EVIDENCE AND INference in the law

B. Logical Relevance

H. Hart & J. McNaughton. Evidence and Inference in the Law

in Evidence and Inference 48, 50-51 (Lerner ed. 1959)

The central difficulty in a discussion of evidence and inference in the law is that the law has no single technique for connecting its conclusions with supporting data. The problems are highly varied, and techniques of decision vary correspondingly. A unified account of "evidence and inference in the law" is thus impossible....

I. THE AFTER-THE-EVENT DETERMINATION OF ADJUDICATIVE FACTS

The first type of problem we have chosen is the simplest. It is the problem presented when a tribunal is called upon to apply a legal direction of undisputed content to a disputed state of fact. Ordinarily, such a direction will be a legal "rule" in the technical sense. Such a rule can be or mental events. In logical terms, the rule is a special kinda "prescriptive" kindof major premise; the conclusion follows if the propositions comprising the minor premise are proved. While such a minor premise may include a proposition that something is likely to happen in the future, generally the problem is one of determining historical facts.

ILLUSTRATIVE CASES

Here are typical examples of simple undisputed-law, disputed-fact cases:

(1) A man is charged with murder. The rule made relevant by the facts of the case may be that any sane person who with malice aforesaid kills another person shall be put to death. The facts are such that there are no difficult questions of definition, say, of "sane" or of "malice aforesaid." The only question here is whether it was the defendant who fired the fatal shot. (2) A man is sued for breach of warranty. The rule applicable by the facts of the situation may be that any person who sells goods to another which are not up to the seller's representations shall, provided the buyer gives prompt notice of the defect, pay the buyer a sum of money equal to the difference between the value of the goods promised and of those delivered. The rules raise no doubts as to the exact meaning of the rule. The only issue is whether the goods delivered were as represented by the seller. (3) A large estate is to be distributed. The relevant rule may be that one-third of the estate of any person dying without will shall be divided equally among his children. There are no close questions requiring the law of descent to be clarified. The only question is whether the claimant is or is not one of the children of the deceased.

In such simple situations the resemblances of the law's problems to the problems of other disciplines in dealing with evidence are perhaps at their maximum. And yet the problems are quite different.

NOTE: ON PRINCIPLES OF REASONING

As Wigmore and Thayer point out, the study of evidence begins with the study of logic, a branch of epistemology. The following excerpts should provide a brief but basic understanding of the most important terms and processes.


A.J. Ayer, Hume's Formulation of the Problem of Induction

FROM THE LEGACY OF HUME, IN PROBABILITY AND EVIDENCE 3-6 (1972)

A rational man is one who makes a proper use of reason: and this implies, among other things, that he correctly estimates the strength of evidence. In many instances, the result will be that he is able to vindicate his assertions by adducing other propositions which support them. But what is it for one proposition to support another? In the most favourable case, the premisses of an argument entail its conclusion, so that if they are true the conclusion also must be true. It would seem, however, that not all our reasoning takes the form of deductive inference. In many cases, and most conspicuously when we base an unrestricted generalisation on a limited set of data, we appear to run beyond our evidence: that is, we appear not to have a logical guarantee that even if our premisses are true, they convey their truth to the conclusion. But then what sort of inference are we making, and how can it be justified? These questions have not proved easy to answer, and their difficulty creates what philosophers call the problem of induction.

The attention which has been paid to this problem is primarily due to the work of David Hume; and it is worth taking some trouble to restate Hume's argument since, for all its essential simplicity, it has often been misunderstood. Hume starts from the assumption that we can have reason to believe in the truth of any proposition concerning an empirical matter of fact only in so far as we are able to connect the state of affairs which it describes with something that we now perceive or remember. Let us assign the neutral term "data" to what one perceives at a given moment or what one then remembers having previously perceived, leaving aside the question what these data are. On any theory of perception, their range will be very limited. Then Hume maintains that one will have reason to believe in the existence of anything which is not a datum, at the time in question, only if one has reason to believe that it is connected with one's data in a lawlike fashion. He puts this rather misleadingly by saying that "all reasonings concerning matters of fact seem to be founded on the relation of cause and effect." He then raises the question whether our belief in the existence of these lawlike connections can ever be rationally justified, and he offers a proof that it cannot.

