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AN ESSAY ON UNCERTAINTY
AND FACT-FINDING IN CIVIL LITIGATION,
WITH SPECIAL REFERENCE TO CONTRACT CASES†

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I Introduction

Law, experience, and philosophy of induction all tell us that fact-finding in adjudication is a matter of probability rather than certainty. In civil trials, upon which this essay focuses, a fact generally will be held as established when it is 'more probable than not.' This standard is known as 'proof on a balance of probabilities' or 'proof by a preponderance of the evidence.'¹

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1 See C. Tapper, *Cross & Tapper on Evidence*, 8th ed. (London: Butterworth, 1995) at 161–65; C. McCormick, *On Evidence*, 4th ed. (St. Paul, MN: West Publishing Co., 1992) vol. 2, at 437–41.

The meaning of this standard and its application in contract cases are the issues I seek to elucidate in this essay. The problem examined here is evidential scarcity and the resulting contingency of probability assessments. Because trial evidence is always scarce, any probabilistic decision that triers of fact make on the basis of available information will be open to challenge. A decision could easily be justified, or even necessitated, by the existing evidence, if the latter were known to be sufficient. But the sufficiency of evidence is a largely unknown, if not altogether unknowable, factor. Factual uncertainty is engendered by evidence that is missing, not by evidence that is available, and nobody can point rationally to the facts that would be revealed by the missing evidence, if it were available. Triers of fact are, therefore, doomed to conditioning their probability assessments upon existing evidence, in the hope that their findings can survive a potential collision with other information of which they are unaware. The validity of probabilistic assessments made by triers of fact is always contingent on this hope.

The challenge posed by this contingency is central to the fact-finding enterprise as a whole. An argument that relevant allegations are more probable than not may be constructed upon virtually any amount of evidence, however scarce that evidence may be. Any such argument may, consequently, be confronted by a counter-argument lamenting that the evidence is too thin to justify a finding. Indeed, it can always be claimed that if additional evidence were brought to the fore, the present probabilistic picture could (or would) change. Our assessments of probability, both mathematical and intuitive, are derived from evidence and experience. But experience also tells us that these assessments are evidence-dependent, so that whatever we decide will be conditioned upon our evidential base, which may be rich or poor, or somewhere in between. Hence, how should judges² proceed when faced with an argument that the evidential base is not sufficiently solid?

My search for a solution to this quandary begins in Part II, which juxtaposes two conflicting interpretations of the civil standard of proof. According to the one interpretation, the civil proof standard can be satisfied by a bare statistical probability that exceeds 0.5. This probability is allowed to rest upon any evidential base, regardless of whether it is rich or poor. The other interpretation holds that the civil standard of proof refers to the strength (or density) of the relevant evidential support – that is, to the extent to which facts necessary for making a particular finding are specified by

2 Throughout this essay, the term 'judges' will refer generically to both judges and jurors. In a jury system, problems dealt with in this essay would have to be resolved also by judges in motions for a directed verdict, for judgment notwithstanding the verdict, and in appellate review. Arguments about evidential insufficiency dealt with by this essay can be raised (and are raised) within each of these frameworks.

the evidence. Under this interpretation, sheer statistical chance has no probative significance. A factual proposition can be deemed more probable than not only when it is supported by a substantial amount of case-specific evidence – that is, when as a matter of inductive (as opposed to aleatory) reasoning, the evidence points in its favour rather than to its negation. Part II then demonstrates that this interpretive clash (commonly known as ‘the probability debate’) is premised on a false dichotomy. Each of the above interpretations is ill-suited for practical reasoning, to which fact-finding in adjudication belongs, because each excludes from consideration an important dimension of fact-finding rationality that is focused upon by the other. Judges ought to consider both the probability factor and the richness of the evidence from which they derive that factor. Representing the chances of revealing the truth, probability factors are obviously important for decision making. At the same time, probability factors can differ in weight, depending on the richness of their supporting evidence. Some probability factors are more strongly evidenced than others. They therefore should be regarded as weightier and correspondingly stronger than other probability factors. This important dimension of fact-finding cannot be ignored.

Also detected in Part II is another shortcoming of ‘the probability debate,’ one that relates to the debate’s categorization of the problem of naked statistics. Allowing verdicts to be based upon bare statistical evidence, rather than on case-specific proof, is generally regarded as problematic. Adjudication involves individuals and their individual affairs, which need to be translated into individual rights and duties. This is not the case with bare statistical evidence. As the famous saying goes, for statistics there are no individuals and for individuals, no statistics. For reasons that may already be apparent, I conceptualize this problem as one of ‘low-weight probability.’ This problem is commonly perceived as epistemic because in cases involving bare statistical evidence, there is no inferentially licensed extension that could bond the general with the individual. Originating from the absence of case-specific knowledge, the similitude between the litigated event and the general class of events, upon which statistical inferences are constructed, is patently superficial.

Part II demonstrates that this categorization of the problem is incorrect. From an epistemological point of view, case-specific inferences resting upon naked statistics are unwarranted or, at best, deeply problematic. In a case involving naked statistics and no other evidence, epistemology will advise the judge that there is no warrant for any determination of fact and that any finding she may make will be tainted with a serious risk of error. Hence, there is no epistemological problem in such a case, because what epistemology has to say about naked statistics in the absence of other evidence is clear. What is less clear is how to decide cases that involve bare statistical evidence,

but on this epistemology has no say. Epistemology may tell judges that no finding will satisfy its truth-conditions, but judges cannot be halted in indecision even in a case like this. Any such case needs to be decided in one way or another, which necessarily will allocate the risk of error to (at least) one of the litigants. Allocation of this risk constitutes a moral rather than epistemological issue. Materialization of a risk of error entails denial of one's legal right. Depending on the nature of the infringed right, this consequence of risk-allocation may produce different degrees of harm. Proper resolution of the issue therefore requires the decision maker to account for this possible harm.³ Because evidence in adjudication is always lacking, this problem is pervasive. Fact-finders have to deal with low-weight probabilities in virtually every case. Bare statistical evidence is an extreme form of low-weight probability, and there are other low-weight probabilities that present similar fact-finding problems and, therefore, call for allocation of the risk of error. Allocation of the risk of error is, indeed, the primary objective of the law of evidence.⁴

My previous analyses of this problem have examined its ramifications and possible solutions within the frameworks of criminal law⁵ and the law of torts.⁶ This essay moves to the terrain of contracts, where it identifies a number of distinct risk-allocating principles and policies that are suitable for adoption. Echoing an approach I have taken in the past,⁷ it proceeds endogenously by extracting the relevant principles and policies from the settled law. The ensuing analysis is therefore purported to be both normative and explanatory.

3 This point often has been ignored by those who claim that judicial verdicts should not be allowed to rest upon bare statistical evidence because this would determine one's rights through one's membership in a group, thus taking away one's moral right to be treated as an individual. See, e.g., L. Tribe, 'Trial by Mathematics: Precision and Ritual in the Legal Process' (1971) 84 Harv. L. Rev. 1329. Putting aside the credentials of this much acclaimed right, along with the questions that arise with regard to its desired scope, it seems obvious that enforcing this right in a civil lawsuit would simply shift the risk of error to the opponent of the right's beneficiary, who is no less an individual and, as such, is entitled to equal concern and respect.

4 See generally A. Stein, 'The Refoundation of Evidence Law' (1996) 9 Can. J. Law & Jurisp. 279.

5 See Stein, *ibid.* at 323-33. See also A. Stein, 'Criminal Defences and the Burden of Proof' (1991) 28 Coexistence 133; A. Stein, 'After *HUNT*: The Burden of Proof, Risk of Non-Persuasion and Judicial Pragmatism' (1991) 54 Mod. L. Rev. 570; A. Stein, 'From Blackstone to *Woolmington*: On the Development of a Legal Doctrine' (1993) 14 J. Leg. Hist. 14.

6 See A. Porat & A. Stein, 'Liability for Uncertainty: Making Evidential Damage Actionable' (1997) 18 Cardozo L.R. 1891.

7 See Stein, *supra* note 4.

This essay also offers an alternative explanation to the burden-of-proof doctrine, as developed at common law with regard to contract cases. This is done in Parts III to VIII, which begin with a remarkable marine insurance case that went through three judicial instances in England, ending up in the House of Lords.⁸ Dealing with insurance liability for causally uncertain losses, this case is of general importance. The issue it resolved could arise and be resolved in the same way in any Anglo-American jurisdiction. There are three other reasons for choosing this case for discussion. First, it exhibits the low-weight probability problem (further analyzed in Part IV) in its purest form. Second, it simultaneously involves all the principles and policies that ought to be at work in allocating the risk of error in contract litigation. Finally, it enables concretization of what may seem to be an overly abstract discussion. This case is, therefore, not only of doctrinal importance, but is also paradigmatic, theoretically significant and heuristically valuable.

Parts V to VIII subsequently offer the following principles⁹ for allocation of the risk of error in contract litigation:

- (1) *the equality principle, which demands that the risk be allocated between the plaintiff and the defendant in an equal fashion (Part V);*
- (2) *the expectation principle, which requires that the risk be allocated in correspondence with the parties' contractual expectations, explicit or implied (Part VI);*
- (3) *the 'penalty-default' approach, which allocates the risk in a way that forces parties into making an explicit contractual stipulation that will allocate this risk in advance, consequently saving the litigation costs associated with contract interpretation (Part VII);*
- (4) *the error-minimizing principle, which prescribes that the risk be allocated in a way that reduces the number of erroneous verdicts to a minimum. Discussed in Part VIII, this principle is of particular importance in the context of insurance cases, where it helps to spread the costs of accidents efficiently, thereby implementing one of the key objectives of the law of insurance.*

These parts of the essay also delineate the scope of application for the above principles.

8 *Edmunds (The Popi M) v. Rhesa Shipping Co.*, [1983] 2 Lloyd's Rep. 235 (Commercial Court) [hereinafter *Edmunds* (Commercial Court)]; *Rhesa Shipping Co. v. Edmunds (The Popi M)*, [1984] 2 Lloyd's Rep. 555 (C.A.) [hereinafter *Rhesa Shipping* (C.A.)]; *Rhesa Shipping Co. v. Edmunds (The Popi M)*, [1985] 2 All E.R. 712 (H.L.) [hereinafter *Rhesa Shipping* (H.L.)].

9 Throughout this essay, no distinction will be made between 'principles' and 'policies.' I will proceed without committing myself to this distinction and its possible implications for adjudication. To further stress this lack of commitment, the two concepts also will be used interchangeably. For the distinction between the two concepts and its implications for adjudication, see R. Dworkin, *Taking Rights Seriously* (London: Duckworth & Co., 1977) at 90–100.

II The Two Dimensions of Fact-finding and the Problem of Uncertainty

A. The Civil Standard of Proof and its Two Interpretations

The requirements set by the civil standard of proof are open to two conflicting interpretations, both plausible and appealing. According to the one interpretation, the standard refers to a frequentist type of probability. This probability may be calculated through enumeration of instances both favourable and unfavourable to the examined propositions, which, subsequently, is combined into a final probability assessment. The latter is generated mathematically by multiplying the probabilities of the propositions necessary for the verdict.¹⁰ The required probability may be assessed experientially by the fact-finder, in which case it will also be reflective of frequencies, although unenumerated. These frequencies (identified as 'personalist' or 'subjectivist') should be reducible, in principle, to mathematical data that obey the ordinary rules of probabilistic calculus. Deviation from this condition would imply that the reasoning followed by the fact-finder was tainted with illogicality.¹¹ According to this interpretation of the civil proof standard, 'more probable than not' means that the chance that the finding fits the actual event is greater than the chance that the finding is wrong. Exhibiting calculus of chances, the logic embedded in this form of reasoning is *aleatory* in character.¹²

According to the second interpretation, the civil standard of proof refers to the degree of evidential support that underlies an examined proposition. More specifically, this interpretation refers to the extent to which facts pertaining to an examined proposition are specified in the evidence.¹³ Measuring the ground covered by the evidence, this approach clearly favours case-specific (or 'individualized') proof over naked statistics. Under this approach, the strength of the evidential support for factual propositions is examined comparatively. It is determined by the gap between the existing and the ideal stock of evidence, with the latter representing the highest, albeit unreachable, level of evidential support. The evidential support gains strength as the gap narrows, and vice versa. Consequently, if there is more substantial evidence in support of a factual proposition than for its negation, then the proposition will be held to be more probable than not. Instead of assessing the favourable and the unfavourable odds under conditions of ignorance,

10 See generally B. Robertson & G.A. Vignaux, 'Probability: The Logic of the Law' (1993) 13 Oxford J. Legal Stud. 457.

11 Ibid.

12 See L.J. Cohen, *An Introduction to the Philosophy of Induction and Probability* (Oxford: Clarendon Press, 1989) at 13-27; ch. IV.

13 Ibid. at 4-13; ch. V.

this approach evaluates the scope of the existing body of knowledge. It does so by focusing upon the inductive justification extended by this knowledge to the inferences that connect the evidence with the ultimate *probanda*. For this reason, this approach has been labelled 'inductivist'.

Under the aleatory framework of reasoning, the probability that event A either occurred or did not occur amounts to 1, when 1 stands for certainty and 0 for impossibility. Consequently, $P(A)=1-P(\text{not-}A)$, which is known as the complementational principle for negation.¹⁴ Under the inductivist framework of reasoning, meagre evidential support for proposition A does not entail, *ipso facto*, massive support for not-A, and vice versa. Evidential support is an empirical matter, also describable as a positive knowledge-factor. It derives from what the fact-finders actually have, not from what they do not have. Under the aleatory framework, the chances that A and another proposition (B) occurred jointly are not as good as the chances that only A (or B) occurred. Indeed, to succeed in a simple one-event gamble (with regard to A only) is much easier than to succeed in a compound gamble (with regard to both A and B). Consequently, $P(A\&B)=P(A)\times P(B)$,¹⁵ which is known as the multiplicative principle for conjunction.¹⁶ Under the inductivist framework of reasoning, evidential support for proposition A&B is equal either to the support for A or for B, whichever is weaker.¹⁷ Assessment of the known and gambling on the unknown are two logically distinct activities. Both are rational, but each is governed by its own, different type of logic.

Aleatory probabilities can be derived from any knowledge, however thin it may be. If I were to toss a coin without knowing whether or not the coin is rigged, it would be warranted for me to place 1:1 odds on either heads or tails. If I later were to discover that the coin is fair, I could justifiably make an identical bet. Under the aleatory framework, my first assessment of the odds is no less warranted than my second: if I happen not to know something, it is warranted for me to assume that the unknown possibilities, some favourable and some unfavourable to my hypothesis, are equally probable.¹⁸ This assumption is known as the 'principle of indifference'.¹⁹ This

14 Ibid. at 17–18.

15 To avoid an unnecessary complication, it is assumed that A and B are two mutually independent propositions. If no independence is assumed, $P(A\&B)=P(A)\times P(B|A)$, which would have no impact on my discussion.

16 Cohen, *supra* note 12 at 18–19.

17 Once again, I assume that A and B are mutually independent and thus cannot corroborate each other.

18 See Cohen, *supra* note 12 at 43–47; J.M. Keynes, *A Treatise on Probability*, 1st ed. (London: Macmillan, 1921) at 44.

19 It also has been labelled 'the principle of insufficient reason.' See Keynes, *ibid*.

principle eliminates informational open-endedness that frustrates any attempt at determining probability. The principle of indifference replaces this open-endedness with informational closure, easily governed by mathematical logic. Consequently, probability is calculated on the assumption that facts relevant to the calculation are fully specified by the existing evidence. Artificial as it may sound, this assumption may be justified in the long run. The unknown possibilities, some favourable and some unfavourable to the examined hypothesis, can be expected to cancel each other out as the gambling proceeds. We can, therefore, exercise control over the ratio of right versus wrong decisions by ignoring these possibilities.

In contrast, the inductivist framework is based on the 'principle of difference.' Within this framework, a proposition supported by a high amount of evidence qualitatively differs from a proposition that rests on a slimmer evidential base. Fact-finders should treat the former proposition as more probable than the latter. This mode of assessing probabilities will apply even when an aleatory probability, constructed on a slim evidential base, is relatively high. In the example with the coin, if it were not known whether or not the coin was rigged, it would be inductively unwarranted to say that heads will come up in 50 per cent of the tosses (as indicated by placing 1:1 odds on either heads or tails). This prediction would have a far greater cogency if the coin were known to be fair. Within this framework, knowledge is not allowed to be procreated out of ignorance. If I were to have no reason for holding the coin either fair or biased, there would be no justification for me to ascribe equal incidence to its fairness and bias. The extent to which facts pertaining to the decision are specified by the evidence consequently becomes the key factor that needs to be examined by fact-finders.

