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# PROCEDURE'S MAGICAL NUMBER THREE: PSYCHOLOGICAL BASES FOR STANDARDS OF DECISION

*Kevin M. Clermont* †

“My problem is that I have been persecuted by an integer.”<sup>1</sup> So began Professor George A. Miller’s pioneering article in cognitive psychology. His magical number was seven. Scientists were then beginning to study the various limits on human mental capabilities, and somehow that number seven kept popping up as a feature of those limits.

In my study of procedure, the number three plays a comparable role. So many procedural doctrines appear, after research and teaching, to trifurcate. An obvious example is that kind of standard of decision known as the standard of proof: what in theory might have been a continuum of standards divides in practice into the three distinct standards of preponderance of the evidence, clear and convincing evidence, and proof beyond a reasonable doubt. Other examples suggest both that I am not imagining the prominence of three and that more than coincidence is at work.

Part I of this essay describes the role of the number three in procedure, with particular regard to standards of decision. Part II reviews the contribution of cognitive psychology toward understanding certain relevant limitations on human capabilities. Part III argues that although the number three represents more than imagination or coincidence for the proceduralist, its persistent recurrence need not lead to Pythagorean conclusions of magic. Instead, limits on our cognitive powers likely dictate this systematic structure of procedure, awareness of those limits should help us better to understand and shape that procedure, and these insights can lead to very specific suggestions for reform. In other words, Part III combines the descriptive legal research of Part I with the social-science review of Part II in search of interpretation, insight, and improvement.

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<sup>1</sup> Miller, *The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information*, 63 *PSYCHOLOGICAL REV.* 81, 81 (1956).

## 1

## STANDARDS OF DECISION

The number three haunts procedure. It recurs in an almost mystical way, bringing to mind strains of numerology<sup>2</sup> and thoughts of the three Fates, the three Graces, the three Furies, the three Harpies, the three Magi, the Trinity and many other religious triads and trinities, the three virtues, the three dimensions, the three states of matter, the three primary colors, the three kingdoms, the three branches of government, the three-piece suit, the three R's, the three unities, three cheers, three-time loser, three strikes and three outs and many other triplicities in sports, the three bears, *The Three Musketeers*, and the Three Stooges.<sup>3</sup> Now I hasten to disavow claiming any potency specially inherent in the number three. Anyone could probably find as much magic in several other numbers.<sup>4</sup> Or as Thomas Carlyle said of statistics, which he seemingly saw as the successor to numerology, "you might prove anything by figures."<sup>5</sup> What I am claiming is that three keeps recurring in procedure, and ultimately in a significant way. I could give many examples to prove

<sup>2</sup> See generally E. BELL, *NUMEROLOGY* (1933).

<sup>3</sup> See S. LEEK, *NUMEROLOGY: THE MAGIC OF NUMBERS 107-08* (1969); M. SAVIGNY-VESCO, *LE SECRET DES NOMBRES 26-28* (1968); J. SWIFT, *A Tale of a Tub*, in *GULLIVER'S TRAVELS AND OTHER WRITINGS* 272 (L. Landa ed. 1960) ("panegyric essay" upon the number three). All this says nothing of the prominence of the number three in countless aphorisms. For example, "three hours a day will produce as much as a man ought to write." 2 A. TROLLOPE, *AN AUTOBIOGRAPHY* 103 (1883). Nor is three a stranger to psychology. See, e.g., Trotter, *Three Heads Are Better than One*, *PSYCHOLOGY TODAY*, Aug. 1986, at 56, 62 (explaining so-called triarchic theory of intelligence and observing that its originator, Robert Sternberg, "seems to have a three-part answer for every question"). But see, e.g., *The Seven Frames of Mind*, *PSYCHOLOGY TODAY*, June 1984, at 21 (explaining Howard Gardner's theory of multiple intelligences).

For a more serious treatment of "the especial sanctity of this integer," see V. HOPPER, *MEDIAEVAL NUMBER SYMBOLISM* at viii (1938).

<sup>4</sup> For example:

[W]hat about the magical number seven? What about the seven wonders of the world, the seven seas, the seven deadly sins, the seven daughters of Atlas in the Pleiades, the seven ages of man, the seven levels of hell, the seven [spectral] colors, the seven notes of the musical scale, and the seven days of the week?

Miller, *supra* note 1, at 96.

<sup>5</sup> T. CARLYLE, *Chartism*, in 5 *CRITICAL AND MISCELLANEOUS ESSAYS* 332 (London 1869); cf. F. DOSTOEVSKY, *THE BROTHERS KARAMAZOV* 463-64 (Dell ed. 1956) ("'But profound as psychology is, it's a knife that cuts both ways. . . . [Y]ou can prove anything by it.'").

But just as I feel mounting ridicule for number-mysticism, I run across something like this, even underlined in our library's copy: "This number [3] is the vehicle of expression. It is the work of 3 to reveal the hidden, to brush from sealed eyes the earth dust so that others may see the glory of the divine all about them." L. BALLIETT, *THE PHILOSOPHY OF NUMBERS* 52 (1908) (explaining "Balliett System of Number Vibration," believe it or not).

its prominence, but eventually to reveal its significance I should first change from wide to narrow focus.

The law's principal task is decisionmaking, and decisionmaking takes place in a world of uncertainty.<sup>6</sup> A legal decisionmaker therefore needs to know not only the issue but also how certain he or she must be to decide it in a particular way. Meanwhile, procedure is a means to the end, although it embodies process values as well as outcome values.<sup>7</sup> Much of procedure accordingly aims at facilitating optimal decisionmaking in the face of uncertainty. A central and critical task of procedure, then, is to specify the degree of certainty or likelihood required to support a particular decision.<sup>8</sup>

I narrow the focus to that central and critical task of procedure as performed in connection with ordinary legal decisions of a binary nature. Although a special task, this still represents a broad and important subject, which I shall generically call the standard of decision. From this procedural heartland, I shall draw examples of the role of three. In other words, I shall ignore examples from the rest of procedure<sup>9</sup> or from the law beyond procedure.<sup>10</sup> The intent be-

<sup>6</sup> "So thoroughly immersed is law in the business of decision that one might easily be tempted to say that decision is its sole activity." Cowan, *Decision Theory in Law, Science and Technology*, 17 RUTGERS L. REV. 499, 507 (1963). "Most legal decision making, like that in many other areas of complex activity, is done under conditions of uncertainty." Saks & Kidd, *Human Information Processing and Adjudication: Trial by Heuristics*, 15 LAW & SOC'Y REV. 123, 126 (1981).

<sup>7</sup> See Lind, *The Psychology of Courtroom Procedure*, in THE PSYCHOLOGY OF THE COURTROOM 13, 14 (N. Kerr & R. Bray eds. 1982) ("Legal procedure is the methodology of the law, and it is by understanding and improving this methodology that we can best hope to make our justice system more reliable and fair."); Summers, *Evaluating and Improving Legal Processes—A Plea for "Process Values"*, 60 CORNELL L. REV. 1 (1974).

<sup>8</sup> See McCauliff, *Burdens of Proof: Degrees of Belief, Quanta of Evidence, or Constitutional Guarantees?*, 35 VAND. L. REV. 1293, 1294-96, 1299, 1313 (1982). All this constitutes facts of life outside the law too. My experience introducing the law to undergraduates suggests, however, that a true/false dichotomy as to legal questions tends to seduce the laity and so makes the standard of decision a special source of confusion to outsiders.

<sup>9</sup> The first such example that pops into the proceduralist's mind might be the classic tripartite division of territorial jurisdiction into in personam, in rem, and quasi in rem. *Pennoyer v. Neff*, 95 U.S. 714, 733-34 (1878). But this division is arbitrary. See Clermont, *Restating Territorial Jurisdiction and Venue for State and Federal Courts*, 66 CORNELL L. REV. 411 (1981) (coincidentally recasting subject into different set of three conceptual receptacles). In short, territorial jurisdiction provides a good example of the many tripartite doctrines in procedure that augment the role of three but rest merely on coincidence.

Nevertheless, there are tripartite procedural doctrines that do not represent a standard of decision but do relate to the concerns of this essay. An example is the doctrine of proper and necessary and indispensable parties, under which a court must measure the closeness of the person's connection to litigation. See K. CLERMONT, *CIVIL PROCEDURE* 194-95 (1982).

<sup>10</sup> A ready example here comes from modern equal-protection analysis, with its two accepted tests of rational basis and strict scrutiny and the contested intermediate standard. See 2 R. ROTUNDA, J. NOWAK & J. YOUNG, *TREATISE ON CONSTITUTIONAL LAW* § 18.3, at 322-35 (1986). Such analysis is essentially inquiring whether sufficient need

hind narrowing the focus in this way is to skirt widely the realm of coincidence and thus to derive a more limited but sounder conclusion.<sup>11</sup>

To begin, I divide the subject of standards of decision into the standards of original decision, the standards of review, and the standards for reviewing the reviewer. To illustrate these standards generously, I shall mine civil and criminal and administrative procedure for doctrines that exemplify tripartition. As I shall be sketching these examples at best pithily, I am sure that experts in those fields and doctrines could quibble with some of my formulations, but I hope that they would accept the basic tripartite conceptions.

### A. Standards of Original Decision

Examples of tripartite standards of original decision form the most diverse group, because of the wide range of initial decisions made by legal actors. I here develop three such examples. Incidentally, my repetitive divisions into three imply the richness of the exemplary sources, rather than cuteness.

As a first example, consider again the conspicuous kind of standard of decision called standard of proof, measure of persuasion, or degree of belief.<sup>12</sup> This category comprises the standards of re-

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exists for the government's classifying of persons. As the initial step in evaluating that need, there is a choice between (i) selecting among the extremely lenient rational-basis test, zero or one or more intermediate standards, and the extremely stringent strict-scrutiny test and (ii) selecting from a sliding scale of standards. See *San Antonio Indep. School Dist. v. Rodriguez*, 411 U.S. 1, 98 (1973) (Marshall, J., dissenting) (arguing against a few discrete standards and for "a spectrum of standards"). This basic choice relates to the concerns of this essay.

<sup>11</sup> My eventual conclusion surely does not apply to all tripartite doctrines, see *supra* note 9, but nevertheless should extend beyond the standard of decision and its scale of likelihood, see *supra* note 10. To generalize, the conclusion will directly apply to any evaluating of certainty in the absence of some extraordinary capability and need for high precision. Moreover, I believe the conclusion will be relevant to any decisionmaking that involves placement on a scale.

<sup>12</sup> See generally E. CLEARY, MCCORMICK ON EVIDENCE 956-64 (3d ed. 1984); R. FIELD, B. KAPLAN & K. CLERMONT, MATERIALS FOR A BASIC COURSE IN CIVIL PROCEDURE 553-56 (5th ed. 1984); 9 J. WIGMORE, EVIDENCE IN TRIALS AT COMMON LAW §§ 2497-2498 (J. Chadbourn rev. 1981).

For more sophisticated discussion of the probability theories involved, see Ball, *The Moment of Truth: Probability Theory and Standards of Proof*, 14 VAND. L. REV. 807, 809-12 (1961) (frequency theory); Tribe, *Trial by Mathematics: Precision and Ritual in the Legal Process*, 84 HARV. L. REV. 1329, 1344-50 (1971) (subjective theory). But see Jaffee, *Of Probativity and Probability: Statistics, Scientific Evidence, and the Calculus of Chance at Trial*, 46 U. PITT. L. REV. 925, 934-51 (1985). See generally R. ECCLESTON, EVIDENCE, PROOF AND PROBABILITY (2d ed. 1983); *Probability and Inference in the Law of Evidence*, 66 B.U.L. REV. 377 (1986). A suggestive elaboration on traditional probability theories appears in Cohen, *Confidence in Probability: Burdens of Persuasion in a World of Imperfect Knowledge*, 60 N.Y.U. L. REV. 385 (1985) [hereinafter N. Cohen]. That article presents a different way of describing how sure a factfinder is, using not only a point estimate of probability but also a level of confidence. Sureness increases as either component rises. See *id.* at 420-

quired certainty used by a factfinder in deciding whether contested facts exist. Three such standards, differing in how likely the particular fact must be, apply in different circumstances: (1) The standard of preponderance of the evidence translates into more-likely-than-not. It is the usual standard in civil litigation, but it appears throughout law. Considerable debate revolves around its practical meaning, but nearly everyone now accepts the propriety of this standard as one end of the usual probability scale.<sup>13</sup> (2) Next comes the intermediate standard or standards, often grouped under the banner of clear and convincing evidence and roughly translated as much-more-likely-than-not. Judicial formulations include "clear, cogent, and convincing," "clear, satisfactory, and convincing," "clear, precise, and indubitable," "clear and irresistible," and "convincing beyond reasonable controversy."<sup>14</sup> These apply to certain issues in special situations, such as when terminating parental

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21; *infra* note 13. My concern lies in how many degrees of sureness the legal system does, can, and should distinguish. I could use a more complex description of confidence in probability (or take account of some sort of second-order probabilities) without affecting my analysis substantially, but usually in this nontechnical essay I shall use point estimates for the imagery implicit in my text.

Alternative to these Pascalian or mathematicist approaches is a Baconian or inductive theory of probability, *see* L. COHEN, *THE PROBABLE AND THE PROVABLE* 49-57, 245-64 (1977), *reviewed by* Schum, 77 *MICH. L. REV.* 446 (1979); Wager, 1979 *DUKE L.J.* 1071, but it is not sufficiently useful for present purposes to justify its complexity, *see* Allen, *A Reconceptualization of Civil Trials*, 66 *B.U.L. REV.* 401, 422-23 (1986), even though it too seems compatible with my ultimate position, *see* L. COHEN, *supra*, at 255-56, 272-73. *See also* G. SHAFER, *A MATHEMATICAL THEORY OF EVIDENCE* (1976) (belief functions).

In all the probability theories, moreover, there seems to be an emerging sense of the need to confront the limited precision of humans in gradating their beliefs. *See* Fine, *Comment*, 1 *STATISTICAL SCI.* 352, 353 (1986).

<sup>13</sup> *See* McBaine, *Burden of Proof: Degrees of Belief*, 32 *CALIF. L. REV.* 242, 247-51 (1944). Equipose lies just below this standard, but the law handles a finding of equipose by means of the burden of persuasion. *See* Ball, *supra* note 12, at 817-18; Posner, *An Economic Approach to Legal Procedure and Judicial Administration*, 2 *J. LEGAL STUD.* 399, 408-09 (1973); *cf.* N. Cohen, *supra* note 12, at 418-19 (arguing that equipose embodies a range of cases, not merely a point). The range of each of the natural categories of complex probabilities and the imprecision of boundaries between them, combined with a proper judicial reluctance to force precise categories on the jury, may help to explain some of the famous paradoxes of statistical evidence. *See infra* notes 36 & 123; *cf.* N. Cohen, *supra* note 12, at 406-09 (trying to explain the paradoxes in a somewhat different way); Cohen, *The Costs of Acceptability: Blue Buses, Agent Orange, and Aversion to Statistical Evidence*, 66 *B.U.L. REV.* 563, 569 (1986) (qualifying his own argument); Ashford, *Take What You Have Gathered from Coincidence: The Importance of Uncertainty Analysis*, 66 *B.U.L. REV.* 943, 945-46 (1986) (generalizing N. Cohen's argument); Friedman, *Generalized Inferences, Individual Merits, and Jury Discretion*, 66 *B.U.L. REV.* 509, 512-19 (1986) (incorporating N. Cohen's argument); Kaye, *Do We Need a Calculus of Weight to Understand Proof Beyond a Reasonable Doubt?*, 66 *B.U.L. REV.* 657, 667 n.22 (1986) (suggestively criticizing N. Cohen's argument); Kaye, *Apples and Oranges: Confidence Coefficients and Significance Levels Versus the Posterior Probability and the Burden of Persuasion*, 1986 Center for the Study of Law, Science and Technology, Arizona State University Res. Rep. No. 86.9 (expanding his criticism).

<sup>14</sup> McBaine, *supra* note 13, at 253 ("Much of the trouble in this class of cases . . . is

rights.<sup>15</sup> Continuing debate here focuses on the practical meaning of clear and convincing evidence,<sup>16</sup> while debate decreases on potential differences among the distinctive intermediate formulations.<sup>17</sup> (3) The standard of proof beyond a reasonable doubt means proof to a virtual certainty. It rarely prevails outside criminal law. Again, arguments persist about its practical meaning, but not about the propriety of this standard as the other end of the probability scale in our unavoidably uncertain world.<sup>18</sup>

The very obviousness of this example helps make my point. There is a Lockean choice of available standards. A task of the law is making the choice appropriate to the situation; the law may aim to minimize overall errors, to decrease dangers of deception or bias or to disfavor certain claims, or to avoid a special kind of error such as convicting the innocent.<sup>19</sup> My interest, however, is merely to describe the range of choices. I do not explore the reasons for choosing a particular standard of proof, beyond observing the desirability of being able to choose among at least three standards.

