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TAKING STOCK AFTER TWELVE YEARS**

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CIVIL JURIES AND COMPLEX CASES: TAKING STOCK AFTER TWELVE YEARS

Introduction

Twelve years ago, as the first Reagan administration was coming into office, it appeared that the civil jury, at least in complex cases, might be on the way out. The hostility of the then Chief Justice, Warren Burger, toward the civil jury was no secret (Burger, 1979; Sperlich, 1982), and a split in the Circuits on the question of whether there was a complexity exception to the Seventh Amendment made the issue ripe for Supreme Court resolution. Moreover, a then recent body of scholarship provided the Court with some historical justification for reading a complexity exception into the Seventh Amendment (Devlin, 1980; Campbell and Le Poidevin, 1980; but see Arnold, 1980) as well as with more modern policy arguments for eliminating the civil jury or dramatically altering its tasks in complex litigation (see e.g. Ell, 1978; Jorde, 1981; Luneberg and Nordenberg, 1981; Devitt, 1980-81; Rubin, 1982). The Supreme Court did not, however, seize the moment, and the issue remains unresolved, which is to say that most federal courts feel obligated by the Seventh Amendment to try legal cases to juries no matter what their complexities so long as at least one party insists.¹

In failing to act the Court was acting wisely, or so I argued in an article published in 1981 entitled "Civil Juries and Complex Cases: Let's Not Rush to Judgment." (Lempert, 1981) That article was premised on the following points: First, that the framers of the Seventh Amendment had important and enduring reasons for constitutionalizing the right to trial by jury in civil cases; second, that the claim that a complexity exception was implicit in the Seventh Amendment lacked adequate historical support; and third, that even if the Seventh Amendment contained no complexity exception, Fifth Amendment due process gave civil litigants the right to insist on bench trials if a judge could be expected to decide a litigant's case rationally and a jury, even with the aid of reformed procedures, could not.

I commended judicial inaction on the issue because at the time I wrote the empirical evidence was insufficient to determine whether some cases were so complex that only a bench trial was likely to yield a rational judgment. To show that bench trials were required for rational decision making meant, I argued, that one would have to show: first, that it was possible to identify a set of cases so complex that juries did not deal rationally with them; second, that such

¹ The Supreme Court has never applied the Seventh Amendment to the states so as a matter of federal constitutional law state courts are free to eliminate jury trials in civil actions. However, many states are bound by their own constitutions to offer jury trials in actions at law.

failures of rationality were inherent in the institution of jury trial and not the result of mutable ways of treating jurors or developing cases for trial; and, third, that judges were likely to decide such cases more rationally than juries.²

Almost twelve years have passed since I wrote my article. One might expect that we now have the data needed to determine whether the showings I argued for can be made. If so, perhaps the Supreme Court can give us a sound, empirically-based resolution of the "complexity exception" issue that has for so long been on "hold." This paper examines the research produced during the past twelve years to see if this is the case. It seeks to determine what we now know which we did not know then about the ability of juries to handle complex cases, about our capacity for improving that ability and about the ability of judges to improve upon jury performance in such cases. It asks whether there is an adequate empirical basis for concluding: (1) that juries can or cannot cope with complex cases; (2) that we can or cannot change the way jury trials are conducted so that rational jury decision making will not be thwarted by complexity; and (3) that judges can cope with complex issues that juries cannot master.

To avoid keeping the reader too long in suspense let me say at the outset that the answer to each of the three aspects of this question is "no." There has been no outpouring of empirical research on these topics, and such research as has been done is either too flawed or too limited to provide answers with firm empirical foundations. Certainly there is not the kind of research on which a social scientist would have the Supreme Court rely. And yet we have learned something. To anticipate the discussion that follows, the jury often appears to do surprisingly well in the face of complexity, particularly in so far as complexity is defined by trial length and the introduction of massive arrays of evidence. As for the judge, we know little about his or her capacity to cope with complexity, but what we do know gives us no reason to be confident that the judge will do better than the jury. We also lack the kinds of rigorous research needed to argue that reforms in case management or jury practice can solve perceived problems, yet we are at a point where a number of reforms can be suggested with little risk that they will make things worse and considerable reason to believe they will improve jury performance. Finally, theoretical developments in

² In a situation where neither judges nor juries could be expected to resolve a matter rationally, it may be, as some commentators have suggested, that the resolution of the issue could be vested in some other institution, such as a panel of experts. (Luneberg and Nordenberg, 1981; Strawn and Munsterman, 1982) In the setting of a law suit such an alternative institution might be confined by the constitution to the limited role that due process requires; it might, for example, resolve difficult technical questions, which the decision maker, whether judge or jury, would then take as proven in deciding a case. Outside that class of actions which are "legal" within the meaning of the Seventh Amendment, a broader role might be accorded expert decision makers as is often done in administrative agencies.

cognitive and jury psychology suggest a new perspective that we might wish to bring to bear in thinking about the complexity problem. I shall deal with these matters in turn.

JURIES AND COMPLEX CASES

Anecdotal Examples

There are many dimensions to complexity, but one feature that stands out in the discussion of complex cases is protraction. The "horrible examples" in the literature on complex cases, that is those cases cited as self-evidently unsuitable for jury trial by those who would abrogate the right to jury trial, are cases that take a long time to try to a verdict. Trial length is important to the argument against jury trial because lengthy trials (1) raise serious problems of juror memory; (2) are associated with massive amounts of information for the jury to comprehend; (3) mean that large numbers of jurors, including a disproportionate number of those most likely to be especially capable, are excused from jury service and (4) can impose hardships on jurors who do serve hardships that in theory might interfere with juror performance by causing resentment.

Perhaps because protraction is seen as a central feature of complex litigation, psychologists in their mock jury studies have seldom focused explicitly on the issue of jury fact finding in complex cases. Instead, most of what we have learned during the past decade about the jury's capacity to cope with complexity is anecdotal; it is based on close attention to jury behavior in particular cases chosen because of their research convenience or celebrity. Table One identifies and summarizes important characteristics of cases reported in the literature which meet two principal criteria. First, the case had to be one that could be regarded as complex by virtue of either its length or subject matter. Second, the case description had to focus in substantial measure on the jury's performance, and the author's assessment of this performance had to be based at least in part on interviews with some or all of the jurors who participated in the case. While the focus of this paper is on civil trials, cases involving criminal trials are included in Table One. Although the legal question regarding the right to jury trial in complex cases may for constitutional reasons have a different answer in the criminal than in the civil context, the problems that complexity poses for juror decision making do not necessarily differ with case type.³

³ The cases included in the Table are a convenience sample, some of which had come to my attention before I wrote this paper and others of which were uncovered by a research assistant. When I starting writing the first draft of this paper I was aware of no other case studies meeting the criteria of inclusion. Since completing the first draft I have learned of several additional case studies that meet my criteria, but including the ones I looked into would lengthen the paper without changing any of the conclusions I reached based on the current sample. It is important to recognize that my sample of cases is a nonrandom selection which contains a disproportionate

There are, of course, serious problems in relying on anecdotal case histories. There is no reason to believe that cases chosen for study are typical of the range of complex cases either in the nature and extent of their complexity or in the ways that judges, jurors and lawyers reacted to that complexity. Moreover, the case study methodology is not designed to be reproducible. Different authors viewing different cases choose to emphasize different features, and where they do focus on the same issues, standards for judgment may vary. These problems are compounded in the current instance, for many of the studies collected in Table One were reported by journalists and not social scientists. Not only did these journalists wish to tell a good story, but they were seldom concerned with what their observations could tell us generally about jury behavior in the face of complexity. Nevertheless, I believe that there is much to be learned from looking at how jurors performed across a range of complex cases. Any conclusions reached on the basis of what we can learn from these cases studies must be tentative, but even tentative knowledge is better than a knowledge vacuum.

Table One summarizes important features about each of the cases described. Across the top the case name is given if the author provided it and a shorthand reference is given if the author did not. Several of the cases described in The American Lawyer are among the most highly publicized and celebrated cases that have been tried in this country in recent years. The remaining cases are less well known and a number may be considered "run of the mill" complex cases. None of the cases appears as formidable for a fact finder as cases like SCM Corp. v. Xerox Corp. or Zenith Radio Corp. v. Matsushita Elec. Indus. Corp., which are the kinds of cases most commonly cited by those arguing for a complexity exception, but were a complexity exception to the Seventh Amendment established, it is likely that at least some of the civil cases listed would, upon motion of a party, be removed from the civil jury docket.

Looking at the rows we see that first the source of the case report is presented. The four cases attributed to the ABA's 1989 report were the product of cooperation between a team of social scientists and lawyers. The social scientists who were in charge of the data gathering and are, I presume, responsible for the descriptions presented, are Elizabeth Loftus, Jane Goodman and Edith Greene, three Ph.D. psychologists who have written extensively on issues relating to jury trial. Arthur Austin, who described the trial and retrial in the case of Cleveland v. Cleveland Electric Illuminating Company, an antitrust case that pitted a city against a privately owned utility, was at the time of his study a Professor of Jurisprudence at Case Western Reserve University. Molly Selvin and Larry Picus, who described Charles Newman v. Johns Manville, a number of "high profile" cases. The cases were not, however, selected because of their tendencies to prove or disprove any of the hypotheses examined in this paper. Indeed, it was not until the cases were selected and read that their implications for the issues explored in this paper were known. My summaries of key case characteristics were checked by Lisa Bernt, a 1992 graduate of the University of Michigan Law School.

tort suit to recover for asbestosis, were at the time they wrote researchers with the Rand Corporation's Civil Justice Research Institute. The remaining trial descriptions are the work of journalists and free lance writers, each of whom published in The American Lawyer, as well as, in the case of Pennzoil v. Texaco, a Wall Street Journal reporter and a trial juror.

The second row notes whether the case was tried in a state court or a federal district court. The third row gives the subject matter of the case and notes if a case was a criminal prosecution. The fourth row specifies how long the trial of the case lasted, excluding jury deliberations. Sometimes it was not clear if jury deliberation time was excluded from the figures an author provided. In these cases the length specified by the author is given. In other cases the trial time was given in days or hours. These figures were converted into days or weeks by assuming 5 hours to a trial day and five days to a trial week.

Row 5 specifies sources of complexity apart from length. In this column I note such things as the presence of multiple counts or parties, conflicts of experts, hard to understand concepts, and the need to understand unfamiliar, technical information.

Row 6 lists efforts the court made to make the case more amenable to a rational jury decision. These efforts included such things as allowing note-taking, giving preliminary instructions, providing trial notebooks that organized crucial material and breaking down the verdict task into a series of special verdicts or a verdict to be decided upon only after answering a series of discrete questions. It turns out, however, that the last of these aids - the use of special questions or verdict forms - had the potential to complicate a jury's task as well as to ease it. _____

Row 7 gives the size of the jury. The four criminal cases were tried to twelve-person juries, but only two of the civil cases was decided by a jury of twelve. One civil case was heard by an eight-person jury and the other cases were heard by six-person juries.

Row 8 gives my reading of a jury's likely difficulty in understanding technical or specialized evidence that appeared crucial to a correct decision. I use a three word scale: high, moderate and low. Where a large amount of hard to understand, unfamiliar scientific information bore on the central issues in the case technical difficulty was coded as "high." Where technical or specialized information seemed somewhat easier to understand or where full understanding seemed less crucial to correct decision making, because the evidence was not so central, or because it was redundant with other easier to understand evidence or because a vaguer understanding would suffice, difficulty was coded as "moderate" or "low" depending on how these factors appeared to play out.

Row 9 provides information on the number of college educated jurors where that information was provided in the report. Where occupational but not educational information was given, I attempted to estimate the number of college educated jurors on the basis of their occupations. These estimates are marked with an asterisk.

Row 10 assesses the defensibility of the jury's verdict. Here I tried to mirror the views of the authors of the various reports, except I ignored the views of the juror writing about Pennzoil who thought the jury had done a fine job. If the author reported that the jury's verdict agreed with the judge's verdict preference or if the author conveyed an impression that the jury's verdict was correct, I coded verdict defensibility as "high." Where the jury's verdict seemed reasonable yet it would not necessarily have agreed with the judge's or the author questioned its adequacy, I coded defensibility as "moderate."

Finally where the author conveyed the impression that the jury's verdict was mistaken in important respects, I coded defensibility as "low." I did this even if the jury verdict was arguably reasonable given the evidence that the jury had before it.

Row 11 notes whether serious mistakes that might have misled the jury were made either by the judge or by one or more of the lawyers involved in the case. Finally, row 12 notes special features about each case, including any actions by the judge or lawyers that might have misled the jury or made its task more difficult.

Trial Complexity

The first thing to notice about Table One is the range of cases which are arguably complex, particularly if trial length alone indexes complexity. Corporate law violations, toxic torts, conspiracies, stock manipulations, sexual harassment allegations, claims under the antitrust laws, contract breaches and matters relating to trade secrets all may give rise to colorable claims of substantial complexity, and this is just a group of cases that happen to have caught the eye of courtroom observers. The point is not a small one. Even though the case for a complexity exception has been made in reference to cases that appear more complex than most of the cases summarized in Table One, if a complexity exception were to be created, the potential slippery slope problem is substantial. The prospect of lengthy trials and conflicting expert testimony on specialized topics would make most of the cases in Table One colorable candidates for the withdrawal of juries. In deciding whether to withdraw juries substantial judicial discretion would have to be exercised and even if a trial court stretched that discretion, an appellate court might well be reluctant to reverse given the prospect of expensive, time-consuming retrial and the difficulties an objector would have in showing that a judge's verdict was unreasonable.

If one looks not at rows 4 or 5, which in litigation would form the basis for predictions of complexity, but at row 8, which reports the technical difficulty of evidence that seemed crucial to a correct disposition of the case, a somewhat different picture emerges. There were two cases that seemed to turn largely on evidence so specialized and esoteric that any non-specialist could be expected to have considerable difficulty in understanding. These were the ABA trade secrets case

which involved highly technical testimony about subtle patent issues and the W.R. Grace case in which there was epidemiological evidence as well as conflicting expert testimony about difficult issues in hydrogeology. I label "moderate/high" the liability issue in the Johns Manville case which involved conflicting interpretations of pulmonary and lung function tests as well as statistical evidence on the association between exposure to asbestos and the development of asbestosis. Cases I have categorized as moderately complex are cases that involved unfamiliar business situations like the need to understand normal practice in the junk bond market (an issue in Keating) or the need to understand economic concepts at issue in antitrust cases such as the need to understand the characteristics of a "relevant geographic market," an issue in the C.E.I. case.

In those cases labeled low in difficulty esoteric and unfamiliar evidence either figured less prominently in the issues the jury had to resolve, or it should have been relatively easy for the jury to understand. Thus, in the sexual harassment case two psychiatrists testified for the plaintiff, but there were no expert witnesses for the defense and the plaintiff could have made out a case for both liability and damages even without the psychiatric testimony. In the GAF stock manipulation trial jurors had to understand how stock trading worked, a matter that most of the jurors in this case found to be difficult "new terrain," but this is the kind of information that many lay jurors would know and which should be relatively easy to explain. The fact that I have rated the evidence in a trial as low in difficulty, does not, however, mean that jurors will understand it. In the C.E.I. litigation, for example, the concept "natural monopoly" figured prominently in both trials. Compared to other testimony on the issue of monopolization, this concept should have been easy for a jury to understand, yet it appears from Austin's interviews that in two trials only one alternate juror adequately understood what the defense, in making a claim of natural monopoly, was talking about.

Overall, one may conclude from looking at these cases that with some frequency trials confront jurors with evidence that only experts have no difficulty understanding. Where such evidence is presented, jurors often find it hard to understand, and even where the evidence should be comprehensible to a jury, jurors chosen in a particular case may not comprehend.

Yet the situation may not be so bleak as this summary suggests. Methodologically, these case studies are retrospective reconstructions of how deliberations proceeded, and after the trial (in some of these studies weeks or months after) jurors may overstate the degree of confusion that existed in the jury room.⁴ Moreover individual jurors who say that "no one understood" an issue may be speaking more for themselves than for others since those who did understand may not have had the occasion to directly exhibit their understanding to their fellow jurors or, if they attempted to do so, their understanding may not have been clear to the others. In this respect the

⁴ Of course it is also possible for confusion to be understated after memories have faded.

trials described in the ABA study are particularly important. The ABA study was conducted by trained researchers who both interviewed jurors who decided the cases they studied and observed the deliberations of alternate jurors who had been on the trial panels. It appears from what the authors observed that in almost all cases the juries were led by their most competent members. Neil Vidmar (1992) reports thus, jurors with poor understanding of key evidence could be guided toward correct verdicts even if misunderstandings of the crucial evidence were never fully clarified. In W.R.Grace we see a perverse variant of this as the only juror who apparently understood the full legal implications of the way the jury answered a question on the verdict form kept quiet about what it meant because he liked the result the jury's answer would yield.