Aleatory probability assessments may be accompanied by judgments regarding their resiliency. This resiliency will be contingent upon the survival of a given assessment in the event of change in its underlying informational base, which would be effected by the flow of new evidence. Because evidence is always lacking, the potential for arrival of new evidence makes any probability assessment open to revision. An assessment's susceptibility to such revision will determine its resiliency and corresponding strength. It is obvious that some probability assessments are less open to revision than others, and there is a clear need to account for this factor. The greater the ability of an assessment to withstand potential changes in its informational base, the more resilient and, correspondingly, more reliable a probability assessment it is. To act upon this assessment in practical affairs consequently becomes a safer endeavour.²⁰ Introduction of this resiliency factor brings the aleatory and inductivist modes of reasoning closer to one another.

This fusion of the two modes of reasoning is, however, profoundly problematic. The resiliency of a probability assessment surely is an important

factor, but setting an appropriate resiliency standard turns out to be a rather daunting task. If the standard is very demanding, it can be satisfied only when the examined proposition approaches certainty or impossibility.²¹ Assessments that yield probabilities ranging between these two extremes would never satisfy such a standard. If the probability of event A were to be assessed as amounting to, say, 0.6, the assessment could not be deemed sufficiently resilient. This would be due to the fact that we would have no significant clue (C) as to what would cause A to occur as opposed to not-A. Our assessment would be sufficiently resilient only if we were to have this clue. But if we were to have this clue, we would have to transform our initial probability assessment, based upon the evidence previously available to us (E), into a new assessment of a considerably more refined and, therefore, altogether new proposition. Instead of talking about $P(A|E)$, we would be talking about $P(A|E,C)$. And if our clue were substantial enough, our assessment of $P(A|E,C)$ would not only be more evidenced than that of $P(A|E)$; indeed, if our knowledge of C were a real resiliency improvement, so that C could be causally associated with A, then $P(A|E,C)$ would be much higher than 0.6.

Probabilities far removed from both certainty and impossibility therefore would not withstand a demanding resiliency standard. To keep these probabilities alive, the resiliency standard would have to be lowered. An undemanding standard, however, would not take us very far from unmitigated aleatory reasoning. There is room, of course, for setting a middle-ground standard, but it would only intensify the tension between the inductive component of a probabilistic assessment and its aleatory component. There is a perennial tension between the indifference principle and the resiliency requirement. The indifference principle promotes randomization, which is exactly the opposite to what is promoted by the resiliency requirement. The indifference principle allows for knowledge to be born out of ignorance, a move that the resiliency requirement rejects. The indifference principle and the resiliency requirement therefore cannot easily coexist.²²

More important, as we increase the demand for resiliency, our reasoning becomes more inductivist and less aleatory. To say that a judgment attaching a 0.7 probability to proposition A fails to meet the resiliency requirement is epistemically equivalent to saying that A is not sufficiently

20 See, e.g., R.A. Fisher, *Statistical Methods for Research Workers*, 7th ed. (Edinburgh: Oliver & Boyd, 1938) at 120ff; N.B. Cohen, 'Confidence in Probability: Burdens of Persuasion in a World of Imperfect Knowledge' (1985) 60 N.Y.U.L. Rev. 385; J. Logue, *Projective Probability* (Oxford: Clarendon Press, 1995) at 78–95.

21 Impossibility, of course, is a form of certainty. To say that event E is impossible is tantamount to saying that it is certain that event E did not or will not occur.

evidenced. When an assessment of probability is epistemically weak, its numerical content should make no epistemic difference. To disqualify a probability assessment for not passing the minimal resiliency threshold is tantamount to annulling its aleatory significance. Conversely, to say that a judgment attaching a 0.7 probability to proposition A satisfies the resiliency requirement is epistemically equivalent to asserting that proposition A is sufficiently supported by the evidence. Note that in this case, we would be unable to ascribe a 0.3 probability to A's negation. The gap left by adequate, although incomplete, evidential support cannot be filled by probabilistic inferences that run against the proposition favoured by the evidence. Any such inferences would have to satisfy the resiliency requirement with their own evidential support. Proposition $P(\text{not-A})=0.3$ consequently cannot survive under a demanding resiliency standard, which was satisfied by $P(A)=0.7$. Because this demanding standard was satisfied by A, it cannot be satisfied by not-A. In order to allow a proposition and its negation to cohabit under one roof, we therefore would have to accept abstract frequencies as epistemically sufficient for constructing resilient probabilities. Such a relaxation of the resiliency standard would take us back to aleatory reasoning. For supporters of trial by mathematics, a non-relaxation of the standard would be no more promising. It would prevent the ascription of a 0.3 probability to not-A, which would entail abandoning the complementational principle. The multiplicative principle, along with the complementational principle, also would have to be discarded. If two independent propositions, $P(A)=0.7$ and $P(B)=0.7$, both satisfy the resiliency requirement, whereas their negations fail to satisfy it, to assert that $P(A\&B)=0.49$ would be epistemically unwarranted. This assertion would be unwarranted because it ascribes a positive (0.3) value to unevidenced propositions $P(\text{not-A})$ and $P(\text{not-B})$. Abandoning the complementational and the multiplicative

- 22 Inspired by W. Kneale, *Probability and Induction* (Oxford: Clarendon Press, 1949) at 147–150, this point should not be understood as denying the validity of randomizing procedures. Numerous throws of a coin are likely to produce a roughly equal number of heads and tails even when the attributes of the coin, along with the environmental conditions of each individual throw and the relevant laws of physics, are totally unknown. In resolving legal disputes, a roughly equal number of correct and incorrect decisions can be produced by following the same randomizing procedure or, more exotically, by allowing a monkey to choose between two bananas that look alike, one of which carries the inscription 'GUILTY' and the other 'NOT GUILTY.' In each of these cases, if we try to relate the resulting 0.5 probability to any individual trial or coin-tossing, we would find the probability disturbingly non-resilient (i.e., likely to be modified by virtually any addition of relevant information). Far from being weighty, this probability would still retain its validity as a randomizing device.

principles would constitute a decisive departure from the aleatory framework of reasoning.²³

As may already be apparent, probability assessments depend on their resiliency not only in terms of cogency, but also in terms of content. Relaxation of the resiliency standard would permit construction of any probability estimate along the 0–1 continuum. Making this standard more exacting would exclude from consideration probability estimates that are far removed from both 0 and 1. Only those estimates coming close to certainty (or impossibility) would survive. An increase in the flow of relevant information would not only enable the decision maker to form a more resilient estimate of the probability, but would also refine and, thus, modify the content of the proposition in question. The decision maker would be forced to revise the proposition in question by ascribing the probability to a more refined factual proposition, which would be a new proposition, altogether different from the proposition initially considered. The decision maker would have to continue with this refinement process as the flow of information continues. In the end, she would determine the most elaborate proposition allowed by the information at her disposal. This proposition would be considerably more detailed and case-specific than the proposition originally examined. It would be more resilient and, therefore, less likely to be shaken by potential additions to its informational base. The probability estimate of this proposition would also come close to certainty.

This point requires some concretization. Let us assume that with regard to a tennis match played in good weather between A and B, we have been asked to assess the probability of A's victory. We have been given no information about A's and B's capacities as tennis players, and the outcome of the match is being kept secret. It is, I think, obvious that we will adequately discharge our task by assigning to A's victory a non-resilient probability of 0.5. A far more interesting question is whether this estimate of equiprobability can ever become resilient.

Let me now add the following to our original stock of information:

- (1) *A and B played 10 matches in the past, of which 5 were won by A and 5 by B.*
- (2) *Both A and B were in excellent form shortly before the match in question.*

This addition of relevant information certainly makes the assignment of a 0.5 probability to A's victory more resilient.²⁴ To maintain accuracy in our probability assignment, we now also have to modify the proposition in question. Our new assignment of probability no longer relates to A and B

23 See Cohen, *supra* note 12 at 104–109.

24 Compare P. Gardenfors & N.E. Sahlin, 'Unreliable Probabilities, Risk Taking and Decision Making' (1982) 53 *Synthese* 361 (using an identical example to distinguish between 'risk of error' and 'epistemic risk').

as totally unknown players. It relates to A and B as players in excellent form who have shown equal strength in the past, which is an altogether new proposition. Although more resilient than its predecessor, this assignment of probability is still deficient on the resiliency score. This deficiency is predicated on the absence of case-specific information shedding light on the match in question.

Let me now add a further item to our stock of information:

(3) *Shortly before the match, B appeared nervous and his leg slightly injured.*

This addition allows us to raise the probability of A's victory from 0.5 to 0.6. As with the previous set of additional information, we are now required to introduce further refinement into the examined proposition. There is, however, still a problem with resiliency because we have no relevant information about the match itself. The match was an individual event that must have been won by either A or B, and we need some information on that score as well in order to make our probability estimate more resilient. Let me therefore add the following information about the match:

(4) *A won the first set against B and was leading in the second.*

(5) *At that stage, B's injured leg began to cause him pain.*

(6) *B appeared very nervous, at times devastated, and lost his temper in two encounters with the umpire.*

This information certainly makes our probability estimate sufficiently resilient. Concurrently, it requires that we raise the probability of A's victory from 0.6 to a level close to certainty. It also requires that we further refine the examined proposition. We no longer are talking about 'two equal players, A and B, playing against each other in good weather and in excellent form, subject to B's minor injury.' We have added to these facts A's interim score, as well as the aggravation of B's injury and his subsequent agitation. Once again, our previous proposition is transformed into an altogether new proposition that covers more particularities of the case at hand. Adherence to a strict resiliency standard makes this adjustment process both inevitable and desirable. Under such a standard, middle-range probability estimates made in relation to individual events will never be sufficiently resilient.

B. The Low-Weight Probability Problem

This point has important implications for civil trials, where the 'more probable than not' standard allows reliance on middle-range probabilities in relation to individual events. The wording of this standard displays indifference towards the resiliency problem, which may suggest that adjudicators should do the same. This suggestion, however, adopts a rather narrow view as to what is required by the law. Ignoring the resiliency factor will not make the resiliency problem disappear. Reasons for being sceptical about non-resilient probabilities do not weaken simply because they are kept out of

sight. These reasons must be seriously considered. Their role in adjudicative fact-finding must be determined. If the existing standard of proof does not determine this role, it must be determined by other legal principles or policies.

A choice between the aleatory and the inductivist modes of reasoning is, therefore, pivotal to understanding and administering the law of evidence.²⁵ As such, this choice has engendered a lasting and lively controversy in the legal literature, known as 'the probability debate.'²⁶ Focusing on both important and unimportant issues,^{27, 28} this debate has been framed and

- 25 Under another approach, facts should be determined holistically by evaluating the relative plausibility of the competing stories brought forth by the plaintiff and by the defendant. There are indications that this approach is being adopted in positive law: see, e.g., *Old Chief v. United States*, 117 S. Ct. 644 (1997). According to the most sophisticated version of this approach, plausibility of competing stories is not just a matter of their inner coherence, but also of probabilities and evidential credentials. See R.J. Allen, 'Factual Ambiguity and a Theory of Evidence' (1994) 88 N.W.U.L. Rev. 604. This brings us back to the problems discussed in this essay. Yet another approach allows fact-finders to establish facts by their subjective experience-based beliefs. This approach does away with the justification requirement and thus allows liberties and properties to be taken away from people on the basis of whim and vogue. For this reason alone, I believe it should be rejected. See Stein, *supra* note 4 at 310–12.
- 26 For a brief survey of this debate, see W.L. Twining & A. Stein, *Evidence and Proof, The International Library of Essays in Law & Legal Theory, AREAS*, vol. 11 (New York: New York University Press, 1992), xxi–xxiv; xxvii, note 54. For the latest symposium, see (1997) 1 Int. J. Evidence & Proof 253–360.
- 27 One issue receiving an undue amount of attention is known as 'the conjunction paradox.' If, in order to succeed in a lawsuit, the plaintiff has to prove two mutually independent propositions A and B, it would not suffice for her to establish that the probability of A and that of B equal 0.7. Under the conjunction rule, the overall probability of the plaintiff's case would amount to 0.49, which falls below the preponderance-of-the-evidence standard. This strikingly counter-intuitive outcome is intended to demonstrate that it would be anomalous to base judicial fact-finding upon mathematical calculus of chances. See L.J. Cohen, *The Probable and the Provable* (Oxford: Clarendon Press, 1977) at 58–62. This paradox is fictitious. A distinction needs to be made between *elemental propositions* (such as formation of a contract, its breach by the defendant, and the ensuing damage) and *intermediary propositions* (such as those that specify the terms of the transaction offered by the plaintiff and the defendant's acceptance of this offer). Elemental propositions refer to the lawsuit's constitutive elements, as determined by the controlling substantive law (Hohfeld termed them 'operative facts': see W.N. Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning* (New Haven: Yale University Press 1923) at 32–35). Intermediary propositions are propositions which establish elemental propositions. To establish an elemental proposition, one always needs more than one intermediary proposition. This distinction needs to be made because the law requires each elemental proposition to be established separately (by the party upon whom the burden of proof lies). There is no requirement that the conjunction of the relevant elemental propositions be established as more probable than not. Consider a person who is seeking a declaratory judgment to the effect that there is a binding contract between her

conducted as a clash between the two modes of reasoning. In a recent article, I have argued that in practical reasoning, to which fact-finding in adjudication belongs, this clash should be treated as spurious. I have, therefore, criticized the debate for posing a false dichotomy.²⁹

Adopting the terminology offered by Keynes, my argument holds that

and another person. The probability of this allegation is subsequently established as equalling 0.7, and the judgment is rendered as requested. At some later stage, the same plaintiff comes to court complaining that the contract was breached by the defendant and requests another declaratory judgment that confirms this new allegation. The judge finds that the probability of this allegation is 0.7 and awards the plaintiff the requested judgment. Finally, the plaintiff sues the defendant for damages, and the probability of her allegations in this lawsuit is also found by the judge to equal 0.7. It seems obvious that the plaintiff should be awarded recovery, as it should be obvious that she also should have been awarded recovery if the three issues had been tried together. If the latter had been the case, the compensatory remedy sought by the plaintiff would have rested upon two interim declaratory judgments, as described above. Analytically, there would be three judgments, which combine into one for expediency reasons alone; and because each judgment stands on its own proof as successfully provided by the plaintiff, the plaintiff is entitled to the requested series of judgments. Hence, if the probability of litigated facts were to be determined mathematically, the conjunction rule would apply to intermediary propositions only, which is neither paradoxical nor overly demanding. Compare R. Lempert, 'The New Evidence Scholarship: Analyzing the Process of Proof' (1986) 66 Boston U. L. Rev. 439 at 452 note 42. Professor Lempert draws a distinction that is almost identical to mine, but argues that the conjunction paradox still retains its force because the law's refusal to apply the conjunction rule undermines the decisional accuracy in the long run. See also M. Bar-Hillel, 'Probabilistic Analysis in Legal Factfinding' (1984) 56 Acta Psychologica 267. To be sure, the law is open to a change that will require a plaintiff to preponderantly establish the elemental conjunction of her case, which would, arguably, produce a greater number of correct decisions. If this happens, however, outcomes reached through application of the conjunction rule will no longer appear counter-intuitive.

- 28 Another paradox, which I also view as spurious, points to the difficulty of combining mutually corroborating pieces of evidence. This difficulty is related to an analysis of corroboration originally provided by Bernoulli. In that analysis, the probability that witness A speaks the truth is denoted as p ; the probability that witness B speaks the truth is denoted as q ; and the fact-finder's task is to determine the probability that A and B both speak the truth when they converge in a statement. This probability (w) is equal to $pq / pq + (1-p)(1-q)$, which demonstrates that the corroboration will not work when either p or q falls below 0.5. Therefore, when both A and B appear as rather unreliable – one because of a prior conviction for perjury, the other because of poor eyesight – their testimonies will not corroborate one another, even though they testify independently to the same facts. If we estimate both p and q as amounting to 0.4, w would be equal to 0.31. This reduction of the probative force of mutually corroborating pieces of evidence is plainly counter-intuitive. See Cohen, *supra* note 27 at 95–96.

