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## Computerized Knowledge Representation and Common Law Reasoning, 9 *Computer L.J.* 223 (1989)

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# COMPUTERIZED KNOWLEDGE REPRESENTATION AND COMMON LAW REASONING

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## I. INTRODUCTION

The law is an applied science which involves the analytic application of legal norms to fact patterns.<sup>1</sup> Practicing attorneys assume the responsibility for discovering the relevant facts underlying a client's request for legal representation and determining how these facts may fit into an established legal framework. This legal framework is generally characterized by legal precedent,<sup>2</sup> statutes or codes, and judges' personal predilections.<sup>3</sup>

The practice of law also involves a combination of inductive<sup>4</sup> and deductive legal reasoning.<sup>5</sup> Benjamin Cardozo identifies four distinct aspects of legal reasoning: logical analysis, historical development, custom, and social justice.<sup>6</sup> Of these four aspects, only the first is purely

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1. See R. MOORE, *LEGAL NORMS AND LEGAL SCIENCE* 2-7, 42-109 (1978) (analysis of Kelsen's conception of legal science as merely "schemes of interpretation").

2. See E. LEVI, *AN INTRODUCTION TO LEGAL REASONING* 1-2 (1949) ("[T]he basic pattern of legal reasoning . . . is a three-step process described by the doctrine of precedent in which . . . similarity is seen between cases; next the rule of law inherent in the first case is announced; then the rule of law is made applicable to the second case.").

3. See generally D. BURTON, *OLIVER WENDELL HOLMES, JR.: WHAT MANNER OF LIBERAL?* (1979) (analysis of Holmes' treatise on legal realism—*THE PATH OF THE LAW*); K. LLEWELYN, *THE BRAMBLE BUSH* (1960) (legal realism); J. FRANK, *LAW AND THE MODERN MIND* (1963) (legal realism); D. MACCORMICK, *LEGAL REASONING AND LEGAL THEORY* (1978) (legal realism). See also *infra* text accompanying notes 97-98.

4. See D. BURTON, *AN INTRODUCTION TO LAW AND LEGAL REASONING* 25-27 (1985) (people generally use inductive reasoning in day-to-day activities).

5. See generally I. COPI, *INTRODUCTION TO LOGIC* (6th ed. 1982). Deductive reasoning is a method of analysis where the antecedent necessarily entails the conclusion. For example, an antecedent composed of the premises "If I live in Pittsburgh, then I live in Pennsylvania" and "I live in Pittsburgh" necessarily entails the conclusion "I live in Pennsylvania." See *infra* text accompanying notes 10-22.

6. See B. CARDOZO, *THE NATURE OF THE JUDICIAL PROCESS* 21-23 (1921) (Lecture I in a collection of Cardozo lectures presented in 1921 at Yale University).

deductive in nature and, therefore, most suited to computing.<sup>7</sup>

The goal of this paper is to explore the possibilities of devising a computerized expert legal system which is capable of deriving legal conclusions and giving legal advice based on a particular fact situation. In order to reach legal conclusions, such a system should draw upon a knowledge base composed of codes, statutes, and common law. Furthermore, the system should determine whether particular codes, statutes, or precedent mandate a result in each case.

Such a system is currently technologically infeasible. Technology aside, however, a computerized expert legal system is inherently limited by the inability of humans to program computers to accurately recognize the realm of human relationships, reason inductively, or represent legal knowledge. Each of these obstacles are knowledge representation problems which can be surmounted only by encoding tremendous amounts of information and formal reasoning procedures as data structures. This paper will analyze these knowledge representation problems, suggest a means toward their resolution, and offer an expert legal system which models common law legal reasoning using essentially deductive reasoning.

## II. THE KNOWLEDGE REPRESENTATION PROBLEM EXPLAINED: THE HUMAN MIND MODEL

The ability of a computer to store the bulk of legal doctrine in memory presents relatively few theoretical problems. However, this poses the immense practical problem of ascertaining the bulk of legal doctrine and transcribing it into a form which computers can understand. In order to effectively store and manipulate data of any amount, a computer must have a cross-indexing scheme. An illustration of the type of cross-indexing system used in computer systems may be found in the human mind.

It is believed that observed facts are processed by the hippocampus, and are stored as memories in the cerebral cortex.<sup>8</sup> One school of thought suggests a "subject model" concept of memory storage in which long-term memory is arranged in the cerebral cortex by subject.<sup>9</sup> Memories are formed through the brain's information pathways—pathways referred to as "traces." This "subject model" of memory storage sug-

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7. See Walter, *Introduction*, in *COMPUTING POWER AND LEGAL REASONING* 4 (C. Walter ed. 1985). Because the goal of the law is justice rather than truth, legal questions elicit inductive analysis founded on open-textured technical concepts with dynamic definitions and interpretations. *Id.* Nevertheless, deductive aspects of legal analysis may readily be executed with the aid of computers. *Id.*

8. See Hinko & Pearlmutter, *Effects of Arginine Vasopressin on Protein Phosphorylation in Rat Hippocampal Synaptic Membranes*, 17 *J. NEUROSCIENCE RES.* 71-79 (1987).

9. See, e.g., Memory, *NEWSWEEK*, Sept. 29, 1986, at 45-54.

gests that subjects are arranged by relevant words known as "mnemonics." A mnemonic device generally engrains a fact in the cerebral cortex by means of a clearly established trace. However, according to this theory, even though particular memories are processed by one's brain, they may, nevertheless, become irretrievable, that is, "forgotten," when their respective traces are unclear.

The subject model suggests that the ideal design for tailoring a computerized expert legal system should be based upon mnemonic traces. As a result, developers of expert legal systems are faced with the immense task of devising an indexing system which can store vast amounts of information, and which can recall the same information through a variety of traces.

### III. LOGIC AND LEGAL ANALYSIS

Legal reasoning involves the application of historical development, custom, social justice and logic.<sup>10</sup> Legal analysis has been described as the logical derivation of legal conclusions from particular fact situations in light of some body of legal doctrine.<sup>11</sup> Insofar as any and all logical systems can be computerized,<sup>12</sup> and insofar as legal analysis involves logic, legal analysis can be computerized.

A computer is essentially a machine for explicating a logical system.<sup>13</sup> Computers lend themselves to logical analysis mainly through three different logic operations: "tests," "conditional branches," and "repeats."<sup>14</sup> Tests cause the comparison between two pieces of data. Conditional branches cause the computer to adjust its operation and change the sequence of steps the computer carries out. The repeat function allows a computer to repeat a set of instructions. Although these functions alone do not appear to be very powerful, a standard personal computer can perform more than 600,000 conditional branch operations every second.<sup>15</sup> Thus, by repeating these three basic logical functions, computers can perform almost any kind of logical analysis.

To the extent that legal analysis involves logical analysis, legal analysis is composed of two modes of logical reasoning: deductive and inductive reasoning.<sup>16</sup> Deductive analysis lends itself to computerization. Inductive analysis, however, involves classification of attributes

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10. See Meldman, *A Structural Model for Computer-Aided Legal Analysis*, 6 J. COMPUTERS & L. 27, 30 (1977) (citing Cardozo).

11. *Id.* at 30.

12. See Leith & Philip, *Logic, Formal Models and Legal Reasoning*, 24 JURIMETRICS J. 334 (1984).

13. *Id.*

14. See P. NORTON, *INSIDE THE IBM PC 76* (1986).

15. *Id.* at 78.

16. Leith & Philip, *supra* note 12, at 348.

and classes to determine similarities and differences with existing fact patterns. For a computer to perform inductive reasoning, it must be able to recognize class distinctions and relationships between those classes.

Deductive and inductive arguments are sometimes distinguished from one another in terms of the relative generality of their premises and conclusions.<sup>17</sup> For instance, deductive reasoning is the process of inferring the particular from the general. This is best illustrated by the following classic example:

All humans are mortal.  
Socrates is human.  
Therefore, Socrates is mortal.

Conversely, inductive reasoning is the process of inferring the general from the particular.<sup>18</sup> The following is an example of an inductive argument:

Socrates is a human and is mortal.  
Bob Hope is a human and is mortal.  
Ronald Reagan is a human and is mortal.  
Rene Descartes is a human and is mortal.  
Therefore, all humans are mortal.

While the relative generality of premises is one factor distinguishing between deductive and inductive reasoning another, more convincing, factor arguably differentiates the two.<sup>19</sup> Specifically, in a deductive argument, the conclusion follows from the premises with absolute necessity. However, in an inductive argument, the conclusion follows only with a degree of probability which is less than certainty. Thus, an inductive conclusion is subject to change by the introduction of counterexamples.

There are three types of inductive arguments, each of which uses a distinct mechanism.<sup>20</sup> First, inductive reasoning may proceed by analogy. Analogy involves inferring resemblance between two objects—class attributes of a first object are recognized, and a second object is determined to be either a member or a non-member of those same classes.

Second, inductive reasoning may proceed by generalization. Generalization may occur when two or more objects share two particular characteristics, and where a class of additional objects share one of the two particular characteristics. Through the generalization process, the second particular characteristic is inferentially attributed to all of the

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17. I. COPI, *supra* note 5, at 51.

18. *Id.* at 52.

19. *Id.* at 53.

20. *Id.* at 54.

additional objects as well.<sup>21</sup>

Finally, inductive reasoning may operate by means of a "cause-and-effect" analysis. A causal connection is inferred between events or characteristics which frequently seem to occur or appear together.<sup>22</sup>

Although people generally reason inductively, legal analysis is essentially deductive. Where the fact pattern of a particular case fits within the scope of an established rule, a particular legal conclusion will necessarily follow. The clearest example of the deductive nature of legal analysis is found in the application of strict liability laws. Not all fact patterns, however, fit neatly under a rule of law.

Sometimes cases which involve almost identical fact situations may result in conflicting holdings. Thus, while the fact situations may be similar at first glance, there is at least one factor which legally distinguishes the two. It is in such instances that the ideal expert legal system will have to use inductive reasoning to determine the distinguishing factor. Unfortunately, programming a computer to recognize legally relevant facts is the greatest obstacle to automating inductive reasoning. If an expert legal system could discern legally relevant facts, it could then determine similar fact patterns, and apply established rules of law to particular cases.

#### IV. COMPUTERIZED LEGAL ANALYSIS

As discussed above, lawyers can store and trigger cases and concepts in their minds through the use of natural language tags.<sup>23</sup> Similarly, computerized legal analysis requires concepts to be classified under computerized tags, so that the relevant information may be retrieved when needed. However, formulating computerized tags presents a knowledge representation problem.

Since the 1960s, much attention and effort has been directed toward the use of computers to retrieve data in order to expedite the process of legal research.<sup>24</sup> Prior to the 1960s, lawyers were forced to manually search for all relevant constitutions, statutes, and case law. Although constitutions are relatively brief, statutes, codes, and case law comprise the bulk of legal knowledge and require huge libraries to store them in printed form. "Accompanying indices" and "digests" have been developed in order to enable practitioners to sort through this morass. One such indexing scheme is the West Key Number System.<sup>25</sup> The West

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21. See *supra* text accompanying notes 18-19 (the "Socrates" example of inductive reasoning).

22. I. COPI, *supra* note 5, at 54.

23. See *supra* text accompanying notes 8-9.

24. Meldman, *supra* note 10, at 40.

25. The "West Key Number System" is a copyright of West Publishing Company.

system breaks all legal concepts down into West "topics" and assigns key numbers to both these topics and sub-topics. Legal concepts are thereby arranged in a hierarchic structure with major topics at the top of the structure and specific holdings at the bottom. However, even with these numeric aids, manually locating relevant statute sections, code sections, or cases is often inefficient and ineffective. A better solution may be computerizing legal indexing schemes and the body of legal knowledge.

LEXIS and WestLaw are the foremost attempts at computerizing legal retrieval systems. Both operate via a method of keyword search known as "key-word-in-combination." These systems require the user to input key words or phrases to retrieve the cases containing the same key words or phrases. LEXIS and WestLaw are inherently ineffective, however, because the key word or phrase input and searched is not necessarily connected to the context of the case in which it appears. WestLaw is relatively more effective than LEXIS since, in addition to mere words, a user may input West Key Number System topic and sub-topic numbers. However, even WestLaw is inefficient because it is still overly broad and often retrieves large amounts of irrelevant information.

For example, suppose one wishes to research whether intentionally grabbing a book from another's hand is a battery. An appropriate key phrase to input into the system might be the following:

battery & "unconsented to grab\*"

The ampersand requires the system to retrieve only those cases which contain all key words or phrases which appear on both sides of the ampersand; the asterisk tells the system to retrieve all variations of the root word immediately preceding the asterisk; and the quotation marks tell the system to retrieve the enclosed phrase in its exact form. This particular search did not retrieve any cases in either the "all federal" or "all state" database.<sup>26</sup> Perhaps limiting the search to an "unconsented to" "grab" was the factor which caused the search to fail. Perhaps it would be less restrictive if the key phrase included only the word "unconsented" in the same sentence as the word "grab" without requiring them to be immediately next to each other. Hence, a new search might appear as follows:

battery & unconsented /s grab\*

The signal "/s" requires the system to retrieve cases where both key words on either side of the "/s" appear in the same sentence. As expected, several cases satisfied this search. However, only one case was directly on point—the others were irrelevant.

Thus, oftentimes a LEXIS or WestLaw search results in cases

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26. Both LEXIS and WestLaw enable the user to research particular jurisdictions.



which bear no relationship to the particular issue the user is researching. A query often retrieves irrelevant information, and the information that is relevant is sometimes overlooked by the system because the user's key word or phrase does not precisely fit the appropriate case.

## V. COMPUTER MODELING OF LEGAL CONCEPTS

To correct these problems, the query should be based on the legal concepts being researched.<sup>27</sup> In order to permit concept-based legal research, programmers must surmount the knowledge representation problem involved in modeling these concepts for use by computers.

One such system for overcoming the knowledge representation problem was proposed by Wesley Hohfeld in 1919.<sup>28</sup> Hohfeld based his system of analysis on four elements: rights, powers, privileges and immunities and their counterparts: duties, no-rights, liabilities, and disabilities.<sup>29</sup> Legal analysis, according to Hohfeld, is only a matter of following a set of logical rules that operate on these elements. However, Hohfeld's approach, and the entire field of analytical jurisprudence, was not well received in his time.<sup>30</sup>

More recent efforts include the work of Georg von Wright, who developed an analytical model called deontic logic.<sup>31</sup> Von Wright used mathematical logic to describe the obligations that run between people. While von Wright was not a lawyer, his system resembles Hohfeld's. Like Hohfeld's system, von Wright's deals with commands and permissions, states of affairs, and transitions between states.

Layman Allen constructed a model of legal analysis using symbolic logic and propositional calculus.<sup>32</sup> To Allen, a statement of legal doctrine may be paraphrased in the form of two propositions: one proposition is a set of legal consequences and the other is a set of conditions that imply these consequences.<sup>33</sup> For example, a legal consequence will follow when condition 1, condition 2, etc. are satisfied. This method of legal analysis is similar to the propositional calculus of the programming language "Prolog."<sup>34</sup>

Another commentator suggests the use of structural representa-

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27. See Krovetz, *The Use of Knowledge Representation Formalisms in the Modeling of Legal Concepts*, in *COMPUTER POWER AND LEGAL REASONING* 275 (C. Walter ed. 1985).