Problems in Understanding

The jury's problems in understanding are compounded by limited juror ability. As row 9 reveals many of the juries involved in this case had few or no members with college education. Occupationally most of the jurors seated in these complex cases who worked outside the household had blue collar or clerical jobs. Since education and occupation are correlates of juror competence (Strodbeck et al. 1957; Hastie et al. 1983), some of these juries may have had few people capable of providing intelligent leadership. However, this difficulty is not an intrinsic failure of the jury system. A number of commentators have suggested ways of dealing with this problem, including making it more difficult for the better educated to avoid jury duty or the sitting of full or partial blue ribbon juries (Lempert, 1981; Nordenberg and Luneberg, 1981, 1982; Schwarzer, 1991). Moreover, even without changing the conditions of jury duty, highly capable juries may be seated if the lawyers, perhaps urged on by the judge, cooperate and do not routinely exercise their peremptory challenges on those jurors most likely to understand the case. Thus, in the DeLorean trial seven college educated individuals were on the jury, none of them missed a trial day or, for that matter, arrived late, and, to judge by Brill's portrayal they performed at the highest level. Similarly, one of the judges interviewed by the ABA researchers reported that in a complex case where both sides wanted an intelligent jury, a highly capable jury was seated and three weeks of trial time was saved because the jurors brought depositions home to read after the trial day was through.

A special problem of understanding arises when there is a conflict of expert testimony. The difficulty is that when the two sides provide different interpretations of a situation, a person who previously knew nothing about the issue may have little basis for choosing between them. This is a generic problem with expert testimony, which exists almost apart from its inherent degree of complexity (Gross, 1992). In these circumstances juries seem to rely heavily on other credibility cues (e.g. does the expert seem like a hired gun?) as well as on the way in which the

evidence fits in with the other elements of the parties' stories. Thus, if it appears as it did in the Pennzoil case, that a party acted improperly, the jury is less likely to believe an expert for the party who suggests that whatever the appearance, technically there was no impropriety, than it is to believe an expert who suggests that what was done violated commonly understood business norms. It should be recognized that juries commonly decide between conflicting non-expert testimony on such grounds as well, and to some extent they are celebrated for this. Thus, when a jury hears an eyewitness who places the defendant at the scene of the crime and a defendant's spouse who testifies that the defendant was home at the time of the crime, the jury weighs the relative credibility of the two witnesses and how their testimony fits into a larger story in deciding whom to believe. They may have no more rational basis for deciding between such witnesses than they do for deciding between two experts who reach opposite conclusions about matters concerning which the jurors were previously ignorant.

Yet the jury faces problems in dealing with conflicting but unfamiliar expert testimony, whether hard to understand or not, that it does not face to the same degree in dealing with the conflicting testimony of ordinary witnesses. The most important is that experts are selected by the parties to be convincing (Getman and Ellsworth, 1987; Champagne, et al., 1991). In these circumstances, as Professor Gross points out (1992), the normal cues to credibility are likely to be misleading, for a low credibility expert who testifies in a way that is unlikely to be believed is not likely to be hired. Indeed, one might expect those who know their cases are weak to make the strongest efforts to find experts who appear credible, for if they could not they would be foolish not to settle. At the same time, one should not overdraw the distinction between conflicting expert testimony and the conflicting testimony of ordinary witnesses, for if experts are adept at appearing credible regardless of the credibility of their testimony, ordinary witnesses may appear credible or incredible for reasons that have little or nothing to do with credibility like the confidence of an eyewitness (Loftus, 1991) or class-based distinctions in speaking style (Lind and O'Barr, 1979).

A second problem that distinguishes battles of experts from the conflicting testimony of ordinary witnesses, is that we feel that when ordinary witnesses tell conflicting stories there is little anyone can do but decide instinctively, on the basis of credibility cues and consistency with other evidence, who is telling the truth. With experts there is often the feeling that if only the decision maker had sufficient expertise, a correct judgment would be made. This feeling gives rise to proposals for such things as science courts (Martin, 1977) or ways to resolve the esoteric scientific issues that arise in litigation through the use of expert panels (Luneberg and Nordenberg, 1981; 1982). To the extent that the feeling is justified, there is a special threat posed by trying complex cases to juries or, in the usual case, to judges. This is a threat to legitimacy

posed by the danger that clearly incorrect decisions will be reached and that this will become known after the fact. It is easy, however, to exaggerate the threat posed. Where experts differ in complex cases, the differences are usually sincere. Indeed, I would suggest that the more difficult the issue - that is the harder it is for the lay person to decide which expert's opinion is more credible - the more likely it is that both positions are reasonably maintained. Thus, in the W.R.Grace case leading experts in hydrogeology differed on whether toxic wastes could pass beneath a river to contaminate the plaintiff's wells. While one side is undoubtedly right, it is likely that hydrogeology today cannot tell us which it is. In these circumstances a jury response of downplaying the importance of the evidence, even though it is at the center of the proximate cause issue, and focusing on other evidence that suggests contamination (how else can an exceptionally high incidence of leukemia be explained) and on the responsibility or irresponsibility of the defendants might be the best we can expect a decision maker, even an expert decision maker, to do.⁵

The Quality of Jury Verdicts

The bottom line, and perhaps the best test of whether jury leadership or other factors alleviate individual problems of understanding, is the quality of the verdicts that juries return. Here the case studies have an interesting tale to tell. It is summarized in row 10 which reports the defensibility of the jury verdicts from the perspective of the person describing the case⁶. The first thing to note is that most jury verdicts seem defensible; they are close to the verdicts that judges would have rendered and/or they seem fair and reasonable. Also in cases where the jury had to decide both liability and damages, if the verdict appears mistaken, it is likely to be the holding on damages that appears unsupported by the evidence rather than the finding of liability⁷.

Moreover, where verdicts are of moderate or low defensibility, it does not appear that the complexity of the jury's fact finding task is ordinarily at the heart of the problem. This can be best appreciated if we look closely at those cases with such verdicts.

First, consider the ABA trade secrets case. The verdict is labeled moderately defensible because the judge's comments indicate agreement (though not in so many words) with the jury's

⁵ This is not, I should note, what the jury did in the Grace case. Their verdict is discussed below.

⁶ More precisely I am giving my subjective view of another observer's subjective view of the verdict quality.

⁷ Since mistakes on damages can be corrected through remittitur either at the trial level or on appeal such mistakes are not as costly to the efficient administration of justice as mistakes on liability which, if caught, may require a new trial.

finding for the counterclaim plaintiff on one count and with its findings for the counterclaim defendant on several other counts. However, the judge, it seems, would have found for the counterclaim plaintiff on two counts where the jury found for the defendant, and he would have granted greater damages than the jury did. Although the ABA trade secrets case is one of the most technically difficult of the cases in Table One, the jury's failure to arrive at a more acceptable verdict does not seem to stem from that difficulty. In fact, eleven jurors, including five of the six who decided the case and the six alternates who for purposes of the study deliberated to a decision shared the judge's verdict preferences. The unsatisfactory nature of the jury verdict stems from a sixth juror who appeared not to understand the judge's instructions and forced a compromise by obstinately holding out for his preferred verdict. Thus it appears that except for the kind of stubborn, uncomprehending juror who occasionally pops up regardless of complexity,⁸ the jurors did very well.

One wonders how such good performance was possible given the complexity of the case. A clue may be found in the lawyers comments about some of the most complex evidence. One attorney, suggesting that the jury probably never understood the complex chemistry underlying a zeolite production process, remarked that the plaintiff never attempted to explain the chemistry involved because the case did not require that knowledge. Another lawyer commenting on laboratory reports and scientific progress reports filled with chemical equations that had been entered into evidence noted that the reports may have been useful for their bulk as they were a way of making concrete the amount of experimental work that had been done month by month. Thus one has a case that in large measure doesn't seem comprehensible to a jury as well as jurors who admit to being mystified by some of the evidence. Yet the jurors' verdict preferences, with one exception, seem eminently sensible, because a scientist's understanding of the evidence does not seem essential to the fair disposition of the case.

The jury system also seems not to have done well in the two C.E.I. trials that Austin observed, at least this is a conclusion one may draw from the fact that the jury verdicts in the two trials were inconsistent, with the first jury hanging 5 to 1 in favor of the plaintiff City of Cleveland and the second jury finding for the defendant. However, the inconsistency does not necessarily point to jury irrationality since, as Austin points out, the defendant's strategy changed between the two trials so that the different juries were hearing quite different presentations of the evidence. Moreover, one piece of evidence offered at the first trial, which the plaintiff had regarded as its "smoking gun," was ruled inadmissible at the second.

Looking at the C.E.I. trials separately, I have rated the verdict at the second trial high on defensibility since it appears the judge agreed with it, while the hung jury outcome at the first

⁸ This is why I argued in my 1981 article for non-unanimous juries in civil cases.

trial is rated as low on defensibility because the vote was 5-1 away from the direction the judge seems to have thought correct. While the jury's failure to understand some of the concepts and evidence relating to the antitrust issues may have played a part in the jurors' votes, their poor performance, if it was poor, seems attributable to less esoteric reasons. The most important is probably that the jurors failed to limit the plaintiff's smoking gun evidence - testimony that C.E.I. had hired a lawyer to bring in his own name a suit designed to hamper the plaintiff's business - to the impeachment purposes for which it was allowed.⁹ The other factors to which Austin attributes the first verdict are the jury's failure to understand other instructions and concepts like the meaning of proximate cause and the fact that the jury took an early straw vote after which its deliberations did not function well.

Thus, if the jury did not reach a defensible result in the first C.E.I. case, it does not appear that the failure was due primarily to the case's complexity. Indeed, it is not clear that the case was so complex as to be beyond the ken of a jury. Rather the first jury, having no college-educated members, seems to have been especially ill-equipped to understand what may in principle have been comprehensible evidence. The second jury, while still failing to understand certain concepts, seems to have better understood the evidence, and this jury too consisted largely of blue collar workers, none of whom was a four year college graduate. The two juries differed however in that the second had several members who had substantial occupational responsibility. The other failures of the first jury, the failure to give proper weight to a limiting instruction and confusion about such concepts as proximate cause are failures that can and do occur in simple cases as well as complex ones (Charrow & Charrow, 1979; Elwork et al., 1977; 1981; Hastie et al., 1983; Ellsworth, 1989).

In the W.R. Grace case, Pacelle, who authored the report I draw on, suggests that the jury performed poorly because a new trial was needed due to the jury's inconsistent answers to special questions and to the fact that in giving an allowed answer to one question the jury did not realize the implications of its answer. Pacelle, however, notes that the question that gave rise to the inconsistent answer was the poorly worded product of a day and a half of legal debating in the judge's chambers. Moreover, when the jury asked the court for help in understanding the question, the judge's remarks were as confusing as the initial question. The jurors, left to their own devices, came up with a reasonable interpretation of the question, but an incorrect one, and their answer meant a new trial (almost immediately forestalled by a settlement) had to be ordered.

The jurors' other problem in the case was that they responded "not determined" to a special question asking when the W.R. Grace Company had polluted certain wells - not realizing

⁹ This limitation strikes me as legally questionable, so the jury's performance might be better than the judge's in this case.

that this answer meant the plaintiffs had not proved an element of their case and so could not recover.¹⁰ The jurors were led into this decision by a verdict form which invited them to answer the question "not determined" without explaining the consequences of such an answer and by the plaintiff's counsel's failure - to the defense counsel's astonishment - to explain to the jury in closing argument the implications of a not determined verdict. The answer "not determined" does not, however, suggest jury incompetence. The W.R. Grace case, as appears from the table, contained perhaps the most technical evidence of any of the cases discussed. It would be difficult for any lay person, judges included, to decide between the conflicting expert testimony in the case, and even an expert might have felt that it was impossible to date the start of the contamination to a specific month and year as the question put to the jury apparently required.¹¹ The Pennzoil case involved a suit by Pennzoil against the Texaco Corporation for tortiously interfering with an "agreement in principle" that Pennzoil had reached to take over the Getty Oil Company and purchase the stock in Getty held by the Getty museum. The jury's verdict on liability was probably wrong and its decisions on both actual and punitive damages appear hugely excessive. Yet judging by the three available reports it is difficult to blame these errors on the jury or on the complexity of the case, even though the jury's apparent failure to understand certain key words, - "indemnities" and "agreement in principle" - fostered jury mistakes. The jury's failure to understand the implications of certain promises of indemnity that Texaco had given the Getty interests played a major role in the jury's decision to award Pennzoil three billion dollars in punitive damages, but this failure appears attributable, at least in part to the trial judge's decision to exclude evidence of other litigation brought by Pennzoil which, Adler tells us, was "the only good way for Texaco to convince the jury that Pennzoil could have sued the Getty interests if it had wanted to - indemnities notwithstanding." The problem caused by the exclusion of the "other litigation" evidence was compounded in the deliberations on punitive damages when the jury asked a question bearing on Texaco's possible responsibility for actions of Getty interests and the defense was content with a reply instructing the jury to reread the instructions. Defense counsel were content with this reply because they believed the instructions contained a sentence there which told the jury that the defendant was responsible only for its own actions. The evening after the jury's inquiry, defense counsel discovered there was no such sentence, but the next day the judge

¹⁰ One juror, the jury's only college-educated member, understood the implications of the answer. This juror kept quiet because he was the defendant's strongest proponent within the jury room.

¹¹ This does not mean that the jury would have been acting irrationally had they realized the consequences of a "not determined" answer and reported a date. The jurors might reasonably have been confident that by a certain time the contamination had begun, and might at least have put this down. The question, however, called for the earliest date on which the contamination could, by a preponderance of the evidence, be shown to have happened.

refused to give the jury a supplementary charge to correct this deficiency. The \$7.53 billion awarded for actual damages was exactly the amount Pennzoil sought. This may well be \$7 billion dollars more than the evidence justified, assuming Pennzoil was correct in its liability claim, but it is hard to fault the jury on this issue or to attribute the excess to the complexity of the damage issue. Rather the jury's award reflects the testimony of three witnesses whom Pennzoil offered on the damage issue one of whom had particularly high credibility, and to Texaco's decision to put on no evidence that contradicted this testimony. Thus when the jury deliberated the only evidence before them was that which tended to establish Pennzoil's full claim, and, as a juror pointed out in deliberations, the jury had been instructed to decide the case on the evidence.

On the liability issue it is similarly difficult to attribute the verdict, assuming it was mistaken, to the case's complexity or to the jury's inability to follow the evidence. Rather jury errors, if they occurred, can be explained by judicial rulings on the admissibility of evidence, the court's charge, which according to both Adler and Petzinger favored Pennzoil in a variety of ways, and to certain strategic errors of the defense team, such as the failure to offer expert evidence about how the crucial term "agreement in principle" was understood in the business world.

Micro/Vest v. ComputerLand was a contract action brought primarily against William Millard, the C.E.O. of ComputerLand and secondarily against the corporation. It was brought to recover on a clause in a loan agreement that allowed the note holder to convert the debt into shares of ComputerLand stock, but the plaintiff also sued under a novel theory of conversion which allowed it to claim that dividends owed on the stock allegedly due the noteholders had been tortiously converted to the defendant's own use. This theory was important because it provided a basis for claiming substantial punitive damages. In the Micro/Vest case, unlike Pennzoil, it appears that the jury's verdict on liability was well-merited; indeed before the trial began defense counsel sent his client a letter warning that "the case was indefensible" and that if he didn't settle, he could be "exposed to ... huge punitive damages."

The award of punitive damages, over \$125,000,000 against the two defendants, seems on the other hand excessive; indeed, it is unclear whether any punitive damages were justified. While part of the reason for the award appears to be that the jury "remembered" an instruction that was never given - that punitive damages had to hurt - this failure of memory does not appear due to massive evidence - the trial on punitive damages followed the return of the general verdict and only lasted a few days - or to evidence that was particularly complex. Indeed, the jury's mistake seems to be due more to a lack of evidence than to a surfeit. The defense attempted to set an implausibly low value on ComputerLand's net worth and presented no evidence on what Millard was worth. More importantly the trial judge excluded evidence of a partial summary judgment that left open the issue the jury had tried; this evidence tended to refute the plaintiff's contention that Millard was using the trial in bad faith to get out of honoring his note. Defense

counsel said of this ruling, "It was a devastating setback. I literally was stunned." The plaintiff like the defendant offered little evidence on the defendant's net worth but was nonetheless allowed to refer to Millard numerous times as a billionaire and to give an estimate of the value of ComputerLand stock. Of course, the trial judge's questionable decision to allow the plaintiff to add a theory of tortious conversion to its contract case made the punitive damage award possible in the first place.

