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#### **Authors**

Lachman, Janet L.

Lachman, Roy

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System Properties of American Law:  
Constraints on Applying Cognitive Science

Janet L. Lachman and Roy Lachman

University of Houston

One measure of the value of a science is its impact on other sectors of society. Cognitive theory has undergone unprecedented growth in the past decade and there are many areas of potential application. One of these is the institution of law. However, law is an intricately structured system, and efforts to apply cognitive science research findings in legal settings will come face to face with a fundamental reality: the systems properties of the law, and not the extent of our expertise, will determine the nature and extent of such contributions. Law is an intellectual enterprise, and much cognitive data appears strikingly pertinent to its operation. However, substantial differences between scientific and legal outlook can result in different judgments of pertinence. Many of our colleagues, even those who have frequently testified as experts, have been puzzled and even outraged by the exclusion of some of their most salient inputs. One who understands the system is likelier to produce information that will be welcomed, or at least appreciate the factors leading to rejection when it occurs. This paper will consider certain of the objectives of a trial that determine what expert testimony is likely to be admitted, and to suggest four points at which cognitive expertise might find entree to institutions of law.

There is much more to law than the trial of cases, but the trial is a central feature of our legal system. It is our ultimate tool for resolving disputes and for imposing criminal sanction. It is also the most common setting for the introduction of non-legal expertise. The nature and extent of expertise that is admitted is determined by the purposes of the trial and the values the system has placed on certain competing purposes. A trial is essentially a determination whether the facts of a particular case fit a given pattern, where the pattern has legal consequences. For example, if a physician commits malpractice and thereby injures his patient, the legal consequence is that he owes the patient money. "Malpractice" is essentially a legal pattern consisting of failure to provide the level of care the doctor implicitly promised when he undertook to treat the patient. When a patient sues his doctor for malpractice, the trial will be an effort to find out what level of care the doctor implicitly promised, and whether the treatment fell below that level; whether the patient was really injured, and if so, whether the doctor's conduct caused the injury. These facts are established on the basis of the evidence admitted at the trial, which includes the testimony of witnesses, expert and otherwise. In a jury trial, the jury determines the facts, within certain limits, and applies the law as instructed by the judge. In a bench trial, the judge finds the facts and applies the law. In either case, the factual determinations are made in a context of competing values, of which achievement of truth is only one.

The legal standard of truth is not, and never has been, absolute. For centuries, courts have decided the truth of claims where absolute accuracy is unobtainable. What is obtainable in our adversary system is procedural fairness; and as our system has evolved, procedural fairness has become the measure of the truth achieved. One dimension of the fairness of the system is the speed with

which a result is reached: "justice delayed is justice denied." Moreover, the perception of fairness is a significant dimension of the system; if people do not trust institutional methods of dispute resolution, they will turn to non-institutional remedies. And of course, a major purpose of a justice system is to avoid resort to such remedies.

The presiding judge at a trial is attempting to structure a procedure that achieves the best compromise of these sometimes competing values. He must not prejudice the interests of a party; he must not deprive a party of a fair trial. But the system does not require him to give any party the best trial possible. There are many different judicial decisions that are consistent with fairness; and typically the judge will not be reversed as long as his decisions have not denied a party a fair hearing. Among the decisions the judge makes is whether any witness, expert or otherwise, shall be heard. He must admit testimony only if it would be unfair to exclude it. He will admit testimony if he thinks it will help the jury decide the issue it must decide, sufficient to offset the costs in court time.

The trial, then, is a method for determining disputed facts by means of structured procedures. The distinction between "facts" and "law" is a fundamental one. "Facts" in the malpractice lawsuit previously mentioned are the nature of the doctor's implied promise, and whether his conduct caused the patient's injury, etc. The "law" encompasses virtually all else, including the trial procedures themselves. Witnesses are supposed to testify to facts only; expert witnesses are permitted to express opinions on factual matters. However, no witness is supposed to testify to matters of law. Consequently, testimony that is relevant to an ultimate fact in issue tends to be freely admitted; but testimony that has implications for the fairness of the procedures is less welcome. Certain types of psychological expertise, particularly, tend to relate rather intimately to the conduct of the trial itself, and in these areas courts may be surprisingly resistant to hearing what the expert has to say. We shall return to this point.

How, then, does cognitive expertise exert an impact on the legal system? The mechanics of impact are multifarious; but there appear to be four "points of system operation" at which cognitive research might be received. The first of these might be called "procedural reform". Procedural reform involves changes in procedural rules themselves. This is the level at which research on the effects of jury size impacts the system, for example. Procedural reforms are basically a legislative prerogative, and research concerning procedural reforms is most likely to impact the system in legislative committee hearings, direct lobbying, and the like. If cognitive research on judicial decision-making has procedural implications, this would be the appropriate level for its introduction.