28. See generally W. HOHFELD, *FUNDAMENTAL LEGAL CONCEPTIONS AS APPLIED IN JUDICIAL REASONING* (1919).

29. Meldman, *supra* note 10, at 34.

30. *Id.*

31. G. VON WRIGHT, *NORM AND ACTION* (1963).

32. Allen, *Symbolic Logic: A Razor Edge Tool for Drafting and Interpreting Legal Documents*, 66 *YALE L.J.* 833 (1957).

33. Meldman, *supra* note 10, at 37.

34. See *infra* text accompanying notes 53-54.

tions.<sup>35</sup> "These representations comprise relatively complicated structures assembled from primitive data items that represent relatively simple things and relations in the everyday world."<sup>36</sup> This model portrays factual situations as "things" and "relations." Things and relations are distinguishable since relations always run from one thing to a second thing.<sup>37</sup> Meldman contends that if the relational structure of the factual components is explicitly represented, it is likely that a case retrieval system would find fewer irrelevant cases.<sup>38</sup>

It is important to note that a system which takes into account relational structures has never been implemented because, regardless of the model used, large numbers of cases would have to be translated into representational data structures. As a result, it is uncertain whether these systems would provide improved performance.

## VI. OTHER KNOWLEDGE REPRESENTATION TECHNIQUES

### A. PATTERN MATCHING

Pattern matching may be used to organize an expert legal system based on pattern recognition rather than reasoning. Legal concepts may be defined as a particular series of bits. Each bit represents the presence or absence of an attribute which a legal expert/programmer has deemed important in the definition of that legal concept. A legal conclusion follows when the system finds that the pattern of bits in the definition matches the user-defined pattern.

Pattern recognition programs are usually based on classifier systems; that is, information about a set of conditions is encoded as a string of bits with each bit representing a specific feature that is typically binary in nature.<sup>39</sup> A classifier system also allows the expert to weight the relative importance of the presence or absence of each bit.

An example of such a classifier system is as follows:

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35. Meldman, *supra* note 10, at 42.

36. *Id.*

37. *Id.* at 44.

38. *Id.*

39. Binary code is the basis of all computer programming. Binary code is comprised of only two character types, the number "0," referred to as "off," and the number "1," referred to as "on." Computers respond to particular patterns of binary code, known as "machine language," in ways unique to that pattern. Each digit of a binary number represents that corresponding power of the number "2"; for example, the corresponding powers of 2 of a typical binary number are as follows:

Binary Number	10111
Corresponding Powers of 2	43210

The binary number 10111 simply means that 2 to the 4th power, 16, is "on," 2 to the 3rd power, 8, is "off," 2 to the 2nd power, 4, is "on," 2 to the 1st power, 2, is "on," and 2 to the 0 power, 1, is "on." Thus, the binary number 10111 equals  $16 + 4 + 2 + 1 = 23$ .

**Battery:**

1. Intent
2. Contact
3. Consent
4. Privilege
5. Injury
6. Plate
7. Book
8. Rocketship

This is a small subset of the total set of attributes. The greater the number of class attributes included in a classifier system, the more accurate the total system.

The expert's job is to identify those class attributes that are relevant. After class attributes are identified, the expert must incorporate a classifier definition. Using the battery class attributes identified above, a classifier system of battery might be defined as follows:

**Battery:**

A. 1, 2, 3

B. 4, 5

C. 6, 7, 8

(NOTE: An underline indicates the negation of the attribute.)

A = those attributes which must be present;

B = those attributes whose absence would indicate negative evidence;  
and

C = those attributes which are helpful when present but not damaging when absent.

Because microcomputers are able to compare bit attributes,<sup>40</sup> expert legal systems using legal concepts defined in the above manner could be developed for microcomputers.

## B. LEARNING

Another question which often arises is whether computers are able to "learn." Learning systems are able to extract knowledge from raw data or through intersystem informative exchanges, including conversations with users. A learning system should be able to identify the facts it does not already know, acquire this knowledge cumulatively, and incorporate the knowledge into its current knowledge structure.<sup>41</sup> If a legal information system was able to learn, it could update itself and thereby provide the user with the most current legal advice. This is the last obstacle to creating the ideal expert legal system.

Generally, computers learn by translating specific instances into

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40. See *supra* text accompanying notes 10-22.

41. Kolokouris, *Machine Learning*, BYTE, Nov. 1986, at 225.

general rules.<sup>42</sup> "Martin's Law" stands for the proposition that one cannot learn anything unless one almost knows it already.<sup>43</sup> Professor Winston demonstrates how a computer can learn class descriptions from positive and negative samples. He calls this procedure "hit and near miss."<sup>44</sup> In this procedure, a teacher presents carefully chosen samples. The computer "learns" whatever rules it can from the samples, and it then forgets the individual samples. The computer learns through what Winston calls "induction heuristics"; that is, a model evolves through known class attributes and non-attributes. Eventually, the procedure forms general rules from specific instances.

## VII. A COMPUTER MODEL OF COMMON LAW LEGAL REASONING

In recent years, researchers have attempted to model legal reasoning using computers capable of exhibiting "artificial intelligence"<sup>45</sup>—that is, the capacity for "common sense," or the intelligent reasoning which is generally characteristic of humans.<sup>46</sup> The failure of this approach led researchers to direct their attention toward the development of teleozetic<sup>47</sup> expert systems capable of receiving factual input in highly focused areas and applying the input to goals in the form of conditional statements.<sup>48</sup> These efforts have yielded expert legal systems which incorporate the rules of a highly focused field of law, and which ask the user about the user's specific fact situation. The system then applies these facts to its endogenous rule hierarchy and offers a legal solution.<sup>49</sup> Thus, modern expert legal systems offer users the opportunity to quickly and conveniently analyze the merits of a case, and to determine whether or how the case ought to proceed.

This progression of computer-modeled legal reasoning made it possible for the author of this article to develop a program entitled Com-

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42. *Id.*

43. P. WINSTON, *ARTIFICIAL INTELLIGENCE* 407 (1984).

44. *Id.* at 385.

45. See McCarty, *Reflections on Taxman: An Experiment in Artificial Intelligence and Legal Reasoning*, 90 HARV. L. REV. 837 (1977) (one of the first attempts to model legal reasoning using artificial intelligence).

46. See Ciampi, *Artificial Intelligence and Legal Information Systems*, in *ARTIFICIAL INTELLIGENCE AND LEGAL INFORMATION SYSTEMS* 49, 51 (C. Ciampi ed. 1982).

47. See Coulter, *The Self-Determinism of Teleogenic Systems*, 5 J. CYBERNETICS 9 (1976) (teleozetic systems are capable of receiving factual input, selecting among a set of internally stored goals, and determining whether these goals have been satisfied).

48. Conditional statements are merely "if-then" rules; for example, "If I live in Pittsburgh, then I live in Pennsylvania" is a conditional statement. See *infra* text accompanying note 55.

49. See Popp & Schlink, *JUDITH: A Computer Program to Advise Lawyers in Reasoning a Case*, 15 JURIMETRICS J. 303 (1975); see also McCarty, *supra* note 45, at 837.

puter Aided Criminal Trial Evidence Admissibility Heuristic (CACTUS).<sup>50</sup> CACTUS enables the user to determine whether evidence obtained by either a police search or a confession to police may be admitted against the defendant at a criminal trial. CACTUS prompts the user for "yes" or "no" answers to a subset of its hierarchy of questions, and provides the user with a determination of whether a particular piece of evidence may be admitted at the defendant's trial. As each question appears on the video display terminal, the user may choose to answer the question with the letter "Y" or the letter "N," or, to learn more about the legal principle underlying each question, the user could input the letter "P." CACTUS is simple to use and understand and may be employed by legal practitioners, judges, or curious laypersons, regardless of the user's level of computer expertise.<sup>51</sup>

In order to construct an expert system for use within a particular area of law, the legal principles underlying that area of law must be transformed into computer source code—statements a computer can recognize. The algorithm which constitutes CACTUS is a multi-level hierarchy of conditional statements abstracted in an artificial intelligence programming language called Prolog.<sup>52</sup>

### VIII. THE PROLOG LANGUAGE

Prolog derives its name from the term "Programming in Logic." Although all computer programming languages are a function of logic, Prolog is relatively more powerful than other programming languages because it closely emulates the logic of human thought and problem-solving processes.

Programming languages such as BASIC, Pascal, and "C" are procedural languages. A computer program written in one of these languages consists of a kind of step-by-step recipe which tells the computer how to solve the problem at hand. Prolog, by contrast, is a declarative language. A Prolog program provides the computer with a description of the problem to be solved and lets the Prolog language, itself, supply the procedural instructions.

A problem-solving component is inherent in every Prolog computer program. The heart of the language is therefore an "inference engine" which draws conclusions from facts which are not explicitly given in the program itself. A Prolog program consists of statements of fact describing a problem and rules for dealing with such facts. For example, consider the following syllogism:

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50. See *infra* app. A.

51. See *infra* text accompanying notes 56-72.

52. CACTUS was developed with the aid of TurboProlog which is a registered trademark of Borland International, Inc.

- (1) All men are mortal.
- (2) Socrates is a man.
- (3) Socrates is mortal.<sup>53</sup>

A Prolog program facing this problem would convey facts (1) and (2), and the computer would derive conclusion (3) with the aid of the Prolog language.<sup>54</sup>

Of course, facts (1) and (2) must be presented to the computer in syntactically correct source code. CACTUS' source code consists of many such syntactically correct rules of fact. In order to understand CACTUS' source code, Prolog should be conceptualized by translating the language into rules of predicate logic. Thus, an explanation of predicate logic is in order.

### IX. PREDICATE LOGIC

Predicate logic is particularly useful for translating natural language principles into computer source code.<sup>55</sup> The rules contained in CACTUS are readily constructed into natural language statements. Predicate logic incorporates the rules of inference of traditional logic, and thereby allows new consequences to be derived from antecedents. These rules of inference are common to most modern expert legal systems and are inherent to CACTUS as well.

The operation of predicate logic is largely dependent upon language symbols and rules which govern their use, commonly known as "syntax." In this respect, the syntax of predicate logic is similar to the syntax of arithmetic and mathematics. Predicate logic is also composed of connectives that logically relate syntactically valid statements.

For the purpose of interpreting CACTUS and other similar expert legal systems, only a cursory understanding of predicate logic is required. All predicates are presumed to be syntactically valid in CACTUS' source code.

The most basic rules of inference are expressed in the following "truth-table" analysis of predicate logic.

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53. See *supra* text accompanying notes 10-22.

54. See Shafer, *Prolog - Just the Beginning*, MACUSER, Mar. 1987, at 122-26.

55. See generally I. COPI, *supra* note 5 (a general discussion of logic).

## PREDICATE LOGIC TRUTH-TABLE

P	Q	$\neg P$	$\neg Q$	$P \& Q$	$\neg P \& Q$	$P \vee Q$	$P \Rightarrow Q$	$P \Rightarrow \neg Q$
T	T	F	F	T	F	T	T	F
T	F	F	T	F	F	T	F	T
F	T	T	F	F	T	T	T	T
F	F	T	T	F	F	F	T	T

In the truth-table above, the letters "P" and "Q" represent syntactically valid predicate logic statements. For example, "P" may represent the statement "I live in Pittsburgh." Similarly, "Q" may represent the statement "I live in Pennsylvania." The truth values of either P or Q may be represented as true, "T," or false, "F."

The logical connectives used in the above truth-table are interpreted as follows:

## LOGICAL CONNECTIVES

CONNECTIVE	INTERPRETATION
" $\neg$ "	Negation ("Not")
" $\&$ "	Conjunction ("And")
" $\vee$ "	Disjunction ("Or")
" $\Rightarrow$ "	Conditional ("If-Then")

The statement " $\neg P$ " means "It is not the case that I live in Pittsburgh," or, more simply, "I do not live in Pittsburgh." Similarly, " $\neg Q$ " means "I do not live in Pennsylvania." " $P \& Q$ " means "I live in Pittsburgh and I live in Pennsylvania." " $\neg P \& Q$ " means "I do not live in Pittsburgh, but/and I live in Pennsylvania." " $P \vee Q$ " means "I live in Pittsburgh or I live in Pennsylvania." " $P \Rightarrow Q$ " means "If I live in Pittsburgh, then I live in Pennsylvania." And finally, " $P \Rightarrow \neg Q$ " means "If I live in Pittsburgh, then I do not live in Pennsylvania."

The truth value of each of the last seven complex statements, namely  $\neg P$ ,  $\neg Q$ ,  $P \& Q$ , and so on, is a function of the truth values of the first two atomic predicates, P and Q. For example, looking across the first row in the truth-table above, notice that because P and Q are both true, "T," then  $\neg P$  is false, "F,"  $\neg Q$  is false,  $P \& Q$  is true,  $\neg P \& Q$  is false,  $P \vee Q$  is true,  $P \Rightarrow Q$  is true, and  $P \Rightarrow \neg Q$  is false. Likewise, the truth values of the last seven complex predicates in the three remaining rows in the truth-table are also functions of the truth values of the first two atomic predicates.

These predicates may also represent other natural language statements such as legal principles. For example, the predicate "Q" may represent the statement "Defendant is guilty of battery." The predicate

"P" may represent the statement "Defendant touched Complainant." Similarly, in order to represent the remaining elements of battery, the predicate "L" may represent "Defendant intended to touch, or was substantially certain that he was likely to touch, Complainant." "M" may represent "Defendant's touching of Complainant was offensive," and "N" may represent "Complainant suffered an injury caused by Defendant's touching."

The complex predicate for battery, as defined here, would be represented as " $(L \& M \& N \& P) \Rightarrow Q$ "; in other words, if the elements L, M, N, and P are all satisfied, then the antecedent  $(L \& M \& N \& P)$  is true, and Q is a true statement as well. If one or more of the predicates L, M, N, and P are false, then the antecedent  $(L \& M \& N \& P)$  must be false, and the consequence, Q, must also be false. Thus, in order for Defendant to be guilty of battery—that is, in order to establish that "Q" is true—the prosecutor must establish at Defendant's criminal trial that all of the elements of battery, as they are represented by the symbols L, M, N, and P, are true.

This type of logic is inherent in the CACTUS expert legal system and is represented by Prolog's unique syntax and connectives. As mentioned above, CACTUS is designed to determine whether a particular piece of evidence, gained either through a police search or by a confession to police, may be admitted at Defendant's criminal trial. The structure of CACTUS is a hierarchy of interrelated, complex predicate clauses which are either satisfied or "failed" in accordance with the user's response to a subset of CACTUS' hierarchy of questions. CACTUS interprets the user's responses and makes a determination as to the admissibility of evidence based on the rules of inference characteristic of predicate logic.