The final case in which the reporter seriously questions the quality of the jury's decision making is the asbestosis case, Charles Newman et al. v. Johns Manville et al., described by Selvin and Picus. This is a case in which three insulators and the wife of an insulator claimed they developed asbestosis due to exposure to the defendant's product. These four claimants were "bellwether" plaintiffs for a group of thirty cases that had been consolidated for trial in a federal district court. The authors point to a number of errors that seem to have infected the verdict, but as with most of the other verdicts that have been described it is hard to link the authors' criticisms to a failure to understand the admittedly complex evidence in the case. Two of the authors' complaints concern the jury's failure to follow judicial instructions, one being a limiting instruction regarding evidence admissible against only one of ten defendants and another being an instruction on permissible bases of damages.¹² These kinds of failures are found in simple cases as well as complex ones, and no data suggests their likelihood of occurrence increases with case complexity. In the particular context of the Manville case, the first error is one that, as a matter of psychology it may have been difficult or impossible for the jurors to avoid, while the second failure may be the kind of justice-oriented nullification of the law for which some might value the civil jury, akin, for example, to jury awards that take account of the fact that parties will have to pay attorneys' fees.

¹² The authors' description of the deliberations is based on one collective interview held several months after the trial had ended. Research on limiting instructions suggests that the admitted role of the forbidden evidence may have loomed larger at the time of the discussion, when the limiting instructions may have been forgotten, than it would have had the interview immediately followed the trial. The reason is not that jurors are unaffected by evidence they are instructed not to consider or to consider only for a limited purpose, but rather that jurors often act during their deliberations as if they will not be improperly influenced. Thus, if we may rely on studies of mock juries, when a juror mentions evidence the jury has been instructed not to consider another juror often points out that the evidence is not to be considered, and it receives no further overt attention. Nevertheless, such evidence may well have the effects the instructions were designed to eliminate. (Hans & Doob, 1976; Casper et al., 1989) What may have happened over time is that the jurors forgot they were not supposed to consider certain evidence and accurately reported the effects that evidence had upon them, even though at the time these effects would have seemed insubstantial to one observing the jury deliberation. This possibility seems more plausible with respect to the documents that were improperly used against defendants other than the one charged with their production than it does in the case of the jury's apparent defiance of the judge's instructions not to make awards for past medical damages. On the damage issue the jurors reported a formula they used, something they seem unlikely to misremember, and the formula awarded money for past medical expenses contrary to the judge's instructions.

The third critique that Selvin and Picus make of the Johns Manville jury is that it appears the jurors diminished the amount awarded one plaintiff because he was a Mexican national. The authors suggest the possibility of discriminatory motives. If these existed, they are not a result of complexity, but by my reading of the facts the case for discrimination is not made. ¹³

Finally, there is one respect in which the jurors misunderstood the scientific facts. They assumed in their deliberations that the asbestosis which they found each of the plaintiffs to be suffering from would progress to the point where each would become as sick as the lead plaintiff. Given the nature of asbestosis, however, even if the jurors were correct in accepting the asbestosis diagnosis of the plaintiffs' doctors they were almost certainly incorrect in awarding damages with the expectation that each plaintiff would inevitably become seriously disabled by the disease. However, it is again hard to fault the jury for their error or to blame it on the complexity of the case. The jurors had been told that asbestosis was a progressive disease, and the defendant never put on a witness to tell the jury of the wide variability with which the disease progressed.

Sources of Difficulty

Considering the group of case studies we see that there is often evidence in complex cases that jurors do not fully understand and that the jury does not always get things right in reaching a verdict. At the same time complexity, particularly as operationalized by protraction or large amounts of evidence is not necessarily confusing, and even when the evidence is quite difficult to follow jurors may understand much of it and reach verdicts that in retrospect appear both justified and rational. Moreover, when jury verdicts seem mistaken, it is difficult to attribute the mistakes largely to the complexity of the evidence the jurors encountered and to their difficulty in understanding it. Rather, as I read the case studies, erroneous verdicts seem to have two general sources: one is the kinds of factors that can lead jurors astray in ordinary cases and the other is the mistakes of lawyers or judges.

The most serious problem that jurors encounter in their efforts to get things right appears to be an inability to correctly apply instructions. Yet this is a long standing problem, which applies whether cases are complex or simple. (Charrow & Charrow, 1979; Elwork et al., 1977, 1981; Hastie et al., 1983; Ellsworth, 1989) Moreover, we know how to increase comprehension

¹³ Not only did the jurors have reason to believe that the plaintiff's future earnings might be diminished by the likelihood he would return to Mexico, but the adjustment made was not great and avoided a situation in which this plaintiff would have been awarded more than a plaintiff, albeit with a shorter life expectancy, who was far sicker than he was. Moreover, when punitive damages were apportioned, this plaintiff received \$1 million, the same as each of the other plaintiff.

substantially (Charrow and Charrow, 1979; Elwork et al., 1981; Sales et al., 1977) but little effort has been made in this direction. (Tanford, 1991) The difficulty jurors have in understanding instructions poses a special problem in complex litigation that has not heretofore been recognized. A standard way of attempting to aid jurors in complex cases is to break down the jury's decision making task through special verdict forms, special interrogatories and other such devices, and there is some evidence that jurors find them helpful (Heuer & Penrod, no date). Yet these devices are themselves instructions and carry with them the danger of misunderstanding. The best example of how well-meaning efforts to simplify the jurors task can lead to juror error occurred when John DeLorean, after his acquittal on drug charges, was tried in Detroit for federal fraud, racketeering and tax evasion (Howell, 1988). He was acquitted even though three of the twelve jurors said after the trial that they left the deliberations believing that DeLorean was guilty. The reason for DeLorean's acquittal was a special verdict form which read in part:

You must remember at all times that the accused cannot be found guilty ... unless you unanimously find beyond a reasonable doubt that he committed at least two acts of racketeering. You must not only unanimously agree as to which of the eleven specific acts of racketeering were committed, if any, but also which specific subpart of each alleged act was committed. Without such unanimous agreement, you must find the defendant not guilty ... (emphasis added).

The jury, which disagreed about whether DeLorean had committed the requisite two acts of racketeering, returned a unanimous verdict of not guilty on the racketeering charge because the special verdict form seemed to mandate an acquittal if they could not reach unanimous agreement.

In somewhat less dramatic fashion several of the less defensible verdicts returned in the trials listed in Table One seem to have been similarly affected by the jury's difficulty in dealing with special questions or special verdict forms. Thus in the W.R.Grace case the jury never knew the consequences of concluding "not determined" on the special verdict form, and they misinterpreted the meaning of another of the special verdict questions, and in Pennzoil, the wording of eight special questions that the judge posed for the jury was, according to Adler, tilted against the defendant. It should also be noted that in several of the cases in which instructions or special questions caused problems, the jurors were aware of a problem and sought clarification by questioning the judge, but the judge usually provided no specific help, instead calling the jury's attention to all or a portion of the instructions that the jury had previously been given.

A second difficulty which the jurors had in some cases was difficulty in understanding esoteric facts when expert testimony seemed on its face equally credible and conflicting. But this too is a problem found in cases that are not generally thought of as complex since it appears associated with a conflict of experts and not with other features that make a case complex. For example, when Goodman, Greene and Loftus (1985) questioned trial court judges about the difficulties that jurors had in complex cases, comprehension of medical testimony and the

evaluation of damages in complex personal injury cases emerged as recurrent problems, particularly in situations when jurors were faced with "reconciling totally conflicting expert testimony from highly qualified medical witnesses" (Goodman et al., 1985, at 66). But this kind of conflict can occur in what are otherwise run of the mill tort cases, the routine fodder of the civil jury (Gross, 1992). Ironically, conflicting expert testimony, which juries are not well-equipped to deal with, will often not make a jury's verdict appear irrational since a decision for either party when experts cannot agree will often appear reasonable. Thus in W.R. Grace, regardless of how the jury decided the contamination issue an observer cannot conclude that the jury was mistaken on the evidence, and the situation is similar with respect to the jury's finding in Johns Manville that each of the plaintiffs was suffering from asbestosis. The situation is perhaps best captured by the words of a juror discussing conflicting medical testimony in another asbestos case: "the expert testimony was not a real factor in our decision, except in the very backhanded sense that it lent medical credence to any result" (Goodman et al., 1985 at 68). Problems attributable to misunderstanding do arise and the jury can be wrong when it credits less reliable expert testimony over more reliable testimony. At its extreme, this is the so-called "junk science" problem (Huber, 1991). In none of the cases noted in Table One did the jury seem to prefer less credible scientific evidence over more credible evidence. In the Pennzoil case, however, the jury on the liability issue accepted what appears to be an unrealistic view of how the business world viewed an "agreement in principle" to consummate a multibillion dollar merger.

The jury's action in Pennzoil, however, brings us to the second factor by my reading of the case studies is particularly salient when juries go astray in complex litigation: the mistakes of lawyers and judges. In Texaco, the judge, "with some exceptions ... didn't permit the lawyer-witnesses to testify on their understanding of the term "agreement in principle" (Adler, 1986; 30) and Texaco did not produce any expert witness to make the point that an agreement in principle is understood not to be binding. Thus, the jury's mistaken perspective on this issue is plausibly attributable to the rational weighing of the evidence they heard (Shannon, 1988) rather than to a failure to comprehend or appreciate evidence set before them. Other judicial mistakes, both in formulating instructions and ruling on evidentiary matters, have been noted in discussing the Table One case studies and shall not be repeated here.

Lawyer mistakes, including strategic and legal errors, have also been noted in our discussion of particular cases. There is, however, a more general observation that I wish to make. Very often, it appears that lawyer mistakes stem from underestimating the capacity of the jury. Thus, in three cases (Micro/Vest, Pennzoil, & Johns Manville) lawyers did not produce important evidence on damages, probably because they feared that to do so would concede a liability issue

they were contesting.¹⁴ In other cases we learn from juror comments that attempts to appeal to them through ploys that appeal to emotions are sometimes perceived for what they are, and when this occurs they may backfire. Thus in the ABA trade secrets case the jurors were notably unimpressed by the cross-defendant's suggestion that a verdict for the cross-plaintiffs might cost 138 New Yorkers their jobs; in Johns Manville the jurors were scornful of the lead plaintiff's wife's reference to the fact that the next day was her 45th wedding anniversary, and the defendant's attempt in Micro/Vest to show the humble backgrounds of their client may well have backfired as well. As one juror in Micro/Vest commented: "The whole case was on the contract, but they kept going back to what he (Millard) did as a child: selling newspapers and such. When you hear seven times what school someone went to, it gets a little old. They got away from what they were really there for" (Weinstein, 1983, 127).

There appear to be more arguably mistaken verdicts in this set of complex cases than one would expect to find in an equivalent number of simpler cases. Given the non-random nature of the sample and the number of celebrated cases, it is impossible to say whether judges and lawyers are more likely to err in complex cases than in simpler ones, but it is certainly reasonable to think so. Also it may be that such mistakes are more consequential in complex cases than simple ones, for when cases are complex juries may be more susceptible to being misled by error. Had the Texaco case been simpler, for example, the jury might not have needed opposing evidence to appreciate the unreasonableness of Pennzoil's demand. Thus complexity may pose special difficulties for juries in part, or in large measure, because of the special difficulties it poses for judges and counsel. As most judges and lawyers realize, complexity is a sign that special care must be taken.

¹⁴ The fear is not irrational. Haney (1984) has shown that jurors who have observed the death qualification process have attitudes toward the case more consistent with a willingness to convict than the attitudes of those who have not witnessed the death qualification process. It seems that at least part of the explanation for this is that the jurors assume that unless the judge and lawyers thought the defendant was guilty of a capital offense, there would be no death qualification. A defense counsel might similarly fear that a jury would regard the presence of evidence contesting damages as an acknowledgement that the plaintiff's position on liability deserved to prevail. Nevertheless such an attitude on the part of jurors would be only one factor that would affect their weighing of the evidence on liability, and it is unlikely to matter as much as evidence more directly related to liability. On the other hand the potential costs of not presenting a witness to tell the jury that the asbestosis of three plaintiffs, if that is what they have, is unlikely to become as debilitating as it is in the case of an incapacitated plaintiff before them (Johns Manville) or of not showing the jury that if the plaintiff was damaged at all the damages are closer to \$400 million than to \$7.53 billion (Pennzoil) are so substantial that an attorney who opts for the strategic withholding of damage evidence is acting foolishly.

Additional Observations

While this concludes our focus on Table One, before leaving these cases a few points that were not central to our discussion thus far should be made. First, the jurors appear to work hard and to take their jobs seriously, sometimes to the point of reading word by word important documents in the case. This observation is confirmed by Bermant and his coauthors who in examining another set of protracted trials note that, "Judges and lawyers are uniformly complimentary of the diligence of the juries in these cases..." (Bermant et al., 1981, 52) Second, it seems that lawyers often seek less well-educated juries (cf. Ell, 1978), but when they do not do so, as in the DeLorean trial it is possible to get a mix of jurors that include a number of jurors with a college education. This is consistent with Cecil, Lind and Bermant's (1987) finding that 22% of the jurors they interviewed who had served in trials of twenty days or more were college graduates, a proportion that is only 10% less than the proportion of college graduates among interviewed jurors who had served in trials of six days or less. Third, juries often contain individuals who understand material that most of their fellow jurors do not, and, as the ABA studies indicate, juries in complex cases tend to follow the lead of their most competent members. Fourth, in several cases where the jury verdict was problematic and the deliberations as reconstructed seemed flawed, there is a mention of an early straw vote as a potential causal factor. Conversely, in several cases that appear to have been well-handled by the jury the foreperson's care in avoiding early polarization is noted. Fifth, in some of the trials the judge's attempts to aid the jury through such means as allowing note taking, allowing the jury to take written copies of instructions to the jury room, furnishing trial handbooks and the like seems to have helped.

Finally, length alone does seem to lead to jury confusion. Juries seem to have few problems in trials which are long but which apart from length and the masses of evidence associated with long trials have no special sources of complexity. The ABA sexual harassment trial and the DeLorean trial are illustrative examples. Conversely if conflicting technical evidence is presented, a long trial is not necessary for jury confusion. These observations are consistent with the findings of Cecil and his coauthors who interviewed 99 jurors who had served in federal trials lasting twenty days or more and 81 jurors who had served in federal trials lasting six days or less (Cecil et al., 1987). They report that while 46% of the jurors in long trials found that evidence was difficult so did 29% of the jurors in short trials, a difference smaller than they expected and one that could result if longer trials are more likely than shorter ones to involve issues elucidated by scientific or technical evidence. Their conclusion like my conclusion from reviewing the case studies is that "concerns about the unique difficulty of the evidence in protracted civil trials may have been overstated" (Cecil et al., 1987, 38).

In Sum

To sum up, one must be wary of drawing firm conclusions from a non-random sample of cases studies. This is clearly true here, particularly since half the studies I cite were done by journalists not specially concerned with showing how juries deal with complexity as a general matter. However, some tentative conclusions appear reasonable. First, it is clear that juries confronted with technical information do have problems understanding, and if there is conflicting expert testimony jurors may have the feeling that they do not know whom to believe. Second, juries often seem able to decide their way around such confusion and arrive at appropriate verdicts. Third, where juries make mistakes in deciding complex cases, the mistakes seem more often due to mistakes in understanding judicial instructions or to the errors of the judge or lawyers than they are to the difficulty of understanding the implications of complex or massive amounts of evidence. It is possible that complexity exacerbates the jury's difficulties with instructions or the degree to which juries are likely to be misled by the mistakes of others, but one cannot reach this conclusion on the basis of the case descriptions we have reviewed. Overall, one can say that the sample of cases I have examined provide no empirical support for the claim that there is a denial of the due process right to a rational decision on the evidence when juries are seated in complex civil cases. The failure to find a clear link between complexity and a denial of due process is consistent with aggregated data collected by Heuer and Penrod (no date). They report that in 160 federal cases collected so as to oversample complex ones, judges were no more likely to disagree with jury verdicts in complex cases than they were in cases that were shorter or simpler on the law or facts.

Laboratory Research

Turning from case studies to the psychologist's laboratory, we find either more relevant studies than we can deal with or very little. There are more studies than we can deal with in the sense that most studies that bear on the quality of jury fact finding and the influence of particular variables should apply to juries in complex cases in the same way that they apply to juries in simpler cases. There is very little that is relevant in the sense that there are few studies that use as stimuli the factual settings of complex cases or that seek to pose for mock jurors the kinds of special problems that are associated with complex cases. To keep things manageable it is only the latter group of studies that I shall review here.