Yet today there seem to be *only* three feasible choices in the range stretching from preponderance of the evidence through proof beyond a reasonable doubt. The law did not always recognize this,<sup>20</sup> but with time the law acknowledged that the conceivable spectrum of standards had coalesced irresistibly into three.<sup>21</sup> Thus,

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caused by the use of phrases which describe the quality of the evidence rather than the [required] state of mind of the judge or the jury . . .").

<sup>15</sup> *E.g.*, *Santosky v. Kramer*, 455 U.S. 745 (1982).

<sup>16</sup> *See* McBaine, *supra* note 13, at 254 & n.24 (decisions are "confused and confusing").

<sup>17</sup> *Compare* *Molyneux v. Twin Falls Canal Co.*, 54 Idaho 619, 631-33, 35 P.2d 651, 655-56 (1934) ("clear, positive, and unequivocal" imposes impermissibly heavier burden than "clear and convincing") and *Morse, Evidentiary Lexicology*, 59 DICK. L. REV. 86, 86 (1954) (intermediate category contains many separate standards) with F. JAMES & G. HAZARD, *CIVIL PROCEDURE* 317-18 (3d ed. 1985) (only one intermediate standard exists) and P. ROTHSTEIN, *EVIDENCE IN A NUTSHELL* 110-11 (2d ed. 1981) (same).

<sup>18</sup> *See* DeLoggio, "Beyond a Reasonable Doubt"—A Historic Analysis, N.Y. ST. B.J., Apr. 1986, at 19; McBaine, *supra* note 13, at 255-58; *see also* Shapiro, "To a Moral Certainty": *Theories of Knowledge and Anglo-American Juries 1600-1850*, 38 HASTINGS L.J. 153 (1986) (tracing equivalent phrase).

<sup>19</sup> *See* E. CLEARY, *supra* note 12, at 960-62; Ball, *supra* note 12, at 815-17; Kaye, *The Limits of the Preponderance of the Evidence Standard: Justifiably Naked Statistical Evidence and Multiple Causation*, 1982 AM. B. FOUND. RES. J. 487; Orloff & Stedinger, *A Framework for Evaluating the Preponderance-of-the-Evidence Standard*, 131 U. PA. L. REV. 1159 (1983).

<sup>20</sup> *See, e.g.*, T. STARKIE, *A PRACTICAL TREATISE ON THE LAW OF EVIDENCE* 449 (Boston 1826) (discussing "degrees of evidence"):

Even the most direct evidence can produce nothing more than such a high degree of probability as amounts to moral certainty. From the highest degree, it may decline by an infinite number of gradations, until it produce in the mind nothing more than a mere preponderance of assent in favour of the particular fact.

<sup>21</sup> *See, e.g.*, Morgan, *Instructing the Jury upon Presumptions and Burden of Proof*, 47 HARV. L. REV. 59, 60 (1933).

Professor J.P. McBaine could eventually write: "The only sound and defensible hypotheses are that the trier, or triers, of facts can find what (a) *probably* has happened, or (b) what *highly probably* has happened, or (c) what *almost certainly* has happened. No other hypotheses are defensible or can be justified by experience and knowledge."<sup>22</sup>

My second example is the harmless-error doctrine, which shifts the focus from likelihood of fact to likelihood of effect or noneffect. After an appellate court unearths error, it normally must decide whether the error failed to change the outcome.<sup>23</sup> Approaches differ on the standard of decision, that is, how likely this noneffect must be for the court to deem the error harmless.<sup>24</sup> The conflict among approaches has lasted for centuries<sup>25</sup> and by now has helped to produce "verbal chaos"<sup>26</sup> or vague tests like "substantial justice."<sup>27</sup> Although the confusion leads some observers to despair of precision,<sup>28</sup> an appellate court nonetheless must apply some standard of decision. With respect to an error on a constitutional matter, the court might require the appellee to show harmlessness "beyond a reasonable doubt."<sup>29</sup> On a nonconstitutional matter, the court might require the appellee's showing of noneffect to be "highly probable."<sup>30</sup> Other courts sometimes choose to follow a different approach, almost taking an independent view of the case by requiring the appellee merely to show "more probably than not"

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<sup>22</sup> McBaine, *supra* note 13, at 246-47 (footnote omitted); *see also* Addington v. Texas, 441 U.S. 418, 423 (1979) ("the evolution of this area of the law has produced across a continuum three standards or levels of proof for different types of cases"). That is to say, although a continuum is conceivable, or even in some ways theoretically desirable, *see, e.g.*, Posner, *supra* note 13, at 414-16 (economic analysis), only three discrete standards exist in practice. And although some observers steadfastly believe that triers of fact will adjust an established standard up or down according to the circumstances, *see, e.g.*, R. EGGLESTON, *supra* note 12, at 117-18, 131, 140, the point of this essay is that reliance on such adjustment is neither realistic nor desirable.

<sup>23</sup> *See* Kornstein, *A Bayesian Model of Harmless Error*, 5 J. LEGAL STUD. 121, 129, 131-33 (1976).

<sup>24</sup> *See id.* at 143-44.

<sup>25</sup> *See* R. FIELD, B. KAPLAN & K. CLERMONT, *supra* note 12, at 618-19.

<sup>26</sup> Kornstein, *supra* note 23, at 121-25.

<sup>27</sup> FED. R. CIV. P. 61; *cf.* Kotteakos v. United States, 328 U.S. 750, 765 (1946) ("fair assurance" of harmlessness).

<sup>28</sup> *E.g.*, F. JAMES & G. HAZARD, *supra* note 17, at 666 & n.6; 11 C. WRIGHT & A. MILLER, FEDERAL PRACTICE AND PROCEDURE § 2883, at 275-76 (1973); *see* Kornstein, *supra* note 23, at 121 & n.5.

<sup>29</sup> *Rose v. Clark*, 106 S. Ct. 3101, 3107 (1986); *Delaware v. Van Arsdall*, 475 U.S. 673, 684 (1986); *Chapman v. California*, 386 U.S. 18, 24 (1967). The more recent cases have in a sense watered down *Chapman* by changing the categories of error subject to harmless-error analysis, but wherever applicable the quoted *Chapman* standard remains unchanged. *See* United States *ex rel.* Miller v. Greer, 789 F.2d 438, 442-45 (7th Cir. 1986) (en banc), *rev'd on other grounds sub nom.* Greer v. Miller, 107 S. Ct. 3102 (1987).

<sup>30</sup> McQueeney v. Wilmington Trust Co., 779 F.2d 916, 928 (3d Cir. 1985).

that the error did not change the outcome.<sup>31</sup> Thus, Chief Justice Roger J. Traynor managed to perceive a pattern of three defensible standards: "What degree of probability should [the appellate court] require that the judgment is contaminated? Should it affirm if it believes that it is more probable than not that the error did not affect the judgment? Highly probable that it did not? Almost certain that it did not?"<sup>32</sup>

Courts can complicate the pattern by speaking in terms of the appellant's burden and thus creating an analogous three standards: the appellant must show a "slightest possibility,"<sup>33</sup> "reasonable possibility,"<sup>34</sup> or "substantial possibility"<sup>35</sup> that the error changed the outcome and thus was prejudicial. For instance, a court would almost automatically reverse if it required the appellant to show merely the slightest possibility of effect, because any error on a relevant matter could meet this scintilla test.<sup>36</sup> But a court could tighten

<sup>31</sup> *Haddad v. Lockheed Cal. Corp.*, 720 F.2d 1454, 1459 (9th Cir. 1983).

<sup>32</sup> R. TRAYNOR, *THE RIDDLE OF HARMLESS ERROR* 34 (1970). At least one court maintains that these three are the only possible standards. *Haddad*, 720 F.2d at 1458 n.7.

<sup>33</sup> *E.g.*, *United States v. Adams*, 385 F.2d 548, 550-51 (2d Cir. 1967).

<sup>34</sup> *E.g.*, *Fahy v. Connecticut*, 375 U.S. 85, 86 (1963).

<sup>35</sup> *E.g.*, *Turlington v. Phillips Petroleum Co.*, 795 F.2d 434, 444 (5th Cir. 1986); *see also* *McQueeney v. Wilmington Trust Co.*, 779 F.2d 916, 927 n.19 (3d Cir. 1985) (describing unnamed standard higher than reasonable possibility); *People v. Watson*, 46 Cal. 2d 818, 836-37, 299 P.2d 243, 254-55 (1956) ("reasonably probable"), *cert. denied*, 355 U.S. 846 (1957); *cf.* *United States v. Bagley*, 473 U.S. 667, 682-84 (1985) (using "reasonable probability" test to assess effect of prosecution's failure to disclose evidence favorable to accused); *Strickland v. Washington*, 466 U.S. 668, 694 (1984) (same for ineffective assistance of defense counsel).

Terminology applied to the low end of the scale of probabilities is far from uniform. *See, e.g.*, *Press-Enterprise Co. v. Superior Court*, 106 S. Ct. 2735, 2743 (1986) (distinguishing, without definition, "substantial probability" from "reasonable likelihood" of prejudice in context of denying public access to criminal proceedings).

<sup>36</sup> Although on the scale of probabilities the slightest-possibility-of-effect standard represents the same category of likelihood as the noneffect-beyond-a-reasonable-doubt standard, the former would produce more reversals. This is true because the former rule provides that a case falling in this category contains prejudicial error, while the latter rule provides that an appellee reaching this category establishes harmless error. Thus, on the one hand, the beyond-a-reasonable-doubt standard is the virtual equivalent of the reasonable-possibility standard in terms of stringency, as the Court recognized in paraphrasing "beyond a reasonable doubt" as "whether there is a reasonable possibility that the evidence complained of might have contributed to the conviction." *Chapman v. California*, 386 U.S. 18, 24 (1967) (quoting *Fahy*, 375 U.S. at 86-87). And, on the other hand, the slightest-possibility standard is the virtual equivalent of requiring practically absolute certainty that the error did not change the outcome, a demanding standard more common outside the law than within it. *Cf.* R. EGGLESTON, *supra* note 12, at 139-40 (describing extremely high standard of proof used in some parentage cases in Australia, wherein decision for plaintiff "should not be given if there was even the slightest room for doubt").

As suggested, and for reasons that will become increasingly clear, a useful way to envisage the scale of probabilities is as a set of categories, or intervals, of likelihood. *See* Schum, *Probability and the Processes of Discovery, Proof, and Choice*, 66 B.U.L. REV. 825, 865-

up the standard substantially, even abandoning the realm of the "possible" for that of the "probable" and requiring the appellant to show at least that the error more probably than not changed the outcome.<sup>37</sup> In short, I can now assert that there are not just three available standards of decision, but three more invoking mirror-image categories beyond equipoise: (1) slightest possibility, (2) reasonable possibility, (3) substantial possibility, (4) equipoise, (5) probability, (6) high probability, and (7) almost certainty.

I have discussed harmless error in the terms of an appellate doctrine, just as many authorities do.<sup>38</sup> The appellate court, however, ordinarily acts as an original decisionmaker with respect to harmless error.<sup>39</sup> Not surprisingly, then, trial courts sometimes face the issue of harmless error too, as on some new-trial motions.<sup>40</sup> Thus, in exploring the range of original decisions pertinent to this essay, both appellate and trial courts deserve consideration. Moreover, the legal decisionmaker need not be a court at all, as the next example drives home.

The third example involves the street actions of police officers, which shifts the focus more squarely onto criminal procedure and

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69 (1986) (fuzzy set theory); Zimmer, *Verbal vs. Numerical Processing of Subjective Probabilities*, in DECISION MAKING UNDER UNCERTAINTY 159, 165-67 (R. Scholz ed. 1983) (same). Each category embodies some range of probabilities, rather than a point. Focusing on a particular category such as beyond-a-reasonable-doubt, I have indicated that a shift in the burden from appellee to appellant changes the terminology from highest probability to lowest possibility. The affirmative/reversal result for the category in question also changes, because the party with the burden gets its desired result if it reaches at least that category. The minimally strong case for reaching the category changes too, because the direction of entering the category reverses as the burden shifts. In sum, such a shift in burden substantially affects imagery. But this kind of burden, unlike the usual burden of production or persuasion, does not substantially simplify or aid the court's decisionmaking. See R. TRAYNOR, *supra* note 32, at 25-26; 11 C. WRIGHT & A. MILLER, *supra* note 28, § 2883, at 277-78; cf. McNaughton, *Burden of Production of Evidence: A Function of a Burden of Persuasion*, 68 HARV. L. REV. 1382, 1382-83 (1955) (burdens of production and persuasion).

The admitted difficulties of this footnote, however, should not work to obscure a basic point: there can be a standard of proof higher than beyond a reasonable doubt, although this does not imply the existence of an additional category of likelihood. The decisionmaker can in practical terms demand absolute certainty from the proponent by deciding against him or her if the opponent raises the slightest doubt in response.

<sup>37</sup> See, e.g., *Moise v. Fairfax Mkts., Inc.*, 106 Cal. App. 2d 798, 801-02, 236 P.2d 216, 218-19 (1951), noted in 25 S. CAL. L. REV. 348 (1952); cf. *Palmer v. Hoffman*, 318 U.S. 109, 116 (1943) (appellant "carries the burden of showing that prejudice resulted"); *Vincent v. Young*, 324 F.2d 266, 269 (10th Cir. 1963) (implying preponderance standard).

<sup>38</sup> E.g., 28 U.S.C. § 2111 (1982). See generally *McDonough Power Equip., Inc. v. Greenwood*, 464 U.S. 548, 553-54 (1984).

<sup>39</sup> See *Kornstein*, *supra* note 23, at 140-42.

<sup>40</sup> See, e.g., FED. R. CIV. P. 61; FED. R. CRIM. P. 52(a); FED. R. EVID. 103(a); *infra* note 146. See generally 3A C. WRIGHT, FEDERAL PRACTICE AND PROCEDURE §§ 851-855 (2d ed. 1982); 11 C. WRIGHT & A. MILLER, *supra* note 28, §§ 2881-2888.

more explicitly onto the lower end of the scale of probabilities. My concern is with the standards of decision that the police themselves must use, although later their decisions may very well be subject to objective judicial review.<sup>41</sup> When facing a decision to search and seize, police on the street cannot act on their slightest suspicion or an "inchoate and unparticularized suspicion or 'hunch.'"<sup>42</sup> But they can stop and frisk based on "reasonable suspicion," which means reasonable grounds to suspect criminal conduct or, arguably, a reasonable possibility.<sup>43</sup> And they can arrest and search based on "probable cause," which is a vague standard meaning reasonable grounds to believe, say, that the arrestee committed the crime in question and which in turn might mean a substantial possibility<sup>44</sup> or something more.<sup>45</sup> At any rate, all these standards stand in stark contrast to the standard for conviction—proof beyond a reasonable doubt. Moreover, they stand as discrete standards, constituting "a step profile of the criminal justice system."<sup>46</sup> Some observers have argued for a sliding scale of suspicion, whereby the required degree of suspicion would move up with greater invasion of privacy and down with greater need for action.<sup>47</sup> But the Supreme Court has

<sup>41</sup> See 1 W. LAFAVE & J. ISRAEL, *CRIMINAL PROCEDURE* § 3.3(a), at 185-86 (1984).

<sup>42</sup> *Terry v. Ohio*, 392 U.S. 1, 27 (1968). For a thorough border search, officers need no more than a "mere suspicion" of illegal activity. *Rodriguez-Gonzalez v. United States*, 378 F.2d 256, 258 (9th Cir. 1967); cf. *United States v. Ramsey*, 431 U.S. 606, 616-19 (1977) (routine border search requires no suspicion).

<sup>43</sup> See 1 W. LAFAVE & J. ISRAEL, *supra* note 41, § 3.3(d). For a prolonged detention at a border to await a suspect's bowel movement, officers need a "reasonable suspicion" of alimentary canal smuggling. *United States v. Montoya de Hernandez*, 473 U.S. 531, 541 (1985).

<sup>44</sup> See 1 W. LAFAVE & J. ISRAEL, *supra* note 41, § 3.3(b), at 188-90; McCauliff, *supra* note 8, at 1303-07. For a border search involving examination of body cavities, officers need a "plain suggestion" of body cavity smuggling, *Henderson v. United States*, 390 F.2d 805, 808 (9th Cir. 1967), which arguably is equivalent to this minimal probable cause.

In the related setting of issuing a warrant, which involves the same standard of original decision although perhaps a more deferential standard of review, see 1 W. LAFAVE & J. ISRAEL, *supra* note 41, § 3.3(a), at 185, the Court has recently defined probable cause as a "fair probability" or "substantial chance of criminal activity." *New York v. P.J. Video, Inc.*, 475 U.S. 868, 876-78 (1986) (quoting *Illinois v. Gates*, 462 U.S. 213, 238, 244 n.13 (1983)).