## X. AN APPLICATION OF PREDICATE LOGIC TO LEGAL REASONING: CACTUS

### A. THE STRUCTURE OF CACTUS

CACTUS' source code was developed using the artificial intelligence programming language Prolog and is divided into standard Prolog sections.<sup>56</sup> These sections include an untitled section at the very top of the program containing the system commands—"nowarnings" and "code=3000."<sup>57</sup> These commands relate more to the interaction between the program and the computer than to the interaction between the user and the program. An understanding of these commands is important only to the Prolog programmer.

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56. See *infra* app. A.

57. *Id.*, lines 80, 90.



The Prolog "database" section contains several elements including "question(string)".<sup>58</sup> These database elements are dynamic facts; for example, a limitless number of "strings" may be assigned to the element "question(string)" as long as the assignment is made in proper TurboProlog syntax. Once a particular value is assigned to a database element, for example, "question(Case),"<sup>59</sup> that value will remain an asserted fact throughout the program. Note that there may be two or more permanent assignments to a particular database element throughout the program, for example, "question(X)."<sup>60</sup> These asserted facts may then be used within the program's hierarchy.

The "predicates" section<sup>61</sup> of CACTUS contains the terms "admis," "inadmis," and so on. These terms are similar in form and function to standard predicates used in predicate logic.<sup>62</sup> These predicates are incorporated into clauses<sup>63</sup> which are similar to predicate logic statements.

The "goal" section of CACTUS<sup>64</sup> is the starting point of the Prolog search process; the goal identifies the initial consequent-predicate. CACTUS' initial consequent-predicate is "inadmis;admis." The semi-colon which appears in CACTUS' goal is a disjunctive logical connective—it represents "or." Therefore, Prolog will attempt to satisfy CACTUS' goal by satisfying "inadmis" or, if "inadmis" fails, by satisfying "admis."

In the "inadmis" portion of CACTUS' goal, Prolog will determine whether the predicate "inadmis" is satisfied by looking throughout the "clauses" section of the source code<sup>65</sup> in order to find the first clause where "inadmis" appears as the consequent. The first clause which contains "inadmis" as its consequent<sup>66</sup> is represented as "inadmis if hello, confession—standing, not(valid—confession) . . ." The "if" which follows "inadmis" is logically identical to the symbol "<=" as it is used in predicate logic.<sup>67</sup> The statements "hello," "confession—standing," "not(valid—confession),"<sup>68</sup> and "not(fruit—poisonous—tree)," are predicates established by the programmer in the "predicates" section. The

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58. *Id.*, lines 210-40.

59. *Id.*, lines 2420-80.

60. *Id.*, line 2530.

61. *Id.*, lines 340-1700.

62. *See supra* text accompanying note 55.

63. *See infra* app. A, lines 1980-16210.

64. *Id.*, lines 1830-50.

65. *Id.*, lines 1980-16210.

66. *Id.*, line 2130.

67. The logical connective "<=" is merely the logical converse of ">." Where the predicate statement "P => Q" means "If I live in Pittsburgh, then I live in Pennsylvania," "Q <= P" is logically identical insofar as it means "I live in Pennsylvania if I live in Pittsburgh." *See supra* sec. IX, "Logical Connectives" Table.

68. The statement not (valid—confession) is merely the negation of the predicate

remaining statements within the antecedent are "built-in" predicates which are automatically executed, and, therefore, "satisfied," by Prolog. In order to determine whether "inadmis" is satisfied, Prolog must determine whether each of the programmer-defined predicates within the clause are satisfied. Prolog will first determine whether the programmer-defined predicate "hello" is satisfied by looking at the first clause which features "hello" as its consequent—that is, to the left of "if." The clause which features "hello" as its consequent<sup>69</sup> is entirely composed of "built-in" Prolog predicates. Once the computer has automatically performed these functions, the predicate "hello" is satisfied.

Similarly, Prolog will determine whether "confession—standing" is satisfied by looking to the first clause where it appears as the consequent.<sup>70</sup> Prolog will automatically satisfy built-in predicates and determine whether programmer-defined predicates such as "clearbase" and "affirm" are satisfied, by using the same method of finding the clause where each programmer-defined predicate appears as the consequent. This process continues until Prolog reaches the point where all built-in predicates have been automatically satisfied, and there are no programmer-defined predicates which have not been either satisfied or failed. Prolog will, thereby, have satisfied one of the two disjuncts of CACTUS' goal, "inadmis" or "admis," and the user will be provided with a response to the inquiry.

CACTUS was written in a manner which requires no computer expertise on the part of the user. Thus, CACTUS is "user friendly." To start CACTUS, the user need only type "CACTUS" into the computer. CACTUS will automatically respond with a subset of its total set of commands and questions.<sup>71</sup> The user must respond to these questions with a single letter: either "Y" for yes, "N" for no, or "P" for the underlying legal principle. By responding to a question with the letter "P," the user will be able to read about the particular legal principle underlying the instant question.<sup>72</sup> The name of the case in which each principle is promulgated is provided as well. Thus, CACTUS enables students to appreciate the status of the law of searches and confessions as it stood in 1985, and it enables legal practitioners to structure a relatively complete, logical argument.

CACTUS does not allow the user to "speak" to the computer using "natural language"—that is, by way of complete or partial English sentences. LEXIS and WestLaw are two of only a very few law-related

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(valid—confession) and, thus, it operates identically with the predicate logic connective "—."

69. See *infra* app. A, line 2660.

70. See *id.*, line 8260.

71. See *infra* app. B.

72. See *id.*, panels 5, 11.

computer programs or systems which allow the user to input messages which are relatively similar to the spoken or written English language.

This deficiency in CACTUS was intentional. Natural language computer programs are difficult, time-consuming, and expensive to create. CACTUS, on the other hand, was created by the author of this article, during a nine-month period, for the sole purpose of modeling the deductive analysis which composes an important part of the process of legal reasoning.

However, one should note that because legal reasoning involves both deductive and inductive reasoning, CACTUS does not accurately reflect the complete process of legal reasoning.

CACTUS is one of the first law-related computer programs which uses the artificial intelligence capabilities of Prolog. It was created to provide insight into the relationship between artificial intelligence and legal reasoning and to enable expert legal systems developers to more fully utilize Prolog's natural language and learning potential.

#### B. USING CACTUS TO DETERMINE THE ADMISSIBILITY OF EVIDENCE

Appendix B contains the sequential print-out of a typical execution of CACTUS. This particular execution was based upon the following fact scenario.

John Doe was released from a prison for the criminally insane in February of 1987. Doe had been convicted on two counts of arson and incarcerated for two years based on these convictions. The prosecutor proved that Doe, acting alone, set fire to two of his Gotham City neighbors' homes for no apparent reason other than his general dislike for these neighbors. As a result, Doe was diagnosed as insane under standard psychiatric principles.

During April and May of 1987, a series of unusual fires erupted in Gotham City in homes and buildings immediately adjacent to where Doe lived prior to his incarceration. Police investigators recognized similarities between these new fires and those for which Doe had been convicted. Consequently, in June of 1987, Doe's activities became the subject of constant undercover police surveillance.

Early in the course of their investigation of Doe, undercover police detectives learned that Doe was living with his girlfriend, Jane Elk, a suspected low level drug courier for an organized crime ring in Gotham City. The police also learned that there were two outstanding warrants for Elk's arrest. The police decided to postpone Elk's arrest until they had enough evidence to arrest Doe as well. For this reason, copies of Elk's arrest warrants were provided to the investigation teams who were assigned the task of observing Doe.

During the early morning hours of June 11, 1987, Doe was observed

by Gotham City Police Department detectives, Wolf and Hunt, driving from Elk's apartment complex. The detectives followed Doe in an unmarked police car to a gasoline station several blocks from Elk's apartment. Doe purchased several one-gallon containers of kerosene from the gasoline station attendant, and put the canisters in the trunk of his car. Doe then drove to the home of one of his former neighbors.

Wolf and Hunt followed Doe as he turned off his car lights and rolled to a stop in the driveway of a darkened home. Doe exited the car, removed the kerosene canisters from its trunk, and walked toward the house. As Doe was opening one of the kerosene canisters, a member of the household awoke and turned on the front floodlights. Doe ran and jumped into his car, then sped away from the residence. The police detectives, believing that they had just observed an attempted arson, put their removable "Kojak" police light on the roof of their cruiser and pursued Doe in a high-speed chase.

Wolf and Hunt lost Doe during their pursuit. The detectives then proceeded to Elk's apartment complex in the hope that Doe would return there. Within fifteen minutes, Doe returned to the apartment complex, pounding his fist and shouting obscenities. The detectives surreptitiously followed Doe as he entered the complex and proceeded to Elk's apartment.

After a few minutes, Wolf and Hunt broke down Elk's apartment door. Inside they found Doe and Elk sitting at the kitchen table "snorting" some of Elk's cocaine. The officers arrested Doe, confiscated the cocaine he had been snorting, and impounded his car. The officers also arrested Elk pursuant to the outstanding arrest warrants against her. The detectives did not search Doe's or Elk's persons or possessions any further.

The question now is whether evidence obtained by the detectives during their "raid" on Elk's apartment will be admissible in a criminal trial. As illustrated by Appendix B, the focus will be exclusively on whether the cocaine may be admitted at Doe's trial.

As indicated above, in order to execute the program the user need only type the word "CACTUS" into the computer. The computer will respond by displaying a window which introduces and explains the use of CACTUS.<sup>73</sup> The user must then hit any key.

CACTUS will ask the user: "Is the instant evidence the result of a confession by Defendant to the police?"<sup>74</sup> The above facts do not reveal any information about a confession by Doe to police. Therefore, the answer to this question must be "N" for "no."

CACTUS will then ask the user: "Was the Defendant the target of

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73. See *id.*, panel 1.

74. See *id.*, panel 2.

a search by the police?"<sup>75</sup> Even though it appears that the cocaine was owned by Elk, Doe was using it when the police confiscated it, so Doe was, in a sense, searched. Therefore, the answer to this question must be "Y" for "yes."

CACTUS continues by asking the user: "Did Defendant have a legitimate expectation of privacy in his own property which was the subject of a search?"<sup>76</sup> If the user feels that the term "legitimate expectation of privacy" is unclear, the letter "P" for "principle," should be typed to access the legal principle underlying each question, and thereby gain more insight into what CACTUS is asking.<sup>77</sup>

After accessing the underlying legal principle, CACTUS will return to the previously unanswered question. Because, in this case, Doe did not own the cocaine, he did not have a legitimate expectation of privacy in it. Therefore, the answer to this question must be "N."<sup>78</sup>

Since the privacy expectation may be applied to objects which are owned by another person, CACTUS will then respond by asking the user: "Did Defendant have a legitimate expectation of privacy in the property of another which was the subject of a search?"<sup>79</sup> It is clear that Doe will want to keep the cocaine from being entered into evidence. Therefore, he will argue that he did have a legitimate expectation of privacy relating to Elk's cocaine. Therefore, the answer to this question should be "Y."

CACTUS will respond by asking the user: "Can it be said that Defendant's expectation of privacy in his own, or another's, property is socially worthy?"<sup>80</sup> Although cocaine consumption is both illegal and immoral, the answer to this question should probably be "Y." Where one has a legitimate expectation of privacy in another person's property, that expectation should be regarded as socially worthy unless and until it can be shown that the underlying property is illegal in nature. Otherwise, the careful and fair nature of our judicial process would be compromised.

CACTUS continues by asking the user: "Did the police obtain a search warrant before they conducted the search?"<sup>81</sup> At the time of the search, the detectives had only Elk's arrest warrants in their possession. Thus, they confiscated the cocaine without a search warrant. Therefore, the answer to this question should be "N."

CACTUS will then ask the user: "Did Defendant have a dangerous

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75. *See id.*, panel 3.

76. *See id.*, panel 4.

77. *See id.*, panel 5.

78. *See id.*, panel 6.

79. *See id.*, panel 7.

80. *See id.*, panel 8.

81. *See id.*, panel 9.

weapon within his immediate control, and did the search occur contemporaneously with Defendant's arrest?"<sup>82</sup> It is unclear whether the kerosene was a "dangerous weapon," and whether it was within Doe's "immediate control." Again, if the user types "P," CACTUS will display the legal definitions of these terms. However, the underlying legal principle is only tangentially on point.<sup>83</sup> Kerosene is not, in itself, a dangerous weapon. Nor was the kerosene in Doe's automobile trunk within his immediate control. Therefore, the answer to this question should be "N."<sup>84</sup>

CACTUS will respond by asking the following two questions: "Did the arresting officers make a search of Defendant's residence while accompanying Defendant in order to monitor his movements?" and "Did the arresting officers make a search of Defendant's person due to a reasonably held belief that Defendant was carrying a concealed weapon?"<sup>85</sup> According to the facts, the answers to these questions should be "N."

CACTUS will continue by asking the user: "Were there others present at the site of Defendant's arrest who might have destroyed evidence while the arresting officers would otherwise have left to obtain a search warrant?"<sup>86</sup> Arguably, because officers Wolf and Hunt arrested both Doe and Elk together, there was no one at Elk's apartment who could have destroyed the cocaine if it had been left there pending a search warrant. However, it was at the officers' discretion whether to arrest Elk with Doe. They could have left Elk behind and taken the cocaine without a search warrant. In order to save time and effort, they merely consolidated tasks which were within their legal power to perform. Therefore, the answer to this question should be "Y."

CACTUS will then ask the user: "Did the officers arrest Defendant while both Defendant and the officers were in hot pursuit from the scene of Defendant's alleged crime?"<sup>87</sup> This question should be answered negatively for several reasons. First, it is unclear whether attempted arson is a crime. Second, it is unclear whether Doe actually attempted arson. Finally, Doe was not arrested while Wolf and Hunt were in hot pursuit.

CACTUS will respond by asking the user: "Did Defendant pose a threat of injury to himself or to others?"<sup>88</sup> Doe clearly intended to cause some harm to the residents of the home from which he fled. The fact that he had been incarcerated in a prison for the criminally insane

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82. *See id.*, panel 10.

83. *See id.*, panel 11.

84. *See id.*, panel 12.

85. *See id.*, panels 13-14.

86. *See id.*, panel 15.

87. *See id.*, panel 16.

88. *See id.*, panel 17.

for arson convictions supports this intent. Therefore, the answer to this question should be "Y."

CACTUS will continue by asking the user: "Were the arresting officers providing assistance to victims of Defendant's alleged crime when they discovered the evidence in question?"<sup>89</sup> The facts suggest that the answer to this question should be "N."

CACTUS will then ask the user: "Was a home searched without a warrant during the course of Defendant's arrest for a crime other than a routine felony?"<sup>90</sup> Because officers Wolf and Hunt should know the law, and conducted their search without a search warrant, it may be surmised that arson may not be a "routine felony." Therefore, the answer to this question should be "Y."

In brief, the questions which appear in Panels 20 through 36 should be answered in the negative.<sup>91</sup> That is, given the facts as set out above, the user should respond to each question with the letter "N."

In Panel 37, CACTUS will ask the user: "If the police conducted an illegal search or obtained an illegal confession, was the same evidence discovered or discoverable through an independent source?"<sup>92</sup> Because the police had outstanding warrants against Elk, they could have arrested her in the apartment at any time during the surveillance of Doe. While arresting Elk, the officers would be allowed to take any evidence in plain view. Doe was snorting the cocaine within plain view of Wolf and Hunt. Therefore, if they had been at Elk's apartment for the sole purpose of arresting Elk, they would have been able to confiscate the cocaine.