Before I do, a word about external validity is in order. For obvious reasons, there are no studies that expose mock jurors to the trial lengths or masses of evidence that are common in complex litigation. This, however, may not be as great a threat to our ability to generalize

controlled experiments as one might assume since it appears from the case studies that trial length and massive arrays of evidence are not the most important sources of the special difficulties that jurors may encounter in complex litigation. However, one cannot assume that trial length and the amount of evidence in a case do not matter. Even if the difference between a taped trial of two to four hours and a trial of a few days does not shake our confidence in our ability to generalize from experimental findings to juror performance in ordinary cases - and the evidence indicates that it should not - the difference between a taped trial of the same length and an actual trial of six weeks to six months may mean that what we learn from a simulation is an unreliable guide to the way an actual jury would act after a lengthy trial. We do not know what weight to give this concern. With stimuli less rich than the taped trial, external validity concerns loom even larger. At the same time, before criticizing a study for not mimicking real life situations, one must consider the point the study is designed to reveal and the justification for generalizing from it. Realism is not always necessary to generalization.

Statistics

The first set of psychological studies of potential relevance to the special problems that confront jurors in complex cases concerns the way that jurors deal with statistics. Statistical evidence is often found in complex litigation, and people without statistical training frequently find statistics evidence hard to understand. Several researchers have looked at what mock jurors do when confronted with statistical evidence (Thompson, 1989). Thompson and Schumann identify (1987) two fallacies that jurors can fall into when confronted with incidence rate statistics such as blood type evidence that links a defendant to a crime. One, which they call the "prosecutor's fallacy", is to think that the probability of a defendant's guilt can be determined by subtracting the incidence rate of a matching characteristic from one.¹⁵ The other, which they call the "defense attorney's fallacy" is to treat incidence evidence as irrelevant almost regardless of the rarity of the matching characteristic because at most it shows the defendant falls into a larger group, one of whom is guilty.¹⁶

¹⁵ Thus, if the defendant has the same blood type as the perpetrator of the charged crime and that blood type is found in 10% of the population a juror caught in the prosecutor's fallacy would conclude that since there is a 10% probability that the defendant would have the blood type if he were innocent there must be a 90% chance that the defendant is guilty.

¹⁶ Thus if the defendant and perpetrator share a blood type shared by 1% of the population, one who falls prey to the defense attorney's fallacy would reason that in a city of 1,000,000 people there are probably 10,000 people who share the blood type in question so the evidence has almost no incriminatory value.

In an experiment with student subjects Thompson and Schumann found that when presented with evidence relating to the probability of a hair match about 25% of their subjects fell into one error or the other, and they were about equally divided between the two types of errors. On a jury, particularly a twelve person jury, such error rates would not be of great concern because it is likely that there would be people present who understood how the evidence should be weighted and that these jurors could explain the weaknesses of the fallacious approaches. Indeed, even if only people making the two types of errors were present on the jury, discussion might reveal why neither position was correct. In a second experiment, however, subjects heard advocates arguing for interpretations of blood type evidence consistent with either the prosecutor's or the defense attorney's fallacy. In these circumstances, only 22% of the subjects rejected both arguments, and one would expect actual jurors, most of whom do not have a college education, to do worse in dealing with such statistical arguments than college students serving as experimental subjects.

The relationship between falling prey to a fallacy and reaching an incorrect decision is, however, not clear. This is the somewhat ironic lesson of another study by Schumann and Thompson (1989, described in Thompson, 1989). In this study mock jurors watched a relatively realistic trial simulation which consisted of a four hour videotape. The closing arguments they observed either ignored the blood type evidence, included a fallacious prosecution argument, included a fallacious defense argument or included competing fallacious arguments. Only the argument for the prosecutor's fallacy when presented alone had an effect; it increased the conviction rate from about 50 to 70 per cent and the average estimated probability of guilt to 85%. In the other conditions both the conviction rates and the average probability of guilt estimates fell. The irony is that given the probability of guilt as estimated by control subjects who received no blood type evidence, the blood type evidence should have increased the average probability of guilt to above .90. Only those subjects who fell victim to the prosecutor's fallacy were close!

The tendency of Schumann and Thompson's subjects to underestimate the probative weight of statistical evidence is not surprising. There are good theoretical reasons for expecting statistical evidence to be less influential with fact finders than intrinsically less probative non-statistical evidence (Saks and Kidd, 1980), and other researchers have also found evidence about the statistical incidence of matching blood types to be relatively uninfluential, even when expert statistical testimony is presented explaining its implications (Faigman and Baglioni, 1988).

It may well be that some complex cases involve incidence statistics of the type that Thompson and Schumann and others have investigated or even that cases that contain such statistics should be considered complex regardless of their other characteristics; however, the statistics that are involved in most cases conventionally considered complex are somewhat different in nature. They usually consist, as in toxic tort cases, of epidemiological statistics which

turn on comparisons between exposed and unexposed populations, or, as in many anti-trust and most sex-discrimination law suits, they are the statistics associated with regression analyses. I have been able to find only two studies that deal with such statistics.

Molly Treadway (1990) has explored the adequacy of juror intuitions when confronted with the kinds of four-fold relative risk tables that epidemiologists use to determine whether a particular condition causes a particular disease. She found that the intuitions of 25 subjects who were members of the Baltimore city jury pool were not good. Her subjects were asked to examine two tables, one of which showed a relative risk from exposure of 2.8 and the other of which a relative risk of 1.01, and to determine from each table (1) whether exposure to a substance increased a person's risk of developing an abnormality and (2), for any particular person exposed to the substance who had the abnormality, whether it was more likely than not that the substance rather than something else had caused the abnormality. Only 41% of the determinations accorded with the answers reached through epidemiological analysis, and only 2 persons, or 8% of the respondents, made all four determinations in accordance with epidemiological reasoning. These results are not encouraging, but they do not adequately address the issue that concerns us. The reason for their inadequacy is that in litigation jurors are not confronted with relative risk tables and asked for their best interpretation. Rather the tables are presented by experts who explain what they imply. One would expect instructed jurors to do far better in understanding the implications of the data presented to them than jurors not so instructed.

Shari Diamond and Jay Casper (In Press), in a particularly good simulation study, exposed 1022 Cook County jurors to an hour and fifteen minute videotape of the damage portion of a suit brought under the Sherman Act. (The jurors were informed that in the first phase of the trial the defendants had been found to have engaged in illegal price-fixing.) As one aspect of this research, they explored the reactions of jurors to competing yardstick and statistical models, two common types of models used to establish damages in such cases.¹⁷ In the various conditions of the

¹⁷ Yardstick models are non-statistical. They employ comparative data from similar firms which did business in competitive markets at the time of the defendant's anticompetitive activity and are based on the premise that the difference in prices paid or profits made by the benchmark firms and the plaintiff is a good measure of the excess costs imposed on or profits lost by the plaintiff company. While valid comparisons are difficult to obtain, the approach is the kind of concrete, common sense approach that one would expect a jury to intuitively understand and easily appreciate. Regression models involve time series analyses of pricing patterns before, during and sometimes after the price-fixing agreement. The model used in the experiment involved a statistical projection, based on pre-price-fixing performance, of what the price the plaintiff paid would have been had there not been a price-fixing agreement. Jurors are not accustomed to dealing with regression models and one would expect that they would find statistical modeling difficult to understand.

The other aspect of this study, which I shall not discuss, concerned the implications of informing jurors that awards in suits brought under the Sherman Act are trebled.

experiment, the models were counterbalanced by party and the amount of damages they implied. The jurors returned individual verdicts following their exposure to the case, and then deliberated in 70 six-person juries until verdicts were returned.

The authors did not find that their statistical expert was ignored or that the effects of his testimony were dwarfed by the effects of the more concrete yardstick testimony. Overall jurors gave somewhat higher awards (\$216,515 versus \$200,813) when the plaintiff's expert presented a statistical model than when he used a yardstick comparison, but the difference is not statistically significant.¹⁸ The overall influence of the statistical evidence relative to the yardstick evidence appeared to be the result of two competing forces: the statistical expert was seen as more expert than the expert presenting the yardstick model and this made him more convincing, but the statistical expert's testimony was seen as less clear than the testimony presented by the yardstick expert and this made him less convincing.¹⁹ For those jurors who found the statistical testimony to be similar to the yardstick testimony in clarity, there was a statistically significant difference in awards. When the statistical expert testified for the plaintiff, the mean award was \$220,517; it was \$168,223 when he testified for the defendant.

The deliberation process had a marked effect on damage awards, as the juries' verdicts averaged about 27% higher than the average of their members' predeliberation judgments. This was not due to the effect of outliers, for the correlation across juries of outlier preferences with final verdicts was relatively low while the correlation with each group's mean and median predeliberation preferences was strong.²⁰ Among jurors the foreperson's preferences were particularly influential.²¹ This is important when we recall from the case studies that juries seem to be most influenced by their most capable members and we note the tendency for juries to select particularly capable members as forepersons. For example, in the Diamond and Casper study the 13% of the jurors in the pool who had had both some postgraduate education and a statistics

¹⁸ Whether he offered a statistical model or a yardstick model the plaintiff's expert presented data that suggested the plaintiff's damages had amounted to \$490,000 while conceding that they might be as low as \$420,000. The defendant's expert, regardless of the model used, presented data which suggested that the most likely figure for damages was \$35,000 but conceded that the model could not rule out damages of up to \$105,000.

¹⁹ There was no statistically significant difference in the ratings given the experts on persuasiveness or trustworthiness.

²⁰ The correlation between the juries' mean predeliberation awards and their final verdicts was .54; for median predeliberation awards it was .62; for a jury's highest predeliberation award it was .24, and for the lowest predeliberation award it was .20.

²¹ The correlation between foreperson's pre-deliberation awards and final jury awards was .44 across jury verdicts while the correlation of final verdicts with the awards of non-forepersons was .22.

course accounted for 36% of those persons chosen foreperson. Moreover, the predeliberation preferences of forepersons with both these characteristics had considerably more influence on final verdicts than the preferences of forepersons who had neither postgraduate education nor a course in statistics.²² These findings should caution researchers about generalizing from the average individual response to statistical evidence to the response of juries, and they emphasize the way in which the composition of real juries in actual cases may affect how complex evidence influences deliberations.²³

Overall Diamond and Casper provide the most resounding support for the capacities of juries dealing with complex issues that can be found in the scientific literature. They write:

The responses to expert testimony we observe ... suggest that jurors play an active role in assimilating and assessing testimony. Jurors did not simply adopt the view of a witness they rated high on expertise, using apparent expertise as a peripheral cue to conclude that the expert must be correct.²⁴ Rather, consistent with deeper processing of information which produces attitude change when the listener is highly involved, the jurors appeared to consider and evaluate the content of what the expert was presenting, and were less likely to be persuaded if they did not feel they understood it.

This approach not only suggests an activity and perhaps even subtlety in dealing with expert testimony, but it also indicates the care jurors use in evaluating evidence to reach their decisions. Rather than being bowled over by what they did

²² The correlation between foreperson's preferences and final jury verdicts is .57 for the former group and .36 for the latter.

²³ The contrary implication that one may draw from the Schumann and Thompson (1989) study may be due to the fact that their simulated jurors were a relatively homogenous group or that they had few subjects who had studied statistics. Thompson's (1989) description of that study, on which I have relied, does not describe the demographics of their simulated jurors.

²⁴ The possibility that jurors when faced with a conflict of experts simply endorse the views of one of them is a suggestion made by Raitz et al. (1990) who looked at the implications of expert economics testimony in a mock age discrimination case. However as a general matter the Raitz et al findings simply do not hold up in the face of the methodologically superior work of Diamond and Casper. Raitz and his coauthors presented subjects with a 150 word summary of a trial and a 200 word "transcript" of testimony relating to damages in their "no expert" condition. The "plaintiff's expert only" condition added 200 words and included the examination and cross-examination of the plaintiff's expert, while the two expert condition added an additional 400 words and the examination and cross-examination of a defense economics expert.

One cannot, however, on the basis of the Diamond and Casper work rule out the possibility that jurors use an "endorsement strategy" when conflicting experts use the same methodology, although the W.H. Grace case shows jurors reacting in the opposite way by acknowledging they are unable to decide. Nor is there necessarily anything wrong with an endorsement approach if the endorsement is based on a reasonable assessment of the credibility of the opposing experts as may have occurred in Johns Manville. Also, if only one side presents expert evidence, endorsement of the expert's views may be a natural response as seems to have occurred in Pennzoil.

not understand, the persuasive force of statistical testimony appears to depend in some substantial measure on the ability of the experts to express clearly the basis for the conclusions it is being used to support. Our results also suggest that concerns about jurors' susceptibility to statistical evidence may be overstated.

Of course, external validity concerns may limit the real world implications Diamond and Casper research. It may be difficult to make statistical evidence clear when it is embedded in weeks of other evidence, or, more importantly given our earlier tentative conclusion that length alone is not a substantial problem, when the statistical testimony itself takes hours to deliver, when it is followed by a cross-examination that may take days, when there is competing statistical testimony of a similar type, when one side is using its experts to obfuscate and when peremptory challenges have been used to strike jurors who know too much about statistics. But even in a worst case scenario where these concerns correctly identify the reality of much modern complex litigation, it may still be reasonable to draw from Diamond and Casper the conclusion that jury weaknesses in dealing with the kinds of statistical evidence most commonly associated with complex litigation are not inherent in the institution of the civil jury but are the result of the way in which complex jury trials are managed.

Joinder

A second body of laboratory studies that may have special relevance to the question of how well we can expect juries to perform in complex cases are those that focus on joinder. These studies matter because one factor that may make for complexity is the joining of parties or counts, as in Johns Manville which involved four bellwether plaintiffs - who if they were not part of a "case congregation" would have enjoyed separate trials - and ten defendants, some of whom might not have been involved in at least some of the separate suits that the plaintiffs might have brought as individuals.

Joinder can involve parties, causes of action (counts or charges) or both. Most of the research on joinder in the psychological literature involves the joinder of charges in criminal cases that would not be considered complex. (see e.g. Greene and Loftus, 1985; Tanford et al., 1985) Bordens and Horowitz (1985) provide a review of this research. Generally the research shows that a criminal defendant is disadvantaged when charges are joinder, but the mechanism by which this occurs is unclear. Three possible mechanisms are: confusion of the evidence, so that evidence admitted on one charge is remembered as bearing on another charge; accumulation of evidence across charges, so that evidence admitted on one charge reinforces evidence relevant to another charge, and inferences about the defendant's character, so that the jury characterizes the defendant with a criminal schema and views the evidence on each charge in that light. The

studies designed to elucidate which if any of these mechanisms operate are often limited in their focus and yield inconsistent results.

These mechanisms might all operate in civil cases in which different causes of action are combined, but if they do it is not clear that they should systematically disadvantage one party or the other. In the studies dealing with charge joinder there is always incriminatory evidence that implicates the defendant. In the civil cases, on the other hand, a plaintiff may introduce evidence on several counts which suggests the defendant was responsible for her injuries, but the defendant may offer evidence on the same counts which suggests that the harm the plaintiff suffered was her own fault. Also unlike those cases of criminal joinder that have been the subject of psychological research, the crucial evidence offered on one civil count may be admissible on another, as when a jury is charged with deciding whether a defendant is responsible under either a negligence or strict liability theory.

To the extent that evidence in a civil case is admissible on only one count, as when evidence of a plaintiff's contributory negligence is admissible to rebut negligence liability but not strict liability, a jury's failure to apply instructions to limit the influence of the evidence to the one count would not be surprising (Hans and Doob, 1976; Kassin and Wrightsman, 1981; Wissler and Saks, 1985; Casper et al., 1989), but the difficulties posed by the added counts are not specific to complex litigation. If, however, the presence of alternate causes of action means that considerably more evidence is presented than when only a single cause of action is alleged and that the trial lasts much longer as a consequence, one might point to alternate causes of action as creating complexity apart from the danger of legal or evidential confusion. But alternate causes of action are not usually regarded as substantially lengthening trials, and no investigation of the effects of alternate causes of action has tried to simulate what would otherwise be considered a complex case. Instead, it is party joinder that is usually seen as making potentially simple cases complex. Trying the cases of different parties together can involve numerous lawyers, often dramatically increases the amount of relevant evidence, and requires the jury to link different items of evidence to the cases of one or more of the parties before it.

Horowitz and Bordens (1988) have attempted to study the effects of party joinder in a simulated complex case. They used as a stimulus a four hour audio tape of a toxic tort trial in which the evidence was intentionally complicated and at times boring. Subjects were 396 jury-eligible men and women who deliberated in 66 six-person juries. The case involved a large chemical company that had allegedly leaked effluent that entered the food chain and harmed the plaintiffs. Litigating the plaintiffs' claims raised both negligence and state of the art issues. The basic comparison was between verdicts when four plaintiffs were tried together and verdicts in the four cases when the trials were disaggregated. Within these conditions, an additional variation contrasted a situation in which plaintiff A was an outlier with respect to the seriousness of her

injury (suffering from a rare liver cancer) with a situation where she was not (suffering from chloracne rather than cancer). The final variable was whether the jurors were told there were 26 or "many hundreds" of other victims or whether the existence of other victims was not mentioned.