<sup>45</sup> The test might be more-probable-than-not where the issue is, say, whether a crime has occurred. 1 W. LAFAVE & J. ISRAEL, *supra* note 41, § 3.3(b), at 190. The test might be still more stringent for certain kinds of searches, such as one involving intrusion into the human body. *Id.* at 187 & n.35.

Of course, the meaning of "probable cause" could also change as the setting alters. See 2 *id.* §§ 13.1(b) (prosecutorial decision to charge), 14.3(a) (preliminary hearing), 15.2(b) (grand jury). I contend, however, that any such change occurs by quantum leap from one customary category of uncertainty to another, thus illustrating the point of this essay.

<sup>46</sup> 1 W. LAFAVE & A. SCOTT, *SUBSTANTIVE CRIMINAL LAW* § 1.4, at 22 (1986).

<sup>47</sup> *E.g.*, Barrett, *Personal Rights, Property Rights, and the Fourth Amendment*, 1960 SUP. CT. REV. 46, 63-65. When discussing conceivable standards of decision, one must be

rejected such an approach as too subtle and manipulatable, saying that "the protections intended by the Framers could all too easily disappear in the consideration and balancing of the multifarious circumstances presented by different cases, especially when that balancing may be done in the first instance by police officers engaged in the 'often competitive enterprise of ferreting out crime.'"<sup>48</sup>

On the one hand, my three examples' variety conveys their differences and suggests that they do not exhaust the list. The list is long because numerous legal decisionmakers must decide countless kinds of issues, each of those issues requires a standard of decision, and many of those standards generate examples by exhibiting tripartition.<sup>49</sup> The differences among the underlying issues account for the variety and for the occasional nonobviousness of the connection between examples. What links the examples, however, is that their standards of decision all involve an apparently trichotomic scale of probabilities.

On the other hand, the number three loses much of its magic when one realizes that the police example's triad of slightest suspicion, reasonable suspicion, and probable cause do not necessarily all fall on the same side of equipoise, and when one further realizes that the potentially multiple meanings of probable cause, as well as the stringent standard for conviction, mean that more than three standards are at play in this example. More generally, a discussion of decisionmaking in some corner of the law might involve only one or two standards, or occasionally even four or more. Yet the

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careful to distinguish proposals that would change the underlying issue to be decided. *E.g.*, Bradley, *Two Models of the Fourth Amendment*, 83 MICH. L. REV. 1468, 1481-91 (1985) (arguing for overt shift of focus from degree of suspicion to overall reasonableness).

<sup>48</sup> *Dunaway v. New York*, 442 U.S. 200, 213 (1979) (quoting *Johnson v. United States*, 333 U.S. 10, 14 (1948)); see also Amsterdam, *Perspectives on the Fourth Amendment*, 58 MINN. L. REV. 349, 393 (1974) (sliding scale "converts the fourth amendment into one immense Rorschach blot"); cf. *United States v. Montoya de Hernandez*, 473 U.S. 531, 541 (1985) (rejecting any standard between "reasonable suspicion" and "probable cause").

<sup>49</sup> For yet another example, the Court recently contemplated the likelihood of a conjectural event when it ruled that to avoid the exclusionary rule the prosecution must establish the evidence's inevitable discovery by a preponderance, rejecting a lower and a higher "quantum of proof." *Nix v. Williams*, 467 U.S. 431, 444 & n.5 (1984). Or a court may have to gauge the probability of a future event, as when determining for pre-trial detention of juveniles whether a serious risk of future criminal conduct exists. *Schall v. Martin*, 467 U.S. 253, 278 (1984).

Another related example is the motion for a new trial on the ground of newly discovered evidence. The standard of decision on the criminal side is whether the new evidence would more likely than not alter the outcome. See 3 C. WRIGHT, *supra* note 40, § 557, at 322-26. However, the standard might be effectively higher on the civil side, see R. FIELD, B. KAPLAN & K. CLERMONT, *supra* note 12, at 635, and be lower in administrative proceedings, *e.g.*, *Booz v. Secretary of Health & Human Servs.*, 734 F.2d 1378, 1381 (9th Cir. 1984). See generally *infra* text accompanying notes 144-59.

number three still predominates in the broad range of examples, partly because it can play any of at least three roles. First, an example may entail three active standards, with each applying in certain circumstances. Second, many other examples involve a court's expressly picking one standard from three arguable choices, with the prominence of three deriving only from the court's and the parties' natural and observable tendency to think in terms of high-low-and-middle candidates once they perceive the task as choosing a standard from a scale. Third, sometimes three related devices differ in terms of standard of decision, as in my next example involving involuntary dismissal and new trial and judgment n.o.v.

## B. Standards of Review

Standards of review are analogous to standards of original decision, but a standard of review specifies how certain the reviewer must be of error by the original decisionmaker in order to overturn the original decision. Also in contrast to the diverse standards of original decision, standards of review in different legal settings display structural similarity. Here I sketch three examples of tripartite standards of review. I begin by shifting the focus to the civil side, at the federal-court level in particular.

As a first example, consider that a trial judge, upon motion to review the jury's factfinding, selects the standard of review from a tripartite scale: (1) The judge conceivably might inquire whether he or she thinks that the jury erred and the movant should have prevailed. This is similar to the standard used on a motion for involuntary dismissal,<sup>50</sup> when a jury is not sitting. Under federal jury practice, however, the judge cannot so substitute his or her own view for the jury's. (2) The judge should grant a motion for a new trial on the ground that the verdict was against the weight of the evidence<sup>51</sup> if, looking at all the evidence, he or she is clearly convinced that the jury was in error. Courts employ various verbal formulas to express this standard. It is apparent, however, that this standard lies between that for involuntary dismissal and that for judgment n.o.v. (3) The judge can grant a motion for judgment

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<sup>50</sup> FED. R. CIV. P. 41(b); see 9 C. WRIGHT & A. MILLER, FEDERAL PRACTICE AND PROCEDURE § 2371, at 222-27 (1971). Inclusion of this version of a "thirteenth juror" approach as an available standard of review is not fanciful, because some states seem to employ it on new-trial motions. F. JAMES & G. HAZARD, *supra* note 17, at 385.

<sup>51</sup> FED. R. CIV. P. 59(a)(1); see 11 C. WRIGHT & A. MILLER, *supra* note 28, § 2806. Regarding this middle standard, "clearly convinced of error" seems equivalent to "convinced of clear error." They require the same degree of certainty of error. In other contexts, however, one must beware that similarly subtle verbal shifts do not reflect a change in the underlying issue. See, e.g., *supra* note 47.

n.o.v.<sup>52</sup> if, looking at the evidence in the light reasonably most favorable to the nonmovant,<sup>53</sup> the judge thinks that a reasonable jury could not find for the nonmovant.<sup>54</sup> This is an extreme standard. The granting judge thinks not merely that the jury was wrong or even that it was clearly wrong, but that it acted irrationally.

Imagine a single disputed issue of typical fact, for which the

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<sup>52</sup> FED. R. CIV. P. 50(b); see 9 C. WRIGHT & A. MILLER, *supra* note 50, §§ 2524-2529.

The same basic standard for granting the motion applies in the pre-verdict setting on a motion for a directed verdict, *see id.* § 2524, at 541-42, or for summary judgment, *see* Anderson v. Liberty Lobby, Inc., 106 S. Ct. 2505, 2511-12 (1986). In practice, however, the movant may find it harder to succeed on these motions, among other reasons, because the judge often prefers to await verdict in order to lessen intrusion upon the jury and to facilitate appellate review and because these motions come earlier and so usually rest upon a less complete and effective airing of the evidence. *See* R. FIELD, B. KAPLAN & K. CLERMONT, *supra* note 12, at 136-37, 565-66. In other words, the judge can effectively avoid decision on these earlier motions, but before a *grant* of either motion the movant must meet the n.o.v. standard.

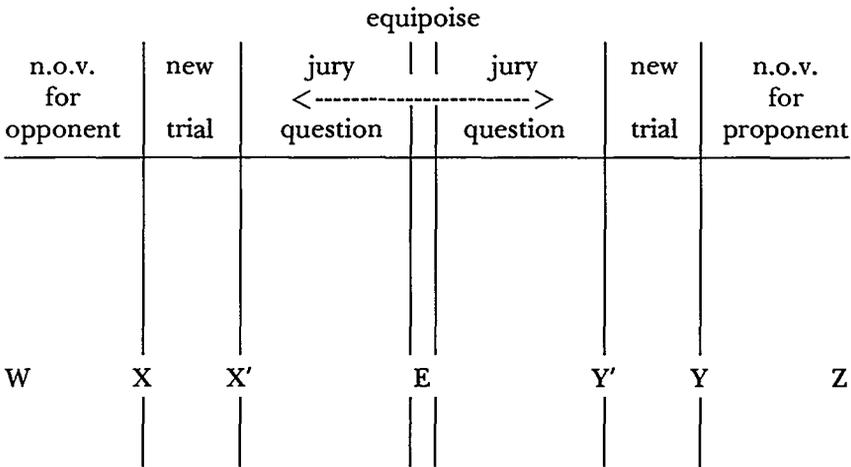
<sup>53</sup> This typical formulation sounds like the first of a two-step decisional process, different in kind from the process for new-trial motions, but the n.o.v. process does not truly involve two separate decisions. The federal judge asks only whether he or she is so sure that the jury erred that he or she can say that a jury could not rationally so decide. This involves envisaging the thought process of rationally functioning jurors as they first filter the evidence in the rational manner most favorable to the nonmovant, believing what the rational jury could believe of the favorable evidence and disbelieving what it could disbelieve of the unfavorable evidence, and as they then view the resultant inferences in like manner. These are merely logical subdivisions of the jurors' thought process, not separate decisional steps for the judge. The judge inquires whether the jury was wrong to the point of irrationality, and recreating the thought process of most-favorable but still-rational jurors is simply a way of testing whether the verdict falls beyond the irrationality line.

A state court might adopt a true two-step process for n.o.v. decisions, as by mechanically looking *only* at the evidence favorable to the nonmovant and then applying the irrationality test. *See* McBaine, *Trial Practice: Directed Verdicts; Federal Rule*, 31 CALIF. L. REV. 454, 460-61 (1943). But the modern federal approach looks at the evidence in the way reasonably most favorable to the nonmovant, thus looking at the evidence favorable to the nonmovant *and* the unquestionable evidence favorable to the movant, and doing so as a natural part of the judge's determination of whether the jury almost certainly erred.

Note that any court employs a multiple-step decisional process insofar as it applies separate preliminary requirements under the guise of initial burden of production, such as a rule that one particular side must initially produce some evidence of certain kinds to avoid adverse decision. *See* R. FIELD, B. KAPLAN & K. CLERMONT, *supra* note 12, at 542, 561-64. But once that side meets those requirements, the federal approach is to apply the standards of review described in the text.

<sup>54</sup> Again, courts employ many different verbal formulas, but these "are largely battles of words." F. JAMES & G. HAZARD, *supra* note 17, at 355. Although truly different standards are feasible, they would not necessarily require the judge to make a finer gradation of probability of error. For instance, a state court might apply the federal new-trial test on a motion for judgment n.o.v. *See id.* at 356. Or the court might follow a two-step decisional process, mechanically looking at some artificial subset of the evidence and then applying the irrationality test. *See supra* note 53. Or the court might deny the n.o.v. motion whenever there is the slightest possibility of the jury's being correct, more or less as under the generally rejected scintilla test. *See* 9 C. WRIGHT & A. MILLER, *supra* note 50, § 2524, at 542-43; Hoffman, *Alabama's Scintilla Rule*, 28 ALA. L. REV. 592 (1977); *supra* note 36 (explaining such a test).

probability of error in a verdict for the proponent is one at W and zero at Z; imagine further that either the proponent or the opponent on the issue would move after an unfavorable verdict, so that seven different categories of probabilities emerge:<sup>55</sup>



To illustrate, if in the judge's view the probability of error lies between X and X', but the jury has nevertheless found for the proponent, then the judge should correct the jury's clear error by granting the opponent's motion for a new trial. Thus, the judge's belief that the jury erred can range in seven degrees from almost certainty down to slightest possibility.

My second example arises from an appellate court's reviewing the trial judge for error on a reviewable issue. On so-called issues of law, the appellate court normally engages in plenary review, employing a virtually de novo approach, but reversing only if it disagrees with the trial judge's resolution and so thinks error in ascertainment of the correct law to be more likely than not.<sup>56</sup> On issues of judge-found fact, the appellate court normally defers to the trial court's view, reversing only if that view is clearly erroneous and thus generates "the definite and firm conviction that a mistake has been committed."<sup>57</sup> In performing certain functions, however, the

<sup>55</sup> This diagram is a remote adaptation of the representation of burden of production in 9 J. WIGMORE, *supra* note 12, § 2487, at 298. The alterations in part reflect the diagrammatic concerns expressed in McNaughton, *supra* note 36, at 1384-85. In particular, this diagram represents the probability of jury error, not the judge's view of the evidential probability that the disputed fact exists.

<sup>56</sup> See J. FRIEDENTHAL, M. KANE & A. MILLER, *CIVIL PROCEDURE* 600-01 (1985); 9 C. WRIGHT & A. MILLER, *supra* note 50, § 2588; Brennan, *Standards of Appellate Review*, 33 DEF. L.J. 377, 406-07 (1984); *infra* note 71 (distinguishing "truly de novo").

<sup>57</sup> *United States v. United States Gypsum Co.*, 333 U.S. 364, 395 (1948); see FED. R. CIV. P. 52(a); *Federal Civil Appellate Jurisdiction: An Interlocutory Restatement*, LAW & CONTEMP. PROBS., Spring 1984, at 13, 55-58; cf. 9 C. WRIGHT & A. MILLER, *supra* note 50, § 2589 (discussing mixed questions of fact and law); Louis, *Allocating Adjudicative Decision*

appellate court will intrude only in the most extreme circumstances. For instance, the appellate court will grant a petition for mandamus only if the trial judge has clearly and indisputably committed reversible error;<sup>58</sup> if the trial error alleged is abuse of discretion, then this threshold test means at least "clear abuse of discretion," which seems to be equivalent to almost certain error.<sup>59</sup>

Appellate courts do employ other formulations, such as an abuse-of-discretion standard of review for certain applications of law to fact.<sup>60</sup> To illustrate, the core decision on a motion for a new trial on the ground of misconduct of counsel lies within the trial judge's discretion, and the appellate court will reverse only if there was an abuse of that discretion.<sup>61</sup> How such a standard correlates

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*Making Authority Between the Trial and Appellate Levels: A Unified View of the Scope of Review, the Judge/Jury Question, and Procedural Discretion*, 64 N.C.L. REV. 993 (1986) (exploring fact/law boundary). The Court recently clarified that this same clear-error standard applied to factfindings based on documentary evidence. *Anderson v. City of Bessemer City, N.C.*, 470 U.S. 564, 574-75 (1985). However, quite questionably, the Court went on to say: "When findings are based on determinations regarding the credibility of witnesses, Rule 52(a) demands even greater deference to the trial court's findings . . ." *Id.* at 575. The Court's explanation of this statement hinted at raising the standard of review in such circumstances to a test of almost certain error, which would constitute a very surprising alteration of the applicable standard. If instead the Court merely meant to nudge the standard slightly higher, then, as with other such minor adjustments, this alteration would be neither realistic nor desirable, as the rest of this essay tries to explain. Cf. C. WRIGHT, *THE LAW OF FEDERAL COURTS* 647-51 (4th ed. 1983) (arguing for "a single standard of review" of factfindings).

<sup>58</sup> See 28 U.S.C. § 1651(a) (1982) (authorizing issuance of writ); 16 C. WRIGHT, A. MILLER, E. COOPER & E. GRESSMAN, *FEDERAL PRACTICE AND PROCEDURE* §§ 3932-3935 (1977 & Supp. 1987). There are other necessary conditions for granting mandamus: the case must be one that was or eventually could be within the court's appellate jurisdiction, and the cost-benefit analysis must favor *interlocutory* review. See *id.* But under current doctrine, these are decisional steps separate from the threshold determination of probability of error, which is the only step involving a standard of review.

<sup>59</sup> See *Will v. Calvert Fire Ins. Co.*, 437 U.S. 655, 665 n.7 (1978) (plurality opinion); *id.* at 676 (Brennan, J., dissenting); R. FIELD, B. KAPLAN & K. CLERMONT, *supra* note 12, at 1252; J. FRIEDENTHAL, M. KANE & A. MILLER, *supra* note 56, at 595-96; Annotation, *Mandamus as Appropriate Remedy to Control Action of Federal Court in Civil Case—Supreme Court Cases*, 57 L. Ed. 2d 1203, 1212-13 (1979).