In judicial fact-finding, however, corroboration is employed *as a matter of caution* rather than as cumulation. For the proponent of A and B, it would be enough if *either* one of these witnesses tells the truth. Therefore, as explicated by John Stuart Mill, the

uncertain reasoning has two *separate* dimensions, 'probability' and 'weight,'

probability that should interest us is that of the disjunctive inference that either A or B is a truthful witness. See J.S. Mill, *A System of Logic Ratiocinative and Inductive* (London: Longmans, Green & Co., 1891) at 391. In my example, this probability amounts to $(p+q)-(pq)$, that is, to 0.64 (the co-occurrence probability pq was detracted in order to avoid double-counting). L.J. Cohen did not ignore this interpretation of the corroboration notion, although he attributes it, instead of to John Stuart Mill, to P. Olof Ekelof, 'Free Evaluation of Evidence' (1964) 8 *Scandinavian Studies in Law* 47 at 58 (see Cohen, *ibid.* at 99). In Cohen's view, by explaining away the Bernoulli paradox, this interpretation engenders another difficulty, describable as 'the opposite-direction convergence paradox.' Returning to my example, since both p and q are equal to 0.4, the probability that A did not tell the truth amounts to 0.6, which holds true also with regard to the probability that B testified untruthfully. Because these latter probabilities are also mutually corroborating, their combined force amounts to 0.84.

This critique is misdirected, for it conflates the tasks faced by a proponent of mutually corroborating pieces of evidence and by the opponent of that evidence. For the proponent of A and B in my example, it would be sufficient to establish that either of those witnesses testified truthfully. For the opponent of this evidence, to establish that either A or B testified untruthfully would not be sufficient. If one of those witnesses testified truthfully, the opponent's case will be lost. The opponent's burden is conjunctive in its nature, not disjunctive, as in the proponent's case. The probability of the opponent's case will, therefore, amount to $(1-p)(1-q)$, that is, to 0.36, not 0.84. For different (and more complex) analyses of the same problem, see R. Eggleston, 'The Mathematics of Corroboration' [1985] *Crim. L. Rev.* 640; A.P. Dawid, 'The Difficulty about Conjunction' (1987) 36 *The Statistician* 91.

Less threatening to the mathematical project on their own terms, other difficulties and paradoxes have been explained away by numerous writers, most convincingly (in my opinion) by F. Schoeman, 'Cohen on Inductive Probability and the Law of Evidence' (1987) 54 *Phil. Sci.* 76. The 'negation rule paradox' is explained away below: see *infra* notes 60–63 and accompanying text. For a plausible solution of the 'prior probability problem,' which otherwise disturbs the application of Bayes' theorem, see A. Stein, 'Judicial Fact-Finding and the Bayesian Method: The Case for Deeper Scepticism About their Combination' (1996) 1 *Int. J. Evidence & Proof* 25 at 36–37, note 25. These problems and their solutions are not specified here because they are only remotely related to the topic of the present essay.

Broadly speaking, implementation of the mathematical probability principles in judicial fact-finding is frustrated by (1) lack of credible statistical data, (2) severe computational problems, and (3) moral difficulty in determining a person's liability by framing him into some statistically significant group of people, which would be especially problematic in criminal cases.

See Tribe, *supra* n.3; J.J. Thomson, 'Liability and Individualized Evidence' (1986) 49 (3) *Law & Contemp. Probs.* 199; C.R. Callen, 'Notes on a Grand Illusion: Some Limits on the Use of Bayesian Theory in Evidence Law' (1982) 57 *Indiana L.J.* 1. For these reasons and also in order to escape the above-mentioned difficulties and paradoxes, some supporters of the mathematical project have turned to subjectivist probabilities. See, e.g., Robertson & Vignaux, *supra* n.10. I recently argued that the subjectivist approach is tautological, in the sense that its application can produce no inferential progress. See Stein, *ibid.*; A. Stein, 'Bayesian Scepticism Justified' (1997) 1 *Int. J. Evidence & Proof* 339.

29 See Stein, *supra* note 4 at 299–309.

and that neither of these dimensions can be neglected.³⁰ Probability should reflect the chance that the proposition at hand fits the actual event, which will be worked out from the existing evidence. The contents of a probability assessment will, thus, derive from the *insides* of its informational base. In terms of its weight or cogency, a probability assessment will be conditioned upon the *size* of its informational base. The weight of a probability assessment will be determined by the size of the ground covered by the evidence – that is, by the extent to which the existing evidence encompasses the facts necessary for decision. Therefore, probability assessments will vary in their respective weight. Some probability assessments will be weightier and, correspondingly, more reliable than others.³¹

Neither of these two factors can be ignored in adjudication. To base a judgment on a probabilistic assessment that does not carry much weight is obviously risky, even when the probability is high. If constructed on a slim evidential base, such high probability may be misleading; and as such, it may lead to a wrong decision. Yet to ignore a substantial probability that rests on an evidentially deficient base is equally risky. A decision that disregards this probability is likely to be erroneous. Missing evidence holds a mystery that may unfold itself in various ways. Both reliance on a low-weight probability as well as refusal to rely upon it involve risk of error. Because adjudicative fact-finding cannot be halted in indecision, one of the possible decisions has to be accorded preference, and any chosen decision will allocate the risk of error between the parties in dispute.

This point requires elaboration. Scarcity of evidence is a commonplace phenomenon in practical affairs, and adjudication is no exception in this respect. In many cases, fact-finders are presented with less evidence than desired, which does not absolve them from the duty to decide the case one way or another. Evidence used in practical affairs has to be processed and evaluated 'as is.' If the evidence is slim, this slimness should be accounted for in the final judgment. If the probability deriving from a slim evidential base is substantial, this probability also should be accounted for in the final judgment. Such an all-things-considered judgment is the very essence of practical reasoning, an enterprise that seeks the optimal decision in a world of imperfect information. In the trial context, the optimal decision about uncertain facts is that which identifies the risk of error and allocates

30 Keynes, *supra* note 18 at 71–77.

31 Charles Peirce is another source in this connection. He wrote that 'to express the proper state of belief, not *one* number but *two* are requisite, the first depending on the inferred probability, the second on the amount of knowledge on which that probability is based.' C. Hartshorne & P. Weiss, eds., *Collected Papers of Charles Sanders Peirce* (Cambridge, MA: Harvard University Press, 1932) vol. 2 at 421.

it in an appropriate way. Risk of error dealt with in adjudication is a risk that materializes in the form of deprivation of a person's liberty or property. Severity of the loss to be sustained by a litigant upon materialization of this risk is, therefore, yet another factor that needs to be taken into account. Unlike probability and weight, this factor is not epistemic. Probability and weight epistemically determine the potential error. The risk-of-error factor is determined by a moral assessment of the error's consequences. Situated in the domain of political morality, this factor ascribes to the final verdict a distinctively moral and political nature. This nature is not only moral, but also political, because any verdict, erroneous or not, will forcefully protect the recognized entitlement by directing the coercion mechanism, sponsored by the State, to operate in a particular way and against particular individuals.

To decide in advance that low-weight probabilities, which are otherwise substantial, will be excluded from consideration is to allocate the risk of error in a way that will not always be desirable. An advance ruling that substantial probabilities alone, irrespective of their weight, will be sufficient for rendering verdicts is equally problematic. This allocation of the risk of error carries no promise of producing more good than harm. Both of these hard-and-fast rules are bound to produce serious damage, which can be avoided by adopting a more refined approach. This prediction can be substantiated without difficulty. Each of the above rules offers an epistemically plausible solution to what it incorrectly identifies as an epistemic problem. The problem at hand is not epistemic. It originates from a slim evidential base that produces epistemic deficiency, but the latter does not determine the ultimate nature of the problem. If the problem were epistemic, its epistemically best solution would be to reserve judgment in any case where adequate knowledge is unavailable. This solution is epistemically more accurate than any other solution to the problem. It is not, however, allowed by the law. Thus, the ultimate nature of the problem at hand is determined by the requirement that does not allow fact-finders to treat epistemic deficiency as grounds for not deciding a case. Forthrightly contradicting the epistemological principle that requires a person to withhold judgment in the absence of adequate knowledge, this requirement is not surprising. In the trial context, to withhold judgment (or, more accurately, to withhold *the judgment*) by not deciding the case is to uphold the *status quo ante*, which is tantamount to making a substantive decision. Allocation of the risk of error under uncertainty therefore cannot be avoided. Situated in the domain of political morality, allocation of this risk can be made only on moral grounds. Rules driven by epistemic concerns, which either discard low-weight probabilities or accept any substantial probability, regardless of its weight, have no moral bite. As such, they bite the wrong apple.

C. Allocating the Risk of Error

In criminal trials, low-weight probabilities do not warrant conviction even when they are very high. There is, however, no reason for not allowing them to work in favour of the accused even when they are not very high. This approach is squarely aligned with the 'proof beyond reasonable doubt' requirement, which protects the accused from wrongful conviction.³² In civil trials, things are more complex. If plaintiffs were to be allowed to recover upon low-weight probabilities surpassing the 0.5 threshold, many individual verdicts granting recovery would be erroneous. This provides a reason for protecting defendants from such verdicts. At the same time, by systematically allowing recovery on probabilities greater than 0.5, the legal system would be maximizing the total amount of correct decisions in the long run. This outcome would be attained with weighty and with low-weight probabilities alike. Systematic reliance upon probabilities grounded on slim databases would randomize the error. By interchangeably favouring plaintiffs and defendants, missing information would, therefore, be responsible, in the long run, for two types of error that would cancel each other out. This long-run utility would be attained at the expense of accuracy in individual cases. Individual accuracy can be furthered by relying upon weighty probabilities alone. The legal system may, however, still opt for long-run utility, either in general or, more feasibly, in specified areas of the law.³³ Adoption of this approach or, alternatively, its rejection both will derive from the moral stance taken by the system with regard to the risk of error.

More fundamentally, to discard a low-weight probability because too much evidence is missing is to exert bias against one of the litigants by treating the missing evidence problem as belonging peculiarly to him. In a system committed to extending litigants equal concern and respect, there is no room for such bias. The system's regret with regard to money wrongfully taken away from plaintiffs and from defendants should be the same in both cases. Consequently, a party whose allegations are more probable than those of her opponent should prevail, even when the probability's weight is low.³⁴ Generally, a party should not suffer from missing evidence more than her opponent. The missing evidence can be blamed on one of the parties

32 See Stein, *supra* note 4 at 323–33.

33 See, *e.g.*, D. Kaye, 'The Limits of the Preponderance of the Evidence Standard: Justifiably Naked Statistical Evidence and Multiple Causation' [1982] *American Bar Found. Res. J.* 487.

34 See Stein, *supra* note 4 at 333–37. My discussion presupposes a 'winner-takes-all' system for resolving disputes, which has been generally adopted. An alternative approach is to apportion the litigated good in accordance with the probabilities supporting each party's case. For a discussion of the two approaches that favours the conventional 'winner-takes-all' system, see *infra* notes 119–26 and accompanying text.

only upon finding him peculiarly responsible for the loss of evidence. Such responsibility may be ascribed to a party for withholding evidence, for physically destroying it, or for otherwise making the trial database deficient.³⁵ Apart from this and other special cases, a low-weight probability surpassing the 0.5 threshold should be generally allowed to tilt the scales.

Phrased in exclusively probabilistic terms, the civil standard of proof contains no explicit requirement with regard to evidential weight. The same holds true with regard to Anglo-American cases that have applied this standard. In some cases, low-weight probabilities have been relied upon, and the problem of weight has been bypassed.³⁶ To infer from these cases that the problem of weight is treated as a non-problem obviously would be premature. An intellectual detour must not be mistaken for an affirmative statement on the issue. In other cases, hostility has been exhibited towards naked statistical evidence, which indicates an implicit concern about evidential weight.³⁷ Dicta pointing in this direction have not, however, hardened into bright-line rules. It is both obvious and settled that a sufficiently high probability will bring victory to its proponent when it carries adequate weight. It is also obvious that a plaintiff will not be awarded recovery when her allegations are not more probable than not, even if they stand on a relatively solid evidential platform. The less obvious remains unsettled and awaits determination. Mute with regard to the weight requirement, the law takes no stand on the issue posed by low-weight probabilities surpassing the 0.5 threshold. This issue can be settled in a principled fashion or on an ad hoc basis. Regardless of the chosen strategy, any resolution of this issue will have to account for all factors relevant to the allocation of the risk of error. Allocation of the risk of error will have to consider the equality demands. It also will involve valuation of the long-run utilitarian gains, which are attainable through systematic reliance upon probabilities greater than 0.5, irrespective of their weight. Additionally, it will have to account for the possibility of

35 See Porat & Stein, *supra* note 6. See also D.A. Nance, 'Evidential Completeness and the Burden of Proof' (1998) *Hastings L.J.* (forthcoming).

36 See, e.g., *Rose v. Abbey Orchard Property Investments Pty. Ltd.*, [1987] *Aust. Torts Rep.* 80 (N.S.W. C.A.), discussed by K.J. Carruthers, 'Some Observations on the Standard of Proof in Marine Insurance Cases, with Special Reference to the 'Popi M' Case' (1988) 62 *A.L.J.* 199 at 207–208, and by D.H. Hodgson, 'The Scales of Justice: Probability and Proof in Legal Fact-finding' (1995) 69 *A. L.J.* 731 at 738. See also *The Brimnes Tenax Steamship Co. Ltd. v. Owners of the motor vessel Brimnes*, [1974] 3 *All E.R.* 88 at 100g–j, 114a–b, 115j–116b (C.A.) and Hodgson, *ibid.* at 738–39.

37 See, e.g., *Smith v. Rapid Transit*, 58 *N.E. 2d* 754 (1945), critically commented on by D. Shaviro, 'Statistical-Probability Evidence and the Appearance of Justice' (1989) 103 *Harv. L. Rev.* 530. For references to further cases, see M. Dant, 'Gambling on the Truth: The Use of Purely Statistical Evidence as a Basis for Civil Liability' (1988) 22 *Colum. J. Law & Social Probs.* 31 at 31, note 1.

holding one of the parties responsible for the missing information.³⁸ Finally, due regard will have to be paid to the specifics of the case at hand. Verdicts resting upon low-weight probabilities can develop statistically stratified settings, which the law will process identically. Apart from causing injustice in individual cases, this can produce improper behavioural incentives and unjust enrichment. These problems obviously need to be taken into account.

Made under the umbrella of the civil standard of proof, decisions considering these factors will go far beyond applying this standard. Such decisions are bound to be substantive decisions because allocation of the risk of error is a substantive matter.³⁹ In this area of risk-allocation, an important distinction needs to be drawn between litigation arising from non-consensual events, broadly taken as torts, and litigation involving consensual relationships, which are based upon contracts. Equality demands will operate in tort and in contract cases alike. Attaining utility (in terms of wealth-maximization) might also become a preferred objective in both areas of the law. The responsibility for missing evidence in contract cases will, however, be allocated differently than in torts. In contractual relationships, factual uncertainty can be both reduced and regulated bilaterally. This objective can be attained by advance stipulations and documentation. Uncertainty can be reduced substantially by documents that specify the facts underlying the transaction and that provide a detailed account of the parties' mutual obligations. Parties anticipating litigation also may agree on a tie-breaking rule by which any dispute between them will be resolved in the event of factual impasse. An agreement to this effect may be implicit, although it is far more preferable to have it in an explicit form. This implies that allocation of the risk of error in contract litigation depends on the interpretation of the individual contract. Because the latter activity is both costly and perspectival, it increases litigation costs without eliminating the ambiguities. Appropriate incentives therefore should be set by the law to impel inclusion of contractual stipulations on the issue, which should be both explicit and documented. These incentives would substitute high litigation costs with relatively low costs of negotiation. The required incentives should be provided by default rules containing a penalty for non-stipulation. A number of existing contract law doctrines, namely, the 'parol evidence doctrine' and the *contra proferentem* principle, can be activated for this very purpose. Parties to a contractual relationship would thus assume responsibility for what can be described as evidential damage. If both parties are equally responsible (or equally non-responsible) for that damage, the damage should affect

38 See Porat & Stein, *supra* note 6.

39 The inevitability of such decisions has additional implications for evidence law. See Stein, *supra* note 4, at 317–18 and 322–42.

them equally. A low-weight probability favouring the allegations brought by the plaintiff would, consequently, allow the plaintiff to recover. If one of the parties is particularly responsible for that damage, the risk of error should fall solely upon that party.

These penalty-default rules should be applicable only in cases where litigation involving uncertainty could be anticipated at the time of entering into the agreement. This will happen in many cases, but certainly not in all of them. Litigation involving contracts by which factual impasse could not be regulated in advance should be controlled by the regular 'proof on a balance of probabilities' requirement. This requirement mirrors the agreement that would have been reached in the vast number of cases. Most people would agree in advance to give preference to the more probable over the less probable. The 'proof on a balance of probabilities' requirement thereby saves the transaction costs associated with negotiating and writing the requirement into the contract. Application of this requirement invokes the contingency problem, which is predicated upon scarcity of evidence. When this problem is not amenable to contractual regulation, its solution must be found in principles and policies other than penalty defaults. These principles and policies are also considered below.

