience give the verdict we've just agreed to. For that to happen, I'll have to base it on my own evidence-set.
> *Juror one*: Okay! Okay! I yield. Let's agree to convict (or acquit) and agree to disagree about why.
> *Juror two*: After all, hasn't each of us reached agreement in an intellectually conscientious, albeit different, way?

There is nothing fanciful or tendentious about our imaginary example. Something similar frequently happens even in the courts above when some highly contentious issue has been decided by majority vote. Unless the majority justices have fully equivalent *rationes decidendi* (reasons for judgement), each must write a separate one. When this happens, and since the majority decision is *eo ipso* the *court*'s decision, the court will have decided a case for reasons it cannot agree on. This leaves it entirely open that one or more of the majority justices will have thought the *ratio* of other justices to have been an inadequate basis on which to reach the decision they all agree on. Nor can it be ruled out that one *ratio* is inconsistent with another. In some instances – *R. v. Morgentaler* (1988) is a well-known Canadian example – the majority *rationes* not only differ but when taken together fail to be internally coherent. When this happens, the majority *decision* stands, but no *precedent* is set by the court's disunified *ratio decidendi*, hence no new rule of law.

3. *The composition fallacy*

Suppose now that in our hypothetical example the jury decides to convict. On present (not so plausible) assumptions, each juror convicts on a consistent subset of the evidence, but the *jury itself* convicts on contradictory evidence. I take it that it is widely, though tacitly, assumed by legal scholars that if the vote of each *juror* is consistently evidenced, the verdict of the *jury* is also a consistently based one. Were it otherwise, jurisprudential *angoisse* would have gone viral and there would be distinguished named chairs in law schools devoted to inconsistency-expungement. The present comparative silence of legal scholars strongly suggests the commission of a special case of the fallacy of composition, according to which it is reasoned that if all parts of a whole have a given property, it follows necessarily that the whole entity has it too. Logicians and decision theorists who study the rationality of collective decision-making often take evasive action to preserve their thinking from this fallacy. One (the right one) is not to

draw the compositional inference in the first place. The other (the dubious one) is to relativize the compositional inference to ideally rational agents, both collective ones and their component individual partners, largely to ease the theory's engagement of powerful and simplifying mathematical methods and higher prospects for some impressive new theorems. I happen to join with those who regret these idealized sleights of hand in so many precincts of rational decision theory. This is not the place to litigate that regret either. The point to note here is not that legal theorists fall into the same questionable habit with regard to inconsistently based jury verdicts, but rather that in a jury deliberation itself, any initial *verdict*-disagreement must be dispelled. However, in so doing, there is no requirement that *evidence*-disagreement also be dispelled, never mind that the opposite might be what jurors will have tacitly assumed. Whatever the workings of an unanimity logic might turn out to be, the fact remains that the legal duty to arrive at verdicts without dissent or abstention is wholly dischargeable by eliminating verdict-disagreement. Whether evidence-disagreement is also expunged is entirely and at best a contingent collateral benefit of the resolution of the former. So let's repeat the central point:

- *Inconsistency tolerance*: Removal of evidence-disagreement is neither a necessary nor frequently realized condition on verdict-disagreement removal.

It is commonly said that jury deliberations are *negotiations*, and indeed the only ones that are permitted once a trial is underway. Sometimes counsel will negotiate issues out of court, as when a prosecutor offers the defence a reduced charge in return for a guilty plea. But none of this, beyond its formal announcement, happens at trial. Jury deliberations, on the other hand, don't occur in the courtroom, but they are fundamental components of criminal trials, and they usually take place in the Court House, not in a plush boardroom at The Four Seasons. The unanimity requirement puts the negotiation-space into a tight confinement. Between guilt (G) and innocence (not-G) there is nothing whatever to negotiate. Jury deliberations are also exercises in *mind-changing*. Jurors can change their minds about G and not-G, and they can change their minds about why-G and why-otherwise. We might think that the only rational and intellectually conscientious way of changing minds about verdicts is by changing minds about what parts of the evidence are the most probative and in which of its consistent subsets it is to be found. However, this is not in fact the case, and it is precisely the point at which some *bona fide* negotiation can conscientiously take place. In the hypothetical trial under present consideration, there are twelve consistent subsets of the inconsistent total evidence, some of which might with low likelihood be extensionally equivalent to one another. More typically, when the trial has been highly contentious and well-handled by opposing counsel, there is a nontrival positive likelihood that each of the twelve will be inconsistent with at least one of the others. The fact that the very existence of this feature of juried decisions leaves no discernible footprint on jurisprudential scholarship might well be explained by the law's routine but tacit commission of the composition fallacy.