<sup>60</sup> Another specialized formulation is the vaguely defined plain-error doctrine, under which, as the first of its decisional steps, the appellate court requires a showing of "obvious" error—apparently a standard that is one notch more deferential than the usual standard of appellate review. See *Rojas v. Richardson*, 703 F.2d 186, 190, *vacated on other grounds*, 713 F.2d 116 (5th Cir. 1983); *P.P. Mast & Co. v. Superior Drill Co.*, 154 F. 45, 51 (6th Cir. 1907); M. GRAHAM, *HANDBOOK OF FEDERAL EVIDENCE* § 103.9 (2d ed. 1986); A. HORNSTEIN, *APPELLATE ADVOCACY IN A NUTSHELL* 40 (1984). In addition, the appellate court requires a showing of likelihood of prejudicial effect, greater than the showing required under the harmless-error doctrine but dependent on the circumstances of the case. See *United States v. Young*, 470 U.S. 1, 15-20 (1985); D. LOUISELL & C. MUELLER, *FEDERAL EVIDENCE* §§ 21-22 (1977); 10 J. MOORE & H. BENDIX, *MOORE'S FEDERAL PRACTICE* § 103.41 (2d ed. 1985).

<sup>61</sup> See *Pettingill v. Fuller*, 107 F.2d 933, 936 (2d Cir. 1939), *cert. denied*, 309 U.S. 669 (1940); see also *infra* text accompanying notes 144-59.

with the tripartite scale of the preceding paragraph is not immediately apparent. "Abuse of discretion is thus a nebulous concept which remains essentially undefined."<sup>62</sup> In the usual situation, most observers would say "that only if an appellate court is convinced that the court below was clearly wrong will it reverse."<sup>63</sup> In other situations, however, the appellate court might be more willing<sup>64</sup> or more reluctant<sup>65</sup> to intercede, given stronger or weaker reasons for review rather than deference. This variety of meanings justifies a generalization: "Discretionary decisions fall into three categories, with corresponding limitations on appellate review."<sup>66</sup> Thus, review of discretionary decisions seems to replicate in parallel the traditionally tripartite standards of appellate review.

The third example comes from administrative law and entails judicial review of administrative factfinding. One view puts it thusly:

Three subsections of section 706(2) [of the Administrative Procedure Act] deal with review of facts, and each prescribes a different level of judicial deference to agency fact-finding. Subsection (A)'s "arbitrary and capricious" test, which applies generally to informal rulemaking and informal adjudication, is in theory the most deferential standard; it is often interpreted to mean only that the administrator's decision have some rational basis. The "substantial evidence" test prescribed by subsection (E) invites somewhat closer judicial scrutiny: there must be enough evidence in the record as a whole that a reasonable person could have reached the

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<sup>62</sup> *Federal Civil Appellate Jurisdiction: An Interlocutory Restatement*, *supra* note 57, at 62; *cf.* *Lawson Prods., Inc. v. Avnet, Inc.*, 782 F.2d 1429, 1438-39 (7th Cir. 1986) (justifying lack of clarity).

<sup>63</sup> J. FRIEDENTHAL, M. KANE & A. MILLER, *supra* note 56, at 605; *accord* F. JAMES & G. HAZARD, *supra* note 17, at 666. *Compare* *Anderson v. Air West, Inc.*, 542 F.2d 522, 524 (9th Cir. 1976) (middle standard) *with* cases cited *infra* notes 64-65.

<sup>64</sup> *See, e.g.*, *Pearson v. Dennison*, 353 F.2d 24, 28 n.6 (9th Cir. 1965) ("What we mean, when we say that a court abused its discretion, is merely that we think that it made a mistake.").

<sup>65</sup> *See, e.g.*, *Delno v. Market St. Ry.*, 124 F.2d 965, 967 (9th Cir. 1942) (dictum) ("Discretion . . . is abused only where no reasonable man would take the view adopted by the trial court.").

<sup>66</sup> *Federal Civil Appellate Jurisdiction: An Interlocutory Restatement*, *supra* note 57, at 62. Although one of the three categories discussed therein seems to be unreviewable discretion, theoretically there should also exist a highly deferential standard of review. "Unfortunately [abuse of discretion] covers a family of review standards rather than a single standard, and a family whose members differ greatly in the actual stringency of review." *American Hosp. Supply Corp. v. Hospital Prods. Ltd.*, 780 F.2d 589, 594 (7th Cir. 1986) (Posner, J.) (describing three standards: simple disagreement, strong conviction of error, and virtually complete deference); *cf.* *Rosenberg, Judicial Discretion of the Trial Court, Viewed from Above*, 22 SYRACUSE L. REV. 635, 650-53 (1971) (describing similar set of three "gradations of discretion," in addition to unreviewable discretion; noting also that "slight abuse of discretion" standard is equivalent to review on questions of law, making "discretion" somewhat of a misnomer). *But cf.* *Friendly, Indiscretion About Discretion*, 31 EMORY L.J. 747 (1982) (observing many different verbal formulas in practice and arguing for sliding scale in theory).

conclusion that the agency did. The substantial evidence test is most often applied to proceedings where there has been a formal trial-type hearing. Finally, subsection (F) indicates that in some instances, the court can find the facts *de novo*.<sup>67</sup>

Other scholars, however, argue that the arbitrary-and-capricious and substantial-evidence standards should be and are equivalent, both being significantly more deferential than the clearly erroneous test applied to judicial factfinding and thus being basically the same as the irrationality test applied to jury factfinding.<sup>68</sup> Whatever the merits of this debate, it seems to take place on the familiar tripartite scale. A more fundamental debate occurs between such views and the familiar pleas for the establishment or recognition of a sliding scale of review standards.<sup>69</sup>

Administrative law provides other examples, as similar debates concern judicial deference to agency decisionmaking on mixed questions or even questions of law.<sup>70</sup> Yet my three examples of standards of review more than suffice because of their basic similarity. Together they reveal the prominence, and question the propriety, of a tripartite scale of probability of error.

### C. Standards for Reviewing the Reviewer

Standards for reviewing the reviewer are very similar to standards of review, but such a standard of renewed review specifies how certain the back-up reviewer must be of error by the preceding reviewer in order to overturn its decision.<sup>71</sup> In any particular situa-

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<sup>67</sup> E. GELLHORN & B. BOYER, *ADMINISTRATIVE LAW AND PROCESS IN A NUTSHELL* 59 (2d ed. 1981); *see id.* 73-77, 233-36, 268-73. On the meaning of "de novo," *see* K. DAVIS, *ADMINISTRATIVE LAW TEXT* 538 (3d ed. 1972), and compare *infra* note 71.

<sup>68</sup> *E.g.*, B. SCHWARTZ, *ADMINISTRATIVE LAW* 599-600, 604-06, 608-11, 667-68 (2d ed. 1984); *see* R. PIERCE, S. SHAPIRO & P. VERKUIL, *ADMINISTRATIVE LAW AND PROCESS* 362-63 (1985); Stein, *Review of Findings of Administrators, Judges and Juries: A Comparative Analysis*, 58 *HARV. L. REV.* 70, 89 (1944); Note, *Convergence of the Substantial Evidence and Arbitrary and Capricious Standards of Review During Informal Rulemaking*, 54 *GEO. WASH. L. REV.* 541 (1986).

<sup>69</sup> *See, e.g.*, F. ANDERSON, D. MANDELKER & A. TARLOCK, *ENVIRONMENTAL PROTECTION* 101-02 (1984); K. DAVIS, *supra* note 67, at 525, 529-30, 535-38; 5 K. DAVIS, *ADMINISTRATIVE LAW TREATISE* 332-50, 456-60 (2d ed. 1984).

<sup>70</sup> *See* E. GELLHORN & B. BOYER, *supra* note 67, at 61-62 (various standards of review for mixed questions); R. PIERCE, S. SHAPIRO & P. VERKUIL, *supra* note 68, at 374-77 (degrees of deference accorded to agency conclusions of law); *see also* Koch, *Judicial Review of Administrative Discretion*, 54 *GEO. WASH. L. REV.* 469, 491-94 (1986); McGowan, *Congress, Court, and Control of Delegated Power*, 77 *COLUM. L. REV.* 1119, 1162-68 (1977).

<sup>71</sup> Three related notions need distinguishing. First, certain issues may be unreviewable on renewed review. The concept of standard of decision then becomes irrelevant. Second, renewed review could be truly *de novo*, which would make the standard of initial review the relevant concept. Truly *de novo* review is not really review but instead entails a fresh decision, whether reached by ignoring completely the prior determination or using the prior record or even weighing the prior decision as evidence. However, truly *de novo* review is quite rare. *See* A. HORNSTEIN, *supra* note 60, at 35 ("Even with

tion, the applicable standard of renewed review might jump up a notch toward deference, especially where the motivation for additional review is merely correctness review rather than institutional review.<sup>72</sup> Still, the standards fall into place on the tripartite scale of probability of error, as the following three examples suggest.<sup>73</sup>

The obvious first example arises from the existence of a higher level of appellate courts. Consider the Supreme Court's review of a federal court of appeals' review. For most issues fully reviewed on the merits, the Court asks whether it disagrees with the court of appeals' resolution. But for certain issues of fact, the Court has shaped the two-court rule, under which the Court will not correct findings concurred in by two courts below "in the absence of a very obvious and exceptional showing of error";<sup>74</sup> although vague, this seems to mean that the court of appeals must have committed clear error in its own deferential review.<sup>75</sup> Finally, the standard of almost

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respect to the purely legal decision, however, there is an inertial force that the party seeking reversal of a trial judge's ruling must overcome."); Stern, *supra* note 68, at 72 n.7 ("although appellate courts purport to respect the legal conclusions they are reviewing, in practice this probably amounts to little more than following the judgment below if the appellate court thinks the considerations are so evenly balanced that there is no reason for reversal"); cf. R. PIERCE, S. SHAPIRO & P. VERKUIL, *supra* note 68, at 370:

Strictly speaking, de novo review refers to judicial determination of an issue entirely independent of any prior agency resolution of that issue. Instances of such pure de novo review of agency conclusions of law are rare. Even when a reviewing court disagrees completely with an agency's legal interpretation and reverses the agency action on that basis, the court invariably considers the agency's interpretation in its review process. It is more useful to think of de novo review as a decision-making process in which the court accords little deference to the agency's conclusion of law. In other words . . . , under de novo review a court is willing to reverse an agency's conclusion of law solely on the basis that it believes that conclusion to be incorrect.

Third, the higher reviewer may have to review an *original* decision by the reviewer below, which likewise would make the standard of initial review the relevant concept. An instance would be the highest court's review of the intermediate court's original decision on harmless error.

<sup>72</sup> See P. CARRINGTON, D. MEADOR & M. ROSENBERG, JUSTICE ON APPEAL 2-4 (1976).

<sup>73</sup> These examples come from federal civil court proceedings, although similar examples exist in state law, see, e.g., A. HORNSTEIN, *supra* note 60, at 60-66 (second level of appellate review), criminal law, see, e.g., P. CARRINGTON, D. MEADOR & M. ROSENBERG, *supra* note 72, at 103-18 (state and federal review of state convictions), and administrative law, see, e.g., B. SCHWARTZ, *supra* note 68, at 603 (renewed review of agency findings). In short, examples could come from any part of the legal system with two or more levels of review.

<sup>74</sup> Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 336 U.S. 271, 275 (1949); see R. ROBERTSON & F. KIRKHAM, JURISDICTION OF THE SUPREME COURT OF THE UNITED STATES § 333, at 659-61 (R. Wolfson & P. Kurland 2d ed. 1951); R. STERN, E. GRESSMAN & S. SHAPIRO, SUPREME COURT PRACTICE 217-20 (6th ed. 1986); C. WRIGHT, *supra* note 57, at 759; cf. Stern, *supra* note 68, at 89-93, 121-22 (largely disapproving of rule).

<sup>75</sup> See Rogers v. Lodge, 458 U.S. 613, 623 (1982); cf. Anderson v. Liberty Lobby, Inc., 106 S. Ct. 2505, 2512-14 (1986) (reviewer looks only for error in decisionmaker's application of own standard of decision). Elevated standards may also apply in granting

certain error theoretically goes unused, at least in full review on the merits.

The second example derives from the growing use of federal magistrates.<sup>76</sup> Among other functions, magistrates may try civil cases by consent of the parties.<sup>77</sup> In such cases, by further consent, an appeal of the usual nature may proceed to the district court.<sup>78</sup> Thereafter, appeal may go to the court of appeals, but only by petition for leave to appeal.<sup>79</sup> The court of appeals thus plays a third-tier role similar to the Supreme Court's usual role, granting some petitions for full review and then presumably applying the Supreme Court's standards of renewed review.<sup>80</sup>

The third and last example entails the federal court of appeals' reviewing the trial court's review of the civil jury's factfinding. The preceding examples help to put this prime example in a revealing light: (1) The court of appeals reviews the normal n.o.v. decision as a matter of law, asking whether it disagrees with the trial judge's decision.<sup>81</sup> (2) In reviewing a grant of a motion for a new trial on the ground that the verdict was against the weight of the evidence, the court of appeals reviews the discretionary element with considerable deference.<sup>82</sup> (3) When reviewing a denial of such a new-trial motion, whereby the trial judge and the sacrosanct jury concurred,

certiorari on the basis of perceived error, *see* R. STERN, E. GRESSMAN & S. SHAPIRO, *supra* note 74, at 218, 222-24, or in deciding to dispose of a case summarily, *see id.* at 277-87.

<sup>76</sup> *See* Resnik, *Tiers*, 57 S. CAL. L. REV. 837, 867-69, 984 (1984); Streepy, *The Developing Role of the Magistrate in the Federal Courts*, 29 CLEV. ST. L. REV. 81 (1980). As to the review of a master's findings and conclusions, *see* 9 C. WRIGHT & A. MILLER, *supra* note 50, §§ 2584, 2613-2615.

<sup>77</sup> 28 U.S.C. § 636(c) (1982 & Supp. III 1985); FED. R. CIV. P. 73. A similar example lies in the review of a magistrate's determining nondispositive pretrial matters. *See* 28 U.S.C. § 636(b)(1)(A) (1982); FED. R. CIV. P. 72(a); *cf.* Resnik, *supra* note 76, at 985-90, 1027-28 (questioning role of district judge's de novo determinations on dispositive pretrial matters).

<sup>78</sup> 28 U.S.C. § 636(c)(4) (Supp. III 1985); FED. R. CIV. P. 73(d), 74-76.

<sup>79</sup> 28 U.S.C. § 636(c)(5) (1982); FED. R. APP. P. 5.1.

<sup>80</sup> *Cf.* Wolff v. Wolff, 768 F.2d 642, 647, 649 (5th Cir. 1985) (discussing and applying criteria for treatment of petitions and suggesting rule analogous to two-court rule). However, little is yet settled under this new appellate regime instituted in 1979. *See* 15 C. WRIGHT, A. MILLER & E. COOPER, FEDERAL PRACTICE AND PROCEDURE § 3901, at 1-4 (Supp. 1987); 12 C. WRIGHT, A. MILLER & F. ELLIOTT, FEDERAL PRACTICE AND PROCEDURE § 3077.5 (Supp. 1987).

<sup>81</sup> *See* 9 C. WRIGHT & A. MILLER, *supra* note 50, § 2524, at 541-42, § 2536, at 595, § 2540; McLauchlan, *An Empirical Study of Civil Procedure: Directed Verdicts and Judgments Notwithstanding Verdict*, 2 J. LEGAL STUD. 459, 464-68 (1973) (a flawed study, but data suggest that appellate courts exhibit little deference).

<sup>82</sup> *Conway v. Chemical Leaman Tank Lines*, 610 F.2d 360, 362, 367 n.9 (5th Cir. 1980) (reversal for "abuse of discretion," meaning "that the court has clearly erred"); *cf.* Taylor v. Washington Terminal Co., 409 F.2d 145, 149 (D.C. Cir.) (appellate court must give "considerable deference" to trial judge's application of his or her own deferential standard), *cert. denied*, 396 U.S. 835 (1969). *But cf.* cases cited *infra* note 155 (some appellate courts may persist in applying even more deferential standard).

the court of appeals exhibits the highest deference,<sup>83</sup> or should even consider the facts unreviewable according to some older views.<sup>84</sup>

Here too, then, a tripartite scale of probabilities appears to reign. But for me to be more precise, or to rebut the argument that an explicit or implicit sliding scale should or does govern rather than three discrete standards, requires a more careful look at the whole difficult subject of appellate review of decisions on new-trial motions. And to lift the fog there, I feel, requires the preliminary step of probing the psychological bases for all these standards of decision. So although eventually I shall return to the critical but elusive subject of new-trial doctrine,<sup>85</sup> now I turn to that psychology background.

## II

### COGNITIVE LIMITATIONS

Cognitive psychology is a fascinating new branch of the relatively young science of psychology.<sup>86</sup> In the 1950's, as behaviorism fell from favor, and with impetus from breakthroughs in computer science and linguistics and developmental psychology, the discipline of cognitive psychology arose. It comprises the study of how we detect, transform, store, retrieve, and use information from our environment. Today, cognitive psychologists generally agree on an information-processing model, which postulates that information proceeds through a series of identifiable stages including a sensory system, a memory system with short-term and long-term components, and a response system.