The same contemplation-based approach holds true with regard to the tie-breaking rules that allocate the burden of persuasion between the contracting parties. These rules place the burden upon the plaintiff to preponderantly establish the alleged breach of contract and charge the defendant with the same burden with regard to any defence he might raise. These rules should be explained by the liability expectation and the expectation of release. Liability is typically not contemplated by the contracting parties for cases where it is not preponderantly clear that the contract was breached. For cases of breach, there is a presumption of liability: release from contractual liability typically is not contemplated for exemptions (such as mistake or frustration) that are not preponderantly probable. This hypothetical bargaining is mirrored by the burden-allocating default provisions.

In tort cases, factual uncertainty is not amenable to advance bilateral regulation. Tortious events are usually accidental and never emanate from coordinated behaviour between the tortfeasor and the victim. These factors do not exclude liability for evidential damage when this damage is inflicted by the tortfeasor or is self-inflicted by the victim.⁴⁰ But these factors do exclude the possibility of using contractual incentives as a means of controlling factual uncertainties. Allocation of the risk of error in tort cases should be directed towards the optimal promotion of the substantive policies of the

40 See Porat & Stein, *supra* note 6.

law of torts, such as deterrence and corrective justice.⁴¹ This approach should be qualified by the litigation costs problem and has a number of other important ramifications, which I will not discuss. The merits, shortcomings, and ramifications of this approach have been examined elsewhere.⁴² This essay focuses upon contract litigation alone, and it is to this type of litigation that I now turn.

The ensuing discussion will link the points made above to a number of evidentiary problems arising at common law. This will be accomplished through an examination of a landmark decision of the House of Lords concerning the nature of the burden of proof that needs to be discharged by the plaintiff in marine insurance litigation. Given in 1985 in a fiercely litigated case, *Rhesa Shipping* (H.L.),⁴³ this decision exhibits simultaneously all the issues that bear upon allocation of the risk of error in contract cases. In addition, this decision has become a textbook authority on the burden of proof doctrine,⁴⁴ as had been predicted to occur.⁴⁵ In what follows, I will examine and criticize one of the principles laid down in *Rhesa*, namely, the holding that an abstract possibility, however probable it may be, cannot help the plaintiff in discharging the burden of proof. Hostile to what can be described as 'naked probability,' this holding violates the equality in the allocation of the risk of error between the plaintiff and the defendant. This holding is at odds also with the expectation interest, which is generally protected by the law of contracts. Apart from this, it clashes with two important policies of contract law and the law of insurance. It fails to provide the right incentive for the parties to an insurance contract to resolve contractually the problem of uncertain losses. This incentive could foster certainty in the insured-underwriter relationship and, thus, save unnecessary litigation costs. Finally, the holding in *Rhesa* distorts allocation of liability in insurance cases as a mechanism for spreading the costs of accidents.

III RHESA: The Facts and the Holding

The plaintiffs' ship, insured with the defendants against 'perils of the seas' and 'negligence of the crew,' sank in the Mediterranean. She sank along with most of the evidence pertaining to her seaworthiness and to the cause

41 Ibid. The notion that allocation of the risk of error should be tied to the substantive law is an old idea, pioneered by the father of the modern law of evidence, James Bradley Thayer. See A. Stein, 'Allocating the Burden of Proof in Sales Litigation: The Law, Its Rationale, a New Theory, and Its Failure' (1996) 50 U. Miami L. Rev. 335.

42 See Porat & Stein, *supra* note 6.

43 *Supra* note 8. Litigation at the Commercial Court and the Court of Appeals preceded this decision. See *Edmunds* (Commercial Court) and *Rhesa Shipping* (C.A.), *ibid.*

of the accident. The plaintiffs, therefore, could not activate the seaworthiness presumption, which usually wins a marine insurance lawsuit based on a 'perils of the seas' policy if there is no evidence of scuttling.⁴⁶ The defendants, in turn, had no evidence indicating that the ship was unseaworthy. Evidence presented in this case was scanty. It revealed that something had seriously damaged the ship by creating a large aperture in a shell-plating on her port side. Water had streamed through this aperture into the ship, and the ship sank as a result of severe flooding. The factor responsible for this aperture consequently became the contested issue in the ensuing litigation.

Two theories concerning this factor were ruled out by the trial judge as virtually impossible:

- (1) *the plaintiffs' theory that the aperture and the consequent loss of the ship resulted from some negligence of the crew;*
- (2) *the defendants' theory that the ship was unseaworthy.*

44 *Rhesa* has been cited and followed not only in England, but also in Australia and Canada. English cases that cite and follow *Rhesa* include the following (unpublished cases appear on LEXIS): *Re L. (a minor)* 1998 (C.A.); *McGregor v. Prudential Insurance Co.*, [1998] 1 Lloyd's Rep. 112; *Byrne v. Nottinghamshire Health Authority*, 1997 (C.A.); *Skelton v. Lewisham and North Southwark Health Authority* 1997 (Q.B.D.); *Court v. Hunting Painting Constructors Limited*, 1994 (C.A.); *Lamb Head Shipping Co. v. Jennings (The 'Marel')*, [1994] 1 Lloyd's Rep. 624 (C.A.) [hereinafter *Lamb Head Shipping Co. (C.A.)*]; *Lamb Head Shipping Co. v. Jennings (The 'Marel')*, [1992] 1 Lloyd's Rep. 402 (Q.B.D.); *Watt & Another v. Great Grimsby Borough Council* 1993 (C.A.); *Romero (trading as Basildon Waste Paper Company) v. The Commission for the New Towns* 1992, (C.A.); *Associated Newspapers PLC. v. Insert Media Ltd.*, [1991] 3 All E.R. 535 (C.A.); *Flatman v. Fisher, Flatman & Another v. Excess Insurance Group Limited* 1990 (C.A.); *Carter v. Sheath*, [1990] R.T.R. 12 (C.A.); *Wom Polymers Ltd. v. Bairstow & Bateman Ltd.* 1987 (Q.B.D.); *Chick v. Powell & Partners* 1987 (Q.B.D.); *Shackwell Edwards & Co. Ltd. v. Stabilag (Esh) Ltd.* 1986 (C.A.); *Continental Illinois National Bank & Trust Co. of Chicago v. Alliance Assurance Co. Ltd.* 1986 (Q.B.D.); *Corrugated Sheets & Profiles (H & E) Ltd. v. General Accident Fire & Life Assurance Corporation Ltd.* 1986 (Q.B.D.); *Cronin v. The Mayor and Burgesses of the London Borough of Redbridge* 1986 (Q.B.D.); *Airways Pension Fund Trustees Ltd. v. London Demolition (UK) Ltd.* 1986 (C.A.)

Australian cases include the following: *Thompson v. Government Insurance Office of New South Wales* (1994), N.S.W. LEXIS 12888 (Supreme Court of New South Wales); *Raso v. NRMA Insurance Ltd.* (1992), N.S.W. LEXIS 6530 (Supreme Court of New South Wales); *R.W. Miller & Co. Pty Ltd. v. Krupp (Australia) Pty Ltd.* (1992), N.S.W. LEXIS 6938 (Supreme Court of New South Wales); *Tasman Inks Pty Ltd. v. Caltex Oil (Australia) Pty Ltd.* (1989), TAS. LEXIS 1823 (Supreme Court of Tasmania); *General Jones Pty Ltd. v. Wildridge* (1988), TAS. LEXIS 1611 (Supreme Court of Tasmania).

Canadian cases include *Eli Lilly & Co. v. Nu-Pharm Inc.* (1996), 69 C.P.R. (3d) 1 (Fed. C.A.) and *C.C.R. Fishing Ltd. v. Tomenson Inc.* (1988), 55 D.L.R. (4th) 429 (B.C. C.A.), also reported in [1989] 2 Lloyd's Rep. 536.

45 See A.A.S. Zuckerman, 'Evidence' [1985] All E.R. Ann. Rev. 155.

46 On this presumption, see G. Brice, 'Unexplained Losses in Marine Insurance' (1991) 16 Tulane Maritime L.J. 105 at 113-14, 120, 122-23, and 129.

This left the judge with two other theories, namely:

- (3) *the plaintiffs' theory that the aperture was caused by a submerged submarine;*
- (4) *the defendants' theory that the proximate cause of the aperture was wear and tear.*

Evidence supporting these theories could not lift either of them above the conjectural. Both theories were considered by the judge to be theories of low probability. The judge found theory (3) more probable than theory (4). On the basis of this comparative preponderance, he ruled in favour of the plaintiffs.⁴⁷ As remarked by the House of Lords,⁴⁸ this finding seems to have adhered to Sherlock Holmes's notorious precept, pronounced to Dr. Watson, 'How often have I said to you that when you have eliminated the impossible, whatever remains, however improbable, must be the truth?'⁴⁹

The finding constituted a plain legal error. Under the preponderance-of-the-evidence standard, the plaintiffs' allegations had to be established as being 'more probable *than not*.' In order to succeed, these allegations had to prevail over *any* possible account of the events that could favour the defendants. The defendants flatly denied these allegations and were perfectly entitled to do so. In developing theory (4), they were not endorsing it as their only voucher.⁵⁰ The error committed by the trial judge initially passed appellate muster,⁵¹ but ultimately was rectified by the House of Lords, and the plaintiffs were denied recovery.

This could be an unquestionably right decision if the plaintiffs had not put forward another, more promising argument. They submitted that the fatal aperture had been brought about by some unidentified peril of the seas and that this was the most probable conclusion that could be arrived at on the basis of the evidence. This argument could be translated into formal probabilistic terms as referring to the probability of the disjunctive proposition 'either p_1 , or p_2 , or p_3 , or ... p_n ,' in which p_1 , p_2 , p_3 , ... and p_n represent the full set of perils of the seas, both known and unknown. The argument therefore holds that the probability of event ' p_1 or p_2 or p_3 or ... p_n ' is greater than 0.5. Because the plaintiffs were entitled to win the case upon proof of any member of the p -set, this argument appears sound.⁵² The probability of many individual p 's in the set is unknown. This probability may well be low, but the probability that one of the p 's was responsible for the plaintiffs' loss

47 Compare R. J. Allen, 'A Reconceptualization of Civil Trials' (1986) 66 Boston U. L. Rev. 401 (supporting a similar approach on policy grounds).

48 *Rhesa Shipping* (H.L.), *supra* note 8 at 718*a*.

49 A. Conan Doyle, 'The Sign of Four' in A. Conan Doyle, *Sherlock Holmes: The Complete Illustrated Novels* (London: Chancellor Press, 1987) 109 at 138.

50 This elementary procedural right was recognized in *Theodorou v. Chester*, [1951] 1 Lloyd's Rep. 204 at 238, and, more recently, in *Lamb Head Shipping Co. (C.A.)*, *supra* note 44 at 627.

51 *Rhesa Shipping* (C.A.), *supra* note 8.

is high enough to tilt the scales in the plaintiffs' favour. Far from implausible in its own right, this argument was also supported by the judgment of the Court of Appeal.⁵³ The House of Lords, however, declined to accept it:

The shipowners could not, in my view, rely on a ritual incantation of the generic expression 'perils of the seas,' but were bound, if they were to discharge successfully the burden of proof ... to condescend to particularity in the matter.⁵⁴

This ruling clearly indicates that a mere probability favourable to the plaintiff is not sufficient to grant her recovery. To enable the plaintiff to prevail, probability favouring her case must represent more than sheer chance. This probability must be attached to some particular account of events that favours the plaintiff. To be valid, this attachment must, of course, be sufficiently grounded in the evidence. The demand for case-specific evidence covering the plaintiff's account of events has, therefore, been added to the basic probability requirement as a firm prerequisite for holding the defendant liable.⁵⁵

IV RHESA: Probability, Weight, and the Risk of Error

In an article that examines the foundations of evidence law, I used the above twofold requirement for holding defendants liable to exemplify the distinction between probability and evidential weight.⁵⁶ I also demonstrated that this distinction is pivotal to understanding evidence law as regulating judicial reasoning about uncertain events. As already mentioned, this distinction originated in Keynes's *Treatise on Probability*.⁵⁷ It was subsequently

52 Compare Hodgson, *supra* note 36 at 750 (supporting the particularity-of-proof requirement laid down by the House of Lords as 'unexceptionable,' but arguing that 'alternatives on which the plaintiff can succeed can be bracketed').

53 *Rhesa Shipping (C.A.)*, *supra* note 8, at 558–59 (Sir John Donaldson, M.R.) and at 561 (Lord Justice May).

54 *Rhesa Shipping (H.L.)*, *supra* note 8 at 716. This holding echoes Judge Devlin's holding in *Waddle v. Wallsend Shipping Co. (The Hopestar)*, [1952] 2 Lloyd's List L. Rep. 105 at 106 ('in a case where substantially all the facts have been brought to light, it is no doubt legitimate to argue that some cause must be found, and therefore the one that has most to be said for it should be selected. Where it can fairly be said that all possible causes have been canvassed, the strongest must be the winner. But in a case where all direct evidence is missing, there is no ground for saying that the most plausible conjecture must perforce be the true explanation. The answer that may well have to be given is that not enough is known about the circumstances of the loss to enable the inquirer to say how it happened.').

55 By this conditioning of 'large inferences' upon 'small facts', the House of Lords appears to have subscribed to a different precept of Sherlock Holmes. See Conan Doyle, *supra* note 49 at 115–16.

56 Stein, *supra* note 4.

57 See Keynes, *supra* note 18.

refined by L.J. Cohen, a contemporary philosopher of science,⁵⁸ and has been invoked, under different terminology, by other philosophers.⁵⁹

In the legal context, this distinction can be presented in its clearest form by using a hypothetical case, widely known as the 'Gatecrasher Paradox,' which was constructed by Cohen for different (but related) purposes. In this hypothetical case, in the words of its constructor,

499 people paid for admission to a rodeo and ... 1,000 are counted on the seats, of whom A is one. Suppose no tickets were issued and there can be no testimony as to whether A paid for admission or climbed over the fence. So by any plausible criterion of mathematical probability there is a 0.501 probability, on the admitted facts, that he did not pay. The mathematicist theory would apparently imply that in such circumstances the rodeo organizers are entitled to judgment against A for the admission-money, since the balance of probability ... would lie in their favour. But it seems manifestly unjust that A should lose his case where there is an agreed mathematical probability of as high as 0.499 that he in fact paid for admission. Indeed, if the organizers were really entitled to judgment against A, they would presumably be equally entitled to judgment against each person in the same situation as A. So they must conceivably be entitled to recover 1,000 admission-money, when it was admitted that 499 had actually been paid. The absurd injustice of this suffices to show that there is something wrong somewhere. But where?⁶⁰

The distinction between probability and weight resolves this paradox. If the preponderance-of-the-evidence standard were to refer solely to a probability greater than 0.5, the organizers would, indeed, be entitled to a verdict against A, however counter-intuitive this may sound.⁶¹ This, however, is not the case. The probability that A was a gatecrasher indeed amounts to 0.501. Yet, similarly to any other probabilistic argument, this proposition is valid only in the world of its underlying information. The *weight* of this proposition is, therefore, contingent upon its informational base. This base is, undoubtedly, slim, and the weight of the proposition is correspondingly low. This proposition does not carry much weight because most of the evidence by which it can be verified or refuted is missing. The weight of this proposition is low for a more specific reason as well. This proposition can be directed with equal weight against *any* of the 1000

58 See L.J. Cohen, 'Twelve Questions About Keynes's Concept of Weight' (1985) 37 Brit. J. Phil. Sci. 263; L.J. Cohen, 'The Role of Evidential Weight in Criminal Proof' (1986) 66 Boston U. L. Rev. 635; Cohen, *supra* note 12 at 102-109.

59 See, *e.g.*, Gardenfors & Sahlin, *supra* note 24; Logue, *supra* note 20.

60 Cohen, *supra* note 27 at 75.

61 Sir Richard Eggleston and Professor Glanville Williams did not consider this outcome counter-intuitive. See R. Eggleston, 'The Probability Debate' [1980] Crim. L. Rev. 678; R. Eggleston, 'Focusing on the Defendant' (1987) 61 A.L.J. 58; G. Williams, 'The Mathematics of Proof' [1979] Crim. L. Rev. 297.

spectators, of whom 499 are known to have paid for admission.⁶² Because the law can rationally be construed as setting minimal requirements at both probability and weight levels, the organizers' lawsuit can rationally be dismissed.⁶³

This two-dimensional reasoning about the strength of probabilistic allegations also explains the outcome reached by the Law Lords in *Rhesa Shipping* (H.L.). The allegation that the ship's loss had resulted from *some* peril of the seas was, indeed, more probable than any other explanation of the event. This allegation, however, was not sufficiently covered by the evidence. It was supported by the evidence only at the aleatory level, as something worth gambling upon. The allegation was a good gamble only in its world of limited information, which was patently uninformative. It was only natural to prefer the stability of the *status quo ante* over this shaky world, which explains the Law Lords' decision.