This proof may be set out in nine stages, as follows:

(i) An inference from one matter of fact to another is never demonstrative. This is not to say that when the inference is fully set out the conclusion does not follow validly from the premisses there is no question but that "d" does follow from "p" and "if p then d" but rather that what one may call the guiding principle of the inference, the proposition "if p then q," when based on a supposed factual connection between the events referred to
by “p” and “q.” is always an empirical proposition, and as such can be denied without contradiction. Hume's way of putting this, or one of his many ways of putting this, is to say that "knowledge of the relation of cause and effect is not, in any instance, attained by reasonings a priori, but arises entirely from experience."

(ii) There is no such thing as a synthetic necessary connection between events. These are not, of course, the terms in which Hume puts it, but this is what it comes to. No matter what events are, if is presented to us in some spatio-temporal relation to , there is nothing in this situation from which we could validly infer, without the help of other premises, that events of the same type as and are connected in the same way on any other occasion. There is no such thing as seeing that must be attended by , and this not just because we lack the requisite power of vision but because there is nothing of this sort to be seen. No sense can be given to a "must" of this type.

(iii) So the only ground that we can have for believing, in a case where is observed by us and is not yet observed, that does exist in such and such a spatio-temporal relation to is our past experience of the constant conjunction of and .

(iv) But clearly the inference from the premises "Events of the type and have invariably been found in conjunction," or to put it more shortly, "All hitherto observed As bear the relation to Bs," to the conclusion "All As bear the relation to Bs," or even to the conclusion "This will have the relation to some B" is not formally valid. There is what we may call an inductive jump.

(v) To make it valid an extra premiss is needed assuring us that what has held good in the past will hold good in the future. Hume's formulation of this principle in the Treatise of Human Nature is "that instances of which we have had no experience, must resemble those of which we have had experience, and that the course of nature continues always uniformly the same."

(vi) But if all our reasonings about matters of fact are founded on this principle, we have no justification for them unless the principle itself is justifiable. But what justification could it have? There can be no demonstrative argument for it. It is clearly not a logical truth. In Hume's own words "we can at least conceive a change in the course of nature; which sufficiently proves that such a change is not absolutely impossible."

(vii) Even if the principle cannot be demonstrated, perhaps we can at least show it to be probable. But a judgement of probability must have some foundation. And this foundation can lie only in our past experience. The only ground we can have for saying that it is even probable that the course of nature continues uniformly the same is that we have hitherto found this to be the case. But then we are arguing in a circle. To quote Hume again, "probability is founded on the presumption of a resemblance betwixt those objects of which we have had experience, and those of which we have had none; and therefore it is impossible that this presumption can arise from probability."

(viii) The same objection would apply to any attempt to by-pass the general principle of the uniformity of nature and argue that inferences from one matter of fact to another, though admittedly not demonstrative, can nevertheless be shown to be probable. Again, this judgement of probability must have some foundation. But this foundation can lie only in our past experience. And so we have to assume the very principle that we are trying to by-pass, and the same objections arise.

(ix) We must, therefore, admit that since the inferences on which we base our beliefs about matters of fact are not formally valid, and since the conclusions to which they lead cannot be shown without circularity even to be probable, there is no justification for them at all. We just have the habit of making such inferences, and that is all there is to it. Logically, we ought to be complete skeptics, but in practice we shall continue to be guided by our natural beliefs.

Bertrand Russell presents two vivid examples of the force and limits of inductive reasoning.

B. RUSSELL, ON INDUCTION

IN THE PROBLEMS OF PHILOSOPHY 60-69 (1912)

Let us take as an illustration a matter about which none of us, in fact, feel the slightest doubt. We are all convinced that the sun will rise to-morrow. Why? Is this belief a mere blind outcome of past experience, or can it be justified as a reasonable belief? It is not easy to find a test by which to judge whether a belief of this kind is reasonable or not, but we can at least ascertain what sort of general beliefs would suffice, if true, to justify the judgement that the sun will rise to-morrow, and the many other similar judgements upon which our actions are based.