The previously quoted article by Professor George Miller,<sup>87</sup> which stressed the limits that exist at various stages of our processing of information, proved influential.<sup>88</sup> Among the limits he discussed were those on absolute judgment and on short-term

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<sup>83</sup> *Georgia-Pacific Corp. v. United States*, 264 F.2d 161, 166 (5th Cir. 1959) (reversal for "clear abuse of discretion"); *Sears v. Pauly*, 261 F.2d 304, 309 (1st Cir. 1958) (appellate court can find abuse "only in a very unusual case"). Such a standard would indeed result in extremely few reversals, because only the combination of a very faulty judge and jury and an extraordinarily lopsided case would prompt the appellate court to be almost certain that the trial judge erred in failing to find the jury in clear error.

<sup>84</sup> See 11 C. WRIGHT & A. MILLER, *supra* note 28, § 2819; *cf. id.* § 2820 (review of size of verdict). *But cf.* Carrington, *The Power of District Judges and the Responsibility of Courts of Appeals*, 3 GA. L. REV. 507, 525 (1969) ("For me, the power of the trial judge to set aside a verdict that he does not like is made more tolerable if he is subject to a measure of review in the exercise of that power."). See generally 6A J. MOORE, J. LUCAS & G. GROTHEER, *MOORE'S FEDERAL PRACTICE* ¶ 59.08[5], at 59-151 to -154 (2d ed. 1986).

<sup>85</sup> See *infra* text accompanying notes 144-59.

<sup>86</sup> See generally R. SOLSO, *COGNITIVE PSYCHOLOGY* 1-21 (1979). To set the subject in a broader context, see H. GARDNER, *THE MIND'S NEW SCIENCE* (1985).

<sup>87</sup> Miller, *supra* note 1.

<sup>88</sup> See H. GARDNER, *supra* note 86, at 89-91; R. SOLSO, *supra* note 86, at 445.

memory. After describing his pertinent findings on those two subjects, I shall mention a few other relevant limitations on cognitive powers, closing this part with thoughts on the theoretical and practical significance of my rudimentary social-science survey.

### A. Absolute Judgment

Professor Miller used the techniques of information theory to analyze the data of other researchers who had tested absolute judgment, that is, how accurately people can identify various magnitudes of any one stimulus.<sup>89</sup> As the typical experimenter increased in a single dimension the number of different values of the stimulus presented repetitively to the subject, the subject at some fixed limit began to make significant errors by confusing the different values. This upper limit, or channel capacity, differed for different kinds of stimuli, but the mean for the different kinds was about seven distinct values and the deviation was remarkably small. Thus, there is a clear and definite limit on the amount of information that an observer can transmit through absolute judgments. Even this simplified explanation probably sounds obscure, but some examples should help.

First, consider an experiment in absolute judgment of tone. The experimenter asked listeners to identify different pitches by assigning arbitrary numerals to them; he presented the different pitches repetitively, but in random order; and after each response, he corrected any misidentification. If there were only a few different pitches, the listener could, after a preliminary training period, distinguish them with no confusion. If there were many different pitches, confusions were frequent. The average channel capacity seemed to be about six pitches.

The result means that we cannot pick more than six different pitches that the listener will never confuse. Or, stated slightly differently, no matter how many alternative tones we ask him to judge, the best we can expect him to do is to assign them to about six different classes without error. Or, again, if we know that there were  $N$  alternative stimuli, then his judgment enables us to narrow down the particular stimulus to one out of  $N/6$ .<sup>90</sup>

The result held across a broad range of frequencies, prompting an interesting aside:

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<sup>89</sup> See Miller, *supra* note 1, at 81-89. Although not entirely distinct, relative judgment concerns the considerable capacity of people to distinguish between two or more different stimuli that they can compare *directly*. Absolute judgment instead involves reference to a remembered scale. See W. DEMBER & J. WARM, *PSYCHOLOGY OF PERCEPTION* 113, 116-17 (2d ed. 1979).

<sup>90</sup> Miller, *supra* note 1, at 84.

For example, if you can discriminate five high-pitched tones in one series and five low-pitched tones in another series, it is reasonable to expect that you could combine all ten into a single series and still tell them all apart without error. When you try it, however, it does not work. The channel capacity for pitch seems to be about six and that is the best you can do.<sup>91</sup>

Moreover, another experiment with different loudnesses yielded similar results.

Second, experimenters asked observers to interpolate visually between two scale markers. In each trial the experimenters presented a pointer position from a set of five, ten, twenty, or fifty pointer positions to the subjects, who either (1) used any integer from zero to one hundred to locate the position or (2) knew which pointer positions could occur in the set being presented and chose one of them as a response. The two versions of the experiments yielded virtually identical results: "[T]here are between 10 and 15 distinct positions along a linear interval. This is the largest channel capacity that has been measured for any unidimensional variable."<sup>92</sup> Other experiments involved visually judging the size of squares, the curvature and length and direction of lines, and the hue and brightness of colors; these yielded analogous results, although with significantly smaller channel capacities.

Third, the senses of taste and touch also came under scrutiny. Experimenters tested absolute judgments of the concentration of salt solutions. Another tested the skin's discrimination by using vibrators and by varying intensity, duration, and location. These experiments suggested channel capacities from four to seven.

In sum, we have built-in cognitive limitations. As Professor Miller concluded, "[W]e possess a finite and rather small capacity for making such unidimensional judgments and . . . this capacity does not vary a great deal from one simple sensory attribute to another."<sup>93</sup> At least for most of us, this limited capacity means around

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<sup>91</sup> *Id.* On the oddity of absolute pitch, see Ward & Burns, *Absolute Pitch*, in *THE PSYCHOLOGY OF MUSIC* 431 (D. Deutsch ed. 1982).

<sup>92</sup> Miller, *supra* note 1, at 86.

<sup>93</sup> *Id.* More elaborate and technical work supporting Miller's basic conclusions appears in later reports, such as W. GARNER, *UNCERTAINTY AND STRUCTURE AS PSYCHOLOGICAL CONCEPTS* (1962); 2 *HANDBOOK OF PERCEPTION: PSYCHOPHYSICAL JUDGMENT AND MEASUREMENT* (E. Carterette & M. Friedman eds. 1974); see J. BIERI, A. ATKINS, S. BRIAR, R. LEAMAN, H. MILLER & T. TRIPODI, *CLINICAL AND SOCIAL JUDGMENT* 79-82, 97-99, 102-04 (1966) [hereinafter J. BIERI ET AL.] (including similar results of odor experiments); W. DEMBER & J. WARM, *supra* note 89, at 113-19; Alluisi, *Conditions Affecting the Amount of Information in Absolute Judgments*, 64 *PSYCHOLOGICAL REV.* 97, 101-02 (1957) (treating differences among individuals and among experimental conditions); cf. MacRae, *Channel Capacity in Absolute Judgment Tasks: An Artifact of Information Bias?*, 73 *PSYCHOLOGICAL BULL.* 112, 116, 119-20 (1970) (arguing that channel capacity eventually decreases as number of different values of stimulus presented to subject increases, as well as decreases

seven distinguishable categories.

This conclusion may seem counterintuitive or unrealistic. After all, in the real world we can distinguish, say, many hundreds of faces. However, faces differ in many independently variable attributes, allowing us to make multidimensional and hence finer distinctions. Experimenters have in fact tested absolute judgment of stimuli varying in two or more dimensions; for example, subjects had to judge both the pitch and the loudness of tones, the position of a dot in a square, or both the saltiness and the sweetness of solutions. These experiments indicate that additional dimensions increase channel capacity, although the effect is not fully cumulative. "The point seems to be that, as we add more variables to the display, we increase the total capacity, but we decrease the accuracy for any particular variable. In other words, we can make relatively crude judgments of several things simultaneously."<sup>94</sup>

### B. Short-Term Memory

According to the predominant cognitive model, between the sensory system, which gathers and selects among thousands of environmental stimuli, and the long-term memory (LTM), which stores vast quantities of knowledge, lies the short-term memory (STM).<sup>95</sup> In a sense, we "live" in STM, which constitutes our "now" as well as the locus of reasoning. There we work with arriving information, as by transforming it, transferring it to permanent storage, or using it to produce responses. An important operation there is rehearsal, a sort of repetition or elaboration of the information that serves to maintain the item in STM or to transfer it to LTM. Without rehearsal, information will leave STM as forgotten in less than a half-minute, either by temporal decay or by interference from other information.

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ing if number of response categories does not equal number of stimulus values). One researcher suggests that the observed differences in channel capacities from 4 to 15 for different kinds of stimuli have more to do with differences in the types of experiments than differences in cognitive capabilities; for example, defining end-points or "anchors," as in the linear interpolation experiment, should and does by itself increase channel capacity to 9 or 10. W. GARNER, *supra*, at 72-74.

Most significantly for my purposes, an important book extends these conclusions concerning absolute judgment from the domain of sensory stimuli to the fields of clinical and social judgment. J. BIERI ET AL., *supra*, at 62, 95-96, 106-08, 230-32. Clearly, the basic idea of limited capacity for absolute judgment cannot be restricted to sensory stimuli.

<sup>94</sup> Miller, *supra* note 1, at 88; see J. BIERI ET AL., *supra* note 93, at 63-75, 97-104, 231-32; *infra* note 123.

<sup>95</sup> See generally D. DODD & R. WHITE, COGNITION 62-85 (1980); R. KLATZKY, HUMAN MEMORY 87-176 (2d ed. 1980); R. SOLSO, *supra* note 86, at 147-202; Miller, *Information and Memory*, SCI. AM., Aug. 1956, at 42. On current rethinking of some aspects of the predominant cognitive model, see H. GARDNER, *supra* note 86, at 122-35.

Professor Miller's classic article emphasized the limited capacity of STM.<sup>96</sup> Extensive data indicate that the typical individual can handle only about seven items in STM.<sup>97</sup> Subjects can hold and recall about seven unconnected digits, letters, or words. Additional items result in displacement from STM, which results in forgetting unless the subject has managed to transfer the information to LTM. Thus, there is a clear and definite limit on the number of items that a person can retain in STM.

Again, we have ways of circumventing this cognitive limitation. We can organize or "recode" information into larger and larger units or "chunks," each of which uses up only one of the available slots in STM. For example, we can retain seven unconnected words, although each contains several morphemes, phonemes, and letters; we can also group words into larger chunks by means of semantic and syntactic structure, effectively increasing further our memory span. For another example, after referring to a telephone book, we can by chunking digits retain in STM a full telephone number, including area code, until we complete the call. "The point is that recoding is an extremely powerful weapon for increasing the amount of information that we can deal with. In one form or another we use recoding constantly in our daily behavior."<sup>98</sup>

Perhaps a causal relation exists between the limited capacity of STM and the limit on absolute judgment. However, observations here are more attainable than explanations. To the expert any such causal relation remains obscure.<sup>99</sup>

### C. Cognitive Limitations in General

Other significant cognitive limitations exist, whether by design of our nervous system or by adaptation to our environment. Consider the process of judgment or, roughly speaking, categorization. Here cognitive limitations operate on both the input and the output levels to skew judgment.

Where the input is coming from humans, limits on their perception, memory, and communication make the incoming information suspect. As an example, I need only refer to the fairly startling work on the unreliability of eyewitness testimony.<sup>100</sup> Moreover, the

<sup>96</sup> See Miller, *supra* note 1, at 91-95.

<sup>97</sup> There are relatively small differences among individuals' STM capacities. See R. KLATZKY, *supra* note 95, at 98-100; cf. Humphreys, Lynch, Revelle & Hall, *Individual Differences in Short-Term Memory*, in 1 INDIVIDUAL DIFFERENCES IN COGNITION 35 (R. Dillon & R. Schmeck eds. 1983) (more general treatment of theory and method).

<sup>98</sup> Miller, *supra* note 1, at 95.

<sup>99</sup> See *id.* at 91, 96; Sandusky, *Memory Processes and Judgment*, in 2 HANDBOOK OF PERCEPTION, *supra* note 93, at 61, 62-64, 79-81.

<sup>100</sup> See, e.g., E. LOFTUS, EYEWITNESS TESTIMONY (1979); Buckhout, *Eyewitness Testi-*

humans generating the input can intentionally manipulate it by capitalizing on the cognitive limitations of others. I again need only mention the studies showing the power of lawyers to influence witnesses and factfinders by careful choice of language.<sup>101</sup>

As to the output side, limits on reception, processing, and response all affect human ability to convert information into a judgment. On the one hand, individual traits and states, attitude, ego-involvement, and social influence may skew judgment. Study of "hot" cognition of this sort intrudes on the fields of personality and social psychology.<sup>102</sup> On the other hand, humans demonstrate systematic skewing even in handling emotionally and motivationally neutral information. This proposition merits a more expansive illustration squarely back in the field of cognitive psychology.

For that illustration, consider the still more specific task of judging probabilities.<sup>103</sup> Experiments have shown that as intuitive

mony, in *MEMORY OBSERVED* 116 (U. Neisser ed. 1982); Wells, *The Eyewitness*, in *THE PSYCHOLOGY OF EVIDENCE AND TRIAL PROCEDURE* 43 (S. Kassin & L. Wrightsman eds. 1985); cf. Johnson, *Cross-Racial Identification Errors in Criminal Cases*, 69 *CORNELL L. REV.* 934 (1984) (specific application).

<sup>101</sup> See, e.g., Andrews, *Exhibit A: Language*, *PSYCHOLOGY TODAY*, Feb. 1984, at 28, 30 (For example, a researcher showed a short film of an auto accident and later questioned subjects, with this result: "When a definite article was used in the question ('Did you see the broken headlight?' rather than 'Did you see a broken headlight?'), witnesses responded with more certainty—but also were twice as likely to 'remember' a broken headlight . . . when there was none."); Conley, O'Barr & Lind, *The Power of Language: Presentational Style in the Courtroom*, 1978 *DUKE L.J.* 1375; cf. Cold, *Covert Advocacy: Reflections on the Use of Psychological Persuasion Techniques in the Courtroom*, 65 *N.C.L. REV.* 481 (1987) (general treatment).

<sup>102</sup> See, e.g., O. BRIM, D. GLASS, D. LAVIN & N. GOODMAN, *PERSONALITY AND DECISION PROCESSES* (1962); M. SHERIF & C. HOVLAND, *SOCIAL JUDGMENT* (1961). For example, one study confirmed that in judging probability of an outcome—an activity "central to the application of the law"—subjects tended to depart from rational estimates when the outcome was costly or beneficial to the subject, although the direction and degree of departure depended on the individual. Cart, *People, Probabilities and the Law*, in *LAW AND PSYCHOLOGY* 157, 157, 162 (S. Lloyd-Bostock ed. 1981).

<sup>103</sup> See generally D. DODD & R. WHITE, *supra* note 95, at 349-59; R. HOGARTH, *JUDGMENT AND CHOICE* (1980); *JUDGMENT UNDER UNCERTAINTY* (D. Kahneman, P. Slovic & A. Tversky eds. 1982); R. NISBETT & L. ROSS, *HUMAN INFERENCE* (1980); Edwards & von Winterfeldt, *Cognitive Illusions and Their Implications for the Law*, 59 *S. CAL. L. REV.* 225, 227-51 (1986); Slovic, *Toward Understanding and Improving Decisions*, in 2 *HUMAN PERFORMANCE AND PRODUCTIVITY: INFORMATION PROCESSING AND DECISION MAKING* 157 (W. Howell & E. Fleishman eds. 1982).

At least some aspects of our handling of probabilities seem culturally based, rather than tied to inherent limitations in humans. See Edwards & von Winterfeldt, *supra*, at 250-51; Wright & Phillips, *Cultural Variation in Probabilistic Thinking: Alternative Ways of Dealing with Uncertainty*, 15 *INT'L J. PSYCHOLOGY* 239 (1980); Wright, Phillips, Whalley, Choo, Ng, Tan & Wisudha, *Cultural Differences in Probabilistic Thinking*, 9 *J. CROSS-CULTURAL PSYCHOLOGY* 285 (1978). For example, culture might influence our usual response scale. Cf. H. GARDNER, *supra* note 86, at 342-50, 358 (terminology for colors).

For such cultural reasons and because of differences in legal evolution, forays into comparative law could not disprove my eventual thesis. Yet it is to some degree reassuring that a quite different legal system such as France's seems to have generated stan-

statisticians, we do not naturally use precise tools like multiple regression or Bayes' theorem,<sup>104</sup> but instead we cope by using a limited number of rules of thumb called heuristics. One such approach in common use is the "availability heuristic": when asked to estimate the probability of an event we try to recall or imagine examples, and the ease of so doing determines the estimated probability. Another is the "anchoring heuristic": when asked to make a judgment, we adjust up or down from some initial value, which may be a given starting point or may constitute a natural anchor or may come from a partial calculation. The last of the three major heuristics is the "representativeness heuristic": when asked to categorize something, we do so according to the degree its salient features resemble a particular category's characteristic features. Often these heuristics prove quite useful. However, because such approaches neglect relevant information, systematic judgmental biases often result.