Overall the data do not suggest that the aggregation of plaintiffs led to confusion. Only the plaintiff with the weakest case, a man who may have continued to eat fish after knowing the food chain was contaminated, was helped by having his case aggregated with the others, and this effect may reflect rational information processing. If the question of whether the plaintiff was responsible for his illness was a close one, the fact that people who clearly weren't responsible for their condition suffered from the contamination is some reason to believe that the plaintiff's suffering was not his fault. Also the data show that compensatory damages were not affected, as they should not be, by the presence of an outlier or the number of other victims; that the greater the responsibility attributed to the defendant the higher the awards, and that the earlier the date that the jurors thought the defendant should have known about the toxicity of the chemical it was discharging the higher the awards. Where liability was found, punitive damages were greater if an outlier was part of the aggregate and if there were hundreds of other victims. These latter results also appear reasonable since punitive damages should reflect the amount and extent of the harm a wrongdoer does.

Two potentially disquieting notes in the study are first a finding that the presence of an outlier is associated with a higher proportion of no liability findings and second that there is substantial variance across juries in their verdicts. The effect of the outlier in stimulating no liability findings is associated in the taped deliberations with remarks attributing fault to the outlier. This appears to be a classic "just world" response (Lerner, 1980).²⁵ The fact that the three juries that blamed the outlier in this way also denied recovery to her co-plaintiffs probably reflects the fact that evidence linking the defendant to the co-plaintiff's injuries was arguably no stronger, and in one case was clearly weaker, than the evidence linking the defendant to the outlier's injuries. As for the variance in jury verdicts and awards, that may be simply a fact of life that is not peculiar to jury trials (Diamond, 1983). As the authors point out similar inconsistencies have been found in judicial behavior when matters such as sentencing have been examined, and in a recent study by Rice and Vidmar (1992) suggests that in medical malpractice cases jury verdicts are no less consistent than arbitrators' awards. Moreover, much of the inconsistency in liability verdicts is attributable to those cases where the irrationality of just world thinking appears to be operating. Inconsistent damage awards may in large measure reflect the

²⁵ Researchers who have investigated the "just world" paradigm report that the greater the harm suffered by a victim the greater the tendency to blame the victim. This is attributed to a psychological need to feel in control which is undermined if people are seen to be suffering excessively through no fault of their own.

fact that the plaintiffs did not request specific amounts of money, so the juries did not have the kinds of anchors and supporting evidence that actual juries often have at trials.²⁶ Whatever else is happening, the jurors seem not to be misled by the additional complexity of dealing with four plaintiffs rather than one.²⁷

In Sum

Looking at the joinder studies together with the studies on how juries use statistical evidence, we can see a number of places where they highlight potential problems posed by the

²⁶ The authors make this point in a later article reporting another experiment that draws on the same stimulus tape (See the note that follows); I assume it applies to this study as well.

²⁷ In a later article using the same stimulus tape the authors investigated the effect of bifurcating and trifurcating trials on damage awards. (Horowitz and Bordens, 1990) While the article is important for those interested in how juries deal with complex cases because it studies a variation that exists in such cases and suggests that the decision to bifurcate or trifurcate a verdict can have substantial consequences, it adds little to what the first study suggest about the jury's capacity to handle complex litigation. Assuming that the jury's task is easier when it hears evidence on one issue and then decides that issue than when it hears evidence on all issues together and decides the issues seriatim, the study does not suggest that juries do worse when their task is more complex. First, there is no a priori reason to suppose that one pattern of verdicts represents a more rational outcome than another pattern. To the extent that verdict consistency across juries is such a standard, there is more verdict consistency in the unitary trials. To the extent a normative judgment is possible, the verdicts of the unitary juries appear more normative, for they are more likely to find for the plaintiffs on the liability issue, and an expert panel of two law professors and a lawyer who reviewed the evidence thought the liability evidence favored the plaintiff. Second, when a trial only lasts four hours, even if some evidence is complex and boring, there may be little in the way of simplifying to be accomplished by presenting evidence only on one issue. Indeed, the longer trial may present a simpler decision problem if evidence allocated to one issue has some relevance on another, for additional evidence may make a case less close and a decision easier rather than harder. An overlap in the implications of evidence may be one reason why Horowitz and Bordens' unitary juries were more consistent with each other and more pro plaintiff in deciding the issue of causality. The causality evidence was the only evidence subset that the expert panel saw as ambiguous rather than pro plaintiff. Perhaps when the implications of other evidence for causality were considered the task of deciding the causality issue became simpler and that this led to greater consistency. Alternatively, one might agree that sympathy or other factors that should not affect decisions on causality motivated pro-plaintiff decisions on this issue. But sympathy at least does not seem to motivate the unitary jurors in this study, for sympathy should be a response to the plaintiff's damage claim and separated juries which heard liability evidence first, rendered a verdict, and then heard causal but not damage evidence had a verdict pattern much like that rendered by the unitary jury deciding the liability and causal issues in the same order. It is possible that in both cases the causal decision reflects a desire to punish the defendant, but it is at least as plausible to suppose that the causal link between the presence of a chemical and the illness of a plaintiff becomes more likely when one knows that a defendant has been discharging the chemical where the plaintiff can encounter it. One other observation of the authors that bears on the rationality of the juries they studied is that once a jury decided for a side, intrajury verdict consistency was "remarkable."

irrationality of some human decision making. But if we look at these studies for indicators of whether juries are likely to be less competent in complex cases than in other cases, we do not see any. Indeed, in the more realistic studies, those by Diamond and Casper on statistical evidence and Horowitz and Bordens on joinder, we see juries coping rather well with those features that make the decision making tasks posed by the stimulus cases more complex than the decision making tasks that juries encounter in more ordinary litigation.

JUDGES AND COMPLEX CASES

Even if the jury were substantially less able to deal with complexity than it apparently is, due process, I have argued should not require the abrogation of the Seventh Amendment right to trial by jury unless judges can decide complex cases more rationally than juries can. If there is little systematic empirical evidence that relates to the competence of the jury in complex litigation, there is virtually none in the case of the judge. Judges have not cooperated in studies of themselves as they proceeded to decide complex cases, they seldom participate as subjects in simulation studies and have not done so in studies simulating complex litigation, and they seldom grant interviews in which they explain how they understood the evidence in complex cases. They do write opinions, but their opinions may provide little insight into the true bases of their decisions. Even where an opinion suggests a mastery of complex materials, the reader cannot know whether the judge has understood the subject, whether he or she after reaching a decision relied on a clerk to convey an impression of understanding or whether the judge and/or the clerk simply copied large passages from the briefs of the side which they favored. Thus, the evidence on how judges handle complexity is fragmentary, and no overall judgment can be reached. What we can say is that there is no guarantee that the judge can do a better job than the jury; that there are a number of cases in which we would not want to force the parties to a bench trial, and that when the judge is unbiased and capable parties may be particularly likely to opt for a bench trial, but if they don't there is a better than average chance that the jury will be up to its task.

The Link Between Judicial and Jury Competence

Perhaps the best place to begin is with the case studies we have examined. Recall that in almost every instance where a jury verdict was seen to be of low or moderate defensibility those who reported on the trials noted mistakes made by the lawyers and/or the judge. Conversely in those trials where the jury seemed to perform at its best, like the DeLorean trial, the judge seemed to have performed exceptionally well also. This has the ironic implication that were there

an exception to the Seventh Amendment for complexity, it is likely that the judge would perform best in precisely those trials where the jury is likely to do a good job as well, for competent judges can enhance the competence of juries they preside over. Thus to the extent that the case for a judge trial turns on the assumption of a competent judge, we are assuming the kind of judge most likely to preside over a competent jury.

The apparent link between judicial and jury competence means that if we look at cases where juries are confused or err, there is an above average chance that we will find a judge who is confused or mistaken as well. It is not, however, necessarily the case that a judge who gives a jury poor guidance will perform equally poorly as a fact finder. A judge who confuses the jury with an unclear instruction might correctly interpret the law as a trier of fact, or a judge whose questionable evidentiary rulings have prejudiced one side's case before the jury, might nonetheless find for that side, perhaps influenced by the very evidence that he wrongfully excluded and the jury will not hear. But by the same token judicial mistakes may signal more general failings, and a jury, even one hampered by judicial mistakes, may be better at fact finding than a judge who cannot adequately organize a trial or state a rule of law. Indeed, in some cases the jury's strength of numbers and experience may make it more able in finding facts than even an excellent judge (Lempert, 1975).

Anecdotal Evidence of Judicial Failings

We have no systematic evidence on the capacity of judges to deal with the kinds of evidence that make complex cases difficult, but anecdotal evidence of situations in which judges appear not to have fully comprehended scientific evidence is easy to find. To begin at the top, we have the example of the Supreme Court's opinion in Williams v. Florida, 399 U.S.78 (1970), which took the results of Asch's line experiments to mean the opposite of what they implied (Lempert, 1975). At the opposite end of the judicial hierarchy, Saks and Van Duizend (1983), who read transcripts of a homicide case that raised definition of death problems, concluded that the prosecution was not as conversant with the medical facts as the defense. Yet the judge, whom they interviewed, praised the prosecutor's preparation and was unimpressed by the defense.

Statistical evidence seems to present courts with recurring problems. Sometimes courts are too ready to receive statistical evidence not realizing its unreliability (e.g. People v. Collins, 438 P.2d.33 (1968)). On other occasions courts are too reluctant to hear statistical evidence that is essential to understanding the facts before it. In Minnesota, for example, the state legislature had to pass a statute to overturn a Minnesota state supreme court ruling that statistical evidence relating to DNA matches was inadmissible even though such information is essential to estimate the probative value of a DNA match (State v. Schwartz, 447 N.W. 422 (Minn., 1989)). Some

years before in the same state, a trial court made the opposite error. It admitted misleading statistical evidence based on an inadequate scientific foundation to show the probative value of a hair match and a man was convicted and sentenced to prison for life perhaps because of it. (State v. Carlson, 267 N.W. 2d 170 (Minn., 1978)) Both a Federal District Court (U.S. v. Massey, 594 F 2d 676, (8th Cir. 1979)) and an Illinois Trial Court (U.S. ex Rel. Di Giacomo v. Franzen, 680 F 2d 515 (7th Cir. 1982)) made the same error (Fienberg, 1989, 60-67). Other cases in which trial and appellate courts have had varying degrees of difficulty in correctly interpreting statistical evidence are documented by the National Research Council in a report it prepared on statistical evidence in courts (Fienberg, 1989).

The recent controversy over DNA evidence also reveals the difficulty that judges can have with scientific information. While one would expect rational decision makers to reach the same conclusions on the same evidence, court decisions on the admissibility of DNA evidence have differed though the evidence bearing on admissibility was similar. Indeed, in one case a court that refused to admit DNA evidence relied heavily on briefs that had been offered in a case that accepted it. (Compare United States v. Yee, 129 FRD 692 (N.D. Ohio, 1990) with State v. Despain, Superior Court of the State of Arizona in the County of Yuma, No. 15589, Feb. 12, 1991.) Finally one occasionally encounters cases where judges admit that scientific evidence is beyond them. (See e.g., Ethyl Corp. v. Environmental Protection Agency, 541 F.2d. 1, 67 (D.C. Cir. 1976); International Harvester Workers v. Ruckelhaus, 478 F. 2d 615, 651 (D.C. Cir. 1973).)²⁸

The point of all this is not to establish the general inability of judges to cope with scientific evidence. The available anecdotal evidence does not allow us to reach any conclusion about the seriousness of the problems that judges face in dealing with the kinds of evidence that make cases complex or about the abilities of our nation's judges to understand and correctly decide complex cases. Nor do we even know, except in the rare case, how judges go about deciding the factual issues in complex cases. However, the anecdotal evidence does mean that just as there are no guarantees that juries will understand technical evidence in a complex case or decide correctly where such understanding is required, so are there no guarantees that judges will get everything right. Nor do we have any empirical basis for deciding whether judges will in some statistical sense decide complex cases better than juries do over the long run. The best evidence we have on

²⁸ Many of these examples come from appellate courts whose errors and bewilderment is more accessible because their opinions are generally published and they cannot disguise their difficulties by simply finding facts without describing the basis of their reasoning. While there is some reason to believe that trial judges are structurally better able than appellate judges to gain an understanding of difficult scientific facts (Lempert, 1988), there is no reason to believe that their structural advantages eliminate problems of understanding, and as individuals it is likely that most appellate judges are more capable than most of the judges who sit in the nation's trial courts.

this count is Heuer and Penrod's (no date) finding that judges are no more likely to disagree with jury verdicts when cases are complex than when they are not. This suggests that over the long run jury and judge verdicts are not likely to differ because of factors that distinguish complex cases from simpler ones.

Human Decision Making

In short we have no reliable empirical basis for saying, that judge trials are preferable to jury trials in complex cases because litigants are more likely to receive decisions based on a rational evaluation of the evidence, nor can we reach the opposite conclusion. Perhaps we are on firmest ground when we simply note that modern psychology has demonstrated numbers of ways in which human decision makers, act irrationally, if consistency in dealing with formally identical problems or scientifically rational models such as Bayes' Theorem are valid standards of rational decision making (Nisbett and Ross, 1980; Tversky and Kahneman, 1981). Moreover, people sometimes will be influenced by actions or conditions they are not aware of, and they may misattribute their decisions to factors that have not influenced them at all (Nisbett and Wilson, 1977). Even knowing about these dangers does not necessarily protect one from them. All people have limited capacities which can lead to problems in understanding difficult, unfamiliar matter. No matter how rationally one thinks about a problem, limited capacities, such as an inability to remember everything in situations of information overload, can promote error. Both judges and jurors are human. The chances are that judges and juries are more like each other in the problems they confront as fact finders in complex cases than that they are different.

Judicial Bias and Overreaching

But it appears that there is one advantage that juries maintain. This is that in some number of complex cases they are likely to be the fairer decision maker, both in appearance and reality. The Pennzoil trial provides a vivid example of why a jury may appear to be and perhaps is a fairer decision maker. In Pennzoil, two days after Judge Farris was chosen to supervise pretrial proceedings, Joe Jamail, plaintiff's lead counsel, donated \$10,000 to the Farris reelection campaign. Up until that time Jamail had given Farris \$100. Jamail also gave \$10,000 to the reelection campaign of the judge who was Farris' administrative superior. Farris in turn, though one can never know for certain what influenced him, made a number of questionable pretrial

evidentiary rulings that severely hampered the case Texaco wanted to present (Petzinger, 1987).²⁹

Consider also the work of Bermant and his coauthors (1981). They interviewed lawyers in 11 protracted cases that could have been tried to either a judge or a jury. Their basic finding is not at all surprising: lawyers prefer to try their cases before the fact finder that gives them a better chance of winning. All six attorneys who chose jury trials and said why they did so listed the identity of the judge as the main or only reason. Four of these attorneys specifically referred to the biases of the judges assigned to hear the case, and bias may have motivated the two who simply gave the judge's identity as their reason for choosing a jury trial. In two of the four cases in which the parties could have forced a jury trial but agreed to a bench trial, the competence and fairness of the judge was mentioned as the most important reason, with one attorney specifically noting that he looked on jury trials as, "buffers against incompetent judges" (Bermant et al., 1981, 39).

Several lawyers interviewed by Bermant and his coauthors noted reasons other than bias or judicial competence for wanting or avoiding a jury trial. Chief among these other reasons was a sense of how one's client or witnesses would appear to the jury. Two attorneys, both of whom had been forced by their opponents to try their cases to juries, said that they preferred bench trials when their cases were strong and jury trials when their cases were weak, implying that judges are more accurate fact finders than juries.

Viewing the comments reported by the Bermant team together a mixed picture emerges. It seems that lawyers view jury trials in protracted cases (and perhaps in all cases) primarily as a protection against judicial bias. But they also see juries as responding to certain "human elements" which judges might ignore, and as less predictable than judges in the sense that a weak case does not necessarily mean defeat. At the same time where a case is protracted and both lawyers have confidence in the competence and integrity of the trial judge, agreement to waive a jury trial may not be difficult to achieve. Whether the views these lawyers have of the relative merits of juries and judges is an accurate one is difficult to determine. There is a considerable body of research, beginning with Kalven and Zeisel's The American Jury (1966), indicating that even when aspects of a case might appeal to the prejudices of jurors, unless the case is otherwise close on the facts the evidence dominates (see, e.g., Visher, 1987). One might similarly expect judicial biases to be tempered by the weight of the evidence. If so the choice of a bench or jury trial is more likely to affect the outcome when a case is close on the facts than when the evidence

²⁹ One should note that in the day-to-day evidentiary rulings at trial, Farris' rulings, particularly at the outset, favored the defense on such mundane matters as objections to leading questions and hearsay.

clearly favors one side. It is in these cases where it is most important to avoid a biased judge, or, for that matter, a biased jury.