To justify this decision, however, is another, more difficult, matter. There surely was a quite severe evidential deficiency. The plaintiffs' allegation was, nonetheless, more probable than not under the existing evidence, and there is nothing to suggest that the plaintiffs were more responsible for the evidential deficiency than the defendants.⁶⁴ In light of this deficiency, *any* resolution of the case obviously entails risk of error. This risk has to be assumed either by the plaintiffs or by the defendants. If so, why should the plaintiffs be singled out to be the exclusive bearers of this risk, given the odds that favour them over the defendants? What marks the defendants as deserving of immunity from this risk, when the odds are not in their favour?

62 In the famous words of Keynes,

As the relevant evidence at our disposal increases, the magnitude of the probability of the argument may either decrease or increase, according as the new knowledge strengthens the unfavourable or the favourable evidence; but *something* seems to have increased in either case, – we have a more substantial basis upon which to rest our conclusion. I express this by saying that an accession of new evidence increases the *weight* of an argument. New evidence will sometimes decrease the probability of an argument, but it will always increase its 'weight.' [W]eight, to speak metaphorically, measures the *sum* of the favourable and unfavourable evidence ... probability measures the *difference*. [Emphasis in original.]

– Keynes, *supra* note 18 at 77, 84.

63 By invoking the same strategy, I have explained away a related paradox, known as 'Prisoners in the Yard,' which was devised by Charles Nesson to highlight the problem of 'proof beyond reasonable doubt.' See C. Nesson, 'Reasonable Doubt and Permissive Inferences: The Value of Complexity' (1979) 92 Harv. L. Rev. 1187 at 1192–93, and Stein, *supra* note 4 at 304, note 115.

64 For a thesis that liability for uncertainty should tip the scales against the 'evidential tortfeasor,' see Porat & Stein, *supra* note 6. For a critical appraisal of this thesis, see R.D. Friedman, 'Dealing With Evidentiary Deficiency' (1997) 18 Cardozo L. Rev. 1961.

No ready-made solution to this quandary can be found in the existing standard-of-proof requirement. Nor is any such solution offered by the rule placing the persuasion burden on the plaintiff's shoulders. None of these provisions distinguishes between probability and weight. None of them bars recovery as was sought by the plaintiffs in *Rhesa* on the basis of naked probability, nor does any of them warrant this recovery. The solution to this quandary must, therefore, be grounded upon other reasons, namely, those reasons that determine the allocation of the risk of error between plaintiffs and defendants. These reasons are not readily available. It is, however, already apparent that they necessarily must assume a distinctively moral, rather than epistemic, trait. There are no epistemic reasons for resolving the conflict between the plaintiffs and the defendants in *Rhesa*. All we have is a slim evidential base and the naked probability constructed thereupon. The uncertainty of the case cannot be reduced any further. Therefore, all that remains to do is to identify the party who should be charged with the risk of error and, correspondingly, the party who deserves immunity from this risk.⁶⁵

Framing the issue in this way reveals the untidiness of the Gatecrasher hypothetical. In the Gatecrasher hypothetical, if the organizers were to be allowed to recover from A, they also would be allowed to recover from any other spectator. This outcome *certainly* would amount to an unjust enrichment of the organizers. To prevent this enrichment, the organizers should be barred (by estoppel rules or otherwise) from recovering more than 501 admission fees. This, in turn, would allocate liability in a way that is *certainly* arbitrary, for there is no evidence that distinguishes between A and his fellow spectators. To make this difficulty more transparent, let it be assumed that the remaining 999 spectators were impleaded as defendants in A's case. In a thus modified lawsuit, there could be no non-arbitrary verdict that would prevent the unjust enrichment of the organizers. The only principled verdict would be one that holds each of the spectators liable.⁶⁶

The Gatecrasher hypothetical was designed to present a set-up that highlights the anomalies that would be produced by grounding judicial verdicts upon naked statistics.⁶⁷ To be paradigmatic, any such set-up should be constructed by postulating conditions where all other factors are equal. In the Gatecrasher hypothetical, all other factors are not equal, which makes the hypothetical unsuitable as a paradigm.

65 See generally Stein *supra* note 4 at 296–342.

66 The only way to prevent unjust enrichment in this case is to hold each of the spectators liable for 0.501 of the admission fee. Not allowed by the law, such an allocation of liability will *certainly* be wrong in every single case. See Stein, *supra* note 4 at 335–36. See also *infra* notes 119–126 and accompanying text.

67 See Cohen, *supra* note 27 at 76–81.

The set-up unfolded in *Rhesa* does not suffer from this predicament. In this case, as already mentioned, the proposition that the ship's loss had resulted from some unidentified peril of the seas was held to be of no benefit to the plaintiffs, even though it was more probable than not. This threshold dismissal of the proposition turned the case into a neat example of naked statistics. Judicial acceptance of this proposition entailed no adverse side-effects for the administration of the law. There was no complaint that the plaintiffs had failed to discharge their *uberrimae fidei* duties prior to or during the execution and performance of their insurance contract. Nor was there a complaint attributing to the plaintiffs a withholding or destruction of evidence. The relevant evidence simply sank together with the ship, and it was too expensive to tow it to the surface.

There is, of course, a general pragmatic concern that the Law Lords might have had in mind, but did not address explicitly. To maintain no minimal threshold requirement with regard to evidential weight – so that plaintiffs are allowed to recover from defendants on the basis of naked statistics – is to invite a manipulative framing of the evidential base to the advantage of the manipulator. This concern, however, is too general and has no special implications for the problem at hand. The manipulation problem hovers over litigation just as in any other setting that involves people, money, greed and uncertainty. Making the standard of proof more demanding (by imposing a ban on low-weight probabilities, or otherwise) will not prevent fabrication and lies. Nor will it induce a self-serving litigant to seek evidence when the effort is costly and holds no definite promise of forensic reward. It also cannot be expected to impel a litigant to come forth with unfavourable evidence, instead of withholding it. A Holmsean 'bad man' can be expected to work for the truth only when he expects the truth to work for him.

This problem persists in every evidential set-up, and there is no reason to believe that it would become more acute if plaintiffs were allowed to recover on naked statistics. Quite to the contrary: naked statistical inferences deriving from a manufactured evidential base can be counteracted more easily than case-specific lies. The thinner the base upon which such inferences are constructed, the easier it becomes to whittle them down. Not resilient to change in their evidential environment, such inferences are liable to be destroyed by virtually any case-specific evidence that supports their opponent's case. Apart from that, a plaintiff resting her case upon naked statistics will expose herself to the charge of withholding case-specific evidence. If found justified, this charge will activate sanctions for foiling discovery, as well as adverse inferences against the plaintiff.⁶⁸ In lawsuits founded upon naked statistics, this

68 D. Kaye, 'The Laws of Probability and the Law of the Land' (1979) 47 U. Chicago L. Rev. 34 at 40.

charge is self-inviting and, therefore, likely to be invoked against any plaintiff. Unwilling to expose herself to this charge, the average plaintiff will tend not to withhold case-specific evidence, so long as it does not subvert the lawsuit.⁶⁹ The average plaintiff also will make efforts to obtain case-specific evidence, if she expects it to support the lawsuit and if the costs of obtaining it are not prohibitive relative to its probative potential. Therefore, a large number of plaintiffs suing upon naked statistical evidence would be suing upon it out of sheer necessity. They certainly would be joined by *mala fidei* plaintiffs, who conceal unfavourable evidence, and it would not be easy to distinguish between the two groups of plaintiffs and to identify to which of the two groups an individual plaintiff belongs. Because *mala fidei* plaintiffs always tend to conceal unfavourable evidence, a rule prohibiting recovery upon naked statistics (or upon low-weight probabilities in general) would be unlikely to increase the flow of probative evidence into courtrooms. At the same time, this rule would unjustly penalize deserving plaintiffs.

Actions grounded upon naked statistics might still be dismissed as unsubstantiated as a matter of principle. This seems to have been the fate of the plaintiffs' allegation in *Rhesa*, which was dismissed by the House of Lords despite its favourable odds. The definitive rhetoric employed in this connection by the Law Lords lends strong support to this interpretation of their decision. The plaintiffs' action ultimately was dismissed because it was founded on an abstract probability not anchored in any specific evidence. Its dismissal allocated the risk of error in a way that required justification, but which the Law Lords failed to provide. Can this required justification, nonetheless, be found elsewhere? To this issue I now turn by discussing the relevant principles and policies of the law.

V The Equality Principle

Grounded upon political morality, the equality principle requires the State to treat all citizens with equal concern and respect.⁷⁰ The same requirement applies to the State when it acts through its courts as an arbiter of civil

69 In the final analysis, evidence unfavourable to its possessor can be extracted only through discovery, when it has enough legal force, and not by adverse presumptions or inferences. This point should be obvious: production of unfavourable evidence usually entails certain loss on the issue, while potential exposure to an adverse presumption or inference would involve only a probable loss. See Stein, *supra* note 41 at 336–38. The same applies to lies, *mutatis mutandis*. Lies can be tackled effectively only when they are tackled directly – that is, by cross-examination, by evidence that refutes them, and by penalties for perjury.

70 See Dworkin, *supra* note 9 at chs. 3 & 4; R. Dworkin, *Law's Empire* (London: Fontana Press, 1986) at chs. 6 & 7.

disputes and thus forces its dispute-resolving decisions upon litigants. Losses undeservedly sustained by the plaintiff and by the defendant should, therefore, be regarded as equally regrettable. Consequently, risk of error in civil litigation should be allocated equally between the parties. It should be allocated in a way that does not favour one party over his or her opponent.⁷¹

The ideal implementation of the equality principle would require that each party be awarded the value of his or her case. A plaintiff, therefore, would recover from the defendant a sum of money equalling PD , when P represents the probability of the plaintiff's allegations and D represents the value of the litigated good. The sum amounting to $(1-P)D$ accordingly would go to the defendant. Under this approach, pursuit of equality in the allocation of the risk of error would acquire independent significance. Equality would be pursued for its own sake, regardless of the demands set by the substantive law. This approach breaks away from the notion of adjectivity that lies at the heart of the burden of proof doctrine and subordinates the doctrine, together with other procedural and evidentiary arrangements, to the substantive law and its underlying objectives.

This approach frustrates the primary purpose of the law of evidence and procedure, namely, the implementation of the substantive law.⁷² In virtually every legal system, the substantive law structures judicial decisions by prescribing a framework of strictly dichotomous legal categories, such as 'contract/no-contract,' 'tort/no-tort,' 'will/no-will,' and so forth.⁷³ Any such law requires judges to adjudicate cases in an all-or-nothing fashion. In a breach-of-contract lawsuit, for example, a judge has to determine whether or not a contract was made; whether or not it was breached; whether or not it was frustrated; whether or not its conditions are illegal, and so forth. More nuanced doctrines – such as those that apportion liability for damage by accounting for the

71 For detailed discussion of this principle, see Stein, *supra* note 4 at 333–42. See also J. Brook, 'Inevitable Errors: The Preponderance of the Evidence Standard in Civil Litigation' (1982) 18 *Tulsa L.J.* 79 at 85; R. J. Allen, 'Burdens of Proof, Uncertainty and Ambiguity in Modern Legal Discourse' (1994) 17 *Harv. J.L. & Pub. Pol'y* 627 at 634; D. Hamer, 'The Civil Standard of Proof Uncertainty: Probability, Belief and Justice' (1994) 16 *Sydney L. Rev.* 506 (all explaining allocation of the persuasion burden by the equality principle).

72 This instrumentalist conception is, of course, closely associated with Bentham. See G. Postema, 'The Principle of Utility and the Law of Procedure: Bentham's Theory of Adjudication' (1977) 11 *Georgia L. Rev.* 1393. See, however, R. Summers, 'Evaluating and Improving Legal Process – A Plea for "Process Values"' (1974) 60 *Cornell L. Rev.* 1; and M.D. Bayles, 'Principles for Legal Procedure' (1986) 5 *Law & Phil.* 33 (ascribing intrinsic value to certain procedural arrangements).

73 Dworkin termed such categories 'dispositive concepts' because the law requires judges to dispose cases only through these categories. See R. Dworkin, *A Matter of Principle* (Oxford: Oxford University Press, 1986) at ch. 5.

parties' comparative fault – operate in a similar way. For example, in applying the comparative fault doctrine, a judge has to determine whether or not the plaintiff was at fault – that is, whether or not the plaintiff negligently contributed to the occurrence of the litigated damage or negligently failed to mitigate it. Although this and affiliated doctrines allow apportionment of liability for damage, the fault activating these doctrines always has to be determined in an all-or-nothing fashion. Judges, for instance, are not allowed to hold a plaintiff responsible for 40 per cent of the litigated damage upon finding a 0.4 probability that the damage was self-inflicted. If there is a 0.6 probability that the damage was caused by the defendant, the defendant should be held liable for the entire damage. Under this framework, risk of error attendant upon determination of factual issues that pertain to a single legal category cannot be equitably divided between the parties. If the equality principle were unrelated to the substantive law, it could prescribe equitable sharing of this risk by allowing a plaintiff to recover from the defendant in proportion to the probability of the plaintiff's case. However, as part of the law of evidence and procedure, which combine into an inherently adjective mechanism aimed at implementing the substantive law, the equality principle cannot acquire such autonomy. It therefore must be applied differently. Unauthorized to divide the risk of error with regard to an indivisible legal category, it is bound to place the entire risk upon one of the parties. Under this constraint, the plaintiff and the defendant will be treated as equals in the sense that neither of them will be accorded preference over the other in factual findings unless his (or her) case is supported by better reasons. A party whose factual allegations are supported by weaker reasons will, consequently, bear the risk of error. Hence, a party will prevail in the entire case when his or her allegations are more probable than not.

This allocation of the risk of error does not yet provide a tie-breaking rule for balanced cases. A possible rule for such cases would be one that requires a plaintiff to prove her entire case by a preponderance of the evidence ('the $P > 0.5$ rule'⁷⁴). If the plaintiff fails to discharge this burden, she will not be allowed to recover from the defendant. From a utilitarian perspective, this rule is certainly desirable. It would discourage unmeritorious lawsuits and thus save litigation costs. It would reduce the number of verdicts that require enforcement, thus saving enforcement costs. It also would acknowledge that for the average person, 'taking' is more harmful than 'not giving' because bottom dollar is of greater value to a person than top dollar.⁷⁵ This saving of auxiliary costs arguably should be opted for when the probabilities are equal. For such cases, the equality principle prescribes

74 This shorthand expression should not be perceived as suggesting that judges should determine facts by resorting to mathematical probabilities.

indifference in regard to the primary cost of error, irrespective of whether this cost is to be sustained by the plaintiff or by the defendant. In view of this indifference, a decision rule saving auxiliary costs associated with litigation should be welcomed.

This *prima facie* appealing argument is flawed in one important aspect. From the equality perspective, a saving of auxiliary costs should be opted for not when the probabilities are equal, but when *everything* is equal. In the present case, the probabilities are equal, but everything else is not. Because the $P > 0.5$ rule systematically favours defendants over plaintiffs in connection with any given issue that arises in litigation, it violates the equality principle.⁷⁶ The equality principle therefore cannot embrace this rule. Because it cannot embrace this rule, the equality principle allocates risk of error *also by dividing the discrete legal categories*, which pertain to specified classes of cases, between plaintiffs and defendants. As a result of this division, facts relevant to a legal category that is to the benefit of plaintiffs have to be established by the plaintiff as more probable than not. Facts pertaining to a category that benefits defendants have to be established by the defendant at the same level of probability. Consequently, each litigant is exposed to the risk of error in relation to *his own allegations* – that is, only in relation to the facts making out his case under the controlling substantive law. For example, in a breach-of-contract lawsuit, the plaintiff has to establish, on a balance of probabilities, that she and the defendant entered into a contract, that the contract was breached by the defendant and that she sustained losses as a result of this breach. The defendant, in turn, will have to preponderantly establish mistake, misrepresentation, frustration, or any other defence he might raise in order to absolve himself from contractual liability.⁷⁷ Risk of error thus will be allocated between the parties in a roughly equal fashion.

Under this framework, the plaintiffs in *Rhesa* ought to have been granted recovery upon proof on a balance of probabilities that their damage resulted from some unidentified peril of the seas. There was no reason for holding them more responsible than the defendants for the scarcity of evidence.