For specific instances, reconsider the three heuristics respectively. In a study of the availability heuristic, the participants judged homicides to be more than five times as frequent as suicides in the United States, although suicides were actually thirty percent more frequent; people tend to overestimate the frequency of dramatic or sensational events, examples of which come readily to mind.<sup>105</sup> In a study of the anchoring heuristic, the experimenters—who gave subjects random starting percentages, told them those percentages were random, and asked them to adjust those percentages to their best estimate of the percentage of African countries in the United Nations—found that those with higher starting points ended up with higher estimates; people tend to adjust the anchor inadequately in light of additional information.<sup>106</sup> In a study of the representativeness heuristic, the subjects gave virtually the same probability that a

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dards of decision from the same limited set of discrete but unquantified standards. See W. Manley, *Standards of Decision in France: Testing the Causal Link Between Cognitive Limitations and Procedure* (Apr. 13, 1987) (unpublished paper on file with *Cornell Law Review*).

<sup>104</sup> Compare S. KOTZ & D. STROUP, *EDUCATED GUESSING: HOW TO COPE IN AN UNCERTAIN WORLD* (1983) (sophisticated techniques in theory) with Callen, *Notes on a Grand Illusion: Some Limits on the Use of Bayesian Theory in Evidence Law*, 57 *IND. L.J.* 1 (1982) (simplified practices of law).

<sup>105</sup> See Lichtenstein, Slovic, Fischhoff, Layman & Combs, *Judged Frequency of Lethal Events*, 4 *J. EXPERIMENTAL PSYCHOLOGY: HUM. LEARNING & MEMORY* 551, 553-59 (1978). The detail of the first part of my essay aimed at countering any argument that the perceived prominence of the number three in procedure stemmed from this availability heuristic.

<sup>106</sup> See Tversky & Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 *SCIENCE* 1124, 1128 (1974). Another example of the anchoring heuristic comes from a study involving subjects asked to estimate quickly, without paper and pencil, the product of  $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$ , while another group faced  $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$ ; the first group's median estimate was 2250, while the other's was 512; the correct answer is 40,320. *Id.*

stereotypically described man was a lawyer, regardless of whether they were told that the personality sketch came at random from sketches of thirty lawyers and seventy engineers or from sketches of seventy lawyers and thirty engineers; people tend to categorize on the basis of similarity to prototype, ignoring base-rate data.<sup>107</sup> The three heuristics appear in many variants, and together they dominate the unaided judging of probabilities by almost all of us, including skilled statisticians.<sup>108</sup> Incidentally, these and other studies show that people are overconfident in their judgments and that they persevere in incorrect judgments in the face of inconsistent new information.<sup>109</sup> In sum, for these and other reasons people perform many probabilistic tasks quite weakly—in the laboratory, in everyday life, and in the courtroom.<sup>110</sup>

The general theoretical point here, which this survey merely suggests but the literature more amply supports, is that significant cognitive limitations leave humans to contend with their “bounded rationality.”<sup>111</sup> Shakespeare gauged us as “noble in reason! how in-

<sup>107</sup> See Kahneman & Tversky, *On the Psychology of Prediction*, 80 PSYCHOLOGICAL REV. 237, 241-43 (1973). The gambler's fallacy (for example, the belief that the chance of heads is high after a string of tails, based on the view that heads will yield a more representatively random sequence) stems from the same representativeness heuristic. Tversky & Kahneman, *supra* note 106, at 1125.

<sup>108</sup> See Tversky & Kahneman, *supra* note 106, at 1130 (also observing that people are not aware of biases in their own judgment). Training of and increased effort by the person judging probabilities do offer a limited hope of debiasing and thus improving judgment. See JUDGMENT UNDER UNCERTAINTY, *supra* note 103, chs. 28-32; Edwards & von Winterfeldt, *supra* note 103, at 238-46, 269; Slovic, *supra* note 103, at 175, 179. See generally Wallsten, *The Theoretical Status of Judgmental Heuristics*, in DECISION MAKING UNDER UNCERTAINTY, *supra* note 36, at 21.

<sup>109</sup> See JUDGMENT UNDER UNCERTAINTY, *supra* note 103, chs. 20-23.

<sup>110</sup> See generally Saks & Kidd, *supra* note 6 (excellently describing literature on behavioral decision theory, explaining heuristic biases in legal setting, showing how lawyers can exploit those biases, and arguing that legal system should counteract those biases by steps such as expert testimony on mathematical aids to decisionmaking). The authors richly support my statement as to weak performance, as well as their statement “that in many contexts decision makers’ intuitive, common-sense judgments depart markedly . . . from the actual probabilities.” *Id.* at 127.

Thus, legal decisionmakers frequently assess and reassess probabilities not too scientifically and not too well: they tend to take an intuitive, and often inaccurate, stab at judgment. See *id.* at 145-49; Schum & Martin, *Formal and Empirical Research on Cascaded Inference in Jurisprudence*, 17 LAW & SOC'Y REV. 105, 143-44 (1982); Tversky & Kahneman, *supra* note 106, at 1130; Spitzer, Book Review, 9 HOFSTRA L. REV. 1621, 1625-36 (1981). Compare Kaye, *The Law of Probability and the Law of the Land*, 47 U. CHI. L. REV. 34, 52-53 (1979) (meshing this point with Pascalian approach) with Callen, *supra* note 104, at 5-6 (same with non-Pascalian approach). For a renewed attempt to model the psychological path to legal judgment, see Kaplan, *Cognitive Processes in the Individual Juror*, in THE PSYCHOLOGY OF THE COURTROOM, *supra* note 7, at 197 (information integration theory); cf. Pennington & Hastie, *Juror Decision-Making Models: The Generalization Gap*, 89 PSYCHOLOGICAL BULL. 246 (1981) (evaluation of various models).

<sup>111</sup> H. SIMON, MODELS OF MAN 199 (1957); see H. GARDNER, *supra* note 86, at 360-80; Slovic, *supra* note 103, at 158-59, 170; see also Sinsheimer, *The Brain of Pooh: An Essay on*

finite in faculties!"<sup>112</sup> Professor Miller would seem to have reduced that assessment to seven, plus or minus two. The truth, as usual, lies in between. Study of the human mind does induce marvel, but also a realization of its limitations. Knowledge of those limitations can only improve the mind's product.

Practical applications abound. Professor Miller himself, for instance, made an observation concerning scaling that has implications for many kinds of rating tasks: "It is interesting to consider that psychologists have been using seven-point rating scales for a long time, on the intuitive basis that trying to rate into finer categories does not really add much to the usefulness of the ratings."<sup>113</sup>

The recent past, especially since the 1970's, has revealed many applications of psychology in general to law.<sup>114</sup> I have already suggested some examples of applying specifically the knowledge of cognitive limitations to law.<sup>115</sup> I believe there could be many such applications directly to procedural mechanics. An obvious example of where awareness of, say, limits on memory could help to shape procedure involves the body of rules governing jury practice: the possibility of jurors' taking notes, asking questions, and receiving written or taped instructions; the timing of those instructions; and

*the Limits of Mind*, 59 AM. SCIENTIST 20 (1971). Some disagreement exists in the scientific world, of course, over the details and implications of this body of research on cognitive limitations. In particular, reactive scholarship increasingly maintains that the prevailing view ignores our capabilities and overstates our limitations. See, e.g., W. LOH, SOCIAL RESEARCH IN THE JUDICIAL PROCESS 574-81 (1984) (eyewitness testimony). See generally Jungermann, *The Two Camps on Rationality*, in DECISION MAKING UNDER UNCERTAINTY, *supra* note 36, at 63; Loftus & Beach, Book Review, 34 STAN. L. REV. 939, 950-56 (1982). One must "recognize that the glass is both half full and half empty." *Id.* at 956.

<sup>112</sup> W. SHAKESPEARE, HAMLET act II, sc. 2, line 317.

<sup>113</sup> Miller, *supra* note 1, at 84. Work proceeds on incorporating the notion of "bounded rationality" into disciplines other than law. E.g., M. BAZERMAN, JUDGMENT IN MANAGERIAL DECISION MAKING (1986); Hirshleifer, *The Expanding Domain of Economics*, AM. ECON. REV., Dec. 1985, at 53, 59-62.

<sup>114</sup> See, e.g., I. HOROWITZ & T. WILLING, THE PSYCHOLOGY OF LAW 6-11 (1984); LAW AND PSYCHOLOGY, *supra* note 102; S. MERMIN, LAW AND THE LEGAL SYSTEM 389 n.124 (1982); PSYCHOLOGY IN LEGAL CONTEXTS (S. Lloyd-Bostock ed. 1981); PSYCHOLOGY IN THE LEGAL PROCESS (B. Sales ed. 1977); PSYCHOLOGY, LAW AND LEGAL PROCESSES (D. Farrington, K. Hawkins & S. Lloyd-Bostock eds. 1979); THE PSYCHOLOGY OF EVIDENCE AND TRIAL PROCEDURE, *supra* note 100; THE PSYCHOLOGY OF THE COURTROOM, *supra* note 7; T. SANNITO & P. MCGOVERN, COURTROOM PSYCHOLOGY FOR TRIAL LAWYERS (1985); J. THIBAUT & L. WALKER, PROCEDURAL JUSTICE (1975); THE TRIAL PROCESS (B. Sales ed. 1981); L. WRIGHTSMAN, PSYCHOLOGY AND THE LEGAL SYSTEM (1987). *But see* D. ROBINSON, PSYCHOLOGY AND LAW (1980) (questioning wisdom of psychosocial invasion of law). From these applications of psychology *within* law, one should distinguish efforts utilizing the psychologist's "outside" perspective to study law as a social system. Compare Friedman, *The Law and Society Movement*, 38 STAN. L. REV. 763, 777-78 (1986) (outside perspective) with Monahan & Walker, *Teaching Social Science in Law: An Alternative to "Law and Society"*, 35 J. LEGAL EDUC. 478, 478-79 (1985) (inside perspective).

<sup>115</sup> See, e.g., *supra* notes 100-02 & 110 and accompanying text.

the use of special verdicts and split trials.<sup>116</sup>

Right now, however, I find intriguing a more indirect contribution that cognitive psychology could make to procedural doctrine. My interest lies in the role that cognitive limitations have played in the evolution of doctrine concerning decisionmaking, as well as the role that awareness of cognitive limitations should play in reshaping this doctrine. At that interest I aimed this selective social-science survey, and so to standards of decision I now return.

### III

#### PSYCHOLOGY APPLIED TO PROCEDURE

In the realm of standards of decision, the number three plays such a prominent role that imagination and coincidence fail as explanations. A look at the range of standards falling on both the high and the low end of the scale of probabilities, however, reveals that three is just a more or less natural subset of the seven categories of uncertainty in legal usage: (1) slightest possibility, (2) reasonable possibility, (3) substantial possibility, (4) equipoise, (5) probability, (6) high probability, and (7) almost certainty. Next, a survey of cognitive limitations reveals that humans are "boundedly rational," with the number seven curiously playing a prominent role in our limits. All this recapitulation suggests a thesis that, rather than magic, limitations on human capabilities underlie the systematic structure of standards of decision.

#### A. A Possible Explanation

Cognitive psychology has unearthed a variety of mental limitations. As a matter of absolute judgment, we can identify only about seven magnitudes of any one sensory stimulus. In other ways, we perform rather weakly in judging probabilities. Indeed, probability is not unlike those studied sensory stimuli.<sup>117</sup> So perhaps these

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<sup>116</sup> See R. FIELD, B. KAPLAN & K. CLERMONT, *supra* note 12, at 598, 607-09, 615-16; Andrews, *supra* note 101, at 32-33; Sand & Reiss, *A Report on Seven Experiments Conducted by District Court Judges in the Second Circuit*, 60 N.Y.U. L. REV. 423 (1985); cf. Bergman, *The War Between the States (of Mind): Oral Versus Textual Reasoning*, 40 ARK. L. REV. 505 (1987) (arguing that orality induces intuitive thinking, while writing induces analytical thinking). See generally Gold, *Jury Wobble: Judicial Tolerance of Jury Inferential Error*, 59 S. CAL. L. REV. 391 (1986) (calling for application of knowledge of cognitive limitations to reform of trial procedure and evidence law); Lind, *supra* note 7, at 14 ("It is important to keep in mind, though, that the psychological investigation of procedure has just begun. Like much of the law, the law of procedure is based to a large extent on untested assumptions about how people behave.").

<sup>117</sup> "The subjective assessment of probability resembles the subjective assessment of physical quantities such as distance or size." Tversky & Kahneman, *supra* note 106, at 1124; see Wendt, *On S.S. Stevens' Psychophysics and the Measurement of Subjective Probability and Utility*, in SOCIAL ATTITUDES AND PSYCHOPHYSICAL MEASUREMENT 303, 307-08 (B.

ideas combine to imply that humans can effectively distinguish only a limited number of categories of probabilities. Beware, however, that combining these ideas involves subtle but sizable leaps of reasoning peculiarly subject to misunderstanding.

I theorize that, in dealing with a probabilistic environment, each of us constantly evaluates probabilities. After a lifetime of evaluating situations that cover the whole range of probability, but given a limited channel capacity, each of us has internalized a stable scale of judgment with a small number of categories that fall between the ideal end-points of absolute certainty. Shared experience in the same culture has led most of us into general agreement on scales with which the seven categories in legal usage are compatible.<sup>118</sup> When we receive as input the depiction of a new amorphous set of circumstances, we process its uncertainty in part by referring to our coarsely graduated scale of probabilities, with our optimal output often being a response in the form of one of these customary seven categories.

We could, of course, go to the trouble of giving a verbal or even a numerical response that appears more precise, but usually there is no reason to expect such responses to be much more accurate or to transmit much more information.<sup>119</sup> It is true that sometimes such attempts at precision would pay off. First, tools like mathematical techniques can aid in producing finer probabilistic distinctions for certain tasks, as when working with statistical frequency data.<sup>120</sup> Second, restructured tasks can help because more complicated decisionmaking processes can offset the crudeness of intuitive probabil-

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Wegener ed. 1982); cf. Volkman, *Scales of Judgment and Their Implications for Social Psychology*, in *SOCIAL PSYCHOLOGY AT THE CROSSROADS* 273, 286 (J. Rohrer & M. Sherif eds. 1951) (suggesting a general psychology of discrimination "whose statements are independent of the particular aspect that is being discriminated"); *supra* note 93 (extending psychophysical conclusions to clinical and social judgment).

<sup>118</sup> Experiments on people's formation of scales for judging sensory stimuli support the plausibility of such processes. See J. BIERI ET AL., *supra* note 93, at 29 ("somewhat analogous to an equal-interval scale"); J. GUILFORD, *PSYCHOMETRIC METHODS* 312-17 (2d ed. 1954); M. SHERIF & C. HOVLAND, *supra* note 102, at 34-36, 68-69, 179-83; Parducci, *Category Ratings: Still More Contextual Effects!*, in *SOCIAL ATTITUDES AND PSYCHOPHYSICAL MEASUREMENT*, *supra* note 117, at 89, 89, 101-02; Volkman, *supra* note 117, at 288-90. Some support for such processes in connection with judging probabilities appears in the important work of one researcher, although he used a distinguishable experimental design. Zimmer, *supra* note 36.

<sup>119</sup> See Miller, *supra* note 1, at 84; cf. W. GARNER, *supra* note 93, at 74-75, 87-90 (slight but appreciable increase in information transmission as number of response categories increases toward number of stimulus values). Compare Symonds, *On the Loss of Reliability in Ratings Due to Coarseness of the Scale*, 7 *J. EXPERIMENTAL PSYCHOLOGY* 456, 460 (1924) (arguing for seven categories in rating scales) with J. GUILFORD, *supra* note 118, at 289-91 (arguing that more categories can be useful).

<sup>120</sup> See L. COHEN, *supra* note 12, at 256-58; Tribe, *supra* note 12, at 1346-47.

istic determinations,<sup>121</sup> as in processes involving a sequence of separate decisional steps,<sup>122</sup> a multidimensional inquiry,<sup>123</sup> or a relative judgment.<sup>124</sup> Third, decisionmakers can somewhat improve their performance on some tasks, as by means of training and increased effort.<sup>125</sup> So, in some settings—for example, where the estimated probability is to enter into a further calculation of expected

<sup>121</sup> See Slovic, *supra* note 103, at 179; cf. Miller, *supra* note 1, at 90:

We are not completely at the mercy of this limited span [of absolute judgment], however, because we have a variety of techniques for getting around it and increasing the accuracy of our judgments. The three most important of these devices are (a) to make relative rather than absolute judgments; or, if that is not possible, (b) to increase the number of dimensions along which the stimuli can differ; or (c) to arrange the task in such a way that we make a sequence of several absolute judgments in a row.