The right to trial by jury also provides some degree of protection against the managerial judge, a figure that has been both praised and damned in the scholarly literature (Elliot, 1986) The power of a judge bent on settling a case in accord with his or her sense of justice is considerable (Schuck, 1986a, b) even if the exercise of this kind of judicial authority may be questioned (Resnik, 1982). In some cases managerial judges have used tactics that parties might perceive as coercive to achieve settlements they regarded as fair. It is simply a fact of modern litigation that judges who desire to mold cases to their preferences have substantial power to do so. If a judge who favored a certain result were sure to try the case if a suggested settlement was declined, the judge's power to coerce settlements would truly know no bounds. Thus a right to jury trial in complex cases may be necessary to ensure that the more basic due process right of a fair trial remains.

In Sum

To sum up, even if juries cannot resolve complex cases rationally, one cannot be sure that bench trials would improve the situation. Judges too make mistakes in dealing with the kinds of scientific and specialized evidence that make many complex cases difficult. One may easily find examples of judges who when confronted with difficult, unfamiliar evidence get things wrong. We currently have no empirical basis for saying that judges will ordinarily do better than juries in deciding complex cases, nor do we have an adequate empirical basis for reaching the opposite conclusion. Thus there is no guarantee that due process in the form of accurate fact finding will be enhanced, even on the average, by replacing juries with judges in cases that promise to be complex. Moreover, in the situation where the judge is most likely to do better than the jury, that is where the judge is known to be both fair and competent, it appears on the basis of limited anecdotal evidence that a jury trial is most likely to be waived, and if there is a jury trial other anecdotal evidence suggests that the jury system will function at its best.

If it is difficult to choose between bench and jury trials when rational fact finding is taken as a due process requisite, it seems easier when the right to an impartial decision maker or the right to meaningful trial are the values that due process protects. Here it appears that situations arise where the right to a jury trial in complex litigation is an important guarantor of due process rights.³⁰

³⁰ I do not mean to suggest that the jury will always be impartial and the judge not. An inadequate voir dire or prejudices too subtle to spot may lead to a biased jury in situations where

PROCEDURAL REFORM

The third point that I made in my 1981 article was that even if juries as now constituted were incapable of rationally deciding complex cases, one should not read a complexity exception into the Seventh Amendment unless the jury's incapacities were inherent in the institution. Before giving up on the jury, I argued, we should be sure that we can not increase jury competence through changes in the way we handle jury cases. Included among the possible changes I mentioned were rewriting jury instructions to make them more comprehensible, furnishing jurors with written copies of the court's instructions, giving jurors preinstructions, allowing jurors to deliberate on various issues as the case progressed, routinely seating 12-person juries, furnishing jurors with daily transcripts (as an alternative to another possible reform - juror note taking), dividing issues for decision, refusing party joinder, providing appointed experts to help the jury understand the testimony of the parties' expert witnesses, removing factual controversies by encouraging stipulations, using masters to clarify particularly difficult issues, sitting partial blue ribbon juries and allowing jurors to ask questions. Many commentators have suggested similar reforms as ways of helping juries cope with complexity (see, e.g. Cecil et al., 1991; Durham, 1986; McLaughlin, 1983; Olander, 1985; Schwarzer, 1982; Willging, 1986; Withrow and Suggs, 1980), and the new Manual for Complex Litigation endorses some of these reforms as well (Taylor et al., 1985). The potential for simplifying complex litigation through partial summary judgment (Durham, 1986; Schwarzer, 1982) and for using special masters to promote coherent case organization or to actively encourage factual stipulations has also been noted (Brazil, 1982, 1986; Brazil et al., 1983).

The implications of such reforms for jury competence may all, in principle, be examined empirically, but there has been little rigorous social scientific investigation of any of them in the

the judge is unbiased. However, the right to jury trial itself - at least in criminal cases - is an element of due process, which suggests that the possibility of benefitting from certain kinds of jury biases is in some measure an element of due process.

I also recognize that due process is not considered to be violated in settings where it is permissible to dispense with a jury such as suits in equity. As a formal matter this is certainly true since due process is in large measure historically defined. Yet even in equity, if bias could be proved, due process would be violated by using a partial judge. However, bias can be hard to demonstrate. In Pennzoil, for example, Judge Farris was challenged on the basis of the \$10,000 campaign contribution from Jamail which was the largest single contribution he had received and amounted to about 10% of his reelection funds, but the judge who heard the challenge ruled there was no cause for disqualification. Totally apart from the issue of bias, the point of the Seventh Amendment, is that in civil actions at law brought in the federal courts the process due includes the right to a jury trial if one party requests it.

years since I wrote.³¹ Among the few topics that have been the subject of carefully controlled research are preinstructions, the use of written jury instructions, jury note taking and jury question asking.

Preinstructions

Supporting the idea of preinstructing juries on the substantive issues in a case is research in cognitive psychology which suggests that informing juries of how to frame information they are about to receive can enhance recall and aid in the interpretation of ambiguous material (Smith, 1990). Thus it has been suggested that preinstructions might help a jury understand the evidence in a complex case. Smith (1988, described in Smith, 1990) reports partial support for this view. She found that the timing of instructions did not affect the recall of mock jurors for either relevant or irrelevant facts in a homicide case nor did the timing of instructions affect how the evidence was interpreted. However, mock jurors instructed both before and after the trial were better able to apply the law to the facts of the case than jurors instructed only after the trial.

Preinstruction on general matters such as the presumption of innocence, burdens of proof or the limited admissibility of certain evidence could in theory affect how evidence is encoded and in this way could affect verdicts.³² Heuer and Penrod report a field study in which Wisconsin

³¹ Convincing experimental research on rewriting jury instructions had been done by 1981 (see e.g. Charrow & Charrow, 1979) and indicated that legal instructions could be rewritten to enhance jury comprehension considerably. Most states have not acted to revise their jury instructions, and among the states that have only a few states have rewritten their jury instructions with this research in mind (Tanford, 1991).

³² Kassin and Wrightsman (1979) found that mock jurors who were preinstructed on the presumption of innocence and the need to prove guilt in a criminal case beyond a reasonable doubt gave lower estimates of guilt both during and after all the evidence was in than did mock jurors who were instructed only after the evidence was in or who received no instructions at all. The latter jurors were in their judgments very much like those jurors who were instructed only after all the evidence was in. Kassin and Wrightsman provide an information integration explanation for their findings, arguing that the preinstructed mock jurors began deliberations with a lower prior probability of guilt which affected their judgments of the defendant's likely guilt as they assimilated the evidence offered at trial. However, recent work by Pennington and Hastie on "story models" (1986, 1988, 1991) calls the adequacy of information integration models into question. An alternative explanation consistent with more general findings in cognitive psychology is that the early instructions affected the way in which the mock jurors encoded the information they received (as more consistent with innocence) so that at each point they remembered the evidence as less probative of guilt than those who had not been preinstructed. From an encoding perspective, instruction after all the evidence was in would not be expected to have a substantial effect because the evidence received would have been already encoded and so would be remembered in a way more consistent with guilt. An encoding explanation also has the virtue of consistency with research which suggests that instructions to disregard or limit evidence will be relatively ineffective (Casper et al., 1989; Hans and Doob, 1976) as well as research on the timing

trial judges agreed to randomly assign cases to a "preinstruction" or a "no preinstruction" condition.³³ It appears that preinstructions did not hurt the trial process and may have helped. Jurors who received preinstructions reported that the preinstructions generally helped them in accomplishing such tasks as evaluating the evidence during the trial, applying the law to the facts, remembering the judge's instructions, etc., but a comparison of their responses with the responses of jurors who had not been preinstructed does not support their belief that they were better off in these ways than if they had not been preinstructed. They were, however, more satisfied with the way their trial had been conducted than jurors who had not been preinstructed, and judge's were both less surprised by the verdicts of preinstructed juries and more satisfied with them. As for costs, lawyers and judges saw preinstructions as having virtually no disruptive or adverse effects on the jury and as tending to increase the fairness of trials. Thus preinstructions seemed to have had only positive effects³⁴, if they had any effects at all. Since Heuer and Penrod do not report what preinstructions were given, further work must be done to see whether their findings apply to both case-focused substantive pre-instructions and to instructions on matters like relevant burdens of proof that are common across trials.

Written Instructions

Heuer and Penrod's study of pretrial instructions also randomized the presentation of written instructions to juries for use during their deliberations. Jurors who received written instructions reported that these instructions helped them in a variety of ways but, their ratings of the helpfulness and understandability of the judge's instructions was no higher than the ratings of those who did not receive written instructions, and jurors who had received written instructions performed no better on a multiple choice test designed to measure comprehension of the judge's instructions than did jurors who only had been instructed orally.³⁵ Neither jury deliberations nor

of opening statements (Wells et al., 1985). Hastie (1983) and Sales et al. (1977) also examined the effects of preinstructions finding relatively few effects and none that seem to justify strong reliance.

³³ It was apparently left to the judge to decide what to preinstruct on and they did not report on this. Thus, we do not know for a given judge or for the mix of cases whether the preinstructions given contained general instructions, case-specific substantive instructions or a mixture of the two.

³⁴ There was no difference between the effects of preinstruction in more or less complex cases, where complexity is operationalized by the length of the trial. My hunch, however, is that the Wisconsin trials that Heuer and Penrod studied probably included few if any that would qualify as complex in the sense that we have been using that term in this paper.

the trial seemed to be affected in other significant ways by written instructions, nor did written instructions seem to function differently in longer cases than in shorter ones. However, judge's and lawyers generally approved of written instructions³⁶ and did not see the need to furnish them as causing significant problems. Because all parties seemed to like written instructions and they seemed to cause no harm, Heuer and Penrod recommend written instructions as a jury reform.

Note Taking and Juror Questions

Heuer and Penrod also provide us with the best research to date on the effects of allowing jurors to take notes or ask questions. They did two field studies of these procedures, one in Wisconsin (Heuer and Penrod, 1988) and one with cooperating federal judges across the nation (Heuer and Penrod, no date). The Wisconsin study, like the study of preinstructions and written instructions, showed no great benefits but little harm to come from these procedures. The national study, however, is more relevant to our concerns since the authors looked specifically at how note taking and question asking function in complex as well as simpler cases. It is this study I shall focus on.

The national study involved 103 federal judges who agreed to assign one or two cases on an experimental basis.³⁷ The authors randomly assigned cases to the experimental conditions and the judges implemented these assignments either in their next case or, if they were willing to accept two assignments, in both their next case and their next complex case. All told, the authors collected data on 75 civil and 85 criminal trials.

³⁵ As Diamond (1993) points out Heuer and Penrod only tested comprehension of general instructions so they could use their instrument across trials. This performance measure may not have been sensitive to the advantages of trial-specific written instructions.

³⁶ The major reason why a true random sample was not achieved in the Wisconsin field study was that attorneys refused to go along with the experimental assignment in some cases. This happened most frequently with respect to written instructions which at the time of the study were required in Wisconsin. Defense attorneys, in particular, were reluctant to waive their right to have the jury furnished with written instructions. This is the best testimony to their popularity.

³⁷ 2000 judges were originally contacted. While two-thirds of the 314 judges who returned a questionnaire saying why they declined to participate indicated they were no longer hearing jury trials, the participation rate is still so low that one cannot be certain from a sampling standpoint that the results of this study would generalize to the federal courts as a group. But while generalization cannot be guaranteed by the nature of the sample, there are few reasons to expect that the results will not generalize. The most important reason to have reservations is that participating judges probably had more interest in the experimental procedures than non-participating judges. It may be that without an interested judge the effects the authors observe would be different. Also participating judges may be more capable than non-participants and the capacity of a jury in a complex case seems in part to be a function of the capacity of the judge presiding at the trial.

Based on judicial responses three dimensions of complexity were defined, one relating most closely to the complexity of the evidence, a second to the quantity of the evidence and a third to the complexity of the law.³⁸ On average, the judges seemed satisfied with the jury's performance, rating the jury verdicts in both criminal and civil cases above 7 on a nine point scale with respect to both legal correctness (9 = strong agreement that the verdict is legally correct) and their own satisfaction with the verdict (9 = very satisfied). A composite of these and two other items reveals that judicial satisfaction with the jury's performance did not vary with the complexity of the case.

Jurors who were allowed to ask questions had significantly higher scores than those not allowed to ask questions with respect to feeling well-informed, the perceived ease of reaching verdicts and understanding the law, the perceived helpfulness of the prosecutor and defense counsel, and the certainty that they felt that the verdict was correct.³⁹ Surprisingly, jurors allowed to take notes felt they were less well informed than jurors who were not allowed to take notes, and they reported it was more difficult to reach a verdict. Judicial approval of jury verdicts was, however, not affected by either of the two experimental procedures and this finding does not change with case complexity. Excluding hung juries in criminal cases judges agreed with the juries' verdicts in about three-quarters of the criminal trials and in about 63% of the civil cases. Interestingly, in civil cases judges were considerably more likely to disagree when juries returned defendants' verdicts (52% disagreement) than when juries returned plaintiffs' verdicts (29% disagreement). Disagreement did not seem to be related to case complexity or trial procedures or to their interaction.

A test of interaction effects revealed that jurors found the ability to ask questions increasingly helpful (in the sense they felt well informed and found it easy to understand the law) as the law became more complex. Permission to ask questions also added more to jurors' confidence in their verdicts as the evidence became more complex. However, as the amount of information offered at trial increased, the chance to ask questions seemed to backfire. With heavy

³⁸ The length of the trial in hours was related to both the complexity of the evidence and, somewhat less strongly, to the quantity of the evidence as measured by the number of pages of documents in evidence, the number of items of evidence submitted and the number of parties. Thus the study indicates that long trials tend to involve masses of evidence, at least some of which is more complex than the evidence found in most trials.

³⁹ There were 71 trials in which question asking was allowed but in only 51 of these was one or more questions asked according to a preliminary report of the data. (American Judicature Society, 1988). (Heuer & Penrod report 74 cases in which question asking was allowed.) While Heuer and Penrod don't address the issue specifically, it appears that they compared trials based on whether question asking was allowed and not based on whether it occurred. This analytical decision is in keeping with the design of the experiment.

information loads those jurors allowed to ask questions were less likely to feel well informed than jurors not allowed to ask questions and more likely to report difficulty in understanding the law and reaching a verdict. For note taking the two-way interactions with the legal dimension of complexity are significant but directionally inconsistent so that in some situations increasing legal complexity is associated with positive juror evaluations and in other cases it is associated with negative reports. The most important findings seem to be that as legal complexity increases, note taking jurors are less likely to feel satisfied with their verdicts and are less certain they have reached the right result than jurors not allowed to take notes.

Heuer and Penrod also examined certain procedures which varied because responding judges handled cases in different ways. They found that an initial juror orientation contributed to juror satisfaction, and that the use of special verdict forms increased not only juror satisfaction but also verdict confidence and feelings of understanding the judge's instructions and being well informed. Judges who commented on the evidence or summarized, on the other hand, left jurors feeling that it was harder to reach a verdict and harder to understand the law, and the closer that judges hewed to pattern verdict instructions the less confidence jurors had in the verdicts they reached.⁴⁰ Judicial satisfaction with jury performance is not, however, affected by the use of any of these four procedures.

One way of interpreting these data is that jurors feel that they perform better when they can ask questions, when they are given verdict forms, and when they receive an initial orientation. But if juries do perform better with these aids, judges seem not to notice.⁴¹ One might argue that so long as jurors feel they are being helped by certain measures, such measures should be used, and this is what Heuer and Penrod conclude. However, it is not clear that the juror responses that Heuer and Penrod treat as positive indicators of competence are always that. For example, confidence in a verdict rendered in a close, complex case may be illusory since there

⁴⁰ With respect to both comments and special verdict forms I have ignored a significant association with the perceived helpfulness of the plaintiff/prosecutor because I don't think it is as important as the dimensions I cite, and I don't know precisely what to make of it. I am also ignoring significant interactions involving those variables that were not experimentally varied. There are a number of interactions, but they are at times directionally inconsistent, and given the lack of experimental control, their interpretation is problematic.