75 See R.K. Winter, 'The Jury and the Risk of Non-Persuasion' (1971) 5 Law & Soc'y Rev. 335 at 337; R.A. Posner, *Economic Analysis of Law*, 4th ed. (Boston & Toronto: Little, Brown & Co., 1992) at 552; Stein, *supra* note 41 at 340–43.

76 It may be adopted only on utilitarian grounds. See *infra* notes 117–126 and accompanying text.

77 The persuasion burden is, indeed, allocated by the law in this way. See *Joseph Constantine Steamship Line Ltd. v. Imperial Smelting Corporation Ltd.*, [1941] 2 All E.R. 165 (H.L.); A. Keane, *The Modern Law of Evidence*, 4th ed. (London: Butterworth, 1996) at 69–70 (for England); J. Sopinka, S. N. Lederman & A. W. Bryant, *The Law of Evidence in Canada* (Toronto & Vancouver: Butterworth, 1992) at 59 (for Canada); McCormick, *supra* note 1 at 427–32 (for the United States).

This scarcity should not have worked more to the plaintiffs' detriment than to the detriment of the defendants. Risk of error attendant upon this scarcity should have been shared equally by the parties. As a consequence, the plaintiffs' probabilistic advantage should have tilted the scales to their benefit.

As dictated by the equality principle, this approach to risk-allocation also benefits defendants. Indeed, a defendant underwriter contending that a vessel insured against perils of the seas was scuttled also will not be required to come forth with specific evidence demonstrating the exact way in which scuttling occurred.⁷⁸ The same holds true with regard to any exception to the insurance coverage. Any such exception can be activated only upon determination of its underlying facts as more probable than not.⁷⁹ This burden can be discharged more easily under the equality principle. An abstract possibility favouring the defendant's case will suffice in this area as well, so long as it can be shown to be more probable than not.

VI *The Expectation Principle*

In some contract cases, scarcity of evidence that produces irreducible uncertainty in litigation is anticipated and regulated by the contract. Parties to a contract may explicitly stipulate the rule by which any future litigation that might arise between them will be settled under uncertainty. They also may agree that certain facts will be deemed true absent proof to the contrary.⁸⁰ They may even agree that certain facts or documents will be deemed irrebuttably true, so that no proof to the contrary ever will be allowed. Finally, an agreement may stipulate that facts pertaining to future disputes between the parties will be provable only by certain specified documents. Stipulation to this effect shields the parties from the uncertainty involved in witness accounts, which might be inaccurate and even perjurious. In the absence of such stipulations, uncertainties are handled by the rules furnished by the law, namely, by the burden of proof and 'parol evidence' doctrines.⁸¹ These doctrines supply standard decisions for uncertain situations. In the present context, they can be viewed as and are often labelled 'default rules.' Parties

78 It is assumed that the burden of establishing scuttling is placed on the underwriter, which is not a clear-cut principle. See *Compania Naviera Vascongada v. British and Foreign Marine Insurance Company* (1936), 54 Lloyd's List L. Rep. 35 at 50-51; *Palamisto General Enterprises SA v. Ocean Marine Insurance Co.*, [1972] 2 Q.B. 625 at 636 (C.A.); M.A. Clarke, *The Law of Insurance Contracts*, 2d ed. (London: Lloyds of London Press, 1994) at 372-75.

79 Clarke, *ibid.* at 372.

80 See, e.g., *Levy v. Assicurazioni Generali*, [1940] 3 All E.R. 427; *Spinney's (1948) Ltd. v. Royal Insurance Co. Ltd.*, [1980] 1 Lloyd's Rep. 406.

81 See Clarke, *supra* note 78 at 317-19.

content with these doctrines can incorporate them into their contract by silence, without incurring transaction costs. Parties adverted to the problem of uncertainty and unwilling to embrace its default rule solution are left free to agree upon their own solution for the problem. They should, indeed, be expected to make such an agreement when the benefits accruing from their special regulation of uncertainties are likely to exceed the costs of negotiating and drafting the terms of that regulation.

This dichotomous depiction of contractual regulation of uncertainties (as oscillating between explicit stipulations and default rules) does not present the full picture. There are also special types of contracts that *imply* a deviation from the default regulation of uncertainties. An implication to this effect can be inherent to the nature of the particular contractual relationship as something that 'goes without saying.' Recognized at common law, this possibility entails the usual problems associated with reading an implied term into a contract. To justify imposition of an obligation not explicitly taken upon by the individual is, indeed, most problematic. Any such imposition clashes with individual autonomy, invokes paternalism and is often at odds with economic efficiency.⁸² Due to these problems, judgments that have recognized the implied-term possibility have been pragmatically bonded to their factual patterns and have avoided pronouncing hard-and-fast rules. One general principle, which I will call 'the expectation principle,'⁸³ is, however, clearly discernible from these judgments. Under this principle, allocation of the risk of error is to be determined by interpreting the contractual exchange of promises between the parties. This principle will now be articulated.

I will begin the examination of the expectation principle with another seminal judgment of the House of Lords, which was delivered in *Constantine (Joseph) Steamship Line Ltd v. Imperial Smelting Corporation Ltd.*⁸⁴ This judgment reaffirmed the well-established principle that the defence of frustration, relied upon by a party seeking to absolve himself from contractual obligations, must be established by that party by a preponderance of the

82 For both a recent and comprehensive discussion of these problems, see E. Zamir, 'The Inverted Hierarchy of Contract Interpretation and Supplementation' (1997) 97 Colum. L. Rev. 1710. See also D. Charny, 'Hypothetical Bargains: The Normative Structure of Contract Interpretation' (1991) 89 Mich. L. Rev. 1815.

83 This alludes to the 'expectation interest,' generally protected by contract law, which follows the famous taxonomy of L. Fuller & W. Perdue Jr, 'The Reliance Interest in Contract Damages' (1936-37) 46 Yale L.J. 52; 373. For more recent discussions, see P.S. Atiyah, *Promises, Morals and Law* (Oxford: Clarendon Press, 1981) at 36-44; C. Fried, *Contract as Promise: A Theory of Contractual Obligation* (Cambridge, MA: Harvard University Press, 1981) at chs. 2 and 8.

84 [1941] 2 All E.R. 165 (H.L.) [hereinafter *Constantine*].

evidence.⁸⁵ The House of Lords also held in this case that once the frustrating event is established, an allegation that it was self-induced needs to be proven by the plaintiff. If the plaintiff fails to establish by a preponderance of the evidence that this event resulted from the defendant's faulty actions, the defence of frustration will stand undefeated.

This ruling was made in a lawsuit brought by charterers of a ship against its owners for failure to load. The charterers sought to recover contract damages for this failure, while the shipowners contended that no damages were due because their ship had been destroyed by an explosion. The key issue was whether the shipowners were at fault for the explosion. Evidence for resolving this issue was unavailable. Consequently, the outcome of the case depended on the allocation of the risk of error.

The problem that arose in this case was seemingly amenable to an easy solution under the equality principle. Under this principle, breach of contract needs to be established by the plaintiff. The plaintiff bears the risk of error in connection with any fact supporting this allegation. Frustration, in turn, needs to be established by the defendant, who is charged with the risk of error in relation to any fact belonging to the frustrating event. An allegation that the frustration was self-induced is equivalent to an allegation that the contract was breached by the defendant, with the latter shifting the risk of error back to the plaintiff.

This solution does not really solve the problem. First, the defendants' claim of frustration could easily have been reformulated into a non-breach of the contract. The defendants could have argued that fulfilment of their contractual obligation had been dependent upon non-occurrence of frustrating events, such as destruction of their vessel, in which they played no part. If this had held true, the defendants could not have been accused of breaching the contract. At the same time, the plaintiffs could have argued, as they actually did, that the defence of frustration is an extraneous excuse that exempts the defendant, on exceptional grounds, from his liability for the breach of contract. Absence of fault is one of the conditions for activating this excuse. If this had held true, the defendants' contention should have been held groundless in the absence of evidence preponderantly showing that the frustrating event had occurred through no fault of theirs. Because framing of the issue in one way or another is merely a verbal matter, the solution offered by the equality principle suffers from arbitrariness.⁸⁶

Julius Stone suggested that the problem should be resolved by invoking general frequencies. According to him, this solution of the problem also

85 Ibid. The same holds true also in the United States and in Canada. See McCormick, *supra* note 1, at 430; Sopinka et al., *supra* note 77 at 80, 90–91 (explaining this and similar rules by 'our traditional notion of justice').

would justify the House of Lords' decision.⁸⁷ Contracts are more often complied with than breached. Breach of contract must, therefore, be preponderantly established by the plaintiff. Frustration is a rare event *ex hypothesi*.⁸⁸ As such, it must be established by the defendant as more probable than not. Frustration occurs more often without fault than through fault on the part of the defendant. Hence, it is for the plaintiff to preponderantly establish an allegation that the defendant contributed to the occurrence of the frustrating event. Risk of error will, thus, fall always upon the party seeking to prove the less likely event, which, arguably, will enhance the accuracy of judicial verdicts.⁸⁹

An alternative explanation of the Law Lords' decision (with echoes of Stone's theory) is founded on the observation that compliance with legal standards is generally more recurrent than wrongdoing. This explanation advocates a rebuttable presumption of civility. Because people normally comply with the law, a person who attributes a wrongdoing to his opponent must preponderantly establish this allegation.⁹⁰ Breach of contract, therefore, must be established by the plaintiff, and it is for the defendant to prove that the contract was frustrated.⁹¹ An allegation that the frustrating event

86 See J. Stone, 'Burden of Proof and the Judicial Process' (1944) 60 L.Q. Rev. 262. Application of the equality principle is dependent upon the conventional classification of the issue as belonging to a cause of action, as opposed to a defence. When the legal convention is unclear, as it was before *Constantine*, the equality principle is of no assistance. Compare P. Westen, 'The Empty Idea of Equality' (1982) 95 Harv. L. Rev. 537.

87 Stone, *ibid*. Other reasons supporting the House of Lords' decision are less persuasive. This is especially true of the *omnia praesumuntur pro negante* principle, originating from a widespread, but nonetheless fallacious, belief that proof of 'negative facts' is especially onerous. First, there is no real distinction between 'positive' and 'negative' facts. A 'negative' proposition that 'the defendants did not do anything to contribute to their ship's explosion' can easily be transformed into a positive one: 'the defendants' ship was blown up single-handedly by a stranger.' Compare Stone, *ibid*. Second, proving 'negative facts' (assuming such a thing exists) is not difficult at all. Proving that the defendants' ship exploded through no fault on their part is much easier than relating the explosion to some specified cause. For the former purpose, a general testimony regarding the defendants' non-involvement in the incident will suffice. Absence of further evidence will only help the defendants, whose testimony will stand uncontradicted. For the latter purpose, however, proof of this kind will obviously be insufficient. Hence, 'positive' facts would usually be more difficult to prove than 'negative facts.' See A. Sidgwick, *Fallacies: A View of Logic from the Practical Side* (London: Kegan, Paul, Trench, Trubner & Co., 1890) at 250-51.

88 Events making the performance of a contract impossible or unduly onerous will be regarded as frustrating only if they could not be *reasonably* contemplated by the parties at the time that they entered into the contract. See, e.g., H.J. Berman, 'Excuse for Nonperformance in the Light of Contract Practices in International Trade' (1963) 63 Colum. L. Rev. 1413 at 1415-16; 1438. Frustrating events can thus be seen as improbable *ex ante*.

89 Stone, *supra* note 86.

was self-induced clearly attributes a wrongdoing to the defendant. The burden of persuasion with regard to this allegation should, therefore, be shouldered by the plaintiff.⁹²

These frequentist explanations, however, are inadequate. If the frequencies alluded to belong to experience, they must be accounted for by judges before they allocate the persuasion burden. Blended with the rest of the evidence, these frequencies might tilt the scales to the benefit of the plaintiff or of the defendant, as the circumstances dictate. When this happens, the burden of persuasion becomes irrelevant.⁹³ This burden must be resorted to only upon arrival at a factual impasse, when the judges hang in indecision. In any such case, factual impasse will be a result of deliberation that has already weighed the existing frequencies. To use them again as a justification for imposing the risk of error on the party whose allegations run against the regular is to count them twice. This double-counting is plainly anomalous.⁹⁴

The *Constantine* doctrine is, therefore, better explained by the expectation principle. This principle refers to the expectations grounded in the

90 D.A. Nance, 'Civility and the Burden of Proof' (1994) 17 Harv. J.L. & Pub. Pol'y 647 at 655–67. Parts of Lord Wright's speech in *Constantine* (supra note 84 at 191A–C, 193D–E) coincide with this approach.

91 Under this theory, the defence of frustration presumably is translated into an allegation that the plaintiff wrongfully insists upon performance of the contract.

92 Dale Nance supports his 'civility presumption' also on normative grounds, which I find problematic. I can see no normative reason for applying this presumption in a balanced case, where the probabilities of transgression and of compliance are equal. This presumption cannot be applied also in cases where either the plaintiff or the defendant is responsible for the litigated damage. In any such case, by upholding the presumption in relation to the defendant, the judges would violate it with regard to the plaintiff or vice versa. See Stein, supra note 4 at 337–38.

93 The decision in *Constantine* may be understood as ascribing a tie-breaking potential to general frequencies. On the basis of this understanding, judges should avoid using these frequencies when evaluating the evidence adduced by the parties, in order to prevent double-counting. This seems to be both unrealistic and wrong in principle. This understanding of *Constantine* also sheds no light on cases where the relevant frequencies have been considered by the judges, who still remain undecided.

94 See V.C. Ball, 'The Moment of Truth: Probability Theory and Standards of Proof' (1961) 14 Vand. L. Rev. 807 at 817–18. The same is true in regard to a party's better access to the evidence as a reason for marking him bearer of the risk of non-persuasion. Attenuated by the contemporary disclosure principles, this advantage can be removed by imposing on its holder the burden of adducing evidence. Once this party produces evidence for examination at the trial, his advantage evaporates and therefore cannot be used against him any further. As argued by Thayer more than a century ago, allocation of the risk of error should be guided by strictly substantive preferences. See J.B. Thayer, 'The Burdens of Proof' (1890) 4 Harv. L. Rev. 45. Further support for Thayer's thesis can be found in Stein, supra note 41.

parties' mutual exchange of promises, namely, the expectation of performance, the expectation of liability and the expectation of release. These mutual expectations need not coincide with the empirical frequencies of the outside world. They should be allowed to determine the parties' rights and obligations as a matter of contract. These expectations should thus be allowed to resolve factual impasse by placing the risk of non-persuasion, along with the corresponding risk of error, upon the party arguing against the expected. This allocation of the risk is justified by the general protection of the expectation interest under contract law. As with any other contract, the contract in *Constantine* entailed a mutual expectation of performance. An allegation that the contract was breached was an allegation against the expected. As such, it had to be preponderantly established by the plaintiffs. If this allegation were as probable as an allegation that the contract was performed, the defendants should have prevailed. The contract in *Constantine* also entailed an expectation of liability. A party that failed to perform the contract obviously was expected to be held liable. An allegation that he is not liable (due to frustration of the contract, non-fulfilment of a condition for performance or for any other reason) would be an allegation against the expected. If this party fails to establish this allegation by a preponderance of the evidence, his opponent should prevail. For unexpected events that frustrate the contract, the contract entailed an expectation of release. A party attempting to upset this expectation by arguing that the frustrating event was induced by his opponent should, therefore, bear the risk of error, if after considering the evidence, the judges still were undecided. General frequencies pertaining to the case at hand should be considered by the judges, along with the specific evidence. These frequencies, however, must have no tie-breaking power. This power should attach to the parties' contractual expectations alone. These expectations often coincide with the general frequencies, but they need not coincide with those frequencies in order to retain their tie-breaking power in a balanced case. Consequently, allocation of the risk of error will be regulated by a normative principle of expectation that implements the parties' bargain and not by empirical contingencies that vary from case to case.

The reasoning of the Law Lords in *Constantine* contains one explicit (albeit not full) endorsement of this principle,⁹⁵ and at least one implicit indication in this direction.⁹⁶ The expectation principle emerges more clearly if the *Constantine* doctrine is juxtaposed with another well-known decision, *Coldman v. Hill*.⁹⁷ Under the *Coldman* doctrine, a bailee seeking to release herself from responsibility for bailed goods, which have been either lost or damaged during the bailment period, must preponderantly prove that the loss occurred without any fault on her part.⁹⁸ This doctrine apparently contradicts *Constantine*. When bailed goods have been lost or

damaged, the bailment contract must have been either breached by the bailee or frustrated by some unforeseeable external cause over which the bailee could exercise no control. Under *Constantine*, the bailee's failure to safeguard the goods would amount to a breach of contract, an allegation that would need to be established by the goods-owner as more probable than not. Frustration of the contract would, in turn, have to be established by the bailee. An allegation that the contract was frustrated through some fault on the part of the bailee would be maintaining that the frustration was self-induced. Functionally equivalent to a breach of contract allegation, this allegation would need to be preponderantly proved by the goods-owner.