Furthermore, there was nothing illegal in the way Wolf and Hunt conducted their search. Although they did not have a search warrant when they confiscated the cocaine, they lawfully entered Elk's apartment in order to arrest Doe. Once inside the apartment, the detectives contemporaneously confiscated the cocaine that was in plain view. Therefore, the answer to this question should be "Y."

Finally, CACTUS will generate for the user its determination: The evidence is admissible at Doe's trial.<sup>93</sup>

This same analysis should be followed for each piece of evidence to be presented at trial. CACTUS will respond with a different subset of questions according to the user's answers.

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89. *See id.*, panel 18.

90. *See id.*, panel 19.

91. *See id.*, panels 20-36.

92. *See id.*, panel 37.

93. *See id.*, panel 38.

## XI. THE VALUE OF EXPERT LEGAL SYSTEMS

There are four distinct issues to consider when analyzing the value of expert legal systems. The first is whether expert legal systems are useful to legal practitioners in their day-to-day research. The second is whether expert legal systems have any practical value for laypersons. The third is whether expert legal systems have any predictive value with regard to future court decisions. Finally, while expert legal systems may be useful from an objective point of view, it is important to examine whether they may have subjective monetary value to practitioners and laypersons. In other words, will users think the benefits justify the costs?

### A. THE UTILITY OF EXPERT LEGAL SYSTEMS WITH REGARD TO LEGAL RESEARCH

There are two general types of expert systems: "top-down" or "backward-chaining" systems, and "bottom-up" or "forward-chaining" systems.<sup>94</sup> Top-down programs begin with a single question or a small, well defined set of questions. Depending upon the user's responses to these questions, the program proceeds down a "root-like" structure to other logically related questions or sets of questions until it reaches the bottom point of a particular "root."

Bottom-up expert systems, on the other hand, begin at the bottom of the root-like hierarchical structure and ask the user about every issue at the bottom of the root structure. Depending upon the user's responses to this set of questions, the program proceeds up the root-like structure until it reaches the top.

Both types of expert systems are of value to the legal practitioner. They provide information regarding the legal principles underlying certain fact situations. However, top-down programs, such as CACTUS, are of less research value to the legal practitioner than bottom-up programs. This is true because the former restricts the user's access to information regarding legal principles to just one branch of the root-like structure. Top-down programs presume that the user has a broad base of legal knowledge, or that he will be satisfied with a narrow argument. Bottom-up programs, on the other hand, inform the user about a wide variety of legal principles underlying a particular set of facts, thereby enabling him to construct broad, deep arguments and alternative arguments. Bottom-up programs are more time consuming to use, but less time consuming to create.

Furthermore, top-down programs more accurately model human legal reasoning. In a pure sense, legal reasoning involves the applica-

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94. See Frey, *A Bit-Mapped Classifier*, BYTE, Nov. 1986, at 161.



tion of facts to a set of legal principles.<sup>95</sup> Legal practitioners begin with a set of facts, apply these facts to threshold questions and questions regarding prima facie elements and defenses, and derive a conclusion therefrom. Arguably, this method is subscribed to only by judges and legal scholars, and not by practicing attorneys.<sup>96</sup> Similarly, top-down programs query the user for facts and apply these facts to internal threshold questions and questions relating to elements and defenses.

CACTUS could have been written either as a top-down or bottom-up program. However, CACTUS was written as a top-down program in order to model legal reasoning as accurately as possible. Although, top-down programs are not ideal for research purposes, they are useful tools for discovering the means by which legal practitioners reason.

#### B. THE UTILITY OF EXPERT LEGAL SYSTEMS WITH REGARD TO THE NEEDS OF LAYPERSONS

While a top-down expert system may not be very valuable to the legal practitioner, it may be quite valuable to the inexperienced layperson who seeks legal guidance. If a layperson is involved in a legal proceeding, and seeks legal guidance from an expert legal system, he will generally do so in order to competently represent himself in a relatively minor matter, or to determine whether to seek the assistance of an attorney. If by using a top-down expert system, the layperson derives the answer he desires, the layperson will know instantly how to proceed with his case because the system enables the user to construct a well-defined argument. Alternatively, if the top-down system arrives at a conclusion contrary to his wishes, the layperson can then choose between forgetting the matter, resolving the matter extra-judicially, or seeking the guidance of an attorney.

#### C. THE PREDICTIVE VALUE OF EXPERT LEGAL SYSTEMS WITH REGARD TO COURT DECISIONS

The estimate a legal expert will give regarding the predictive value of expert legal systems will turn on whether the expert is a legal positivist or a legal realist. Legal positivists maintain that moral judgments about the goodness or badness of human laws cannot be established by reasoning, but are merely expressions of human feelings or choices.<sup>97</sup> One can predict future court decisions by identifying collective social values and deriving conclusions from them.

Legal realists, on the other hand, maintain that legal certainty is

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95. See *supra* text accompanying notes 23-26.

96. See *infra* text accompanying notes 97-98.

97. See generally H.L.A. HART, *THE CONCEPT OF LAW* (1961).

rarely attainable, and perhaps, undesirable, in a changing society.<sup>98</sup> Legal realists posit that predictions with regard to future court decisions cannot be had in any accurate form.

The same philosophical distinction is vital to determine whether expert legal systems have any predictive value with regard to future court decisions. Legal positivists would maintain that, as long as the collective social conscience can be ascertained, it can be transformed into an expert legal system, and an accurate forecast of court decisions can be made. Legal realists would maintain the opposite position: since no man can predict court decisions with a high degree of certainty, a computer is also incapable of doing so because it is merely a function of the former.

The legal realist philosophy is more appealing because it recognizes that predictions of court decisions must take into account a myriad of values for a myriad of variables. Such a task is beyond the realm of human capability, and computers are therefore also precluded from accomplishing this goal. Thus, while expert legal systems may have some research value to the practitioner and layperson, they are poor barometers for court decisions with regard to particular cases.

#### D. A FORECAST OF THE ACCEPTANCE OF EXPERT LEGAL SYSTEMS BY PRACTITIONERS AND LAYPERSONS

Expert legal systems appear to have some theoretical value to practitioners and laypersons. However, such systems must have commercial value as well in order to inspire private industry to further develop and refine them. In this regard, expert legal systems may be useful for practitioners to screen out spurious cases, and to expedite the research process underlying clients' cases. Expert systems may also execute ancillary, mechanical tasks which occupy large portions of an attorney's limited time.

An expert system, or a set of such systems, which is capable of resolving many of the practitioner's problems would be invaluable. Given the recent increase in the number of people practicing law, attorneys must become more efficient, and perhaps, must lower their fees in order to compete. Although there is neither an integrated expert system, nor a set of expert systems which can tackle all of the attorney's mundane tasks, apparently such systems do indeed have commercial value because the trend in legal software development is toward this goal.

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98. See D. BURTON, *supra* note 3; K. LLEWELYN, *supra* note 3; J. FRANK, *supra* note 3; D. MACCORMICK, *supra* note 3.

APPENDIX A  
CACTUS SOURCE CODE

```

10  /* =====
20  = COMMENT =
30
40  THE FOLLOWING COMMANDS RELATE TO THE INTERACTION
50  OF THE CACTUS PROGRAM WITH THE PROLOG SYSTEM.
60  ===== */
70
80  nowarnings
90  code=2000
100
110 /* =====
120 = COMMENT =
130
140 THE FOLLOWING DATABASE FUNCTIONS ARE VARIABLE IN THE
150 SENSE THAT DIFFERENT VALUES ARE ATTRIBUTED — I.E.,
160 “INSTANTIATED” — TO EACH OF THE “STRING” AND “CHAR”
170 VARIABLES THROUGHOUT CACTUS, AND THE INSTANTIATED
180 COMMANDS ARE USED FOR VARIOUS SUBROUTINES.
190 ===== */
200
210 database
220   question(string)
230   explanation(string,string)
240   answer(string,char)
250
260 /* =====
270 = COMMENT =
280
290 THE FOLLOWING PREDICATES IDENTIFY TO THE COMPUTER THE
300 VARIOUS CLAUSE FUNCTIONS IT WILL ENCOUNTER AS IT
310 PROCESSES THE HIERARCHICAL LOGIC STRUCTURE OF CACTUS
320 =====
330
340   predicates
350
360   admis
370   inadmis
380   search—standing
390   confession—standing
400   valid—search
410   valid—confession
420   target

```

430	expect—privacy
440	socially—worthy
450	plain—view
460	open—field
470	dog—sniff
480	warrant—exception
490	search—incident—arrest
500	exigent—circumstances
510	home—arrest
520	automobile—scope
530	inventory—search
540	stop—frisk
550	administrative—search
560	consent—search
570	immediate—control
580	dorm—room
590	probable—cause—weapon
600	destroy—evidence
610	hot—pursuit
620	threat—injury
630	assistance—victims
640	non—routine—felony
650	gravity—crime
660	defendant—home
670	mobile—vehicle
680	seizable—items
690	custodial—arrest
700	scope—inventory—search
710	incarcerated—inventory—search
720	carrying—weapon
730	informant—stop—frisk
740	drug—courier
750	illegal—aliens
760	specific—articulable
770	car—stop—frisk
780	finger—printing
790	seizure—apartment
800	health—inspection
810	school—inspection
820	liquor—inspection
830	defendant—voluntary—consent
840	third—party—consent
850	right—refuse
860	subtle—coercion

870	defendant—custody
880	intimidating—environment
890	inferior—intelligence
900	police—contact
910	vulnerable—state—mind
920	limit—consent
930	power—authority
940	possessory—interest
950	defendant—agent
960	assumed—risk
970	apparent—authority
980	search—warrant
990	basis—knowledge
1000	informant—veracious
1010	corroborated—facts
1020	self—verifying
1030	good—faith—exception
1040	misleading—affidavit
1050	rubber—stamp—magistrate
1060	inadequate—affidavit
1070	facially—deficient
1080	voluntary—confession
1090	miranda—rights
1100	totality—circumstances
1110	abusive—method
1120	poor—condition
1130	police—force
1140	independent—proof
1150	unnecessary—delay
1160	judge—unavailable
1170	testimony—conflicts
1180	not—custody
1190	general—cooperation
1200	car—briefly—stopped
1210	not—stationhouse
1220	not—police—car
1230	not—own—home
1240	person—briefly—stopped
1250	not—interrogated
1260	voluntary—statement
1270	indirect—questions
1280	unlikely—elicit—response
1290	public—safety—exception
1300	waived—miranda—rights

1310	knowingly—intelligently
1320	implied—waiver
1330	with—legal—counsel
1340	not—initiated—proceedings
1350	not—suspicion—focused
1360	unaccusatory—questions
1370	not—interrogation—restarted
1380	miranda—again
1390	unrelated—crime
1400	defendant—communicated
1410	street—questioned
1420	fruit—poisonous—tree
1430	independent—source
1440	inevitable—discovery
1450	attenuated—chain
1460	surveillance
1470	hello
1480	type—crime
1490	confession—conditions
1500	defendant—property
1510	third—party—property
1520	affirm
1530	clearbase
1540	help
1550	clearanswer
1560	go—on
1570	whose—property
1580	warrant—used
1590	filler1
1600	filler2
1610	filler3
1620	filler4
1630	filler5
1640	filler6
1650	filler7
1660	filler8
1670	filler9
1680	filler10
1690	filler11
1700	filler12

1710

1720

/\* =====

1730

= COMMENT =

1740

1750

THE FOLLOWING GOAL INDICATES THE STARTING POINT

1760

FOR THE COMPUTER'S ANALYSIS OF THE CLAUSES IN

1770

CACTUS. THAT IS, THE COMPUTER WILL FIRST DETERMINE

1780

WHETHER THE "INADMIS" CLAUSES IS SATISFIED. IF IT

1790

FAILS, THEN THE COMPUTER WILL DETERMINE WHETHER

1800

THE "ADMIS" CLAUSE IS SATISFIED.

1810

===== \*/

1820

1830 goal

1840

inadmis;admis.

1850

1860

1870

/\* =====

1880

= COMMENT =

1890

1900

THE FOLLOWING CLAUSES COMPRISE THE LOGICAL STRUCTURE

1910

OF CACTUS. SOME CLAUSES DEFINE MESSAGES OR

1920

QUESTIONS WHICH WILL BE POSED TO THE USER. THE

1930

REMAINING CLAUSES DEFINE THE LOGICAL RELATIONSHIP

1940

BETWEEN CLAUSES, THEREBY CREATING THE LOGICAL

1950

HIERARCHY OF CACTUS.

1960

===== \*/

1970

1980 clauses

1990

2000

/\* =====

2010

= COMMENT =

2020

2030

THE FOLLOWING "INADMIS" AND "ADMIS" CLAUSES ARE

2040

ALTERNATIVE CLAUSES WHICH OCCUPY A PARALLEL LEVEL

2050

IN THE CACTUS STRUCTURE, JUST BELOW THE TOP "GOAL"

2060

LEVEL. IF THE FIRST "INADMIS" CLAUSE FAILS, THEN

2070

THE COMPUTER WILL ATTEMPT TO SATISFY THE SECOND

2080

"INDAMIS" CLAUSE. IF THAT FAILS AS WELL, THEN THE

2090

"ADMIS" CLAUSE WILL AUTOMATICALLY BE SATISFIED BY

2100

DEFAULT.

2110

===== \*/

2120

2130

inadmis if hello,confession—standing,not(valid—confession),

2140

not(fruit—poisonous—tree),clearwindow,nl,

```

2150     makewindow(4,15,9,"CACTUS
DETERMINATION",0,0,25,80),
2160     cursor(12,15),write("The evidence is INADMISSIBLE at
2170     defendant's trial."),makewindow(2,139,9,"",20,0,5,80),
2180     cursor(2,35),write("HIT ANY KEY"),readchar(X),
2190     removewindow,removewindow.
2200
2210     inadmis if search—standing,not(valid—search),
2220     not(fruit—poisonous—tree),clearwindow,
2230     nl,makewindow(4,15,9,"CACTUS
DETERMINATION",0,0,25,80),
2240     cursor(12,15),write("The evidence is INADMISSIBLE
2250     at Defendant's trial."),makewindow(2,139,9,"",20,0,5,80),
2260     cursor(2,35),write("HIT ANY KEY"),readchar(X),
2270     removewindow,removewindow.
2280
2290     admis if clearwindow,nl,makewindow(4,15,9,"CACTUS
2300     DETERMINATION,0,0,25,80),cursor(12,15),
2310     write("The evidence is ADMISSIBLE at Defendant's
2320     trial."),makewindow(2,139,9,"",20,0,5,80),
2330     cursor(2,35),write("HIT ANY KEY"),readchar(X),
2340     removewindow,removewindow.
2350
2360     /* =====
2370     = COMMENT =
2380
2390     THE FOLLOWING CLAUSES ARE ESSENTIALLY SUBROUTINES.
2400     ===== */
2410
2420     affirm if question(Case),readchar(Answer),
2430     asserta(answer(Case,Answer)),answer(Case,'Y');
2440     answer(Case,'y');question(Case),answer(Case,'P'),help;
2450     question(Case),answer(Case,'p'),help.
2460
2470     help if makewindow(2,15,15,"CACTUS PRINCIPLE",1,0,9,80),
2480     question(Case),explanation(Case,Phrase),
2490     write(Phrase),cursor(6,35),write("HIT ANY KEY"),
2500     clearanswer,readchar(X),removewindow,affirm.
2510
2520     clearbase if answer(X,Y),retract(answer(X,Y)),fail;
2530     question(X),retract(question(X)),fail;clearwindow.
2540
2550     clearanswer if answer(X,Y),retract(answer(X,Y)),fail;go—on.
2560

```



2570 go—on.