<sup>122</sup> Separate decisional steps, some of which are overtly probabilistic, are common in law. For example, decision on judicial disqualification for bias can entail creating a subset of the evidence first and then weighing that evidence under a particular standard of proof. See R. SUMMERS, K. CLERMONT, R. HILLMAN, S. JOHNSON, J. BARCELÓ & D. PROVINI, *LAW: ITS NATURE, FUNCTIONS, AND LIMITS* 155-56 (3d ed. 1986). For other examples, see *supra* notes 53, 58 & 60 and accompanying text. Note, however, that any separate step involving a standard of decision would proceed in the usual fashion.

<sup>123</sup> See *supra* text accompanying note 94. A truly multidimensional test is unwieldy in law and consequently rare. It would entail simultaneous measurement in terms of clearly separable dimensions, as opposed to (i) a sequential process of initial inquiry into factors that might affect the choice of standard of decision, followed by application of the chosen standard, see, e.g., *supra* text accompanying note 47, (ii) a decision on a complex issue such as reasonableness, on which many factors bear but to which an ordinary standard of decision applies, see *supra* note 47, or (iii) a multifactored placement along what the decisionmaker sees as a single dimension, see *supra* note 93, such as in measuring need, see *supra* note 10, or perhaps even probability, see *supra* note 12. A possible example of a multidimensional inquiry in civil procedure is the power test of personal jurisdiction: the court may decide on the basis of both the level of defendant's state-related activity and the degree of unrelatedness between plaintiff's claim and that activity, see K. CLERMONT, *supra* note 9, at 147, although categorization along the latter dimension becomes very coarse, see Richman, *Review Essay*, 72 CALIF. L. REV. 1328, 1337-40 (1984).

<sup>124</sup> See *supra* note 89 and accompanying text. This is yet another of the decisional processes that are often loosely called balancing. See Aleinikoff, *Constitutional Law in the Age of Balancing*, 96 YALE L.J. 943, 945 (1987). A possible example from civil procedure is the test for granting a preliminary injunction: the court must find, by rough or implicit calculation and comparison, that the expected irreparable harm of wrongly denying relief exceeds the expected irreparable harm of wrongly granting relief. See *American Hosp. Supply Corp. v. Hospital Prods. Ltd.*, 780 F.2d 589, 593-94 (7th Cir. 1986), criticized in Mullenix, *Burying (with Kindness) the Felicific Calculus of Civil Procedure*, 40 VAND. L. REV. 541 (1987); Silberman, *Injunctions by the Numbers: Less than the Sum of Its Parts*, 63 CHI.-KENT L. REV. 279 (1987) (focusing on standard of review). In contrast, applying a standard of decision, which is the concern of this essay, does not seem to entail relative judgment. See *supra* notes 13 & 110.

<sup>125</sup> See *supra* note 108. The limited feasibility of such improvement obviously differs for administrators, judges, and jurors. Regardless of any such differences of competence in evaluating uncertainty, the considerable costs and insignificant benefits of utilizing noncustomary standards of decision support applying my eventual conclusion to all legal decisionmakers, nonexpert and expert.

More generally, mine is not a defeatist attitude. Knowledge of cognitive limitations enables us to devise techniques, nonlegal and legal, to function better. See, e.g., *supra*

harm—we should try to express all this available accuracy by a finely gradated response. But in the ordinary task of unaided categorization of amorphous probability—such as applying a standard of decision—we can at best make little more than an imprecise stab at judgment. Not only do we encounter limitations on absolute judgment, but also in dealing accurately with probabilities we must overcome special shortcomings such as heuristic biases. Accordingly, many tasks do not warrant a response finer than selecting one from a few categories of uncertainty.

As to why we should in these tasks restrict our categorical response to one of the customary seven categories, the basic reason is that referring to this scale is routinely straightforward and hence easy. Consider the lawmaker laying down a standard of decision, whereby the decisionmaker must categorize a situation's probability in order to determine whether it reaches the level of probability required by the standard. The coarsely gradated, customary scale of probabilities is ready for use in the minds of lawmakers and decisionmakers, whether for repeated use by officials like judges or on a one-shot basis by people like jurors. If the standard were to invoke one of the customary seven categories, the lawmaker's task of articulation and the decisionmaker's tasks of comprehension and application would become easier. The legal system could thereby act with surer footing. Indeed, the argument for employing only the relatively clear customary standards of decision grows stronger as the psychological and legal realities come more fully into joint consideration. Because lawmakers have trouble communicating any standard,<sup>126</sup> unusual standards would only increase the confusion.

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note 116. Striving to utilize noncustomary standards of decision, however, does not seem a feasible or worthwhile goal.

<sup>126</sup> For example, there is agreement that judges have difficulty conveying subtleties regarding the standard of proof to jurors. See *Addington v. Texas*, 441 U.S. 418, 424-25 (1979); *Larson v. Jo Ann Cab Corp.*, 209 F.2d 929, 931-35 (2d Cir. 1954) (Frank, J.); R. FIELD, B. KAPLAN & K. CLERMONT, *supra* note 12, at 554-56; F. JAMES & G. HAZARD, *supra* note 17, at 317-18; 9 J. WIGMORE, *supra* note 12, § 2497, at 414-15; cf. Schauer, *Slippery Slopes*, 99 HARV. L. REV. 361, 370-76 (1985) (generally discussing linguistic imprecision and limited comprehension in communicating legal principles). Available empirical data tend to support the view that some confusion on standards of proof exists in practice, and that the confusion would grow as standards became more unusual. See *United States v. Fatico*, 458 F. Supp. 388, 409-10 (E.D.N.Y. 1978) (Weinstein, J.), *aff'd*, 603 F.2d 1053 (2d Cir. 1979), *cert. denied*, 444 U.S. 1073 (1980); R. EGGLESTON, *supra* note 12, at 118-20; Kagehiro & Stanton, *Legal vs. Quantified Definitions of Standards of Proof*, 9 LAW & HUM. BEHAV. 159 (1985); Kaplan, *supra* note 110, at 216-17; Nagel, Lamm & Neef, *Decision Theory and Juror Decision-Making*, in THE TRIAL PROCESS, *supra* note 114, at 353; Simon, "Beyond a Reasonable Doubt"—An Experimental Attempt at Quantification, 6 J. APPLIED BEHAVIORAL SCI. 203 (1970); Simon & Mahan, *Quantifying Burdens of Proof: A View from the Bench, the Jury, and the Classroom*, 5 LAW & SOC'Y REV. 319 (1971); Underwood, *The Thumb on the Scales of Justice: Burdens of Persuasion in Criminal Cases*, 86 YALE L.J. 1299, 1309-11 (1977); cf. McCauliff, *supra* note 8, at 1324-33, 1335 (considering standards of decision

Moreover, to the extent that decisionmakers exhibit disuniformity in handling any standard,<sup>127</sup> abandoning the customary standards would only accentuate the problem.

Theoretically, then, in the standard-of-decision setting our optimal output psychologically is one of the customary seven categories of uncertainty. From that point, I more explicitly argue that lawmakers should cast any standard of decision in terms that fit this optimal output, at least in the absence of a strong legal reason to the contrary. Further, and critically, I argue that such a contrary reason is lacking, because lawmakers can adequately serve the often imprecise policies underlying the standard of decision by choosing from the set of seven categories, thus moving up or down by fairly small quantum leaps rather than by unrealistically finer degrees.<sup>128</sup> My argument, however, is not as extreme as it might sound. I am merely saying that, as specifying a standard of decision necessarily entails drawing a dividing line on the spectrum of uncertainty, lawmakers can defer to psychological limitations and still serve legal policies by drawing the line at the most appropriate of the customary categories rather than inventing an unusual cutoff.

Yet one could accept that the coarseness of human judgment justifies utilizing a particular set of a few discrete standards of decision, and still one could argue for much more precision in articulating those standards to decisionmakers.<sup>129</sup> Indeed, lawmakers could begin to state the standards in numerical terms. That, however, would not be wise, at least in our prevailing legal system. First, quantification by itself imposes some costs in terms of accuracy and other values—arguably by such effects as inaccurate meshing with soft or unquantifiable variables and the dehumanization of the legal process<sup>130</sup>—even though theorists often overstate those costs.<sup>131</sup>

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more generally, and arguing that confusion makes proliferation of standards unwise). However, results of some such investigations, showing that judges and jurors vary in translating standards of proof into specific probabilities when asked to do so for a survey, lose much of their significance upon realization that these decisionmakers may not make fine categorizations or, for that matter, may not quantify when actually applying standards of proof. See J. MONAHAN & L. WALKER, *SOCIAL SCIENCE IN LAW* 50-52 (1985) (external invalidity); *infra* note 136 (role of quantification); cf. Dane, *In Search of Reasonable Doubt: A Systematic Examination of Selected Quantification Approaches*, 9 *LAW & HUM. BEHAV.* 141 (1985) (criticism of quantification methodology).

<sup>127</sup> See empirical data cited *supra* note 126. However, to the extent the law sticks to customary standards, disuniform handling should not be extreme. The ease of those standards may help to explain the fairly high frequency of agreement, say, between judge and jurors. See, e.g., H. KALVEN & H. ZEISEL, *THE AMERICAN JURY* 55-65 (1966).

<sup>128</sup> Cf. K. COLE, *SYMPATHETIC VIBRATIONS: REFLECTIONS ON PHYSICS AS A WAY OF LIFE* 117 (1985) (analogizing discrete states of mind to quantum mechanics).

<sup>129</sup> See, e.g., Kaplan, *Decision Theory and the Factfinding Process*, 20 *STAN. L. REV.* 1065, 1073 (1968); Kornstein, *supra* note 23, at 121-22.

<sup>130</sup> See, e.g., Nesson, *The Evidence or the Event? On Judicial Proof and the Acceptability of*

Second, expressly translating a level of probability into something like a point estimate could be illusory, because probability in connection with standards of decision is a complex concept.<sup>132</sup> Third, there is no convincing reason to expect that quantification would effectively invoke our imprecise internal scale of judgment, or otherwise accord with our ingrained way of thinking.<sup>133</sup> Therefore, lawmakers should, and wisely do, speak, often with some serious attempt at explanation, in nonnumerical terms such as slightest possibility, reasonable possibility, substantial possibility, equipoise, probability, high probability, and almost certainty—or in established synonyms such as preponderance of the evidence, clear and convincing evidence, and proof beyond a reasonable doubt.<sup>134</sup> Additionally, the very imprecision of such a vocabulary reinforces the argument in favor of employing only a limited set of customary standards of decision.

Once articulated, the standard passes to the decisionmaker for comprehension and application. The decisionmaker may not be able or inclined to handle the standard in strict accordance with the law. Because of the decisionmaker's imprecision in dealing with probabilities and the potency of the customary seven categories, however, any hope that the decisionmaker would reliably adjust the standard up or down instinctively by fine degrees appropriate to the circumstances seems quite unrealistic. Instead, the hope and duty should be that the decisionmaker will stick with the articulated standard.

In sum, on the basis of this theorizing, I argue that lawmakers should articulate and decisionmakers should apply standards of decision in terms of the customary seven categories. I am *not* saying that people would find handling noncustomary standards impossible. I *am* saying that any such standard would be difficult to articulate and comprehend and apply, would risk confusion and possibly

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*Verdicts*, 98 HARV. L. REV. 1357, 1363-65, 1377-78 (1985); Tribe, *supra* note 12, at 1389-93.

<sup>131</sup> See Milanich, *Decision Theory and Standards of Proof*, 5 LAW & HUM. BEHAV. 87, 90, 94-96 (1981); Saks & Kidd, *supra* note 6, at 124-25, 148-54.

<sup>132</sup> See Ashford, *supra* note 13, at 945-46. Compare N. Cohen, *supra* note 12 (Pascalian complexities) with L. COHEN, *supra* note 12 (non-Pascalian complexities).

<sup>133</sup> See also *infra* note 136 (role of quantification in applying standard of proof).

<sup>134</sup> See J. GUILFORD, *supra* note 118, at 293 (construction of cues); Elwork & Sales, *Jury Instructions*, in THE PSYCHOLOGY OF EVIDENCE AND TRIAL PROCEDURE, *supra* note 100, at 280 (review of literature on making instructions understandable); *supra* note 126. I am not claiming that use of my phrases will solve communication problems, because such words do mean different things to different people. I am theorizing that we generally share a customary scale and arguing that lawmakers should strive to utilize it. To maximize the chances of invoking the desired standard, especially in settings like jury trial, decisionmakers need careful explanations. The cited research should help in this task of explanation.

abuse by the decisionmaker, and would inevitably drift toward one of the customary standards—and that these costs more than offset any benefit of utilizing an unusual standard. A fortiori, an explicit or implicit sliding scale of standards is neither realistic nor desirable.

The theorizing that underlies this argument, however, constitutes merely a plausible reason for observed phenomena. Perhaps the law's reaction to an ingrained scale for categorizing probabilities explains the observed systematic structure of standards of decision, but in several ways that explanation is speculation. First, the psychological evidence is difficult to interpret, incomplete in coverage, not free from doubt, and not directly applicable to the legal setting.<sup>135</sup> Second, experimental or other proof of the explanation in the legal setting seems infeasible.<sup>136</sup> Third, and as a parting shot at human cognition, any such specific explanation is suspect because people are notoriously bad at causal analysis.<sup>137</sup>

Nevertheless, even a merely plausible explanation suffices for my purposes. Given the empirical tendency of legal doctrine to converge on seven customary categories of probability, given the general theoretical point of "bounded rationality," and given at least one plausible explanation, I am prepared to believe that there is *some* significant reason for the systematic structure of standards of decision. Magic is not at work, and the real reason likely lies in the law's reaction to some cognitive limitations that would serve as an equivalent theoretical basis for my legal argument.

This thesis of cognitive causation, when combined with the considerable consequential costs and insignificant policy benefits of utilizing noncustomary standards of decision, supports restricting

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<sup>135</sup> See Scott, *Error and Rationality in Individual Decisionmaking: An Essay on the Relationship Between Cognitive Illusions and the Management of Choices*, 59 S. CAL. L. REV. 329, 330-37 (1986).

<sup>136</sup> For a rough suggestion of an experiment, see Walls, *What Is "Reasonable Doubt"?* *A Forensic Scientist Looks at the Law*, 1971 CRIM. L. REV. 458, 469-70 (proposing comparison of results of real or mock trials with statistician's probability calculations, in cases permitting realistic and meaningful calculation). Such a suggestion reveals both how difficult staging an experiment would be and how little it would prove about standards of decision.

Experiments could nevertheless shed light on parts of the puzzle. For example, one experiment has shown that asking subjects to quantify a probability evaluation before rendering a verdict affects the verdict. Simon & Mahan, *supra* note 126, at 322. This tends to support my view that quantification ordinarily is not a necessary or desirable step in applying the standard of proof. See Koriati, Lichtenstein & Fischhoff, *Reasons for Confidence*, 6 J. EXPERIMENTAL PSYCHOLOGY: HUM. LEARNING & MEMORY 107, 108 (1980) (quantification is separate cognitive step following judgment as to certainty); Zimmer, *supra* note 36 (arguing superiority of verbal processing of probabilities).

<sup>137</sup> See generally R. NISBETT & L. ROSS, *supra* note 103, at 113-38 (outlining major sources of error in causal analysis, including overreliance on representativeness and availability heuristics).

standards to the customary seven categories. The thesis admittedly rests less on airtight science than on sensible inferences from observing the law's systematic standards. Yet the thesis still is persuasive, and ultimately reassuring as it contends anew that the law's experience represents wisdom.

## B. A Probable Lesson

It remains to put the thesis to work. The *motivation* lies in realizing that although the law has usually acted wisely as to standards of decision, it has sometimes faltered by departing from the normal pattern. The *means* of reform consists of using the new psychological understanding to shape a better procedure. The *end* is to make sound procedure better fit humans, and not the impracticable reverse.<sup>138</sup>

Generally, the probable lesson here is that law should not be too demanding of human probability skills and accordingly should, even more consistently than it does, recognize only the customary seven categories of probabilities. Just as the standards of proof have coalesced toward three of the seven categories, so should lawmakers steadfastly cast other standards of decision in terms of some of the customary seven categories.<sup>139</sup>

Specifically, when lawmakers confront the task of fixing a particular standard of decision, they should choose a standard based on a customary category. On the one hand, a coarsely gradated scale can make some such choices seem heartrending, but lawmakers should choose rather than take the fainthearted way out by leaving the stan-

<sup>138</sup> My allusion is to human factors engineering, which involves tailoring things to fit human limitations. See, e.g., Chapanis, "Words, Words, Words," 7 HUM. FACTORS 1 (1965).