The second point at which cognitive science is likely to impact the law is at the traditional level of assisting in fact finding. This form of impact is achieved by the familiar means of testifying at trial, regarding some area of expertise that has become an issue in a particular lawsuit. One example is testimony about the effect of fatigue on reaction time in an automobile accident case.

The third point is subtle, falling somewhere between the first and second. We shall label it "judicial control processes", but the label is not self-explanatory. At this level, the cognitive scientist appears to be testifying to facts, in the conventional manner, but the testimony has implications for trial procedures. As previously mentioned, testimony of this type may be resisted.

Cognitive research specifically designed to have legal significance may impact the legal system at this level, but it requires a sympathetic judge for it to be heard. One example is eyewitness identification research. The cognitive scientist is called, usually by the defense in a criminal case, to tell the jury the results of research on eyewitness identification. The researcher's testimony is received as "fact" testimony, nominally to help the jury evaluate the credibility of the eyewitness. However, it has wider implications, because it suggests that juries need assistance in evaluating the general credibility of eyewitnesses -- not just the eyewitness in a particular case. Juries are presumed to possess without advice proper perspicacity on such matters. The judicial impulse may be to exclude the testimony, perhaps on the basis that it will not help the jury. And in one sense, it won't: if the prosecution's case depends heavily on the eyewitness, how can it help the jury to be told that their best source of information is unreliable? No comparable problem exists where the testimony is more traditional; it need not unsettle the judge if a witness swears that his research shows that tired people react slowly. Despite pressures to exclude expert testimony on the reliability of eyewitnesses, there is a trend toward admitting it. This trend may reflect a factor that countervails judicial resistance: only the defendant can appeal in a criminal case, and it is usually defendants who seek to introduce expert testimony to counter the effects of an eyewitness. By giving the defendant the benefit of every doubt, the judge minimizes the occasions on which his decision is reversed on appeal.

A second example of cognitive science research impacting the legal system at this third level is work on hypnosis. Many witnesses have proved able to recall additional and important detail under hypnosis that they could not recall otherwise. There are important legal issues involved in the use of hypnosis: Can the witness meaningfully swear the oath to tell the truth while hypnotized? Can the witness swear before being hypnotized, and comply with the oath afterward? Can the witness be meaningfully cross-examined? Cognitive research on hypnotism may prove considerably more valuable to our legal system than that on eyewitness identification, for it potentially adds to the fact-finding arsenal. It has also met with initial resistance; like eyewitness identification reliability, it has implications for the conduct of the trial itself. However, if the nature of hypnosis can be understood, the legal issues can be addressed rationally and the system eventually will encompass it.

The final area of potential impact might be called "indirect inputs". Empirical data available in cognitive science that are rejected at the other levels can nevertheless be used informally by attorneys. A well-known example of impact at this level comes from social psychology, where empirically-based theories of small-group interaction have been used to assist lawyers in the jury-selection process. Comparably, a cognitive scientist whose formal testimony on eyewitness identification has been rejected by the trial judge may nevertheless suggest to the attorney the most vulnerable aspects of the eyewitness' account, and these suggestions may be used to advantage in cross-examination.

By far the smoothest entry to the legal system is in the conventional role of expert on a disputed issue of pure fact. Much of our research has implications for important areas of the law, which would be quickly noticed by the legal profession if it were properly packaged. For example, psycholinguistic research on language comprehension is typically done using narrative prose. However, reading the instructions on equipment, medicine

bottles and the like also involves language comprehension -- and also figures in an important class of products liability cases. There may be some questions that could be meaningfully addressed in either context; if so, why not use the one with practical utility? Incidental learning and recognition memory, two familiar areas of memory research, are significant factors in trademark infringement cases. Some of these research questions might be addressed by using real or simulated trademarks as stimuli; and the researcher would become a potential contributor to the patent and copyright bar. Research on cognitive development could suggest when a child is old enough to make informed decisions on matters affecting his own welfare, such as medical treatment (including abortion), which parent shall have custody, etc. Psychological and psycholinguistic inquiry into the concept of intentionality potentially has profound implications. Many additional areas of research could be suggested that would be both quality cognitive science and oriented toward significant issues of law.

We have suggested four distinct ways that cognitive scientists can seek to make contributions to our legal institutions. The reception will be different depending upon the point of impact; the cognitive scientist who understands the properties of the legal system will be in a better position to comprehend its response to his proffered contribution.