2580

2590 /\* =====

2600 = COMMENT =

2610

2620 THE "HELLO" CLAUSE IS THE FIRST WINDOW THE USER

2630 WILL SEE WHEN HE RUNS THE CACTUS PROGRAM.

2640 ===== \*/

2650

2660 hello if clearwindow,nl,

2670 makewindow(1,15,9,"CACTUS",0,0,25,80),

2680 cursor(5,36),write("HELLO."),

2690 cursor(8,30),write("Welcome to CACTUS, the"),

2700 cursor(11,10),write("Computer Aided Criminal Trial

2710 Evidence Admissibility Heuristic"),

2720 cursor(12,10),write("This program will enable the user to

2730 determine whether evidence"),

2740 cursor(13,10),write("obtained either by a search or

2750 confession may be admitted at a"),

2760 cursor(14,30),write("criminal trial."),

2770 cursor(17,20),write("NOTE: Where a letter response is

2780 requested by CACTUS,"),

2790 cursor(18,22),write("respond with only a single letter:

2800 'Y', 'N', or 'P'."),

2810 cursor(22,35),write("< HIT ANY KEY >"),readchar(X).

2820

2830 /\* =====

2840 = COMMENT =

2850

2860 THE FOLLOWING CLAUSES DEAL WITH ISSUES WHICH RELATE

2870 TO EVIDENCE GATHERED THROUGH A SEARCH BY POLICE.

2880 ===== \*/

2890

2900 search—standing if target,expect—privacy.

2910

2920 target if clearbase,asserta(question(target1)),

2930 clearwindow,cursor(10,10),write("Is the instant evidence

2940 the result of a search"),

2950 cursor(11,10),write("by police?"),

2960 cursor(20,35),write("< Y > or < N >"),

2970 affirm.

2980

2990 expect—privacy if whose—property,socially—worthy.

3000

- 3010 whose—property if defendant—property;third—party—  
property.
- 3020
- 3030 defendant—property if clearbase,  
3040 asserta(question(rawlings1)),clearwindow,  
3050 cursor(10,10),write(“Did Defendant have a legitimate  
3060 expectation of privacy”),  
3070 cursor(11,10),write(“in his own property which was the  
3080 subject of a search?”),  
3090 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
3100
- 3110 third—party—property if clearbase,  
3120 asserta(question(rawlings2)),clearwindow,  
3130 cursor(10,10),write(“Did Defendant have a legitimate  
3140 expectation of privacy”),  
3150 cursor(11,10),write(“in the property of another which was  
3160 the subject”),  
3170 cursor(12,10),write(“of a search?”),  
3180 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
3190
- 3200 socially—worthy if clearbase,asserta(question(katz)),  
3210 clearwindow,  
3220 cursor(10,10),write(“Can it be said that Defendant’s  
3230 expectation of”),  
3240 cursor(11,10),write(“privacy in his own, or another’s,  
3250 property is”),  
3260 cursor(12,10),write(“socially worthy?”),  
3270 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
3280
- 3290 valid—search if search—warrant;warrant—exception;plain—  
view;  
3300 open—field;dog—sniff;surveillance.  
3310
- 3320 plain—view if clearbase,asserta(question(brown)),  
3330 clearwindow,  
3340 cursor(10,10),write(“Was the object of the search in plain  
3350 view of”),  
3360 cursor(11,10),write(“the arresting officers?”),  
3370 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
3380
- 3390 open—field if clearbase,asserta(question(oliver)),  
3400 clearwindow,  
3410 cursor(10,10),write(“Was the object of the search  
3420 discovered in”),

3430 cursor(11,10),write("an open field by the arresting  
3440 officers?"),  
3450 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
3460  
3470 dog—sniff if clearbase,asserta(question(place)),clearwindow,  
3480 cursor(10,10),write("Was the object of the search  
3490 discovered by a"),  
3500 cursor(11,10),write("trained dog which sniffed a container  
3510 of some sort?"),  
3520 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
3530  
3540 surveillance if clearbase,asserta(question(knotts)),  
3550 clearwindow,  
3560 cursor(10,10),write("Was the object of the search  
3570 discovered by the"),  
3580 cursor(11,10),write("use of an electronic beeper which  
3590 revealed nothing more"),  
3600 cursor(12,10),write("than what a visual surveillance would  
3610 otherwise have"),  
3620 cursor(13,10),write("revealed?"),  
3630 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
3640  
3650 search—warrant if warrant—used,filler1.  
3660  
3670 filler1 if basis—knowledge,informant—veracious,  
3680 corroborated—facts,self—verifying;good—faith—exception.  
3690  
3700 warrant—used if clearbase,asserta(question(gates99)),  
3710 clearwindow,  
3720 cursor(10,10),write("Did the police obtain a search  
3730 warrant"),  
3740 cursor(11,10),write("before they conducted the search?"),  
3750 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
3760  
3770 basis—knowledge if clearbase,asserta(question(gates1)),  
3780 clearwindow,  
3790 cursor(10,10),write("Did the police get a search warrant  
3800 by"),  
3810 cursor(11,10),write("relying on an informant who has a  
3820 reliable basis"),  
3830 cursor(12,10),write("of knowledge?"),  
3840 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
3850  
3860 informant—veracious if clearbase,asserta(question(gates2)),

3870 clearwindow,  
3880 cursor(10,10),write("Did the police get a search warrant  
3890 by"),  
3900 cursor(11,10),write("relying on an informant who is honest  
3910 in that"),  
3920 cursor(12,10),write("regard?"),  
3930 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
3940  
3950 corroborated—facts if clearbase,asserta(question(gates3)),  
3960 clearwindow,  
3970 cursor(10,10),write("Did the police get a search warrant  
3980 by"),  
3990 cursor(11,10),write("relying on an informant who provided  
4000 them with"),  
4010 cursor(12,10),write("information which corroborated the  
4020 facts in this"),  
4030 cursor(13,10),write("case?"),  
4040 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
4050  
4060 self—verifying if clearbase,asserta(question(gates4)),  
4070 clearwindow,  
4080 cursor(10,10),write("Did the police get a search warrant  
4090 by relying"),  
4100 cursor(11,10),write("on an informant whose information was  
4110 generally"),  
4120 cursor(12,10),write("self-verifying in nature?"),  
4130 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
4140  
4150 good—faith—exception if not(misleading—affidavit),  
4160 not(rubber—stamp—magistrate),not(inadequate—affidavit),  
4170 not(facially—deficient).  
4180  
4190 misleading—affidavit if clearbase,asserta(question(leon1)),  
4200 clearwindow,  
4210 cursor(10,10),write("Did the police get a search warrant  
4220 by"),  
4230 cursor(11,10),write("submitting a misleading affidavit to  
4240 the issuing"),  
4250 cursor(12,10),write("magistrate?"),  
4260 cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
4270  
4280 rubber—stamp—magistrate if  
4290 clearbase,asserta(question(leon2)),clearwindow,  
4300 cursor(10,10),write("Did the police get a search warrant

4310 by”),  
4320 cursor(11,10),write(“submitting an affidavit to a rubber-  
4330 stamping magistrate?”),  
4340 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
4350  
4360 inadequate—affidavit if clearbase,asserta(question(leon3)),  
4370 clearwindow,  
4380 cursor(10,10),write(“Did the police get a search warrant  
4390 by”),  
4400 cursor(11,10),write(“submitting an inadequate affidavit to  
4410 the issuing magistrate?”),  
4420 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
4430  
4440 facially—deficient if clearbase,asserta(question(leon4)),  
4450 clearwindow,  
4460 cursor(10,10),write(“Did the police get a search warrant  
4470 by”),  
4480 cursor(11,10),write(“submitting a facially deficient  
4490 affidavit to the”),  
4500 cursor(12,10),write(“issuing magistrate?”),  
4510 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
4520  
4530 warrant—exception if search—incident—arrest;  
4540 exigent—circumstances;  
4550 home—arrest;automobile—scope;inventory—search;stop—  
frisk;  
4560 administrative—search;consent—search.  
4570  
4580 search—incident—arrest if immediate—control;dorm—room;  
4590 probable—cause—weapon.  
4600  
4610 immediate—control if clearbase,asserta(question(chimel)),  
4620 clearwindow,  
4630 cursor(10,10),write(“Did Defendant have a dangerous weapon  
4640 within”),  
4650 cursor(11,10),write(“his immediate control, and did the  
4660 search occur”),  
4670 cursor(12,10),write(“contemporaneously with Defendant’s  
4680 arrest?”),  
4690 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
4700  
4710 dorm—room if clearbase,asserta(question(chrisman)),  
4720 clearwindow,  
4730 cursor(10,10),write(“Did the arresting officers make a

4740 search of”),  
4750 cursor(11,10),write(“Defendant’s residence while  
4760 accompanying”),  
4770 cursor(12,10),write(“Defendant in an effort to monitor his  
4780 movements?”),  
4790 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
4800  
4810 probable—cause—weapon if clearbase,  
4820 asserta(question(robinson)),clearwindow,  
4830 cursor(10,10),write(“Did the arresting officers make a  
4840 search of”),  
4850 cursor(11,10),write(“Defendant’s person due to a  
4860 reasonably held”),  
4870 cursor(12,10),write(“belief that Defendant was carrying a  
4880 concealed”),  
4890 cursor(13,10),write(“weapon?”),  
4900 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
4910  
4920 exigent—circumstances if destroy—evidence;hot—pursuit;  
4930 threat—injury;assistance—victims.  
4940  
4950 destroy—evidence if clearbase,asserta(question(kale1)),  
4960 clearwindow,  
4970 cursor(10,10),write(“Were there others present at the site  
4980 of”),  
4990 cursor(11,10),write(“Defendant’s arrest who might have  
5000 destroyed evidence”),  
5010 cursor(12,10),write(“while the arresting officers would  
5020 otherwise have left”),  
5030 cursor(13,10),write(“to obtain a search warrant?”),  
5040 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
5050  
5060 hot—pursuit if clearbase,asserta(question(kale2)),  
5070 clearwindow,  
5080 cursor(10,10),write(“Did the officers arrest Defendant  
5090 while both Defendant”),  
5100 cursor(11,10),write(“and the officers were in hot pursuit  
5110 from the scene of”),  
5120 cursor(12,10),write(“Defendant’s alleged crime?”),  
5130 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
5140  
5150 threat—injury if clearbase,asserta(question(kale3)),  
5160 clearwindow,  
5170 cursor(10,10),write(“Did Defendant pose a threat of injury

5180 to himself or”),  
5190 cursor(11,10),write(“to others?”),  
5200 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
5210  
5220 assistance—victims if clearbase,asserta(question(thompson)),  
5230 clearwindow,  
5240 cursor(10,10),write(“Were the arresting officers providing  
5250 assistance to”),  
5260 cursor(11,10),write(“victims of Defendant’s alleged crime  
5270 when they discovered”),  
5280 cursor(12,10),write(“the evidence in question?”),  
5290 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
5300  
5310 home—arrest if defendant—home,type—crime.  
5320  
5330 type—crime if non—routine—felony;gravity—crime.  
5340  
5350 non—routine—felony if clearbase,asserta(question(payton)),  
5360 clearwindow,  
5370 cursor(10,10),write(“Was a home searched without a warrant  
5380 during the”),  
5390 cursor(11,10),write(“course of Defendant’s arrest for a  
5400 crime other than a routine”),  
5410 cursor(12,10),write(“felony?”),  
5420 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
5430  
5440 gravity—crime if clearbase,asserta(question(welsh)),  
5450 clearwindow,  
5460 cursor(10,10),write(“Did the gravity of the alleged crime  
5470 require entry”),  
5480 cursor(11,10),write(“by the police to enter a home in  
5490 order to effect Defendant’s arrest?”),  
5500 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
5510  
5520 defendant—home if clearbase,asserta(question(stegald)),  
5530 clearwindow,  
5540 cursor(10,10),write(“Was the search conducted in the home  
5550 of a third”),  
5560 cursor(11,10),write(“party after police officers, while  
5570 acting upon an”),  
5580 cursor(12,10),write(“arrest warrant for Defendant, failed  
5590 to find”),  
5600 cursor(13,10),write(“Defendant at the location stated on  
5610 the warrant?”),

5620 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
5630  
5640 automobile—scope if mobile—vehicle;seizable—items;  
5650 custodial—arrest.  
5660  
5670 mobile—vehicle if clearbase,asserta(question(carney)),  
5680 clearwindow,  
5690 cursor(10,10),write("Was a search made of a readily  
5700 mobile"),  
5710 cursor(11,10),write("vehicle?"),  
5720 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
5730  
5740 seizable—items if clearbase,asserta(question(ross)),  
5750 clearwindow,  
5760 cursor(10,10),write("Was a search made of an automobile by  
5770 officers who"),  
5780 cursor(11,10),write("had probable cause to believe that  
5790 there were seizable items inside?"),  
5800 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
5810  
5820 custodial—arrest if clearbase,asserta(question(belton)),  
5830 clearwindow,  
5840 cursor(10,10),write("Was a search made of an automobile by  
5850 officers who"),  
5860 cursor(11,10),write("had already placed Defendant in  
5870 custodial arrest?"),  
5880 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
5890  
5900 inventory—search if filler2,scope—inventory—search,  
5910 incarcerated—inventory—search.  
5920  
5930 filler2 if clearbase,asserta(question(opperman)),  
5940 clearwindow,  
5950 cursor(10,10),write("Did police conduct an inventory  
5960 search of Defendant's"),  
5970 cursor(11,10),write("automobile?"),  
5980 cursor(20,30),write("<Y> or <N>"),affirm.  
5990  
6000 scope—inventory—search if clearbase,  
6010 asserta(question(opperman)),clearwindow,  
6020 cursor(10,10),write("Was an inventory search of  
6030 Defendant's automobile"),  
6040 cursor(11,10),write("confined only to the passenger  
6050 compartment, and not"),



6060 cursor(12,10),write("performed upon the trunk as well?"),  
6070 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6080  
6090 incarcerated—inventory—search if clearbase,  
6100 asserta(question(lafayette)),clearwindow,  
6110 cursor(10,10),write("Was an inventory search of  
6120 Defendant's automobile"),  
6130 cursor(11,10),write("performed after Defendant was  
6140 incarcerated?"),  
6150 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6160  
6170 stop—frisk if carrying—weapon;informant—stop—frisk;  
6180 drug—courier;illegal—aliens;specific—articulable;  
6190 car—stop—frisk;finger—printing;seizure—apartment.  
6200  
6210 carrying—weapon if clearbase,asserta(question(terry)),  
6220 clearwindow,  
6230 cursor(10,10),write("Did the arresting officers search  
6240 Defendant's person,"),  
6250 cursor(11,10),write("without first moving him to another  
6260 location, under reasonable"),  
6270 cursor(12,10),write("suspicion that Defendant was carrying  
6280 a weapon?"),  
6290 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6300  
6310 informant—stop—frisk if clearbase,asserta(question(adams)),  
6320 clearwindow,  
6330 cursor(10,10),write("Did the arresting officers search  
6340 Defendant's person,"),  
6350 cursor(11,10),write("without first moving him to another  
6360 location, based on a tip"),  
6370 cursor(12,10),write("from a reliable informant?"),  
6380 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6390  
6400 drug—courier if clearbase,asserta(question(mendenhall)),  
6410 clearwindow,  
6420 cursor(10,10),write("Did the arresting officers search  
6430 Defendant's person"),  
6440 cursor(11,10),write("or any of his containers, without  
6450 first moving him to another"),  
6460 cursor(12,10),write("location, because Defendant appeared  
6470 to fit a"),  
6480 cursor(13,10),write(" 'drug courier profile'?"),  
6490 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.