It is obvious that if we are asked why we believe that the sun will rise to-morrow, we shall naturally answer, "Because it always has risen every day." We have a firm belief that it will rise in the future, because it has risen in the past. If we are challenged as to why we believe that it will continue to rise as heretofore, we may appeal to the laws of motion: the earth, we shall say, is a freely rotating body, and such bodies do not cease to rotate unless something interferes from outside, and there is nothing outside to interfere with the earth between now and to-morrow. Of course it might be doubted whether we are quite certain that there is nothing outside to interfere, but this is not the interesting doubt. The interesting doubt is as to whether the laws of motion will remain in operation until to-morrow. If this doubt is raised, we find ourselves in the same position as when the doubt about the sunrise was first raised.

The only reason for believing that the laws of motion will remain in operation is that they have operated hitherto, so far as our knowledge of the past enables us to judge. It is true that we have a greater body of evidence from the past in favour of the laws of motion than we have in favour of the sunrise, because the sunrise is merely a particular case of fulfillment of the laws of motion, and there are countless other particular cases. But the real question is: Do any number of cases of a law being fulfilled in the past afford evidence that it will be fulfilled in the future? If not, it becomes plain that we have no ground whatever for expecting the sun to rise to-morrow, or for expecting the bread we shall eat at our next meal not to poison us, or for any of the other scarcely conscious expectations that control our daily lives. It is to be observed that all such expectations are only probable; thus we have not to seek for a proof that they must be fulfilled, but only for some reason in favour of the view that they are likely to be fulfilled.

Now in dealing with this question we must, to begin with, make an important distinction, without which we should soon become involved in hopeless confusions. Experience has shown us that, hitherto, the frequent repetition of some uniform succession or coexistence has been a cause of our expecting the same succession or coexistence on the next occasion. Food that has a certain appearance generally has a certain taste, and it is a severe shock to our expectations when the familiar appearance is found to be associated with an unusual taste. Things which we
see become associated, by habit, with certain tactile sensations which we expect if we touch them; one of the horrors of a ghost (in many ghost-stories) is that it fails to give us any sensations of touch. Uneducated people who go abroad for the first time are so surprised as to be incredulous when they find their native language not understood.

And this kind of association is not confined to men; in animals also it is very strong. A horse which has been often driven along a certain road resists the attempt to drive him in a different direction. Domestic animals expect food when they see the person who usually feeds them. We know that all these rather crude expectations of uniformity are liable to be misleading. The man who has fed the chicken every day throughout its life at last wrings its neck instead, showing that more refined views as to the uniformity of nature would have been useful to the chicken.

But in spite of the misleadingness of such expectations, they nevertheless exist. The mere fact that something has happened a certain number of times causes animals and men to expect that it will happen again. Thus our instincts certainly cause us to believe that the sun will rise tomorrow, but we may be in no better a position than the chicken which unexpectedly has its neck wrung. We have therefore to distinguish the fact that past uniformities cause expectations as to the future, from the question whether there is any reasonable ground for giving weight to such expectations after the question of their validity has been raised.

What implications do Ayer's and Russell's observations have for the law of evidence? Do they add anything to your understanding of the differences between what is typically called "circumstantial" evidence and what is often called "direct" or "eyewitness" evidence? If, as Russell writes, the business of science is "to find uniformities ... to which, so far as our experience extends, there are no exceptions," what is "the business of the law of evidence"?

2. Deductive reasoning. Judicial proof also employs deductive reasoning. Irving M. Copi, in Introduction to Logic 23-26 (4th ed. 1972), explains what deductive argumentation is:

Arguments are traditionally divided into two different types, deductive and inductive. Although every argument involves the claim that its premisses provide some grounds for the truth of its conclusion, only a deductive argument involves the claim that its premisses provide conclusive grounds. In the case of deductive arguments the technical terms "valid" and "invalid" are used in place of "correct" and "incorrect." A deductive argument is valid when its premisses, if true, do provide conclusive grounds for its conclusion, that is, when premisses and conclusion are so related that it is absolutely impossible for the premisses to be true unless the conclusion is true also. Every deductive argument is either valid or invalid; the task of deductive logic is to clarify the nature of the relation between premisses and conclusion in valid arguments, and thus to allow us to discriminate valid from invalid arguments....

If a deductive argument is valid, then its conclusion follows with equal necessity from its premisses no matter what else may be the case. From the two premisses All men are mortal and Socrates is a man the conclusion Socrates is mortal follows necessarily, no matter what else may be true. The argument remains valid no matter what additional premisses may be added to the original pair....