4. *What now?*

It is time to give the present problem a name. Let's call it what it is; the verdict-inconsistency problem (VIP). There will be plenty of logicians and decision theorists who won't be able to believe that experienced trial lawyers and judges are simply impervious to the likelihood that juries return inconsistently based verdicts with a notable frequency. Judging from what we know of jury room deliberations, based in large part on what jurors report after

dismissal, these same theorists have the same difficulty in believing that none of them had cottoned on to the likelihood – indeed sometimes the fact – that their verdict had been crafted upon unresolved evidential inconsistency. [12] Suppose that sometimes these reservations are grounded in plain fact, and that it is simply not true that the VIP has escaped notice. When this happens, why wouldn't its spotters draw attention to the problem? Where, it might be asked, are the whistle-blowers, and why is it that they leave their whistles unblown?

Perhaps part of the reason is the public's substantial confidence in the criminal justice system, especially in politically stable countries whose governments aren't noticeably corrupt at their core. The man or woman at large in countries such as Britain, Canada and in most jurisdictions of the United States is likely to believe that false convictions, although deeply regrettable, fall within an acceptably narrow margin of error. Let's also give a name to this. Call it the *verdict-confidence phenomenon* (VCP). The question now is to sort out the tangled complexities of the relations, such as they may be, between VIP and VCP. I said at the beginning that my objective in this note was merely exploratory, and that I wanted to call attention to what strikes me as an unnoticed – or anyhow undeclared – problem with verdicts in criminal trials. My hope is to have taken a small first step in passing to the research communities of legal reasoning the complexities of the VIP-VCP dynamic for their further consideration. I'll make two further remarks before closing, one quite short and the other a bit longer.

First remark: In a loosely convenient way, we could speak about "establishment" logic and epistemology, within which there roil unsettled rivalries in considerable number.[13] Among the matters when the roiling is absent, there is quite general establishment agreement that any system of case-making and decision-making having the features touched upon in this note is in all intellectual conscience a basket-case. A principal purport of *Is Legal Reasoning Irrational?* is that in this respect the establishment has got it wrong. On the face of it, however, this present note reveals my effort in that book to have been a forlorn hope and a lost cause.

Second remark: There is nothing that disturbs establishment composure more than unremedied inconsistency. There are numbers of systems of not-quite establishment logic in which methods of prevention, expungement and containment are laid out with masterly technical skill. Such remedies are commonly referred to as "paraconsistent". For present purposes, it is unnecessary to parse the name. Lying alongside this bustling paraconsistency minority is a much larger and still more influential research community. In this community, inconsistency is a massively more destructive difficulty than paraconsistentists believe. At the heart of this (still unresolved) difference is the following proposition which, borrowing from the paraconsistency diagnosticians, I'll simply call

> *The Detonation Principle* (DP): If a system contains the slightest trace of inconsistency, the entire system is inconsistent. Every proposition of the system has a logically derivable negation within that outright contradicts it.[14]

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[12] In common law jurisdictions such as Canada, it is criminally impermissible for jurors subsequently to reveal any aspect of what occurred during jury deliberations. In the United States, there is no such general prohibition. Most of what Canadian scholars know of the ins and outs of jury rooms comes from American after-the-fact self-disclosure.

[13] Think here of the Oxford Philosophers sketch of Beyond the Fringe (available on U Tube), in which Oxford's "para-philosophers" are likened to those "paratrooper chappies", crucial parts of whose work requires that feet not touch the ground.

[14] The metaphor of detonation is a clever play on the words of the title of one of the classic papers of Bertrand Russell in the 1905 volume of *Mind*: "On denoting". The abettors of this pun are Peter Schotch and R. E. Jennings, "On detonating", in Graham Priest, Richard Routley and Jean Norman, editors, *Paraconsistent Logic,* pages 302-

DP is provable in classical, intuitionist, and the standard modal logics. If it holds for natural languages such as English, my defence of the logico-epistemic *bona fides* of common law criminal jurisprudence would seem to be gravely imperilled, if not brought down for the full count. The trouble for me is that DP indeed is true. Here is a simplified proof of that fact.

or statement-expressing – English in this case. Then

1. S and it's not the case that S by assumption

Then on the "both-each" principle, that is, the principle that if any two propositions follow each of them also does, we have it that (since (1) follows from itself).[15] it follows that from (1)

2. S.

On the principle that if one thing follows, so does any pair of things of which *that* one is one it follows from (2) that

3. at least one of S and S* follows.

By the reasoning that took us from (1) to (2), it also follows that

4. It's not the case that S.

On the principle that if at least one of two things follows and it is not this one, it is the other one, it follows from (3) and (4) that

5. S*, where S* is any sentence whatever.

Accordingly, it follows that

6. any S* follows from the contradiction that S and not-S.

327, Munich: Philosophia Verlag, 1989. This volume is a valuable source book for paraconsistent logic. More recent are Bryson Brown, "Preservationism: A short history" in Dov M. Gabbay and John Woods, editors, *The many Valued and Nonmotonic Turn in Logic,* pages 95-127, volume 8 of their *Handbook of the History of Logic,* Amsterdam: North-Holland, 2007, and Graham Priest, "Paraconsistency and dialetheism", in Gabbay and Woods, pages 129-204. Also of interest is Graham Priest, JC Beall and Bradley Armour-Garb, *The Law of Non-Contradiction: New Philosophical Essays,* Oxford: Clarendon Press, 2004.