⁴¹ Since there are fewer responses from judges than from jurors, one possible reason why juror responses are significantly associated with procedural variations while judicial responses are not is the relative lack of power in the analyses that deal with judges' reactions. It is difficult to evaluate this possibility since comparable statistics are not presented for judges and jurors. However, given the small amount of variance that the procedural measures uniquely explain when judicial satisfaction is dependent, it is probably a mistake to attribute the lack of significance of these measures to a problem of power. Relative differences in power are more plausible as an explanation of why certain interactions are significant when the jurors' views are dependent but not when the judges' attitudes are.

may be no verdict in which a fact finder should feel truly confident. A juror who felt less confident in such a case might have done a more honest job of grappling with the evidence and returned a verdict more likely to be correct. The same could be said about the sense that a verdict is easy. Indeed, it may be that certain juror attitudes toward their experiences have a different normative status depending on whether cases are close on the evidence or easy, and simple to comprehend or complex. Thus while the Heuer and Penrod study is the best effort to date to shed an empirical light on the utility of reforms designed to increase jury competence, their results are inescapably ambiguous, for the normative status of their dependent variables is not completely clear. It may be for this reason that judicial evaluations do not confirm juror reports.

Informal Experiments

If there have been few rigorous scientific experiments evaluating proposed jury reforms, there has been no lack of experimentation in a more colloquial sense. We saw, for example, in our case studies that most of the trial judges involved "experimented" with one or more of the procedural reforms that have been commonly suggested. Indeed, some reforms such as note taking may be more the rule in complex cases than the exception.⁴² It appears that when judges try innovative procedures they seldom find the harms they feared and often perceive apparent benefits.

This conclusion is confirmed by the work of Sand and Reiss (1985). Sand and Reiss persuaded one or more of the 28 judges serving on the Second Circuit in June of 1983 to try one or more of seven "novel" procedures. These procedures included: ten minutes of attorney participation in voir dire, individual, private voir dire, preinstructing the jury, allowing jurors to ask questions, informing jurors they could take notes, providing jurors with a written copy of the charge and providing jurors with a tape recording of the charge. Sand and Reiss found in almost every instance that if lawyers and judges could be induced to go along with a procedure, a majority, sometime an overwhelming majority, reacted favorably to it. These findings are consistent with later work by Heuer and Penrod (1988, 1990) who report that those Wisconsin judges, lawyers and jurors who participated in their field experiments invariably liked the innovative procedures they experienced, and they liked them more and saw fewer problems with them than judges, lawyers and jurors who had not experienced the procedures but were asked how they thought they would have reacted to them.

⁴² Heuer and Penrod (1991) in a survey that elicited 553 responses find that judges report allowing note taking in about 1/3 of their trials and only 37% of judges say they have never allowed juror note taking. One would expect that judges who sometimes allow note taking are more prone to allow it as case complexity increases.

Let the Reforms Begin

Having reviewed the evidence I cannot say that there is an adequate empirical basis for concluding that reforms like those that have been proposed will make the jury a better fact finder in complex cases. Yet given a wealth of unsystematic experience and some few experiments, it appears likely that certain proposed reforms will not be harmful and there is reason, in common sense, scientific theory, and occasional experience to believe that certain of the suggested reforms will do some good. Where the likelihood of harm is low, and the possibility of benefits exists there is a case for action, as there is when some harm is possible but the likelihood of net benefits is, given what we know, substantial. I believe that a number of the proposed procedural reforms fit one or the other of these two circumstances. Thus rather than wait for definitive research, some of the proposed procedural reforms should be instituted now.

But since we are acting without full knowledge, we should in innovating act to gain knowledge. Ideally courts would institute any reforms experimentally, but this is unlikely to happen. In default of experimental implementation, there should be a systematic attempt, perhaps under the auspices of the Federal Judicial Center and the National Center for State Courts, to monitor reforms and systematically canvass reactions to them. Also these agencies and other funding sources should make the continued experimental evaluation of such reforms a priority. Many reforms are plausible; I will discuss ten I would like to see.

First there is note taking. Opposing note taking seems futile, for it is already often allowed in complex cases. Note taking was permitted in a number of our case studies, and in no case in which it was allowed, was there a suggestion of any problems. Moreover, there is some theoretical reason to believe that note taking might increase juror involvement with in the trial and juror performance (Friedland, 1991). However, the Heuer and Penrod (no date) experiment provides some cause for concern. In their experiment note taking was associated with feeling less well informed and finding it harder to decide on a verdict. These feelings are too consistent with an hypothesized danger of note taking: the possibility that jurors who take notes will miss information as they try to copy other information down;⁴³ to be summarily dismissed. Thus, in trials where daily transcripts are being prepared jurors might be barred from taking notes and instead be furnished with transcripts to use as they see fit. The reactions and performance of jurors furnished with transcripts should be compared with those of jurors in similar trials who instead may take notes.

⁴³ Heuer and Penrod (1988) in their Wisconsin field experiment did not find any evidence that this occurred.

The second reform I would implement today is to allow jurors to pose questions. This is the reform most strongly supported by the Heuer and Penrod field experiment, and it seems to be the one most desired by jurors as well (Strier, 1988). The experimental and anecdotal evidence both suggest that jurors do not abuse the privilege, and questions may give lawyers an idea of how well jurors are following the evidence. It should be noted, however, that questioning was allowed in the Pennzoil trial and the judge ceased to allow it part way through the trial (Shannon, 1988). Problems with questioning may have arisen in that trial because the judge permitted jurors to interject questions orally at any point in the testimony simply by raising their hands. When jurors submit written questions after a witness has finished the direct or cross-examination, problems are not reported.

Third, and somewhat less confidently, I suggest that at the outset of complex cases jurors receive a composite of preinstructions and an orientation lecture. The case for this change is better grounded in theory than in experimental evidence, although some apparently positive effects appeared in the Heuer and Penrod (no date) experiment. Theory suggests that if the jurors are aware of the issues they have to resolve, they may be better able to understand the evidence they receive and to put otherwise confusing evidence in an understandable perspective. Theory coupled with some evidence tells us that instructions concerning how evidence should be coded are better given before evidence is encountered than after the fact. In accordance with these views jurors should be informed before the trial begins of the legal issues they are expected to resolve and of the major factual disputes between parties. While this is also the stuff of opening statements, an introduction unskewed by partisanship might be a helpful prelude to the parties' versions. There is, however, a danger of reversible error here and a judge should develop such comments carefully in consultation with the parties.

It also makes sense for the judge to preinstruct the jury, as judges now often do, on what is and is not evidence, on how they should respond to objections, on why discussions occur out of the jurors' hearing or with the jury escorted out of the courtroom, and on similar matters. A potentially important preinstruction is that commonly given which emphasizes that there are two sides to a case and that the jurors should not discuss the case or make up their minds until they have heard all the evidence. While some people regard such instructions as futile, there is anecdotal evidence from jurors serving in lengthy trials that the temptation to discuss a case as it progresses can be and often is resisted. The effectiveness of the instruction to maintain an open mind is more problematic since jurors admit to leaning toward one side or the other as a case progresses. Perhaps the goal of the instruction would be enhanced if jurors were told at the outset that when they began deliberations, they should not vote immediately but should together review the evidence in the case. Both some of the case studies and mock jury research (Hawkins, 1960; Hastie et al., 1983) indicates that early voting can make for less productive deliberations.

It is probably also wise to explain the burden of proof to jurors at the outset and, if it is a criminal case, to acquaint jurors with the presumption of innocence. The theoretical reason for this is that jurors may engage in "on line" decision making, and if they do it should at least be with knowledge of the correct standard. However, despite the Kassin and Wrightsman (1979) study that purports to have shown the virtues of this instruction experimentally, this recommendation is based more on common sense and theory than on experimental evidence.

Fourth, each juror should be given copies of the instructions in writing to refer to during deliberations.

Fifth, complex cases should be simplified through pre-trial stipulations, severance of joined claims or counts, partial summary judgment if facts are truly not in dispute, and other ways of limiting the issues in dispute. A particularly effective technique, is to allot only a limited time to the parties to present their cases. Where one party's case is inherently more time consuming than the other's difficult problems of fairness may arise. Two of the courts in our case studies used this technique to apparently good effect. Also, to promote simplification a court should not allow parties to present technical documents largely to impress jurors with their bulk, as may have occurred in the ABA trade secrets case. If documents are redundant or unnecessary they should be ruthlessly pared down according to the provisions of Rule 403 of the Federal Rules of Evidence to what is new and essential. If it is unlikely that jurors will understand certain documents those documents should not be admitted unless the party offering them offers evidence to aid in their understanding.

Sixth, steps should be taken, as they often are today, to ensure that jurors can easily follow documentary evidence. One aid in this respect is the loose-leaf trial notebook that can be added to as exhibits are offered. Such notebooks can include at the outset information about important facts the parties have agreed on. Documentary evidence should be distributed to the jurors so that they can follow it as it is discussed or visual aids should be used to the same effect. Those documents and exhibits admitted into evidence should be organized and indexed for easy retrieval once the jury has retired to the jury room. The jury should not be given boxes of unorganized exhibits as has occasionally happened.

Seventh, legal instructions should long since have been rewritten so as to be more comprehensible. In jurisdictions where this has not happened (most places) rewriting should occur.

Eighth, jury questions during the deliberations should be answered in plain language. Juries should not simply be referred back to the instructions. We saw in several of the case studies that such references seldom helped and that in the absence of judicial guidance a reasonable interpretation of an instruction could be wrong. Indeed, in several of the cases where the jury verdict seemed to reflect a legal misinterpretation, the jury had realized it was having trouble understanding what the law required and had sought the court's aid in understanding but

had not received any. As a corollary to this recommendation, so long as a court's answers to juror questions appear fair and helpful, appellate courts should not reverse trial courts simply because precise legal language was not tracked and an unlikely legal misinterpretation is possible.

Ninth, larger juries should be used. We saw in a number of cases that jurors tend to follow the lead of their most competent members when cases are complex. Increasing the number of jurors increases the likelihood that there will be one or more jurors who have a good understanding of the law and evidence. In addition, the larger the jury the better the jury's collective memory is likely to be. The recent amendment to Rule 48 of the Federal Rules of Civil Procedure, which eliminates alternate jurors, should help achieve larger juries since no court will seat only six jurors in a complex case and risk a mistrial should one juror be unable to continue. Courts should routinely seat twelve jurors when cases are likely to be complex. Indeed, in lengthy complex cases where substantial juror attrition is a danger, the court should seek the parties' consent to ignore the limitations of the new rule and seat more than twelve jurors, with the understanding that if more than twelve jurors remain at the end of the trial excess jurors will be treated as alternates. Otherwise there is a small danger that juror attrition over the course of a long trial will reduce the jury to fewer than six members, allowing one party to force a mistrial and the more likely possibility that by the time the case reaches the jury the strengths that larger juries afford will be dissipated. If there is a return to larger juries it will make increasing sense to allow verdicts to be returned in civil cases over the dissent of one or two jurors in order to prevent hung juries or, more likely, the excessive influence, as in the ABA trade secrets case, of a lone and probably incorrect dissenter. Accepting non-unanimous verdicts in federal civil cases requires the consent of the parties which a judge should try to secure in advance; allowing non-unanimous verdicts in civil cases without party consent is a matter for Congress's agenda.

Tenth, courts should encourage the selection of competent jurors. The tactical desire to gain a jury that can be fooled deserves no legal respect. The issue is, however, a delicate one, for judicial intervention to ensure juror competence can interfere with a party's right to exercise peremptory challenges. But some interference is tolerable if, as I have argued elsewhere (Lempert, 1978) the peremptory challenge is justified largely as a device to eliminate prejudice which escapes the sieve of the challenge for cause. Encroachments, however, have already been made on the peremptory challenge to forestall racial prejudice and with further encroachments for other good reasons the peremptory challenge will be reduced to a challenge for cause. Thus, I do not support legal change in this area. Rather I recommend judicial jawboning. The trial judge should make the desirability of securing a capable jury clear and should urge the attorneys not to challenge those jurors who seem most likely to understand the issues in the case. Where such a juror is challenged it would not be untoward for the judge to ask an attorney why the challenged juror was thought undesirable. While an attorney would be free to tell the court there was no

reason, few attorneys would want to admit, even implicitly, that they wished to avoid jurors who seemed likely to understand the case. Provisions should also be made to compensate jurors generously in trials that exceed a certain length so that fewer people would seek to be excused where cases are likely to last more than a few weeks.⁴⁴

I could go on and suggest more changes that might now be made, but I suspect these ten are more than are likely to happen in the near future. The important point that bears reemphasis is that the institution of any such changes should be the occasion for more study and not a signal that research on these matters is no longer needed because reform has occurred. None of these suggestions is as firmly rooted in reliable research as I would like it to be, but I believe that each can be plausibly justified based upon what we now know.

A NEW PERSPECTIVE

I have now canvassed the research done since my first article that bears on the three issues that in my view had to be resolved to support a due-process-based complexity exception to the Seventh Amendment right to jury trial. There has, however, been another development since 1981 in the psychological understanding of jury trials that relates to the likely capacity of juries in complex cases. This is the development of a new model of jury decision making, which Nancy Pennington and Reid Hastie, its principal proponents, call the "story model." (1986, 1988, 1991) The story model suggests that jurors try to make sense out of the evidence they are offered by constructing the story that best explains it. It is an exciting and plausible development in the effort to understand jury decision making both in its own right and because it fits in nicely with recent developments in cognitive psychology, where stories are a kind of schema that links people, motives and actions (Bennett and Feldman, 1981; Black et al., 1984; Holstein, 1985; Schank, 1990).

⁴⁴ Without going into detail, I support the creation of a fund that would drastically increase the payment jurors receive in any trial that extends past 14 trial days. To pay for such a fund I would "tax" the payments made to lawyers in lengthy cases where money damages are sought or where litigation is over a commercial matter. For example, in lengthy cases the parties might be charged 1% of all lawyer's fees paid for pretrial work and 3% of the fees paid for work during the trial. This proposal should not unduly discourage contingent fee representation since if the plaintiff lost there would be no fees to be taxed. It would also not discourage litigation over non-commercial matters disputed as issues of principal since no fees would be taxed in such cases. The exact trigger for payment could be adjusted to take account of party responsibility for lengthening the trial. In some small measure the tax should encourage pretrial settlements and the shortening of cases that go to trial.

At present the story model has been largely used to explain jury decisions in cases like homicide cases where such alternative stories as the premeditated assault and the self defense story can be plausible explanations for the same array of evidence. The model seems to work well in these settings, and it illustrates how jurors can take evidence and, using various consistency criteria, try to fit it to one among a stock of stories with which they are already familiar. We also see in the experimental evidence that preexisting story structures can lead to the misperception of certain evidence or the recall of evidence that was never presented. This is to be expected if stories are a type of schema.

Now consider the complex case. From a story perspective there are two types. First, there are cases in which the evidence that makes a case complex can fit a slot, by which I mean a place that holds a story element, in a story. For example, consider a case like the W.R. Grace case. The plaintiff's main story line is not complex, and is one readily available to most jurors: a company carelessly dumps a poisonous effluent which reaches the water table and percolates to the plaintiff's well. The plaintiff drinks the water and becomes seriously ill. The easy conclusion is that the defendant is a wrongdoer who should pay for the harm its effluent caused.

What makes the case difficult is not the unfamiliarity of the basic story line. Rather it is that at several points, the defendant argues that connections that the story assumes do not exist and suggests that science supports this argument. Thus, in W.R. Grace the defendant argued that the effluents could not reach the plaintiff's wells and that there was no proof that the effluent was the source of the increased incidence of leukemia in the plaintiff population. Thus, what is complex in the trial involves two story slots that must be filled in for the plaintiff to recover. There must be a way for the defendant's effluent to reach the plaintiffs' well and there must be a reason to conclude that the effluent caused the plaintiff's leukemia. The trial is not limited to these issues - the plaintiff for example must prove the defendant discharged the effluent, but the trial, particularly what is complex about the trial, turns on them.