6500  
6510 illegal—aliens if clearbase,asserta(question(delgado)),  
6520 clearwindow,  
6530 cursor(10,10),write("Was the search conducted in a place  
6540 of business in"),  
6550 cursor(11,10),write("an attempt by officers to find  
6560 illegal aliens?"),  
6570 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6580  
6590 specific—articulable if clearbase,asserta(question(place2)),  
6600 clearwindow,  
6610 cursor(10,10),write("Were/Are the arresting officers able  
6620 to provide"),  
6630 cursor(11,10),write("specific and articulable facts which  
6640 provided"),  
6650 cursor(12,10),write("reasonable suspicion to search  
6660 Defendant's"),  
6670 cursor(12,10),write("person or containers?"),  
6680 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6690  
6700 car—stop—frisk if clearbase,asserta(question(long)),  
6710 clearwindow,  
6720 cursor(10,10),write("Did the arresting officers have  
6730 reasonable suspicion to"),  
6740 cursor(11,10),write("stop and search Defendant's car, and  
6750 did they confine their"),  
6760 cursor(12,10),write("search to the passenger compartment  
6770 of Defendant's car?"),  
6780 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6790  
6800 finger—printing if clearbase,asserta(question(hayes)),  
6810 clearwindow,  
6820 cursor(10,10),write("Did the search consist of a seizure  
6830 of Defendant's person"),  
6840 cursor(11,10),write("for the sole purpose of  
6850 fingerprinting Defendant?"),  
6860 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6870  
6880 seizure—apartment if clearbase,asserta(question(segura)),  
6890 clearwindow,  
6900 cursor(10,10),write("Did the search consist of a seizure  
6910 of a residence while"),  
6920 cursor(11,10),write("a search warrant was being  
6930 obtained?"),

6940 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
6950  
6960 administrative—search if health—inspection;  
6970 school—inspection;liquor—inspection.  
6980  
6990 health—inspection if clearbase,asserta(question(camara)),  
7000 clearwindow,  
7010 cursor(10,10),write("Was the search conducted for health  
7020 inspection purposes?"),  
7030 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
7040  
7050 school—inspection if clearbase,asserta(question(tlo)),  
7060 clearwindow,  
7070 cursor(10,10),write("Did the search consist of a school  
7080 inspection of students by"),  
7090 cursor(11,10),write("school administrators?"),  
7100 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
7110  
7120 liquor—inspection if clearbase,asserta(question(colonnade)),  
7130 clearwindow,  
7140 cursor(10,10),write("Did the search consist of a liquor  
7150 or firearms inspection by the"),  
7160 cursor(11,10),write("appropriate governing authority?"),  
7170 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
7180  
7190 consent—search if filler3;filler5.  
7200  
7210 filler3 if filler4,defendant—voluntary—consent.  
7220  
7230 filler4 if clearbase,asserta(question(consent1)),  
7240 clearwindow,  
7250 cursor(10,10),write("Did Defendant consent to the  
7260 search?"),  
7270 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
7280  
7290 defendant—voluntary—consent if right—refuse,  
7300 not(subtle—coercion),not(defendant—custody),  
7310 not(intimidating—environment),not(inferior—intelligence),  
7320 police—contact,not(vulnerable—state—mind),  
7330 not(limit—consent).  
7340  
7350 right—refuse if clearbase,asserta(question(consent1)),  
7360 clearwindow,  
7370 cursor(10,10),write("Was Defendant aware that he had

7380 the”),  
7390 cursor(11,10),write(“right to refuse the search?”),  
7400 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
7410  
7420 subtle—coercion if clearbase,asserta(question(consent2)),  
7430 clearwindow,  
7440 cursor(10,10),write(“Was Defendant subtly, or otherwise,  
7450 coerced”),  
7460 cursor(11,10),write(“by police officers to give his  
7470 consent?”),  
7480 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
7490  
7500 defendant—custody if clearbase,asserta(question(consent3)),  
7510 clearwindow,  
7520 cursor(10,10),write(“Was Defendant in police custody at  
7530 the time when”),  
7540 cursor(11,10),write(“he gave his consent?”),  
7550 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
7560  
7570 intimidating—environment if clearbase,  
7580 asserta(question(consent4)),clearwindow,  
7590 cursor(10,10),write(“Did Defendant consent to the search  
7600 amidst a”),  
7610 cursor(11,10),write(“generally intimidating  
7620 environment?”),  
7630 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
7640  
7650 inferior—intelligence if clearbase,  
7660 asserta(question(consent5)),clearwindow,  
7670 cursor(10,10),write(“Was Defendant of inferior  
7680 intelligence or education”),  
7690 cursor(11,10),write(“at the time of his consent?”),  
7700 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
7710  
7720 police—contact if clearbase,asserta(question(consent6)),  
7730 clearwindow,  
7740 cursor(10,10),write(“Did Defendant have sufficient prior  
7750 contact with”),  
7760 cursor(11,10),write(“the police so that he was, more  
7770 probably than”),  
7780 cursor(12,10),write(“not, aware of his right to withhold  
7790 consent?”),  
7800 cursor(20,30),write(“<Y> or <N> or <P> rinciple”),affirm.  
7810

7820 vulnerable—state—mind if clearbase,  
7830     asserta(question(consent7)),clearwindow,  
7840     cursor(10,10),write("Was Defendant in a particularly  
7850     vulnerable state"),  
7860     cursor(11,10),write("of mind at the time when he gave  
7870     consent?"),  
7880     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
7890  
7900 limit—consent if clearbase,asserta(question(consent8)),  
7910     clearwindow,  
7920     cursor(10,10),write("Did Defendant revoke his consent or  
7930     limit it"),  
7940     cursor(11,10),write("so as to exclude the area which  
7950     revealed the"),  
7960     cursor(12,10),write("instant evidence?"),  
7970     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
7980  
7990 filler5 if filler6 and third—party—consent.  
8000  
8010 filler6 if clearbase,asserta(question(consent9)),  
8020     clearwindow,  
8030     cursor(10,10),write("Did a third party give his consent to  
8040     a search"),  
8050     cursor(11,10),write("by police which revealed the instant  
8060     evidence?"),  
8070     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
8080  
8090 third—party—consent if -power—authority;possessory—  
interest;  
8100     defendant—agent;assumed—risk;apparent—authority.  
8110  
8120 power—authority if clearbase,asserta(question(consent9)),  
8130     clearwindow,  
8140     cursor(10,10),write("Did the third have the power of  
8150     authority to"),  
8160     cursor(11,10),write("give his consent?"),  
8170     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
8180  
8190 possessory—interest if clearbase,  
8200     asserta(question(consent10)),clearwindow,  
8210     cursor(10,10),write("Did the third party have a possessory  
8220     interest"),  
8230     cursor(11,10),write("in the thing searched?"),  
8240     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.

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8250
8260 defendant—agent if clearbase,asserta(question(consent11)),
8270 clearwindow,
8280 cursor(10,10),write("Was the third party acting as
8290 Defendant's"),
8300 cursor(11,10),write("agent when he gave his consent?"),
8310 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.
8320
8330 assumed—risk if clearbase,asserta(question(consent12)),
8340 clearwindow,
8350 cursor(10,10),write("Can it be said that Defendant assumed
8360 the risk"),
8370 cursor(11,10),write("that the third party would give his
8380 consent?"),
8390 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.
8400
8410 apparent—authority if clearbase,
8420 asserta(question(consent13)),clearwindow,
8430 cursor(10,10),write("Did the third have the apparent
8440 authority"),
8450 cursor(11,10),write("to give his consent?"),
8460 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.
8470
8480 /* =====
8490 = COMMENT =
8500
8510 THE FOLLOWING CLAUSES DEAL WITH ISSUES WHICH RELATE
8520 TO EVIDENCE GATHERED THROUGH A CONFESSION BY THE
8530 DEFENDANT TO POLICE.
8540 ===== */
8550
8560 confession—standing if clearbase,asserta(question(conf)),
8570 clearwindow,
8580 cursor(10,10),write("Is the instant evidence the result of
8590 a confession by"),
8600 cursor(11,10),write("Defendant to the
8610 police?"),
8620 cursor(20,35),write("<Y> or <N>"),affirm.
8630
8640 valid—confession if miranda—rights,confession—conditions.
8650
8660 valid—confession if waived—miranda—rights,
8670 with—legal—counsel.
8680

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8690 miranda—rights if not(filler9),filler10.  
8700  
8710 filler9 if clearbase,asserta(question(miranda1)),  
8720 clearwindow,  
8730 cursor(10,10),write(“Was Defendant read his Miranda rights  
8740 before”),  
8750 cursor(11,10),write(“he confessed to police?”),  
8760 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
8770  
8780 filler10 if not—custody,not—interrogated;  
8790 public—safety—exception;not—initiated—proceedings.  
8800  
8810 not—custody if street—questioned;general—cooperation;  
8820 car—briefly—stopped;not—stationhouse;not—police—car;  
8830 not—own—home;person—briefly—stopped.  
8840  
8850 street—questioned if clearbase,asserta(question(miranda1)),  
8860 clearwindow,  
8870 cursor(10,10),write(“Was Defendant questioned by the  
8880 police on the street?”),  
8890 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
8900  
8910 general—cooperation if clearbase,asserta(question(orozco)),  
8920 clearwindow,  
8930 cursor(10,10),write(“Did Defendant voluntarily answer  
8940 questions from the”),  
8950 cursor(11,10),write(“police while they were all on the  
8960 street?”),  
8970 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
8980  
8990 car—briefly—stopped if clearbase,  
9000 asserta(question(beckimer)),clearwindow,  
9010 cursor(10,10),write(“Was Defendant’s car briefly stopped  
9020 by officers in the”),  
9030 cursor(11,10),write(“flow of traffic for a misdemeanor  
9040 traffic violation”),  
9050 cursor(12,10),write(“during which time he answered police  
9060 questions?”),  
9070 cursor(20,30),write(“< Y > or < N > or < P > rinciple”),affirm.  
9080  
9090 not—stationhouse if clearbase,asserta(question(beckwith)),  
9100 clearwindow,  
9110 cursor(10,10),write(“Did Defendant answer police questions  
9120 while he was”),

9130 cursor(11,10),write("outside of the police stationhouse,  
 9140 and while he was"),  
 9150 cursor(12,10),write("otherwise not in police custody?"),  
 9160 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 9170  
 9180 not—police—car if clearbase,asserta(question(brewer1)),  
 9190 clearwindow,  
 9200 cursor(10,10),write("Did Defendant answer police questions  
 9210 while he"),  
 9220 cursor(11,10),write("outside of a police car, and while he  
 9230 was"),  
 9240 cursor(12,10),write("otherwise not in police custody?"),  
 9250 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 9260  
 9270 not—own—home if clearbase,asserta(question(miranda2)),  
 9280 clearwindow,  
 9290 cursor(10,10),write("Was Defendant arrested and  
 9300 interrogated within his own home?"),  
 9310 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 9320  
 9330 person—briefly—stopped if clearbase,  
 9340 asserta(question(terry2)),clearwindow,  
 9350 cursor(10,10),write("Did Defendant answer questions while  
 9360 he was only briefly stopped?"),  
 9370 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 9380  
 9390 not—interrogated if voluntary—statement;indirect—questions;  
 9400 not(unlikely—elicit—response).  
 9410  
 9420 voluntary—statement if clearbase,  
 9430 asserta(question(miranda3)),clearwindow,  
 9440 cursor(10,10),write("Were any statements made by Defendant  
 9450 truly volunteered?"),  
 9460 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 9470  
 9480 indirect—questions if clearbase,asserta(question(miranda4)),  
 9490 clearwindow,  
 9500 cursor(10,10),write("Were Defendant's statements made in  
 9510 response to questions"),  
 9520 cursor(11,10),write("which were only indirect in nature,  
 9530 e.g., regarding"),  
 9540 cursor(12,10),write("his identity?"),  
 9550 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 9560



9570 unlikely—elicit—response if clearbase,  
9580     asserta(question(innes)),clearwindow,  
9590     cursor(10,10),write("Did police carry on a discussion in  
9600     Defendant's presence which"),  
9610     cursor(11,10),write("was likely to elicit a response from  
9620     Defendant?"),  
9630     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
9640

9650 public—safety—exception if clearbase,  
9660     asserta(question(quarrels)),clearwindow,  
9670     cursor(10,10),write("Were the police forced to take  
9680     immediate action"),  
9690     cursor(11,10),write("which caused them to fail to  
9700     administer to the"),  
9710     cursor(12,10),write("Defendant his Miranda rights?"),  
9720     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
9730

9740 not—initiated—proceedings if not(not—suspicion—focused);  
9750     not(unaccusatory—questions).  
9760

9770 not—suspicion—focused if clearbase,  
9780     asserta(question(brewer2)),clearwindow,  
9790     cursor(10,10),write("Had police suspicion focused on  
9800     Defendant when they first"),  
9810     cursor(11,10),write("asked him questions; i.e., was he a  
9820     primary suspect?"),  
9830     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
9840

9850 unaccusatory—questions if clearbase,  
9860     asserta(question(escobedo)),clearwindow,  
9870     cursor(10,10),write("Were police questions of an  
9880     accusatory nature?"),  
9890     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.  
9900

9910 waived—miranda—rights if filler11,filler12.  
9920

9930 filler11 if clearbase,  
9940     asserta(question(miranda5)),clearwindow,  
9950     cursor(10,10),write("Did Defendant waive his Miranda right  
9960     to remain"),  
9970     cursor(11,10),write("silent immediately prior to the  
9980     alleged"),  
9990     cursor(12,10),write("confession?"),  
10000     cursor(20,30),write("< Y > or < N > or < P > rinciple"),affirm.