Accordingly, we characterize a deductive argument as one whose conclusion is claimed to follow from its premisses with absolute necessity, this necessity not being a matter of degree and not depending in any way upon whatever else may be the case. And in sharp contrast we characterize an inductive argument as one whose conclusion is claimed to follow from its premisses only with probabilty, this probability being a matter of degree and dependent upon what else may be the case.

If this is not clear, perhaps the following exercise (adapted from Copi at 30) will demonstrate what deductive reasoning is. How good are your deductive faculties?

In a faraway land there were two tribes. The Lynx were inveterate liars, while the Cougars were unfailingly veracious. Once upon a time a stranger visited the land, and on meeting a party of three inhabitants inquired as to what tribe they belonged.

The first murmured something that the stranger did not catch. The second remarked, "He said he was a Lynx." The third said to the second, "You are a liar."

What is the tribe of the third person?

Try another:

Once upon a time in a faraway land, the king wanted his son to marry the smartest young woman in the kingdom. All women were tested. Three tied with the highest possible score. The king seated these three women at a round table. He asked them to close their eyes, which they did. He then announced that he was placing a beanie on each of their heads, positioned in such a way that, when they opened their eyes, each would be able to see the beanies on the heads of the other two but would not see the beanie on her own head. The king told the young women that the beanies might be either red or white. "When you open your eyes, you are to raise your right hand if you see one or more red beanies. When you deduce the color of the beanie on your own head, lower your hand and rise. Now, open your eyes." The king had, in fact, placed red beanies on each of the three women's heads. All three raised their hands. After ten seconds, one of them lowered her hand, rose, and explained her deduction that she was wearing a red beanie.

How did she do it?

Try a third:

Long ago in a strange and faraway land, where the queen's word was law and all the subjects were very smart, every woman knew by supernatural power all the men in the land who were being unfaithful to their wives, except that no woman had knowledge of her own husband's fidelity or infidelity. One day the queen announced, "There is adultery in this land. I order any woman who determines that her husband has been unfaithful to her to kill him at the next sunrise." For 23 days, life proceeded without incident. Then, on the 24th morning, there was considerable slaughter in the land.

How many men were killed and why did the bloodshed occur on the 24th day?

3. Proof in the law courts. Proof in law differs from proof in logic because the functions of law and logic differ.
Dean Wigmore, recognizing this priority of logic, discusses the form of argument involved in the use of circumstantial evidence.

Wigmore does not deny that in every instance proof must be based upon a generalization connecting the evidentiary proposition with the proposition to be proved. Conceding this, he urges that the generalization may as well be tacitly understood as expressed, that "the transmutation [from the inductive to the deductive form] is useless, because the Court's attention is merely transferred from the syllogism as a whole to the validity of the inference contained in the major premise." Yet it is precisely in this transfer of attention that the value of the transmutation lies. The author's own examples illustrate the point. In the case of the repaired machinery we are told: "People who make such repairs [after an accident] show a consciousness of negligence; A made such repairs; therefore, A was conscious of negligence." Before this deductive proof can be evaluated, ambiguity must be eliminated from the major premise. By "people" shall we understand "some people" or "all people"? If the argument is intended to read, "Some people who make such repairs show consciousness of negligence; A made such repairs; therefore, A was conscious of negligence," it contains an obvious logical fallacy. If intended to read, "All people who make such repairs show consciousness of negligence; A made such repairs; therefore, A was conscious of negligence," it is logically valid. However, few could be found to accept the premise that all persons who repair machinery after an accident show consciousness of guilt; that is, that no single case could be found of one who, confident of his care in the past, nevertheless made repairs to guard against repetition of an unforeseeable casualty or to preserve future fools against the consequence of their future folly. Here the result of transmuting a proposed direct inference into deductive form is discovery that it is invalid at least in the terms suggested.

The other proposed argument is equally interesting: "Men's fixed designs are probably carried out; A had a fixed design to kill B; therefore, A probably did kill B." Once one attempts to deal, in a quasi-syllogistic form, not with certainties but with probabilities, additional opportunities for fallacy are presented. Suppose that it is argued: "Most Xs are Bs; therefore B is probably X; or "Nine-tenths of all Xs are Bs; an X, therefore, is probably a B." Here the chances are nine to one that the transmutation is logically valid except upon the assumption that As may be treated as a uniform class with respect to the probability of their being X. This can be because there really is no way of subdividing the class, finding more As in one sub-class than in another, or because no subdivision can be made in terms of available data. Suppose that nine-tenths of all people in the world have dark eyes. If absolutely all one knew about X was that he was a person, it would be an apparent nine-to-one chance that B had dark eyes. But if one knew to be a Swede, the percentage of dark eyes in the total population of the world would no longer be important. One would want to know about the proportion of dark-eyed Swedes, which might differ from the ratio among humans generally.