[15] Some logicians doubt that following of necessity from is a reflexive relation. I demure from this view on the principle that it is logically impossible for a statement to have a negation which in all the same respects is unambiguously and concurrently true. I accept that reflexivity makes for a wholly unconvincing rule of deductive inference. But I've never been happy with the over-hopeful idea that the conditions on the following of necessity from relation are, just so, rules of deductive inference or truth-preserving belief-change. See here Gilbert Harman, "Induction", in Marshall Swain, editor, *Induction, Acceptance and Rational Belief,* Dordrecht: Reidel, 1970. It is also true that some philosophers deny that the following of necessity from relation is transitive. In so thinking, they abandon the idea that logical implication is truth-preserving – and also that it is monotonic. This is a plausible supposition – indeed a palpable fact – if, once again, logical implication and deductive inference were subject to the same regulatory constraints. Since they aren't, we can accept intransitivity for deductive inference without molesting the transitivity of truth-preservation.

If, as I believe, DP is true, it is routinely the case that the evidence presented at criminal trials detonates, and inconsistency goes viral. This means, among other things, that every apparently consistent subset of the total evidence will, sentence-by-sentence have a *validly derived* negation. The reason why is that every sentence whatever of the total evidence has a validly derived negation which outright contradicts it. This is more than a setback. It is, on its face, a vastation, and a death blow to the logico-epistemic integrity of English law. It is a problem I pass on, perhaps with more hopefulness than wisdom, to all the affected research communities. My own efforts to show that a true DP is an endurable matter and that it lays no glove on the logico-epistemic integrity of detonated systems of enquiry and belief can be found in the works noted below.[16]

It would be difficult to underestimate the resistance to be shown to my proof[17] by the paraconsistency sector, by many establishment logicians of belief revision and rational decision, and by working mathematicians. I attach this prediction to the assumption that once they learned of it, they would either pay it no mind or would simply laugh in its face. Some of the sceptics take the shifty view that since DP is in fact true of the logical implication relation in English, the logical implication relation of English and like mother tongues is in no fit shape to do any heavy lifting in the more rigorous precincts of logical theory, for which purposes it will have to be spruced up a bit, indeed rationally reconstructed, before calling any of the shots in these more demanding reaches. What is more, one of the key conditions on the sprucing up will be that DP must *fail* for the rationally reconstructed concept. I would have two responses to this criticism if it ever materialized, one short and the other slightly larger. The short response is "Who's laughing now?" The longer one is this. A sizable majority of the formal approaches to a suitably spruced-up natural-language logical implication relation makes the opposite assumption. DP holds for their own various reconstructions of this relation. So why should we defer to yours? Is it their fault that you've confused conditions on the logical implication relation with the rules of truth-preserving belief change?

The only reservation that would give me pause if were it ever expressed is from the working mathematician. "We couldn't possibly do mathematics if we had to bring our quotidian practices into a working harmony with the brutal provisions of DP." If true, that could indeed be problematic. Actually, it isn't true at all. Lots of working mathematicians got their first footfall in set theory from textbooks built on the original axioms of set theory. The axioms harbour an inconsistency and the teachers of the texts know that *ex falso* is true, and tell this to their students. It is then explained to the class that this paradoxical twist needn't detain them, and that for the purposes of their introduction to sets they will put the paradox aside to be dealt with in a

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[16] John Woods, "Does changing the subject from A to B really enlarge our understanding of A?" *IfCoLoG Journal of Logics and their applications*, 24 (2016) 456-480; "Globalization makes inconsistency unrecognizable", in Gillman Payette, editor, *"Shut up", I explained : Essays in Honour of Peter K. Schotch*, to appear from College Publications of London in 2017; and "Inconsistency-management in big information-systems", a keynote lecture to a conference of the logical foundations of strategic reasoning, presented to the Korean Advanced Institute of Science and Technology, Daejeon, in November, 2016.

[17] Logical readers will be aware that my "proof" is a barely tolerable appropriation of voice – in this case, the voice of C. I. Lewis and C. H. Langford, of whom the latter was my teacher when I was a doctoral student at Michigan. "Mine" is a cleaned-up version of theirs, which was crafted for the formal language L of the classical logic of truth functions, in *Symbolic Logic*, New York: Appleton Century-Croft, 1932. The difference between theirs and mine is as different as English is from L. Beyond that, mine makes no use of "or", whose counterpart "$\vee$" in L is a central target of paraconsistentist hostility (and error).

more senior course. Thus do these present-day working mathematicians go about their daily business, having secured much of their foundational knowledge of sets from a system in which any true proposition about sets has a validly derived negation. Clearly, this is something that requires our further close attention, and new cross-disciplinary starts-up in the investigation of the cognitively productive management of inconsistency in all sectors of the cognitive economies of human life.

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