10010  
10020 filler12 if knowingly—intelligently;implied—waiver;  
10030 defendant—communicated.  
10040  
10050 knowingly—intelligently if clearbase,  
10060 asserta(question(miranda5)),clearwindow,  
10070 cursor(10,10),write(“Did Defendant knowingly and  
10080 intelligently waive his”),  
10090 cursor(11,10),write(“Miranda rights?”),  
10100 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
10110  
10120 implied—waiver if clearbase,asserta(question(butler)),  
10130 clearwindow,  
10140 cursor(10,10),write(“Could Defendant’s waiver of his  
10150 Miranda rights be inferred”),  
10160 cursor(11,10),write(“from his other words or behavior?”),  
10170 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
10180  
10190 with—legal—counsel if clearbase,  
10200 asserta(question(miranda6)),clearwindow,  
10210 cursor(10,10),write(“Was Defendant in the presence of his  
10220 legal counsel when he”),  
10230 cursor(11,10),write(“answered police questions?”),  
10240 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
10250  
10260 not—interrogation—restarted if miranda—again;  
10270 unrelated—crime;defendant—communicated.  
10280  
10290 miranda—again if clearbase,  
10300 asserta(question(miranda7)),clearwindow,  
10310 cursor(10,10),write(“Was interrogation restarted after  
10320 Defendant refused to speak,”),  
10330 cursor(11,10),write(“and was Defendant re-read his Miranda  
10340 rights?”),  
10350 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
10360  
10370 unrelated—crime if clearbase,  
10380 asserta(question(mosley)),clearwindow,  
10390 cursor(10,10),write(“Was interrogation restarted  
10400 concerning an unrelated crime?”),  
10410 cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.  
10420  
10430 defendant—communicated if clearbase,  
10440 asserta(question(bradshaw)),clearwindow,

10450  
10460 cursor(10,10),write("Did Defendant restart further  
10470 communication of his own avail?"),  
10480 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
10490  
10500 confession—conditions if voluntary—confession;  
10510 independent—proof.  
10520  
10530 voluntary—confession if totality—circumstances;not(filler7).  
10540  
10550 totality—circumstances if not(abusive—method),  
10560 not(poor—condition),not(police—force).  
10570  
10580 abusive—method if clearbase,asserta(question(confession1)),  
10590 clearwindow,  
10600 cursor(10,10),write("Did the police use abusive methods to  
10610 elicit a confession from"),  
10620 cursor(11,10),write("Defendant?"),  
10630 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
10640  
10650 poor—condition if clearbase,asserta(question(confession2)),  
10660 clearwindow,  
10670 cursor(10,10),write("Was Defendant in poor mental or  
10680 physical condition"),  
10690 cursor(11,10),write("at the time of his confession?"),  
10700 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
10710  
10720 police—force if clearbase,asserta(question(confession3)),  
10730 clearwindow,  
10740 cursor(10,10),write("Did the police use force, threats or  
10750 deception to elicit a"),  
10760 cursor(11,10),write("confession from Defendant?"),  
10770 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
10780  
10790 independent—proof if clearbase,asserta(question(jackson)),  
10800 clearwindow,  
10810 cursor(10,10),write("Was there proof, independent of  
10820 Defendant's confession,"),  
10830 cursor(11,10),write("that he committed the alleged  
10840 crime?"),  
10850 cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.  
10860  
10870 filler7 if filler8,unnecessary—delay.  
10880

10890 filler8 if clearbase,asserta(question(confession4)),  
 10900 clearwindow,  
 10910 cursor(10,10),write("Was there a substantial delay between  
 10920 the time"),  
 10930 cursor(11,10),write("of Defendant's arrest and his  
 10940 arraignment"),  
 10950 cursor(12,10),write("during which time the Defendant  
 10960 confessed?"),  
 10970 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 10980  
 10990 unnecessary—delay if testimony—conflicts;  
 11000 not(judge—unavailable).  
 11010  
 11020 testimony—conflicts if clearbase,asserta(question(mcnab)),  
 11030 clearwindow,  
 11040 cursor(10,10),write("Did the delay cause Defendant's  
 11050 confession to"),  
 11060 cursor(11,10),write("conflict with his testimony at the  
 11070 time of his"),  
 11080 cursor(12,10),write("trial?"),  
 11090 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 11100  
 11110 judge—unavailable if clearbase,  
 11120 asserta(question(confession4)),clearwindow,  
 11130 cursor(10,10),write("Was the delay due to the  
 11140 unavailiability of a judge"),  
 11150 cursor(11,10),write("to arraign Defendant?"),  
 11160 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.  
 11170  
 11180 /\* =====  
 11190 = COMMENT =  
 11200  
 11210 THE FOLLOWING "FRUIT OF THE POISONOUS TREE" CLAUSES  
 11220 ENABLE EVIDENCE WHICH WAS OBTAINED BY UNLAWFUL  
 11230 POLICE CONDUCT TO BE ADMITTED AT TRIAL.  
 11240 =====\*/  
 11250  
 11260 fruit—poisonous—tree if independent—source;  
 11270 inevitable—discovery;attenuated—chain.  
 11280  
 11290 independent—source if clearbase,asserta(question(segura2)),  
 11300 clearwindow,  
 11310 cursor(10,10),write("If the police conducted an illegal  
 11320 search or obtained an illegal"),

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11330 cursor(11,10),write("confession, was the same evidence
11340 discovered or discoverable"),
11350 cursor(12,10),write("through an independent source?"),
11360 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.
11370
11380 inevitable—discovery if clearbase,asserta(question(nix)),
11390 clearwindow,
11400 cursor(10,10),write("If the police conducted an illegal
11410 search or obtained an illegal"),
11420 cursor(11,10),write("confession, would the same evidence
11430 inevitably have been"),
11440 cursor(12,10),write("discovered nonetheless?"),
11450 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.
11460
11470 attenuated—chain if clearbase,asserta(question(wongsun)),
11480 clearwindow,
11490 cursor(10,10),write("If the police conducted an illegal
11500 search or obtained an illegal"),
11510 cursor(11,10),write("confession, was the causal link
11520 between the illegal action and"),
11530 cursor(12,10),write("the evidence attenuated?"),
11540 cursor(20,30),write("<Y> or <N> or <P> rinciple"),affirm.
11550
11560 /* =====
11570 = COMMENT =
11580
11590 THE FOLLOWING CLAUSES DEAL WITH THE PRINCIPLES
11600 WHICH UNDERLIE THE CONFESSION AND SEARCH CLAUSES
11610 ABOVE. THESE ARE THE MESSAGES WHICH ARE DISPLAYED
11620 ON THE COMPUTER SCREEN WHEN THE USER PRESSES THE
11630 LETTER "P".
11640 ===== */
11650
11660 explanation(rawlings1,"If Defendant's own property was
11670 searched, he must have an expectation of privacy in such
11680 property for standing to contest admissibility of the
11790 evidence. Rawlings v. Kentucky, 448 U.S. 98, 100 S.Ct.
11700 2556, 65 L.Ed.2d 633 [1980].").
11710
11720 explanation(rawlings2,"If a third party's property was
11730 searched, Defendant must have an expectation of privacy in
11740 such property for standing to contest admissibility of the
11750 evidence. Rawlings v. Kentucky, 448 U.S. 98, 100 S.Ct.
11760 2556, 65 L.Ed.2d 633 [1980].").

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11770

11780 explanation(katz, "Defendant's expectation of privacy in  
11790 searched property must be considered a socially worthy  
11800 expectation for standing to contest admissibility of the  
11810 evidence. Katz v. United States, 389 U.S. 347, 88 S.Ct.  
11820 507, 19 L.Ed.2d 576 [1967].").

11830

11840 explanation(brown, "Evidence obtained without a search  
11850 warrant by a police officer who observed the evidence in  
11860 'plain view' is admissible at trial. Texas v. Brown, 460  
11870 U.S. 730, 103 S.Ct. 1535, 75 L.Ed.2d 502 [1983].").

11880

11890 explanation(oliver, "Evidence obtained without a search  
11900 warrant by a police officer who observed the evidence in  
11910 an 'open field' is admissible at trial. Oliver v. United  
11920 States, 466 U.S. 170, 104 S.Ct. 1735, 80 L.Ed.2d 214  
11930 [1984].").

11940

11950 explanation(place, "Evidence obtained without a search  
11960 warrant with the use of a drug detection dog that sniffs  
11970 personal luggage in public areas is admissible at trial.  
11980 United States v. Place, 462 U.S. 696, 103 S.Ct. 2637, 77  
11990 L.Ed.2d 110 [1983].").

12000

12010 explanation(knotts, "Evidence obtained with the warrantless  
12020 use of an electronic beeper is admissible only insofar as  
12030 it must have been discoverable by visual surveillance from  
12040 a public place. United States v. Knotts, 460 U.S. 276,  
12050 103 S.Ct. 1081, 75 L.Ed.2d 55 [1983].").

12060

12070 explanation(gates99, "Unless police rely upon a search  
12080 warrant exception, they must first obtain a warrant before  
12090 they conduct a search. Illinois v. Gates, 462 U.S. 213, 103  
12100 S.Ct. 2317, 76 L.Ed.2d 527 [1983].").

12110

12120 explanation(gates1, "If police rely on an informant to obtain  
12130 a search warrant, the evidence is admissible only if the  
12140 informant has a reliable basis of knowledge to 'tip' the  
12150 police. Illinois v. Gates, 462 U.S. 213, 103 S.Ct. 2317, 76  
12160 L.Ed.2d 527 [1983].").

12170

12180 explanation(gates2, "If police rely on an informant to obtain  
12190 a search warrant which reveals the evidence in question,  
12200 the warrant is valid only insofar as the informant is

- 12210 honest in that regard. *Illinois v. Gates*, 462 U.S. 213, 103  
12220 S.Ct. 2317, 76 L.Ed.2d 527 [1983].”).
- 12230
- 12240 explanation(gates3,“If police rely on an informant to obtain  
12250 a search warrant, the evidence revealed is admissible only  
12260 if the facts of the case corroborate the information  
12270 provided by the informant. *Illinois v. Gates*, 462 U.S. 213,  
12280 103 S.Ct. 2317, 76 L.Ed.2d 527 [1983].”).
- 12290
- 12300 explanation(gates4,“If police rely on an informant to obtain  
12310 a search warrant, the evidence revealed is admissible only  
12320 if the information provided by the informant is ‘self-  
12330 verifying’ in nature. *Illinois v. Gates*, 462 U.S. 213, 103  
12340 S.Ct. 2317, 76 L.Ed.2d 527 [1983].”).
- 12350
- 12360 explanation(leon1,“If police submitted a misleading  
12370 affidavit to a magistrate in order to obtain a search  
12380 warrant, then that warrant is invalid. *United States v.*  
12390 *Leon*, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984].”).
- 12400
- 12410 explanation(leon2,“If police submitted an affidavit to a  
12420 ‘rubber-stamping’ magistrate in order to obtain a search  
12430 warrant, then that warrant is invalid. *United States v.*  
12440 *Leon*, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984].”).
- 12450
- 12460 explanation(leon3,“If police submitted an inadequate  
12470 affidavit to a magistrate in order to obtain a search  
12480 warrant, then that warrant is invalid. *United States v.*  
12490 *Leon*, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984].”).
- 12500
- 12510 explanation(leon4,“If police submitted a facially deficient  
12520 affidavit to a magistrate in order to obtain a search  
12530 warrant, then that warrant is invalid. *United States v.*  
12540 *Leon*, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984].”).
- 12550
- 12560 explanation(chimel,“Police officers may make a warrantless  
12570 search of an arrestee’s person or home only insofar as the  
12580 search is incidental to, or contemporaneous with,  
12590 custodial arrest. *Chimel v. California*, 395 U.S. 752, 89  
12600 S.Ct. 2034, 23 L.Ed.2d 685 [1969].”).
- 12610
- 12620 explanation(chrisman,“Police officers may conduct a  
12630 warrantless search of an arrestee’s residence while  
12640 accompanying Defendant in order to monitor his/her

- 12650 movements. *Washington v. Chrisman*, 455 U.S. 1, 102 S.Ct.  
12660 812, 70 L.Ed.2d 778 [1982].”).
- 12670
- 12680 explanation(robinson, “Police officers may conduct a  
12690 warrantless search of an arrestee’s person only if the  
12700 officer has a reasonably held belief that the arrestee is  
12710 carrying a concealed weapon. *United States v. Robinson*,  
12720 414 U.S. 218, 94 S.Ct. 467, 38 L.Ed.2d 427 [1973].”).
- 12730
- 12740 explanation(vale1, “Police officers may conduct a warrantless  
12750 search of an arrestee’s premises where others are present  
12760 who may destroy vital evidence while the officer takes the  
12770 arrestee to police headquarters. *Vale v. Louisiana*, 399 U.S.  
30, 90 S.Ct. 1969, 26 L.Ed.2d 409 [1970].”).
- 12780
- 12790 explanation(vale2, “Police officers may conduct a warrantless  
12800 search of an arrestee’s premises only insofar as the  
12810 arrest was made after the officers were in ‘hot pursuit’  
12820 of the arrestee from the scene of an alleged crime.  
12830 *Vale v. Louisiana*, 399 U.S. 30, 90 S.Ct. 1969,  
26 L.Ed.2d 409 [1970].”).
- 12840
- 12850 explanation(vale3, “Police officers may conduct a warrantless  
12860 search of an arrestee and the area within his immediate  
12870 control if the arrestee poses a threat to himself or to  
12880 others. *Vale v. Louisiana*, 399 U.S. 30, 90 S.Ct. 1969, 26  
L.Ed.2d 409 [1970].”).
- 12890
- 12900 explanation(thompson, “Police officers may conduct a  
12910 warrantless search of an arrestee’s premises in order to  
12920 find victims or other suspects. *Thompson v. Louisiana*, 469  
U.S. 17, 105 S.Ct. 409, 83 L.Ed.2d 246 [1984].”).
- 12930
- 12940 explanation(payton, “Police officers may make an arrest  
12950 within the arrestee’s home only if the arrest is for  
12960 something other than a routine felony. *Payton v. New*  
12970 *York*, 445 U.S. 573, 100 S.Ct. 1371, 63 L.Ed.2d 639  
12980 [1980].”).
- 12990
- 13000 explanation(welsh, “Police officers may make an arrest within  
13010 the arrestee’s home only if the gravity of the underlying  
13020 offense necessitates doing so. *Welsh v. Wisconsin*, 466  
13030 U.S. 740, 104 S.Ct. 2091, 80 L.Ed.2d 732 [1984].”).
- 13040