Similarly in Wigmore's example. We know that we are interested in the probability of execution of a fixed design of a particular kind: to commit murder. There may be variation in the probability of execution of fixed designs on various subjects. As an initial criticism, therefore, the primary generalization should be "Men's fixed designs to kill are probably carried out." In this form we have a valid, quasi-syllogistic argument based upon the limited data available. Still, is the premise sound?

"Men's fixed designs to kill are probably carried out," as a major premise in this argument, must mean that they are carried out more often than not. While the word "probable" can be used in other senses, its meaning here is clear. Hence one would conclude from the single datum that A had a fixed design to kill B no other evidence being offered, that more likely than not A actually did kill B. But when this argument was presented to a group of law students and teachers, only one was willing to accept the indicated conclusion. Several would accept it if supported by adequate evidence that B had been intentionally killed by some one. Others refused to accept it without still further evidence connecting A with B's death, or at the very least evidence that B had no other enemies. Moreover, there was less hesitancy in accepting the argument in its "inductive" form. Once the generalization was made explicit, and particularly after discussion of the meaning of "probably" as there used, doubts as to the propriety of the inference arose or sharpened. The demonstration, however "valid," is no better than its major premise, and the more one considers this premise the less reliable it looks. Certainly a permitted inference should rest upon some more easily acceptable law.

Of course, it does not follow that a proposed inference is improper because it can be shown not to follow on the basis of one possible generalization, or because another which by the rules of logic would validate the inference is unacceptable. There may be a third law, as yet unexpressed, which would justify the inference and at the same time be commonly accepted as true. And it may be very important to find the valid and accurate link, since the form of the link will control the form of the conclusion.

Persons who are unwilling to agree that men's fixed designs (at least in case of murder) are "probably" carried out, even conceding the fact of murder, that proof of A's fixed design to kill B establishes A more likely than not, as B's killer still agree that somehow this bit of evidence does have some tendency to indicate A's guilt. What form of general statement can reconcile these views? Perhaps something like this: "Men having such a fixed design are more likely to kill than are men not having such a fixed design." Those who contend that even fixed designs to kill are more often abandoned or thwarted than carried out and doubtless will still concede that enough such designs are carried to execution so that the percentage of murderers is higher among persons entertaining such a fixed design than among the general public. Obviously this proposed generalization does not lead us from A's fixed design to kill B to the conclusion that A probably did kill B. There is nothing disturbing in this. This conclusion simply does not follow from the evidence of design. The error was in the original "direct induction." In fact, no useful conclusion about A's guilt can be drawn from design or intent alone. On the basis of an acceptable generalization we are able only to place A in a class of persons in which the incidence of murder is greater than among the general public. We cannot now say that A is probably guilty, but we can say that the apparent probability of this guilt is now greater than before the evidence of design was received. This is in fact the definition of logical relevancy we can expect in dealing with practical affairs where strict demonstration is never possible. The advantage of the transmutation into deductive (though not strictly syllogistic) form is that we know to what degree of proof we have attained, and do not overstate our results.

Which kind of reasoning is more powerful deductive or inductive? Do trials lend themselves to one kind of proof more than the other? Deductive reasoning, if valid, is extremely powerful in fact, it is airtight. Inductive reasoning always requires an inductive leap. Yet as the excerpts above point out, all deductive reasoning requires induction in formulating the major premise, so all legal reasoning is inductively based at some point in time.

Note in Problem II-3 how changing the substantive rule also changes the mode of reasoning from inductive to deductive. If the issue is whether the second drum is defective, evidence as to the quality of the first drum can only be used inductively. But if the issue is whether P purchased a second drum of paint prior to notice that a drum of the same kind of paint caused leaks in her roof, then evidence that the first drum of paint was defective supports a deductive argument. When does the inductive reasoning take place in this situation? With which part of the deductive process is the law of evidence primarily concerned?