We can think of the jury's decision regarding how to fill each slot as itself involving a competition among stories. But these competing stories are specialized stories which only scientific experts know well, and invariably in a case like W.R. Grace the scientists whom the jury hears disagrees. How is a jury to decide between the scientists' stories if the jurors find the scientists' stories unfamiliar and have themselves no set of plausible stories to compare the scientific evidence with? To what extent will juror decisions reflect the ways in which the parts of the story that they can follow pull them along? Is, for example, the very fact that the plaintiffs are suffering from a feared and esoteric disease likely to lead jurors to believe that the defendant's effluent must have seeped into the plaintiffs' wells and must have been capable of causing the disease because otherwise there is no explanation for the evidence before them. Would a jury that accepted the plaintiff's expert's scientific story for this reason be acting

irrationally? Suppose instead of relying on an unfamiliar scientific story about how effluent travels, a juror instead relies on schemas with which he or she is familiar - like the stereotype that nervousness is associated with lying - to decide which expert's story to accept. Is this an irrational basis for decision? As for the judge, is there any reason to believe that he or she would do a better job than the jury? The judge is likely to have a stock of pollution stories in the same way the jury does, but like the jury, he or she is probably unfamiliar with the stories the scientists tell. Moreover, the trial judge's stories may be different than the stories the jury has or at least may be differentially accessible. The unscrupulous plaintiff's attorney story (plaintiff's attorney is known for drumming up litigation) may figure in the judge's evaluation of the evidence when it hardly enters into the jury's. Or the judge may have easy mental access to a story in which potential polluters are more responsible or pollution is less likely to be harmful - access not shared by the jurors. In this situation whose stock of stories should be brought to bear to help make sense of those aspects of the story - scientific stories within the story - that neither the judge nor the jury understands well? I don't intend to answer questions like these here, but they are worth raising and suggest a new approach to thinking about how judges and jurors respond to one kind of evidentiary complexity.

The situation which characterizes other complex cases from a story perspective is one in which evidence is not necessarily hard to understand, but jurors are unlikely to be acquainted with the set of stories that most plausibly fit the evidence. The Pennzoil and Micro/Vest trials furnish examples. The jurors in these cases did not know various story lines that plausibly made sense of facts relating to competing tender offers or business understandings about the terms of loans. In cases like these it is not surprising if jurors are tempted to make sense of evidence given them by fitting it to stories they are more familiar with, such as a story of people making ordinary agreements. This tendency can be exacerbated when one side encourages the jury to use its ordinary stock of stories to make sense of the facts in the case. This occurred in Pennzoil. It was perhaps best revealed in an interchange between the plaintiff's attorney Joe Jamail, a personal injury lawyer who ordinarily did no business litigation, and Marty Lipton, a well-known New York takeover lawyer. Jamail asked Lipton whether he was "saying that you have some distinction between just us ordinary people making contracts with each other, and whether or not it's a ten-billion-dollar deal? Is there a different standard in your mind?" Lipton replied, "Yes, indeed." Jim Shannon, who may have been the jury's most influential member, recalls, "At that point my jaw just dropped" (Petzinger, 1987, 371). For a Wall Street lawyer or for most judges (not necessarily the judge in the Pennzoil trial) an answer that the standard was the same might have caused jaws to drop.

In these circumstances are we better off with trial to a jury or to a judge? Despite the Pennzoil case, people can learn that stories they have not heard of before are plausible (The

entrapment story in DeLorean is an example). And in Pennzoil, there is no reason to believe that the judge would have decided differently; indeed, a number of his pretrial evidentiary rulings prevented Texaco from presenting a convincing, gapless version of the story it wanted to tell. Moreover, having access to a story that appears to fit a body of evidence is not always a virtue, for when a story is familiar, evidence may be distorted, overlooked or even invented where the evidence recalls the story but does not fit it perfectly. The jury's virtue is that different jurors have different preferred stories so the jury collectively is less likely than individual decision makers to be misled by the kinds of natural distortions and gap filling that an available story may stimulate.

I do not pretend to have answers to the questions I pose, nor do I now suggest that the story model provides a new or more adequate answer to the question of whether judges or juries are better situated to decide complex cases. But story model research does provide a new perspective on the issue; one that I think is worth further thought and exploration.

CONCLUSION

I began this paper by recalling my earlier article which suggested that three kinds of showings had to be made to justify a Supreme Court holding that due process required a complexity exception to the Seventh Amendment right to jury trial. First, was a showing that juries did not decide such cases rationally; second was a showing that changes in the management of juries and cases could not cure identifiable jury deficiencies and third was a showing that judges would find facts in such cases more rationally.

I then proceeded to examine the empirical evidence relating to these three issues. It turns out that much of the available evidence is anecdotal. It is the kind of evidence on which one does not want important policy decisions to turn. To the extent that there is systematic social science knowledge that elucidates these three issues, none of it resolves an issue, and much of it is unclear in its import even if external validity concerns are discounted. In short, not enough social science research has been done to date to allow us to reach firm conclusions about the capacities of juries and judges to handle complex cases or about the potential improvement in jury capacity afforded by possible reforms.

Thus, I could simply end this paper as I ended my first one, with a call for additional empirical research, an argument that the burden of proving the incapacity of juries in complex cases is on those who would limit the Seventh Amendment right, and a judgment that that burden has not been met.

But there is more to be said. Throughout this review, strengths of the jury emerge. A close look at a number of cases, including several in which jury verdicts appear mistaken, do not show juries that are befuddled by complexity. Even when juries do not fully understand technical issues, they can usually make enough sense of what is going on to deliberate rationally and they often reach quite defensible decisions. To the extent that juries make identifiable mistakes, their mistakes usually seem attributable not to conditions uniquely associated with complexity but to the mistakes of judges and lawyers, to such systematic deficiencies of the trial process as battles of experts and the prevalence of hard to understand jury instructions, and to the kinds of human error that affect simple trials as well. The anecdotal evidence should also remind us that it is difficult to predict which complex cases will trouble juries and which they will handle well.

The import of the experimental literature is similar. Experiments show that some factors that make for complexity, like the joinder of charges or statistical evidence, can lead to jury mistakes. Yet in the most realistic studies, juries perform surprisingly well. In the study by Diamond and Casper, for example, contrary to what one might predict, regression models were as influential as the more concrete and intuitively understandable yardstick models. In the study by Horowitz and Bordens joined plaintiffs and scientific evidence caused few problems. Moreover, juries in the Diamond and Casper study, like some of the case study juries, showed an extraordinary capacity for identifying their most capable members and then letting them lead. This suggests that the challenges that complex cases pose might be best met by the simple expedient of getting more capable people to serve on juries.

The empirical evidence also provides no reason to believe that judges will fare better in the face of complexity than juries, for we have little basis for deciding how judges will do at all. What we have instead are anecdotes which make the point that judges dealing with unfamiliar, technical information can be as confused as we fear similarly situated juries are. Ultimately the most reasonable conclusion about the relative capacity of juries and judges is probably one that I reached in my earlier article without substantial empirical support and am willing, still without substantial empirical support, to reiterate here: in complex cases we can expect that some judges will be more capable than the average jury and we can expect that the average jury will be more capable than some judges. But there will be many cases in which we will not know in advance whether judge or jury is likely to be the more rational decision maker.

When it comes to reforming the way that complex cases are managed and jury trials are conducted, we live in a world of constantly experimenting judges. The problem is that the experimentation most judges do is uncontrolled, hardly visible and unsystematic, so that we learn almost nothing from it except what we can learn from the fact that great outcries over various novel procedures seem not to have arisen. Given this, I have suggested that we should apply the little we have learned from systematic experimentation, consider what social science theory

suggests, add in a good dose of common sense and make those limited changes we think will improve the jury system. We should, however, resolve to study the changes we make so that we will learn if our hunches are right.

For more than a decade now the fitness of juries to hear complex cases has been on trial. Twelve years ago it was possible to say no more than that the case against the civil jury had not been proven. We still do not have nearly the amount of evidence one would like, but there is enough to support a more positive verdict. Based on what we now know today one cannot make out an empirical case for a "complexity exception" to the Seventh Amendment. Instead the weight of the evidence indicates that juries can reach rationally defensible verdicts in complex cases, that we cannot assume that judges in complex cases will perform better than juries, and that there are changes that can be made to further enhance jury performance. These conclusions will not necessarily be sustained as research proceeds. But they are the best that our knowledge base today can offer.

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Table One
(part one)

	Case		
	ABA Sexual Harassment	ABA Antitrust	ABA Arson
Source	ABA (1989)	ABA (1989)	ABA (1989)
Court	Federal	Federal	Federal
Subject	Sexual Harassment	Antitrust - Price Maintenance Conspiracy	Criminal Conspiracy to Commit Arson
Approximate Length	4 weeks	9 days	2 weeks
Other Sources of Complexity Other Than Length	3 years of behavior to sort out, 175 exhibits.	Unraveling meaning of an intricate chain of business transactions. Difficult instructions on conspiracy, use of business jargon.	Conspiracy law, complex fact question. 5-day recess in mid-trial.
Jury Aids	Notetaking - each side limited to 25 hours of testimony.	Special Verdict Form; notetaking allowed on preliminary instructions.	One juror took notes.
Jury Size	8	6	12
Inherent Difficulty of Evidence	Low	Moderate	Low
Jurors Who Completed College	---	0*	3-5*
Defensibility of Verdict	High	High	High
Judge or Lawyer Responsibility	---	---	---
Comments	---	Jurors with good understanding guided the others, some of whom were confused.	Jurors requested but could not get a transcript of crucial testimony - complained of having to reconstruct testimony from memory.

Table One
(part two)

	ABA Trade Secrets	Pennzoil v. Texaco	Cleveland v. C.E.I.#1
Source	Federal	State	Federal
Court	ABA (1989)	Adler (1985) (1986)	Austin (1984)
Subject	Trade secrets and restraint of trade	Tortious interference with contract	Antitrust, Attempt to monopolize
Approximate Length	6 weeks	4 1/2 months	8 weeks
Other Sources of Complexity Other Than Length	Highly technical testimony, subtle patent issues. Events involved many companies in 4 countries over a 4 year period; 281 exhibits - law of tortious interference difficult to understand.	Need to understand Financial Analyses of costs of discovering oil, business concepts like "agreement in principle", "leveraged buyout," and "indemnification."	Had to understand difficult concepts like "natural monopoly".
Jury Aids	Preliminary instructions; each side limited to 50 hours of testimony, notetaking allowed.	8 special questions posed, juror questions allowed for part of trial.	5 special interrogatories.
Jury Size	6	12	6
Inherent Difficulty of Evidence	High	Liability Low	Moderate
Jurors Who Completed College	2-3*	1-3*	0
Defensibility of Verdict	Moderate	Liability: Moderate Damages: Low	Low (?) (hung 5-1 against judge's apparent preferred verdict)
Judge or Lawyer Responsibility		Liability: judge, lawyer Damages: lawyer	

Table One (continued)

	ABA Trade Secrets	Pennzoil v. Texaco	Cleveland v. C.E.I.#1
Comments	<p>Most able juror assumed leadership role; compromise verdict because of one holdout- lack of indexing made it difficult to find documents in jury room. Without compromise forced by the holdout, the verdict would have been highly defensible.</p>	<p>The trial had two judges. The first made several mistaken evidentiary rulings that strongly hampered the defense case. The second posed a jury change that undermined the defendant's position. Defense counsel failed to put on expert witness to explain a key concept which the jury misunderstood and failed to offer jury any evidence or argument on damage issue. The plaintiff's attorney's contribution of \$10,000 was the largest campaign contribution to the trial judge's reelection campaign. He also contributed \$10,000 to the judge's administrative judicial superior.</p>	<p>The judge seemed biased against city. The jury was not properly concerned with issue of the relevant market. The jury attitudes toward the size and identity of parties affected the verdict. The jury did not understand concept meaning of proximate cause, and failed to limit certain evidence to impeachment. After an early straw vote the jury did not function well. The jurors did not understand the instructions which were given orally in a 1 1/2 hour lecture by the trial judge, but seemed to understand the conduct testimony.</p>

Table One
(part three)

	Case		
	Cleveland v. C.E.I. #2	U.S. v. DeLorean (criminal)	U.S. v. Gaf. Corp.
Source	Austin (1984)	Brill (1984)	Frankel (1989)
Court	Federal	Federal	Federal
Subject	Antitrust, Attempt to monopolize	Criminal Conspiracy	Stock Manipulation (criminal)
Approximate Length	11 weeks	4 months	6 weeks
Other Sources of Complexity Other Than Length	Need to understand difficult concepts like "natural monopoly".	Vivid videotape could have distracted from other evidence.	Need to understand how stock trading is conducted.
Jury Aids	Copy of instructions allowed in deliberations - special interrogatories - preliminary instructions given which summarized issues and defined terms - written final instructions.	Written copy of instructions - copies furnished each juror when jury insisted - notetaking.	--
Jury Size	6	12	12
Inherent Difficulty of Evidence	Moderate	Low	Low
Jurors Who Completed College	0	7	0-1
Defensibility of Verdict	The jury seemed to understand high conduct testimony and most technical terminology. There was low comprehension of instructions.	High	Moderate (hung)
Judge or Lawyer Responsibility	---	---	---

Table One (continued)

	Cleveland v. C.E.I. #2	U.S. v. DeLorean (criminal)	U.S. v. Gaf. Corp.
Comments	Unlike the first case the judge provided the jury with a written copy of his instructions to use during its deliberations.	The judge did an excellent job in keeping things clear and being unbiased. The jury discussed matters thoroughly and systematically; juror mistakes were corrected by other jurors.	This was the 2nd mistrial in the case. The first was caused by a prosecutorial failure to disclose an expert's report to defense. The jury voted in the first half hour, with the jurors split into 3 groups. Many opinions changed during deliberations. The case turned on credibility issues. The jurors were not moved by a plea to "send a message to government" or by the government pointing out that the defendant's idea of community service was founding the Aspen Junior Golf Foundation.

Table One
(part four)

	Case		
	California v. Keating	___ v. W.R. Grace & Co.	Charles Newman, et al. v. Johns Manville, et al.
Source	Jervey (1992)	Pacelle (1986)	Selvin & Picus
Court	State	Federal	Federal
Subject	Violating California Corporations Code and Fraud in selling bonds (criminal)	Toxic Tort	Products Liability - Asbestos
Approximate Length	10+ weeks	4 months	7 days
Other Sources of Complexity Other Than Length	Need to understand market in junk bonds and duties of buyers and sellers. Evidence entirely circumstantial. 18 counts involving 15 individuals and 3 couples had to be decided.	Technical, conflicting expert testimony, much of it dealt with hydrogeological issues.	4 plaintiffs with differing stages of lung function impairment; substantial conflicting expert testimony, complex issues of medical causation, diagnosis and prognosis.
Jury Aids	--	Special interrogatories (poor), trial in phases.	Jurors furnished with trial notebooks containing listing of asbestos products manufactured by the defendants, copies of warnings used and dates of warnings, preliminary instructions on some issues. Notetaking allowed, jurors given 4 question verdict form.
Jury Size	12	6	6
Inherent Difficulty of Evidence	Moderate	High	Liability: Moderately high Damages: Low (?)
Jurors Who Completed College	1	1	No Information
Defensibility of Verdict	High	Low - new trial needed because special questions inconsistently answered	Liability: High Damages: Low
Judge or Lawyer Responsibility		Judge, lawyer	Damages: lawyer

Table One (continued)

	California v. Keating	___ v. W.R. Grace & Co.	Charles Newman, et al. v. Johns Manville, et al.
Comments	<p>No initial vote. The foreman encouraged a general discussion. First careful analysis of evidence and instructions. The jury was not swayed by dislike of one victim. There was a substantial conflict of views. No defense case was presented.</p>	<p>The jury interpreted its task in terms of guilt or innocence. Jurors attempted to deal with the evidence systematically and to look at the evidence from both sides. The verdict form had a "not determined" response category that in effect decided the issue for the defense without the jury knowing it. Plaintiff's counsel did not explain that a "not determined" answer was equivalent to a "no." Only one juror understood - the only "college grad." He kept quiet because he liked the result. Jury's answers to the verdict form were not reasonable, but judge asked misleading question.</p>	<p>The authors argue that most damage awards were excessive, but that is because defense counsel never explained that if the plaintiffs had asbestos the disease would not progress equally in all plaintiffs. Also, the authors argue that one plaintiff's award was cut back due to his nationality, but the award was still substantial and fair vis-a-vis what others received. This plaintiff received the same amount in punitive damages.</p>

Table One
(part five)

	Case
	Micro/Vest v. Computerland Corp.
Source	Weinstein (1985)
Court	State
Subject	Breach of Contract, Conversion
Approximate Length	8+ weeks
Other Sources of Complexity Other Than Length	--
Jury Aids	--
Jury Size	12
Inherent Difficulty of Evidence	Low
Jurors Who Completed College	0-3
Defensibility of Verdict	Liability: High Damages: Low
Judge or Lawyer Responsibility	Damages: lawyer

Table One (continued)

	Micro/Vest v. Computerland Corp.
Comments	<p>The defendant intransigently refused to settle. The jurors misunderstood the judge's instructions on damages and misinterpreted the facts. The judge allowed a questionable cause of action to be added which opened the door to the punitive damages. The case lasted as long as it did because it was tried only 4 hours a day, 4 days a week. Crucial evidence on damages was excluded by the trial judge. Not much evidence was offered in support of the plaintiff's punitive damage request and nothing was offered by the defendant who simply asked for a zero verdict. A punitive damage instruction was misremembered.</p>

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