Constantine and *Coldman* are, indeed, treated in the literature as inconsistent doctrines, based upon different policies.⁹⁹ The precise nature of these policies remains unarticulated. In my view, the two doctrines are not inconsistent: their different outcomes are comfortably explained by the expectation principle, which both doctrines seem to endorse. In bailment contracts, the parties typically contemplate that goods deposited in the hands of the bailee are unlikely to be lost or damaged without some fault on her part. Consequently, the bailee is expected to assume liability when

95 See Viscount Maugham's judgment in *Constantine*, supra note 84 at 175F-G, 178E-H ('whether or not the [frustration] doctrine simply rests on a term or condition to be implied in the contract itself, or whether it is otherwise to be explained, it is clear that it is based upon the presumed common intention of the parties. ... The present question can therefore be tested by asking what term or condition as to onus of proof ought to be implied here in relation to the destruction of the vessel. ... I agree that ... the term or condition which might reasonably be implied ... in this case, or in any case of true frustration, does not throw on the plaintiff or claimant the burden of proving something which it may be impossible in practice to prove. The term or condition is not for the benefit of one party rather than the other. ... In these circumstances, I cannot see why a court should decide that the parties ought to be presumed to have intended that the ordinary rules as to onus of proof ought not to apply. ... To my mind, [a condition requiring the shipowners to prove absence of their fault] ... is a condition which is artificial, and which may operate in some cases with great injustice').

96 See *Constantine*, supra note 84 at 171H-172C, Viscount Simon, L.C.

97 *Coldman v. Hill*, [1919] 1 K.B. 443 [hereinafter *Coldman*].

98 This doctrine is well-settled at common law. See generally N.E. Palmer, *Bailment* (Sydney: The Law Book Company, 1979) at 40. See also Tapper, supra note 1 at 134 (for the English law); *National Trust Co. Ltd. v. Wong Aviation, Ltd.* (1969), 3 D.L.R. (3d) 55 (S.C.C.); *Amo Containers Ltd. v. Mobil Oil Canada, Ltd.* (1989), 62 D.L.R. (4th) 104 (Nfld. C.A.) (for the Canadian law); J.H. Wigmore, *A Treatise on the Anglo-American System of Evidence in Trials at Common Law*, 3d ed. (Boston: Little, Brown & Co., 1940) vol. 9, par. 2508 at 375-76; McCormick, supra note 1 at 456-57; C. Mueller & L. Kirkpatrick, *Evidence* (Boston: Little, Brown & Co., 1995) at 148-49 (for the American law, which is less clear).

99 See Tapper, *ibid.*; Keane, supra note 77 at 78.

the goods are lost or damaged due to some unknown cause. The bailee is expected to be liable even when the goods are taken away (or damaged) by another person who acted against the bailee's will, unless it is clear that she was unable to prevent the loss.¹⁰⁰ The bailee, in other words, is expected to be liable not only for losses positively attributable to some fault on her part, but also for causally indeterminate losses.¹⁰¹ Originating from special care that needs to be exercised by a bailee in relation to the bailed goods, this expectation is the very essence of the bailment contract.¹⁰² In view of this expectation, the bailee should, indeed, be required to prove her faultlessness on a balance of probabilities. Because her faultlessness was contractually contemplated as unlikely, it should come as no surprise that the law marks her as the bearer of the risk of error in cases involving causally indeterminate losses. No such expectation could be elicited in the context of the charterer-shipowner relationship dealt with in *Constantine*. In this case, the shipowners undertook no special obligation to protect the goods, which they failed to load, prior to loading. This explains the different decision rule chosen by the Law Lords in *Constantine*.

With this understanding of the expectation principle in mind, we can now move on to analyze our main issue. A policy-holder suing the insurer will recover upon proof of the loss that is covered by the policy. There is no expectation of performance by the insurer absent such proof. The proof is not required to reach the level of certainty. Under the general law, proof on a balance of probabilities will suffice if it points to the loss insured against by the policy-holder. Such proof will give rise to the expectation of the insurer's performance. What the proof is required to point to in terms of content also will depend on the relevant expectations. The insured obviously is expected to provide evidence that will establish the nature and the extent of his loss. As for the cause of the loss, the expectation principle will accord a differentiated treatment to this component of the insured's lawsuit. When the insurance policy extends only to a specified class of losses, such as losses resulting from 'theft' or from 'fire,' evidence establishing the precise cause of the loss has to be adduced. There can be no expectation of performance

100 See Palmer, *supra* note 98. In some cases, however, the bailee was charged only with the evidential burden (wrongly, in my opinion). See Palmer, *ibid.*; Wigmore, *supra* note 98; McCormick, *supra* note 1 at 456–57.

101 This resonates with the 'evidential damage' doctrine advocated by Porat & Stein, *supra* note 6. A bailee can reasonably be expected to protect not only the goods themselves, but also any information pertaining to their whereabouts during the bailment period. She should consequently assume liability *for uncertainty* when the disputed loss of the bailed goods is causally indeterminate.

102 See Palmer, *supra* note 98 (in any such case, the bailee will be expected either to admit liability or to come up with a convincing explanation for the loss).

on the part of the insurer with regard to unspecified losses. A *Rhesa*-type low-weight probability, which does not rest upon case-specific information, would not, consequently, allow the insured to recover from the insurer. However, when the policy covers 'all risks,' the insured should be granted recovery upon proof that his loss resulted from *some* fortuitous event. An all-risk policy entails an expectation of performance by the insurer with regard to both specified and unspecified losses. This expectation is entailed in insurance coverage that extends to infinite types of accidental losses. Consequently, the insured should not be required to prove the precise nature of the cause of his loss by case-specific evidence. Because any accidental loss will provide the basis for the insured's case, its cause need not be identified. A low-weight probability favouring the insured's case thus becomes decisive.

This analysis sits well with doctrinal solutions adopted at common law in England, Canada and the United States.¹⁰³ Its implications with regard to policies covering 'perils of the seas' are transparent. A peril-of-the-seas policy is an all-risk policy that covers losses precipitated by heavy weather, collision, stranding, and an infinite number of other misfortunes associated with seas and sailing.¹⁰⁴ Any such policy entails an expectation of performance by the insurer with regard to both specified and unspecified losses, as long as the loss is fortuitous and associated with seas. As remarked in a case-note on *Rhesa*, the insurance in question 'was not against swordfish or submarines (yellow or red) but against peril of the sea in

103 In *British & Foreign Marine Insurance Company, Ltd. v. Gaunt*, [1921] 2 A.C. 41 (H.L.), the position of the law was stated by Lord Birkenhead, L.C., as follows:

'We are, of course, to give effect to the rule that the plaintiff must establish his case, that he must show that the loss comes within terms of his policies; but where all risks are covered by the policy and not merely risks of a specified class or classes, the plaintiff discharges his *special onus* when he has proved that the loss was caused by some event covered by the general expression, and he is not bound to go further and prove the exact nature of the accident or casualty which, in fact, occasioned his loss.' [Emphasis is mine.]

Ibid. at 47. Lord Birkenhead's expression 'special onus' seems to have been related to the contractual expectations embedded in an all-risk policy. See also *Texas Eastern Transmission v. Marine Office – Appleton & Cox Corporation*, 579 F.2d 561 at 564 (10th Cir. 1978); *Morrison Grain Company, Inc. v. Utica Mutual Insurance Company*, 632 F.2d 424 at 431 (5th Cir. 1980) (both holding the same). For the Canadian law, which holds the same, see C. Brown & J. Menezes, *Insurance Law in Canada*, 2d ed. (Toronto, ON: Carswell, 1991) at 5 ('the insured need only establish in general that the loss was within the range of risks covered without having to prove the exact cause of the damage or injury.')

104 See Brice, *supra* note 46 at 114. In the *Marine Insurance Act, 1906*, the term 'peril of the seas' refers to all 'fortuitous accidents or casualties of the seas,' excluding 'the ordinary action of the wind and waves.' Directly applying to marine insurance policies in England, this broad definition is followed in Canada and Australia and is also regarded as guiding by American courts. See Brice, *ibid.* at 106–107.

general.¹⁰⁵ Consequently, the insured should be granted recovery when it is more probable than not that his loss was occasioned by some unknown, and, therefore, unspecified peril of the seas. A low-weight probability surpassing the 0.5 threshold ought to be treated as sufficient in that context.¹⁰⁶

VII Stipulation-forcing Penalty Default

Allocation of the risk of error according to the expectation principle is not devoid of interpretive difficulties. In contract interpretation, which deals with unstated intentions and expectations, the line separating the real from the conjectural is often very fine.¹⁰⁷ These difficulties could be avoided and adjudication could be made less expensive, if the possibility of uncertainty in a future trial was adverted to and explicitly regulated by contracting parties. Because adjudication is subsidized by public funds, parties to a contract should be encouraged not to leave these difficulties contractually unresolved. They should be encouraged to regulate the uncertainty problem, whenever it can be reasonably anticipated, by explicitly allocating the risk of error in their contract. By leaving this problem to be dealt with by the court, the parties can save in contract negotiation and drafting expenses, but the price will be an increase in both the likelihood and the cost of their future litigation. Contracting parties will be unwilling to make this saving when it introduces an undesirable element of uncertainty into their relationship. But in some cases at least, either one of the parties or both will find the uncertainty contractually convenient. By leaving the uncertainty problem unregulated, the contracting parties may very well strike a good bargain, but this will entail greater adjudicative subsidy and, therefore, a free ride at the taxpayers' expense.¹⁰⁸

105 M. Clarke, 'Accident Insurance – Peril of the Seas: Yellow Submarine or Red Herring?' (1985) 44 Camb. L.J. 359 at 360. Robertson & Vignaux (supra note 10 at 472) make a similar point on the theory that 'the task of the court is to determine the odds that the defendant is liable.' As submitted by the present essay, this is only one dimension of the court's task.

106 At common law, as applied in Australia, Canada, England, and the United States, this outcome will be possible only upon supplementary proof of seaworthiness prior to the sailing. See Brice, supra note 46 at 113–29. This pre-emptive requirement impliedly (and sometimes explicitly) attributes an unexplained loss to the vessel's unseaworthiness. Brice, *ibid.* at 114. Alas, the possibility of unseaworthiness must have already been considered by the fact-finders prior to arriving at the probability that happens to support the insured. The possibility of unseaworthiness will thus be counted twice against the insured, which is clearly anomalous.

107 See Zamir, supra note 82; Charny, *ibid.*

108 Compare Charny, *ibid.* at 1841.

This harmful externality can be minimized by laying down an appropriate default rule that will penalize the party responsible for the failure to contractually regulate in advance the uncertainty problem.¹⁰⁹ Insofar as it forces judges to adjudicate incomplete bargains, this lacuna is a kind of evidential damage, and a party that inflicts this damage should normally bear responsibility for its consequences.¹¹⁰ In the present context, this responsibility should assume the form of risk-allocation: the risk of error should be shifted to the party responsible for leaving the uncertainty problem unregulated.¹¹¹ This approach will be suitable only for cases where the uncertainty problem could have been reasonably anticipated by at least one of the parties prior to concluding the contract. When the problem could not have been reasonably anticipated, the proposed default rule will be non-applicable. In fact, this rule might not be appropriate even when the uncertainty problem could have been anticipated. This would happen in cases where there is sufficient knowledge about the parties' 'would-be agreement' – namely, the agreement that would have been reached by the parties had they addressed the uncertainty problem in their negotiations. In any such case, the penalty-default rule would force the parties into making an explicit stipulation that regulates the uncertainty problem in advance by identifying the bearer of the risk of error. This would involve separate negotiations and contract drafting – that is, greater transaction costs. These costs could be saved by laying down another default rule, one that mirrors the parties' would-be agreement.

In the insurance context, the possibility of litigation is always anticipated by the contracting parties. In property insurance, the prospect of causally uncertain losses lies within the boundaries of the parties' reasonable, if not actual, contemplation. The problem of causally uncertain losses and the low-weight probability problem are two sides of the very same coin. When a loss is causally uncertain, there is always a naked probability that it falls under the insurance coverage, and when this probability is greater than 0.5, the insured's claim is, arguably, more probable than not.¹¹² This position is problematic because the probability in support of the insured's

109 This idea belongs to I. Ayres & R. Gertner, 'Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules' (1989) 99 Yale L.J. 87; I. Ayres & R. Gertner, 'Strategic Contractual Inefficiency and the Optimal Choice of Legal Rules' (1992) 101 Yale L.J. 729. For its thoughtful discussion, showing that the Ayres-Gertner model may be disturbed by strategic bargaining, see J.S. Johnston, 'Strategic Bargaining and the Economic Theory of Contract Default Rules' (1990) 100 Yale L.J. 615.

110 See generally, Porat & Stein, *supra* note 6.

111 Compare Porat & Stein, *ibid.* (applying the same approach in tort litigation).

112 When this probability falls below the 0.5 threshold, it is contractually expected that the insured will not recover from the underwriter.

claim is a low-weight probability. My preceding discussion demonstrated that this problem is amenable to a general legal solution that mirrors the parties' typical expectations and that maintains equality in the allocation of the risk of error. From this solution, an expectation-mirroring default rule can be derived for insurance policies covering 'perils of the seas' and (*a fortiori*) 'all-risks.' Because this solution may not be accepted across-the-board, the low-weight probability problem also should be examined as a problem with no general solution in the law. This problem, therefore, should be perceived also as a contractual ambiguity. Accordingly, contracting parties should be impelled to resolve this problem for themselves, and the proposed penalty-default rule would provide the required incentive.

Operating similarly to the *contra proferentem* doctrine,¹¹³ the proposed penalty-default rule can be accommodated within this doctrine if we place the risk of error upon the drafter of the contract.¹¹⁴ In the case at hand, the risk of error associated with the low-weight probability seemingly should be placed on the underwriters, who drafted the 'perils of the seas' policy purchased by the insured. This is only seemingly so because the policy in question is a commercial policy, not a household or other 'small-consumer' policy that should be treated as a 'contract of adhesion.'¹¹⁵ The

113 This doctrine holds that textual ambiguities in a contract should be resolved against the party who drafted the contract. See, e.g., Clarke, *supra* note 78 at 352–57. For the Canadian law, see *Manulife Bank of Canada v. Conlin* (1996), 139 D.L.R. (4th) 426 (S.C.C.) (applying and examining the rationale of the *contra proferentem* doctrine); *Yang v. Canadian Lawyers' Insurance Assn.* (1997), 147 D.L.R. (4th) 31 (Alta. C.A.) (reconfirming the applicability of the doctrine to insurance contracts).

In *The American Law Institute, Restatement of the Law, Second, Contracts 2d* (St. Paul MN: American Law Institute Publishers, 1981) §206, vol. 2 at 105, this doctrine is formulated as follows:

'In choosing among the reasonable meanings of a promise or agreement or a term thereof, that meaning is generally preferred which operates against the party who supplies the words or from whom a writing otherwise proceeds.'

See also Zamir, *supra* note 82, at 1724–25 (examining the *contra proferentem* doctrine and its penalty-default justification).

114 This, of course, will constitute an expansion of the traditional doctrine, which applies to textual ambiguities, as opposed to lacunae. Because there are no substantial differences between the two kinds of contractual ambiguity, the proposed rule can be easily accommodated in the existing law.

115 See F. Kessler, 'Contracts of Adhesion – Some Thoughts About Freedom of Contract' (1943) 43 Colum. L. Rev. 629; T.D. Rakoff, 'Contracts of Adhesion: An Essay in Reconstruction' (1983) 96 Harv. L. Rev. 1173. In such contracts, transaction terms are dictated by the drafting party, which might justify legal interference on the grounds of both efficiency and fairness. For an efficiency-based justification, see A.W. Katz, 'Standard Form Contracts' in P. Newman, ed., *The New Palgrave Dictionary of Economics and the Law* (MacMillan Press, forthcoming in 1998).

bargaining powers of the underwriters and the shipowners in *Rhesa* were not grossly unequal (if at all), so that the shipowners were no less responsible than the underwriters for the text of the insurance policy. Both parties, therefore, should have been held equally responsible for the ambiguity. Even if we take the insurance policy as a standard form dictated by customary practices and, therefore, non-negotiable, the responsibility for not providing a contractual solution for causally uncertain losses should also have been shared equally by both parties. Hence, neither of the parties should have suffered from the low-weight probability problem to the opposing party's benefit. The low-weight probability should have been taken for its statistical value, and because this probability favoured the insured, the insured ought to have been allowed to recover from the underwriters.