In the context of the fourth amendment, Amsterdam, *supra* note 48, at 377, phrased this engineering challenge thusly:

The motto, I suppose, is that any number of categories, however shaped, is too few to encompass life and too many to organize it manageably. The question remains at what level of generality and in what shape rules should be designed in order to encompass all that can be encompassed without throwing organization to the wolves. The question must be answered with a due regard for the practical workings of the institutions that administer, and are governed by, any particular set of rules.

A more general formulation appeared in F. POLLOCK, A FIRST BOOK OF JURISPRUDENCE 45 (5th ed. 1923):

The law cannot be more finely graduated than the means of ascertaining facts . . . . Hence the development of law is largely bound up with the development of procedure. As improved procedure enables the law to grapple with complex facts, the aspirations of lawyers and citizens are enlarged . . . . But even in the most advanced polity we shall find now and then that the subtilty of forensic and judicial thought outruns the possibilities of effectual inquiry and administration.

<sup>139</sup> Lawmakers could, however, doctrinally manipulate the seven categories of uncertainty to form an array of somewhat more than seven conceivable standards of decision. See *supra* notes 36 & 122.

dard vague. On the other hand, the limited set of standards available will define the policy choice clearly and often make it easier. Thus, for example, most appellate standards now grouped under "abuse of discretion" would convert readily to a standard of highly probable error. Once lawmakers choose, they should express the standard in familiar language, not novel verbiage. Such lawmaking should improve comprehension and application by decisionmakers, as well as enable better control of those decisionmakers.

This proposal implies that some current standards of decision—those difficult to pigeonhole—ironically reveal not sophistication but rather either a lack of courage to make the tough choice or a lack of thought and effort in making and expressing the choice. So, for example, courts should clear up their domains where the decisionmakers cannot tell which standard prevails<sup>140</sup> or what the prevailing standard means.<sup>141</sup>

Similarly, my proposal implies that lawmakers should avoid or consider abolishing any sliding scale of standards of decision. A sliding scale in this context means that the applicable standard of decision varies by infinite or very fine gradations of probability according to the circumstances. Such an approach springs from the understandable urge to be precise in dealing with situations involving many factors, but such precision is an illusion. The applicable standard properly may vary according to the circumstances, but only by quantum leaps from one customary category of probabilities to another. So, coalescence of standards into the customary catego-

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<sup>140</sup> *E.g.*, *Morris v. Mathews*, 106 S. Ct. 1032, 1038 (1986):

Accordingly, we hold that when a jeopardy-barred conviction is reduced to a conviction for a lesser included offense which is not jeopardy barred, the burden shifts to the defendant to demonstrate a reasonable probability that he would not have been convicted of the non-jeopardy-barred offense absent the presence of the jeopardy-barred offense. In this situation, we believe that a "reasonable probability" is a probability sufficient to undermine confidence in the outcome. Cf. *Strickland v. Washington*, 466 U.S. 668, 695 . . . (1984) [see *supra* note 35]. . . .

The Court of Appeals thus was . . . too ready to find that [the defendant] had made the necessary showing of prejudice. . . . [Its] "reasonable possibility" standard, which could be satisfied by "an exceedingly small showing," was not sufficiently demanding. To prevail in a case like this, the defendant must show that, but for the improper inclusion of the jeopardy-barred charge, the result of the proceeding probably would have been different.

*See id.* at 1042 & n.3 (Blackmun, J., concurring in judgment) (calling the conflict in the new standard "particularly puzzling").

<sup>141</sup> *E.g.*, *INS v. Stevic*, 467 U.S. 407, 424 & n.19 (1984) (use of "clear probability" to say more likely than not); *United Steelworkers v. Warrior & Gulf Navigation Co.*, 363 U.S. 574, 582 (1960) (unexplained use of "positive assurance" as standard). Other examples of special need for clarity appear *supra* note 35, and indeed most of the doctrines discussed in the first part of this essay would benefit from increased efforts to rephrase standards in terms of the customary seven categories.

ries, in reaction to the unacceptable complexity of a sliding scale, is a sign of maturity of legal doctrine.

My position is susceptible to radical misunderstanding. Several caveats should offer some immunization. To locate anew the area in dispute, I stress my concern lies only in the form of decisionmaking that involves placement on a scale and, more particularly, testing for a required degree of certainty. I am arguing that lawmakers normally should not ask decisionmakers to make unrealistic distinctions of probability, say, by requiring them to find a fact only if it is more than much-more-likely-than-not but not necessarily beyond-a-reasonable-doubt. This essay thus does not attack all amorphous or multifactored forms of decisionmaking, which often pass under the banner of "balancing" and which can be wholly appropriate in many settings.<sup>142</sup>

Moreover, within that specific area of dispute, I am not arguing for *more* sophistication or complexity. Despite superficial appearances, I am arguing for *less* complication, in recognition of cognitive limitations. Although decisionmaking requires a standard of decision, which in turn necessitates line drawing, I champion simpler line drawing. This essay thus conveys selective sympathy—in a specific area for special reasons—with those who argue that the law has become just too complicated.<sup>143</sup> Perhaps the following examination of a particular doctrine will further clarify my position.

### C. A Specific Reform

To demonstrate concretely the probable lesson in all this, and to show the possibility of doctrinal improvement, I return to the subject of appellate review of decisions on new-trial motions.<sup>144</sup> For the federal courts of appeals' civil cases, no unitary standard of review (or renewed review) currently exists. Instead, the applicable standard seems to depend on a number of factors: these factors should rest on reasons for or against deference to the trial judge, and the weight of these factors in the particular case's circumstances

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<sup>142</sup> See *supra* notes 11, 122-24.

<sup>143</sup> E.g., Nagel, *The Formulaic Constitution*, 84 MICH. L. REV. 165 (1985); Younger, *In Praise of Simplicity*, 62 A.B.A. J. 632 (1976).

<sup>144</sup> See *supra* notes 49, 61 & 82-85 and accompanying text. To illustrate what seems to be an inappropriate sliding scale on the lower end of the scale of probabilities, I could point instead to the standard of proof for personal jurisdiction. When the jurisdictional issues overlap the merits, the generally accepted standard is reasonable likelihood or a prima facie showing of jurisdiction—a purposely malleable standard that varies primarily with the nature of the issue. In establishing jurisdiction, this standard requires, for example, a relatively strong showing on identity of the tortfeasor, but only a weak one on results of the tortious act. See generally R. CASAD, JURISDICTION IN CIVIL ACTIONS ¶ 6.01[3] (1983); 4 C. WRIGHT & A. MILLER, FEDERAL PRACTICE AND PROCEDURE § 1068, at 344-45 (2d ed. 1987).

will determine the standard or standards that the appellate court will apply.

The most significant factor is the degree to which proper decision depends on the decisionmaker's presence at the trial. On the one hand, an appellate court will not defer on so-called issues of law when reviewing a new-trial decision; for example, after the trial judge decides a new-trial motion on the ground of judicial mistake of law in conducting the trial, as in instructing the jury, the appellate court may reverse if it merely disagrees with the trial judge's view of the law.<sup>145</sup> On the other hand, an appellate court will defer considerably on issues of fact and on like issues for which presence at trial is important; for example, the appellate court will not freely substitute its view for the trial judge's with respect to a new-trial motion based on misconduct of counsel.<sup>146</sup> It is difficult to know exactly how much deference a nonlegal decision enjoys, because appellate courts use various and vague language to describe the standard of review. Presumably, however, deference ideally should steadily increase with the importance of being present at trial.<sup>147</sup>

The reasons for such deference are familiar: society's interest in getting the right answer by reexamination is usually greater on general legal issues than on specific nonlegal issues; anyway, the trial judge is more apt to be right on nonlegal issues than the appel-

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<sup>145</sup> See *Allstate Ins. Co. v. Springer*, 269 F.2d 805, 808 (6th Cir. 1959), *cert. denied*, 361 U.S. 932 (1960); *F. JAMES & G. HAZARD*, *supra* note 17, at 371-73. Similarly, the appellate court freely reverses for errors in handling the procedural law associated with new-trial motions. See *Marsh v. Illinois Cent. R.R.*, 175 F.2d 498, 500 (5th Cir. 1949); *6A J. MOORE, J. LUCAS & G. GROTHEER*, *supra* note 84, ¶ 59.15[3], at 59-328 to -333. See generally *Louis*, *supra* note 57, at 1038-46 (exploring law/discretion boundary in appellate review of procedural issues).

<sup>146</sup> See *City of Cleveland v. Peter Kiewit Sons' Co.*, 624 F.2d 749, 756 (6th Cir. 1980) (deferential standard applied in reversing denial of new trial based on misconduct of counsel); *Pettingill v. Fuller*, 107 F.2d 933, 936 (2d Cir. 1939) (reversing grant for abuse of discretion), *cert. denied*, 309 U.S. 669 (1940). Because of the broad and varied nature of the new-trial device and because of the complexities of the new-trial decisional process, numerous other examples exist where the appellate court will show considerable deference. Another example would be a new-trial decision on the ground of newly discovered evidence, for which review generally follows the abuse-of-discretion standard. See *Thomas v. Nuss*, 353 F.2d 257, 259-60 (6th Cir. 1965) (affirmance); *infra* note 149 and accompanying text. Also, any findings of fact are subject to a clearly erroneous standard. See *La Fever, Inc. v. All-Star Ins. Corp.*, 571 F.2d 1367, 1368 (5th Cir. 1978) (affirmance). Indeed, whenever the new-trial review extends to a trial judge's harmless-error determination, the appellate court will show some deference, thus encouraging broad statements to the effect that all new-trial motions are within the trial court's discretion. *E.g.*, *11 C. WRIGHT & A. MILLER*, *supra* note 28, § 2803, at 32-33, § 2818, at 119-20.

<sup>147</sup> See, *e.g.*, *Ehret Co. v. Eaton, Yale & Towne, Inc.*, 523 F.2d 280, 285 (7th Cir. 1975) ("the trial judge's opportunity to view the 'living courtroom' must be given great weight, especially when assessing the intent of the parties"), *cert. denied*, 425 U.S. 943 (1976).

late court; and even where possibly more adept on nonlegal issues, the appellate court by intruding will probably not generate sufficient benefits to offset the many costs, including the long-range detrimental effects on the trial judges' sense of responsibility and image of legitimacy and on the appellate courts' functioning as appeals multiply.<sup>148</sup> Conceivably, these reasons could act as independently variable factors that would help determine the appropriate level of deference.

Still other factors are at play, including the ground for the new-trial motion. So, for somewhat unclear reasons, there may be higher deference for motions on the ground of newly discovered evidence.<sup>149</sup> And, because of the jury's sacrosanctity, there is higher deference for some motions on the ground that the verdict was against the weight of the evidence.<sup>150</sup>

Another, more significant factor is the grant/denial distinction. It nicely reveals the doctrinal confusion. On the one hand, arguable reasons exist to treat a grant of a new-trial motion with more deference than a denial: the appeal of a grant usually comes after a second trial, the result of which the trial judge approved, and consequently the appellate court will be reluctant to upset the fair second trial to reinstate the first result,<sup>151</sup> even though the two results are in conflict; additionally, wrongly reversing a denial leads only to a new trial where justice may still be done, but wrongly reversing a grant ensures injustice,<sup>152</sup> although concededly the opposite tendency to affirm denials and reverse grants would reduce the number of retrials. On the other hand, when a new-trial motion entails factual reconsideration of the jury's factfinding,<sup>153</sup> persuasive reasons exist to treat a denial with more deference than a grant: a denial means that the trial judge and the sacrosanct jury concurred, so that the appellate court should be extremely reluctant to intercede;<sup>154</sup> indeed, the jury's role alone suffices to generate sugges-

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<sup>148</sup> See generally Wright, *The Doubtful Omniscience of Appellate Courts*, 41 MINN. L. REV. 751, 779-82 (1957).

<sup>149</sup> See *Pettingill v. Fuller*, 107 F.2d 933, 936 (2d Cir. 1939) (dictum) (discussing deference to denial of such motion), *cert. denied*, 309 U.S. 669 (1940); 6A J. MOORE, J. LUCAS & G. GROTHEER, *supra* note 84, ¶ 59.08[3], at 59-99 n.9; *supra* note 146.

<sup>150</sup> See *infra* text accompanying notes 153-55.

<sup>151</sup> See J. FRIEDENTHAL, M. KANE & A. MILLER, *supra* note 56, at 558-59.

<sup>152</sup> See Recent Decision, 13 STAN. L. REV. 383, 388-89 (1961).

<sup>153</sup> This situation comprises review of decisions on new-trial motions based on the ground that the verdict was against the weight of the evidence or that the verdict was excessive or inadequate. It does not include review of decisions on n.o.v. motions or on challenges to so-called impossible verdicts; these decisions entail the irrationality test, and an appellate court will normally treat them as matters of law. See *Fairmount Glass Works v. Cub Fork Coal Co.*, 287 U.S. 474, 483-84 (1933); 11 C. WRIGHT & A. MILLER, *supra* note 28, § 2807, at 50, § 2820, at 127; *supra* note 81 and accompanying text.

<sup>154</sup> See *supra* notes 82-84 and accompanying text.

tions that the appellate court should be more willing to overturn a grant here than, say, a grant of a motion based on misconduct of counsel.<sup>155</sup>

The result of all this is considerable confusion, inadvertently encapsulated by one court in this circuit: "The scope of appellate review of the trial court's [new-trial] decision is narrow as the trial judge's discretion is broad, and reversal warranted only when he has abused it."<sup>156</sup> Even if theoretically clarified as an explicit sliding scale of standards of review,<sup>157</sup> such an approach is unrealistic and undesirable. We cannot expect appellate courts to conform strictly to the currently confused law, and in fact they are left fairly free to exercise whatever review they wish.

I submit that a definite improvement would flow from recognizing only three review standards for decisions on new-trial motions. At one extreme, all issues currently classified as matters of law<sup>158</sup> should still undergo review as such, with the appellate court asking whether it simply disagrees with the trial judge's decision and thus reversing only if it thinks error to be more likely than not. At the other extreme, on factual reconsideration the appellate court should reverse a denial of a motion on the ground that the verdict was against the weight of the evidence or that the verdict was excessive or inadequate only if it is almost certain that the trial judge erred. All other reviewable new-trial issues<sup>159</sup> should receive customary middle-level scrutiny, by which the appellate court looks for clear or highly probable error.

This formulation of three standards roughly conforms to the present state of the doctrine, and likely even more closely to what most courts do as opposed to what they say. It covers the same range as the current standards, but reduces potentially infinite gradations to the three discrete standards of probable, highly probable, and almost certain error. This easy formulation would improve comprehension and application by the courts, as well as better control them. Moreover, quantum leaps adequately serve the policies

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<sup>155</sup> See, e.g., *Lind v. Schenley Indus. Inc.*, 278 F.2d 79, 90 (3d Cir.) ("close[r] scrutiny is required in order to protect the litigants' right to jury trial," but court was reviewing conditional new-trial grant on ground that verdict was against weight of evidence), *cert. denied*, 364 U.S. 835 (1960). *But cf.* *Harris v. Quinones*, 507 F.2d 533, 535-36 (10th Cir. 1974) (applying "gross abuse of discretion" standard to grant of new trial on ground that verdict was against weight of evidence).

<sup>156</sup> *Sulmeyer v. Coca Cola Co.*, 515 F.2d 835, 852 (5th Cir. 1975), *cert. denied*, 424 U.S. 934 (1976).

<sup>157</sup> See J. FRIEDENTHAL, M. KANE & A. MILLER, *supra* note 56, at 559-60 (apparently proposing sliding scale).

<sup>158</sup> See *supra* notes 145 & 153 and accompanying text.

<sup>159</sup> Some new-trial issues are unreviewable. E.g., *Donovan v. Penn Shipping Co.*, 429 U.S. 648 (1977) (no review of remittitur that federal plaintiff accepted).

behind variable deference on review; indeed, because the limited choice of standards illuminates the policy question, courts may be able more soundly to effectuate those policies, once three and only three discrete standards of new-trial review come to be recognized.

#### CONCLUSION

The law usually does, realistically can, and optimally should recognize only seven categories of uncertainty in its standards of decision: (1) slightest possibility, (2) reasonable possibility, (3) substantial possibility, (4) equipoise, (5) probability, (6) high probability, and (7) almost certainty. First, this essay's description of seemingly diverse legal doctrines demonstrated that standards of decision tend to fall, often in groups of three, into the seven customary categories. Second, a review of cognitive psychology revealed humans to be "boundedly rational." Third, combining the observation with the science suggested that the systematic structure of the standards reflects the law's wise reconciliation with those cognitive limitations. Accordingly, in explicit recognition of a "quantum theory" of the standards of decision, lawmakers should steadfastly cast any such standard expressly in terms of one of the customary seven categories.