The same conclusion would be reached, of course, if the underwriters, as the ultimate drafters of the insurance policy, were held responsible for the contractual ambiguity. In both cases, underwriters would be forced to include in their insurance policies an explicit regulation of causally uncertain losses. Consequently, some policies would not cover such losses by explicitly requiring specific proof of the peril insured against. This would make those policies less expensive. Other policies would cover causally uncertain losses, which would make them more expensive to purchase. Finally, all policies would be sufficiently clear with respect to causally uncertain losses, so that their purchasers would know exactly what they are purchasing. There would be no marketing incentive for underwriters to avoid the issue in drafting the insurance policies. This approach would ensure justice and fairness for both the policy-holder and her underwriter, as well as make the insurance market more efficient. As opined by Judge Posner with regard to insurance contracts in general,

the principle that insurance contracts are to be construed against the insurer ... may seem paternalistic and sentimental, but there is an economic argument for it. One's insurance coverage will turn out to be less extensive than it appeared to be, if ambiguities in the insurance policy are resolved against the insured. The insurance company is the superior bearer of this risk too. Of course, if all interpretive doubts are resolved against the insurance company, its costs, and hence premium rates, will be higher. But all this means is that the insured is buying some additional insurance.¹¹⁶

VIII *The Error-minimizing Principle*

The problem faced by the courts in *Rhesa* also can be resolved in a way that promotes economic efficiency. This could be achieved by allocating the risk of error in a way that would minimize the total amount of both direct and

indirect economic losses. Utilitarian in character, this approach would favour the rule that generates, in the long run, the greatest possible amount of correct decisions.

One of the principal objectives of insurance law is to spread the costs of accidents amongst the insured individuals.¹¹⁷ Every insurance contract proceeds on the assumption that for the risk-averse individual, a 1 per cent probability of, say, a fire causing \$100,000 in damage constitutes a risk that is more costly than its actuarial equivalent, \$1,000. The individual, therefore, is willing to shift the risk to an underwriter in exchange for an insurance premium. An assumption of this risk by an underwriter will cost no more than \$1,000 because in the long run, in the context of cases similar to this, the underwriter pays the insured no more than \$1,000 per case: the risk insured against will materialize only in 1 out of every 100 cases. The collective payment collected from the insured individuals by the underwriter represents, therefore, the actuarial equivalent of all the insured losses along with the underwriter's expenses and profit.¹¹⁸

This contractual background seems to support the view that factually uncertain cases should be controlled by a probabilistic recovery rule: every insured should receive a payment that is equal to her loss multiplied by the probability that the loss resulted from the event covered by the insurance policy. This rule has been advocated as appropriate for recurrent liability cases,¹¹⁹ and insurance litigation belongs to this genus of cases. This rule has been advocated as appropriate also for *all* cases that involve the risk of an especially large error,¹²⁰ and insurance cases seem to belong to this category as well. It has been argued in this connection that since the utility of gains steadily diminishes and the disutility of losses continually increases, the average person's loss of a large sum *D* (representing the litigated amount in an uncertain case) would produce a disutility much greater than *D*. This disutility can be conveniently taken as amounting to D^2 . By taking

116 R.A. Posner, *Economic Analysis of Law*, 3d ed. (Boston & Toronto: Little, Brown & Co., 1986) at 95. For the opposite view (which I do not find persuasive), see M.B. Rappaport, 'The Ambiguity Rule and Insurance Law: Why Insurance Contracts Should Not Be Construed Against the Drafter' (1995) 30 Georgia L. Rev. 171. For a recent case-law analysis exhibiting different approaches to the *contra proferentem* doctrine, see K.S. Abraham, 'A Theory of Insurance Policy Interpretation' (1996) 95 Mich. L. Rev. 531.

117 See, e.g., K.S. Abraham, *Distributing Risk: Insurance, Legal Theory, and Public Policy* (New Haven, CT: Yale University Press, 1986) at 1-2.

118 This common knowledge is supported by an uncontroversial economic analysis: see Posner, *supra* note 116 at 91-92.

119 See S. Levmore, 'Probabilistic Recoveries, Restitution, and Recurring Wrongs' (1990) 19 J. Legal Stud. 691.

120 See N. Orloff & J. Stedinger, 'A Framework for Evaluating the Preponderance-of-the-Evidence Standard' (1983) 131 U. Pa. L. Rev. 1159.

p_1 and p_2 as denoting, respectively, the probabilities of the plaintiff's and the defendant's conflicting allegations¹²¹ and by allowing S1 and S2 to represent, respectively, the actual (though unknown) states of affairs, favourable to either the plaintiff or the defendant, an economic comparison may be made between the following decisions:

d_1 = The plaintiff loses. (The risk of error is imposed on the plaintiff in its entirety.)

d_2 = The defendant loses. (The risk of error is imposed on the defendant in its entirety.)

d_3 = the probabilistic recovery rule under which the plaintiff recovers from the defendant $p_1 D^2$, while $p_2 D^2$ goes to the defendant by not allowing the plaintiff to recover this amount.

Losses incurred by each of these decisions (per average case) will consequently be as shown in the chart below.

Decision	Loss if S1	Loss if S2	Total Loss
d_1	$p_1 D^2$	0	$p_1 D^2$
d_2	0	$p_2 D^2$	$p_2 D^2$
d_3	$p_1 (p_2 D)^2$	$p_2 (p_1 D)^2$	$p_1 p_2 D^2$

Because p_1 and p_2 both fall below 1 and are greater than zero, the probabilistic recovery rule (d_3) will bring to a minimum the total amount of unavoidable losses.¹²²

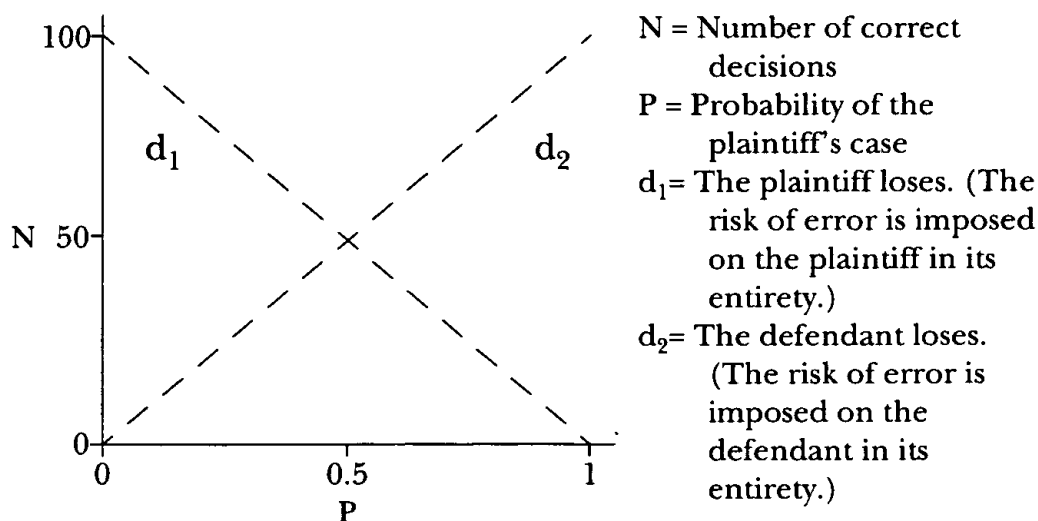
Despite this favourable effect, the probabilistic recovery rule is not suitable for adoption. On the general level, its adoption would weaken the protection of substantive rights and, thus, undermine the behavioural incentives set by the substantive law. Because under this rule, the number of correctly decided cases would always be zero, there would be no contracts that are fully enforceable. Compensation for breach of contract and for tortiously inflicted damages also would never be full. Security and predictability, sought to be maintained by the law in a wide variety of human affairs, would, thus, be frustrated. This chilling prospect would thwart a good deal of socially beneficial activities. Many transactions that could otherwise transpire and produce economically efficient exchanges would not be effected. Transactions that would still be carried out would have to be accompanied by more complex and more expensive securitization devices. This social

121 As always is the case: $0 < p_1 < 1$; $0 < p_2 < 1$, when 1 stands for certainty and 0 for impossibility.

122 Orloff & Stedinger, *supra* note 120.

disutility would be further increased by the costs of litigation. Intensified and complicated by the probabilistic recovery rule, civil litigation would become considerably more expensive.¹²³

In the area of insurance, the probabilistic recovery rule would confer no significant benefits upon underwriters, who act merely as intermediaries in the spreading of costs of accidents. This rule would simply reallocate large sums of money from deserving to non-deserving policy-holders. Because the list of non-deserving beneficiaries of the rule would include not only bona fide claimants, but also moral hazards and downright fraudulent free-riders,¹²⁴ the result would be a particularly damaging contamination of insurance practices. The emerging free-ride incentives would subvert the security of insurance, thereby substantially increasing its cost for those who seek enhanced protection. This damage both can and should be avoided by discarding the probabilistic recovery rule in favour of a rule that minimizes the total number of erroneous verdicts. The required rule is discernible from the following graph:¹²⁵



This graph makes apparent that a party whose case is supported by a probability greater than 0.5 should prevail (the ' $P > 0.5$ rule').¹²⁶

¹²³ See Stein, *supra* note 4 at 335–36.

¹²⁴ The notion of 'moral hazard' is liable to abuse by insurers, as convincingly demonstrated by Tom Baker, 'On the Genealogy of Moral Hazard' (1996) 75 *Texas L. Rev.* 237. The point made in the text thus refers to genuine moral hazards only – that is, to those who have an incentive to increase the consumption of insurance benefits in comparison with the average (by raising the frequency of the accidents or magnitude of the losses covered by insurance).

¹²⁵ Adapted from Kaye, *supra* note 33 at 493.

The $P > 0.5$ rule should have equal applicability in low-weight probability cases. Reliance on a low-weight probability is problematic because the validity of any such probability is conditioned upon its evidential base, when this base is inordinately deficient. Any substantial change in this base, therefore, will require modification of the probability, which classifies the probability as non-resilient. This, however, presents a problem for individual cases only, whereas we are concerned with increasing the overall amount of correct decisions. When decision makers are concerned with long-run accuracy, they will do well to base their decisions on low-weight probabilities. By its very nature, missing information gives no clue as to the identity of its potential beneficiary. Because it may potentially benefit both the plaintiff and the defendant, this information is susceptible to randomization. It can be postulated that by working in both directions, this information could benefit roughly the same number of plaintiffs and of defendants. Because the missing information varies in each case, rather than being constant in all cases, this randomization is supported by statistical theory. A straightforward analogy can be made between this randomization and flipping an unbiased coin, an experiment justifiably expected to result in a roughly equal number of heads and tails. This randomization is reliant on the problematic principle of indifference, but this principle is almost as good for the long-run as it is bad for individual cases.¹²⁷ In conditions of uncertainty, indifference towards individual possibilities of error is, indeed, instrumental to maximizing the amount of correct decisions in the long run.

This utilitarian approach, therefore, supports the plaintiffs in *Rhesa*. Hence, the Law Lords' decision in favour of the defendants appears to be wrong under every conceivable principle and policy.

IX Summing Up

This essay has demonstrated the incompleteness of the burden of proof doctrine as a mechanism for adjudicating civil cases in conditions of uncertainty. This doctrine is one-dimensional, whereas rational fact-finding must be a two-dimensional process. The burden of proof doctrine specifies the level of probability necessary for making a finding, but does not address the problem of contingency that accompanies any decision about probability. Any such decision is epistemically contingent and, therefore, conditionalized upon its underlying evidential base. The broadness of this base – that

126 For more details and references see Stein, *supra* note 41 at 340–43. For an economic explanation of the requirement that balanced ($P=0.5$) cases should be decided for defendants, see Stein, *ibid.* at 343.

127 See Cohen, *supra* note 12 at 46.

is, the extent to which it incorporates the relevant facts – determines the weight (or resiliency) of the probability decision. Different probabilities, therefore, carry different weights that signify the probabilities' strength or weakness. The strength and weakness (the weight factor) depend on the breadth of the shortfall between the existing amount of evidence and the ideal amount of evidence. Hence, a low-weight probability satisfying the civil standard of proof may not be sufficient for delivering a verdict.

Under this model, some probabilities may be regarded as weighty enough for the practical purposes of adjudication, whereas others may not be so regarded. This problem is not amenable to an epistemic solution because it arises at a point where the available sources of information have been exhausted. The only sustainable solution to this problem lies in the allocation of the risk of error to either the plaintiff or to the defendant. Preferences formed with regard to risk-allocation should relate to the possible materialization of the risk. Allocation of the risk of error in civil litigation is, therefore, bound to be different from its allocation in criminal matters. Moreover, allocation of the risk of error in contract cases should be different from its allocation in tort cases. The distinction between the two types of cases derives from the fundamental difference between voluntary and involuntary legal relations. In voluntary relations, generalized as 'contracts,' factual indeterminacy of future litigation can be reduced, or at least regulated, through advance stipulation, a possibility not available in the context of legal relations such as torts, which are formed involuntarily. Therefore, allocation of the risk of error in contract cases should generally correspond to the parties' contractual expectations. These expectations also should determine the allocation of the burden of proof in general. Identified as the expectation principle, this approach is not merely normative; it also accounts for the existing doctrinal ramifications, which otherwise would appear incoherent. Allocation of the risk of error in cases involving low-weight probabilities may, therefore, justifiably be based upon this approach.

Ascertainment of the parties' contractual expectations often proves to be a rather complex task. This interpretive enterprise frequently ends up with 'implied terms' being written into the contract, which poses serious problems. These problems do not surface when the required stipulation is included explicitly in the contract. Therefore, creating incentives that will force out the required stipulation is yet another possibility for allocating the risk of error. As with the expectation approach, this possibility is available in contract cases only. Default provisions that fill in the contractual gaps both can and should be directed to this end. These provisions should be drafted in a way that will penalize one of the parties for failing to explicitly allocate the risk of error in the contract, in one way or another. The party to be thus penalized is the party who can identify the uncertainty problem

more easily than her opponent, a criterion that would tend to penalize the drafter of the contract. Because litigation is subsidized by tax money, contractual gaps that entail the possibility of an unregulated factual impasse should be treated as a kind of externality that needs to be counteracted by the law. Resonating with the *contra proferentem* doctrine, this stipulation-forcing approach would be effective only in relation to contracts that can reasonably anticipate litigation and the accompanying problem of uncertainty. There is a broad spectrum of contracts that belong to this category, and insurance contracts certainly are included in this spectrum.

Allocation of the risk of error also can follow the equality principle. This principle produces decision rules for factually uncertain cases by treating the risk of sustaining a wrongful loss as equally detrimental to the plaintiff as it is to the defendant. Alternatively, risk-allocation may be used as an instrument for furthering a variety of social policies, utilitarian in nature. These two possibilities are equally available in contract litigation and in tort litigation. They can resolve any factual impasse, including the low-weight probability problem. Along with the expectation principle and the stipulation-forcing penalty default, these possibilities form a cluster of plausible solutions to the low-weight probability problem. The potential operation of all these principles and policies has been demonstrated in the analysis of *Rhesa*, a landmark decision of the House of Lords that addressed the low-weight probability problem. As demonstrated by my analysis, each of these principles and policies runs counter to the outcome reached by the Law Lords.

The above principles and policies are not exclusive, and I am not offering a meta-principle that can establish their normative superiority over other potential candidates. These principles and policies have been chosen on endogenous grounds: the normative attitudes they display are broadly instantiated in the positive law. The doctrinal possibility of adopting them is more real, therefore, than in the case of other principles and policies. Indeed, my analysis of the uncertainty problem in contract litigation is meant to be both normative and positive.

The proposed principles and policies might not coexist in harmony. The expectation principle may be at odds with a penalty default provision un contemplated by the contracting parties. Implementation of certain social policies may clash with the requirement that individuals be treated as equals. Furthermore, a perennial tension exists between equality and utility, and one can easily envision other combinations of potential clashes between the proposed principles and policies. Fragmentation is the only remedy to this problem. Different principles and policies should apply in different settings. Principles and policies suitable for particular settings, such as insurance contracts, may not be suitable in other settings, such as collective employment contracts. Allocation of the risk of error must be tied

to the relevant substantive objectives of the law. These objectives should accord preference to one of the risk-allocating principles or policies. It is, therefore, these substantive objectives – not a Procrustean application of the burden of proof doctrine – that should ultimately identify the bearer of the risk of error.