- 13050 explanation(steagald, "Evidence is inadmissible where police  
13060 officers act upon an arrest warrant, enter the home of a  
13070 third party, and discover the evidence in plain view.  
13080 Steagald v. United States, 451 U.S. 204, 101 S.Ct. 1642,  
13090 68 L.Ed.2d 38 [1981].").
- 13100  
13110 explanation(carney, "Police officers may make a warrantless  
13120 search, incident to arrest, of any readily mobile vehicle.  
13130 California v. Carney, 471 U.S. 386, 105 S.Ct. 2066, 85 L.Ed.2d  
406 [1985].").
- 13140  
13150 explanation(ross, "Police officers may make a warrantless  
13160 search of any part of an automobile if they have probable  
13170 cause to believe that there are seizable items therein.  
13180 United States v. Ross, 456 U.S. 798, 102 S.Ct. 2157, 72  
13190 L.Ed.2d 572 [1982].").
- 13200  
13210 explanation(belton, "Police officers may make a warrantless  
13220 search of an automobile only if the driver has already  
13230 been place in custodial arrest. New York v. Belton, 453  
13240 U.S. 454, 101 S.Ct. 2860, 69 L.Ed.2d 768 [1981].").
- 13250  
13260 explanation(opperman, "Police officers may make an inventory  
13270 search of an arrestee's impounded automobile which extends  
13280 only to the passenger compartment, and to containers  
13290 therein. State v. Opperman, 247 N.W.2d 673 (S.D.  
13300 1976).").
- 13310  
13320 explanation(lafayette, "Police officers may conduct an  
13330 inventory search of an arrestee's impounded automobile  
13340 only after the arrestee has been incarcerated. Lafayette,  
13350 462 U.S. 640, 103 S.Ct. 2605, 77 L.Ed.2d 65 [1983].").
- 13360  
13370 explanation(terry, "Police officers may 'stop and frisk' a  
13380 person only insofar as they have resonable suspicion to  
13390 believe that he/she is carrying a dangerous weapon. Terry  
13400 v. Ohio, 392 U.S. 1, 88 S.Ct. 1868, 20 L.Ed.2d 889  
13410 [1968].").
- 13420  
13430 explanation(adams, "Police officers may make a warrantless  
13440 search of a person based on information from a reliable  
13450 informant. Adams v. Williams, 407 U.S. 143, 92 S.Ct.  
13460 1921, 32 L.Ed.2d 612 [1972].").
- 13470

- 13480 explanation(mendenhall, "Police officers may make a  
13490 warrantless search of a person, or any of his containers,  
13500 if that person fits a 'drug courier profile.' United  
13510 States v. Mendenhall, 446 U.S. 544, 100 S.Ct. 1870, 64  
13520 L.Ed.2d 497 [1980].").  
13530
- 13540 explanation(delgado, "Police officers may stop and frisk  
13550 individuals in a place of business where such officers are  
13560 attempting to discover illegal aliens. Immigration and  
13570 Naturalization Serv. v. DelGado, 466 U.S. 210, 104 S.Ct.  
13580 1758, 80 L.Ed.2d 247 [1984].").  
13590
- 13600 explanation(place2, "Evidence obtained without a search  
13610 warrant in public areas is admissible only if the officers  
13620 provide specific and articulable facts which create a  
13630 reasonable suspicion. United States v. Place, 462 U.S. 696,  
13640 103 S.Ct. 2637, 77 L.Ed.2d 110 [1983].").  
13650
- 13660 explanation(long, "Evidence obtained by officers from a  
13670 warrantless search of an automobile is admissible only if  
13680 the search was limited to the passenger compartment.  
13690 Michigan v. Long, 463 U.S. 1032, 103 S.Ct. 3469, 77 L.Ed.2d  
13700 1201 [1983].").  
13710
- 13720 explanation(hayes, "A person may be seized and detained for  
13730 fingerprinting purposes, given probable cause. Hayes v.  
Florida, 470 U.S. 811, 105 S.Ct. 1643, 84 L.Ed.2d 705 [1985].").  
13740
- 13750 explanation(segura, "Police officers may seize and occupy an  
13760 arrestee's residence while other officers leave to obtain  
13770 a search warrant. Segura v. United States, 468 U.S. 796,  
13780 104 S.Ct. 3380, 82 L.Ed.2d 599 [1984].").  
13790
- 13800 explanation(camara, "Evidence obtained from a health  
13810 inspection is admissible at trial. Camara v. Municipal  
13820 Court, 387 U.S. 523, 87 S.Ct. 1727, 18 L.Ed.2d 930  
13830 [1967].").  
13840
- 13850 explanation(tlo, "Evidence obtained from an inspection of  
13860 students by school administrators is admissible at trial.  
13870 New Jersey v. T.L.O., 469 U.S. 325, 105 S.Ct. 733, 85 L.Ed.2d  
720 [1985].").  
13880
- 13890 explanation(colonnade, "Evidence obtained from a state liquor

- 13900 and firearms inspection may be admitted at trial.  
13910 Colonnade Catering Corp. v. United States, 397 U.S. 72, 90  
13920 S.Ct. 774, 25 L.Ed.2d 60 [1970].”).  
13930  
13940 explanation(consent1,“Evidence obtained from a consenting  
13950 Defendant is admissible only insofar as the Defendant knew  
13960 that he had the right to refuse the search. Schneckloth  
13970 v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854  
13980 [1973].”).  
13990  
14000 explanation(consent2,“Evidence obtained from a consenting  
14010 Defendant is admissible only insofar as the Defendant was  
14020 neither expressly nor subtly coerced. Schneckloth v.  
14030 Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854  
14040 [1973].”).  
14050  
14060 explanation(consent3,“Evidence obtained from a consenting  
14070 Defendant is admissible only insofar as the Defendant was  
14080 not in police custody at the time. Schneckloth v.  
14090 Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854  
14100 [1973].”).  
14110  
14120 explanation(consent4,“Evidence obtained from a consenting  
14130 Defendant is admissible only insofar as the Defendant was  
14140 not subjected to an intimidating environment. Schneckloth  
14150 v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854  
14160 [1973].”).  
14170  
14180 explanation(consent5,“Evidence obtained from a consenting  
14190 Defendant is admissible only insofar as the Defendant is  
14200 not of low intelligence or poor education. Schneckloth v.  
14210 Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854  
14220 [1973].”).  
14230  
14240 explanation(consent6,“Evidence obtained from a consenting  
14250 Defendant is admissible if the Defendant has had prior  
14260 contact with the police. Schneckloth v. Bustamonte, 412  
14270 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].”).  
14280  
14290 explanation(consent7,“Evidence obtained from a consenting  
14300 Defendant is admissible only insofar as the Defendant was  
14310 not in a vulnerable state of mind. Schneckloth v.  
14320 Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854  
14330 [1973].”).

14340

14350 explanation(consent8, "Evidence obtained from a consenting  
14360 Defendant is admissible only if the Defendant's words or  
14370 conduct did not limit his consent so as to exclude the  
14380 searched area. *Schneckloth v. Bustamonte*, 412 U.S. 218,  
14390 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").

14400

14410 explanation(consent9, "Evidence obtained by police who relied  
14420 upon the consent of a third party is admissible only  
14430 insofar as the third party had the authority to give his  
14440 consent. *Schneckloth v. Bustamonte*, 412 U.S. 218, 93  
14450 S.Ct.2041, 36 L.Ed.2d 854 [1973].").

14460

14470 explanation(consent10, "Evidence obtained by police who  
14480 relied upon the consent of a third party is admissible if  
14490 the third party had a possessory interest in the thing  
14500 searched. *Schneckloth v. Bustamonte*, 412 U.S. 218, 93  
14510 S.Ct.2041, 36 L.Ed.2d 854 [1973].").

14520

14530 explanation(consent11, "Evidence obtained by police who  
14540 relied upon the consent of a third party is admissible if  
14550 the third party acted as Defendant's agent. *Schneckloth*  
14560 *v. Bustamonte*, 412 U.S. 218, 93 S.Ct.2041, 36 L.Ed.2d 854  
14570 [1973].").

14580

14590 explanation(consent12, "Evidence obtained by police who  
14600 relied upon the consent of a third party is admissible if  
14610 the Defenant assumed the risk that a third party would  
14620 give his consent. *Schneckloth v. Bustamonte*, 412 U.S.  
14630 218, 93 S.Ct.2041, 36 L.Ed.2d 854 [1973].").

14640

14650 explanation(consent13, "Evidence obtained by police who  
14660 relied upon the consent of a third party is admissible if  
14670 the third party had apparent authority to give his  
14680 consent. *Schneckloth v. Bustamonte*, 412 U.S. 218, 93  
14690 S.Ct.2041, 36 L.Ed.2d 854 [1973].").

14700

14710 explanation(confession1, "A confession obtained by police who  
14720 used abusive methods to elicit the confession is not  
14730 admissible as evidence at trial. *Jackson v. Denno*, 378  
14740 U.S. 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].").

14750

14760 explanation(confession2, "A confession obtained by police  
14770 from an arrestee who is in poor physical or mental

- 14780 condition is not admissible at trial. *Jackson v. Denno*,  
14790 378 U.S. 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].”).  
14800  
14810 explanation(confession3, “A confession obtained by police who  
14820 used force, threats, or deception to elicit the confession  
14830 is not admissible as evidence at trial. *Jackson v. Denno*,  
14840 378 U.S. 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].”).  
14850  
14860 explanation(confession4, “A confession is inadmissible if it  
14870 is made during a long delay between arrest and  
14880 arraignment, unless the delay was caused by the  
14890 unavailability of a judge. *Jackson v. Denno*, 378 U.S.  
14900 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].”).  
14910  
14920 explanation(jackson, “A confession is inadmissible unless  
14930 there is also some independent proof linking Defendant to  
14940 the crime. *Jackson v. Denno*, 378 U.S. 368, 84 S.Ct. 1774,  
14950 12 L.Ed.2d 908 [1964].”).  
14960  
14970 explanation(mcnab, “A confession made during an inexcusably  
14980 long delay between the time of arrest and arraignment is  
14990 inadmissible at a federal trial. *McNabb v. United States*,  
15000 318 U.S. 332, 63 S.Ct. 608, 87 L.Ed. 819 [1943].”).  
15010  
15020 explanation(mirandal, “Answers to non-intrusive police  
15030 questions made briefly on the street are admissible at  
15040 trial. *Miranda v. Arizona*, 384 U.S. 436, 86 S.Ct. 1602,  
15050 16 L.Ed.2d 694 [1966].”).  
15060  
15070 explanation(orozco, “Answers made voluntarily to police by an  
15080 arrestee who generally cooperates are admissible at trial.  
15090 *Orozco v. Texas*, 394 U.S. 324, 89 S.Ct. 1095, 22 L.Ed.2d  
15100 311 [1969].”).  
15110  
15120 explanation(beckimer, “Miranda warnings must be administered  
15130 before Defendant may answer questions by police officers  
15140 who stopped Defendant’s car in traffic for a misdemeanor  
15150 traffic violation. *Berkemer v. McCarty*, 468 U.S. 420, 104  
15160 S.Ct. 3138, 82 L.Ed.2d 317 [1984].”).  
15170  
15180 explanation(beckwith, “Miranda warnings need not be given  
15190 before Defendant answers police in a comfortable  
15200 environment outside the stationhouse, e.g., in Defendant’s  
15210 own home. *Beckwith v. United States*, 425 U.S. 341, 96

- 15220 S.Ct. 1612, 48 L.Ed.2d 1 [1976].")  
15230  
15240 explanation(brewer1, "Miranda warnings must be administered  
15250 to Defendant who answers questions in a police car.  
15260 Brewer v. Williams, 430 U.S. 387, 97 S.Ct. 1232, 51  
15270 L.Ed.2d 424 [1977].").  
15280  
15290 explanation(miranda2, "Miranda warnings need not be  
15300 administered to Defendant within his/her own home because  
15310 he/she is not yet in custody. Miranda v. Arizona, 384  
15320 U.S. 436, 86 S.Ct. 1602, 16 L.Ed.2d 694 [1966].").  
15330  
15340 explanation(terry2, "Miranda warnings need not be  
15350 administered to Defendant who has been only briefly  
15360 stopped by officers on the street. Terry v. Ohio, 392  
15370 U.S. 1, 88 S.Ct. 1868, 20 L.Ed.2d 889 [1968].").  
15380  
15390 explanation(miranda3, "Miranda warnings need not be  
15400 administered for answers which are truly volunteered.  
15410 Miranda v. Arizona, 384 U.S. 436, 86 S.Ct. 1602, 16  
15420 L.Ed.2d 694 [1966].").  
15430  
15440 explanation(miranda4, "Miranda warnings need not be  
15450 administered for questions which are indirect or non-  
15460 intrusive in nature. Miranda v. Arizona, 384 U.S. 436, 86  
15470 S.Ct. 1602, 16 L.Ed.2d 694 [1966].").  
15480  
15490 explanation(innes, "Statements are inadmissible where Miranda  
15500 rights have not been read, and officers' conversation was  
15510 likely to elicit Defendant's response. Brewer v.  
15520 Williams, 430 U.S. 387, 97 S.Ct. 1232, 51 L.Ed.2d 424  
15530 [1977].").  
15540  
15550 explanation(quarrels, "Miranda warnings need not be given  
15560 where exigent circumstances required the officer to obtain  
15570 an immediate answer from Defendant. New York v. Quarles,  
15580 467 U.S. 649, 104 S.Ct. 2626, 81 L.Ed.2d 550 [1984].").  
15590  
15600 explanation(miranda5, "A confession obtained from Defendant  
15610 who has waived his Miranda rights is admissible only  
15620 insofar as Defendant knowingly intelligently waived his  
15630 rights. Miranda v. Arizona, 384 U.S. 436, 86 S.Ct. 1602,  
15640 16 L.Ed.2d 694 [1966].").  
15650

- 15660 explanation(butler, "A confession obtained from Defendant is  
15670 admissible if a waiver of his Miranda rights could have  
15680 been inferred from Defendant's words or behavior.  
15690 North Carolina v. Butler, 441 U.S. 369, 99 S.Ct. 1755, 60  
L.Ed.2d 286 [1979].").
- 15700  
15710 explanation(miranda6, "A confession from Defendant must be  
15720 made in the presence of Defendant's legal counsel, unless  
15730 Defendant has waived his right to counsel. Miranda v.  
15740 Arizona, 384 U.S. 436, 86 S.Ct. 1602, 16 L.Ed.2d 694  
15750 [1966].").
- 15760  
15770 explanation(brewer2, "Miranda rights must be administered to  
15780 Defendant if police suspicion has focused on Defendant.  
15790 Brewer v. Williams, 430 U.S. 387, 97 S.Ct. 1232, 51  
15800 L.Ed.2d 424 [1977].").
- 15810  
15820 explanation(escobedo, "Miranda rights must be administered to  
15830 Defendant before police ask questions of an accusatory  
15840 nature. Escobedo v. Illinois, 378 U.S. 478, 84 S.Ct.  
15850 1758, 12 L.Ed.2d 977 [1964].").
- 15860  
15870 explanation(miranda7, "If Defendant refuses to answer  
15880 questions after having his/her Miranda rights  
15890 administered, Miranda warnings must again be given if  
15900 police initiate further questioning. Miranda v. Arizona,  
15910 384 U.S. 436, 86 S.Ct. 1602, 16 L.Ed.2d 694 [1966].").
- 15920  
15930 explanation(mosley, "If Defendant refuses to answer questions  
15940 after having his/her Miranda rights administered, then any  
15950 statements made by Defendant are admissible if police  
15960 initiate questioning with regard to another unrelated  
15970 crime. Michigan v. Mosley, 423 U.S. 96, 96 S.Ct. 321, 46  
L.Ed.2d 313 [1975].").
- 15980  
15990 explanation(bradshaw, "If Defendant refuses to answer  
16000 questions after Miranda rights were read, Miranda warnings  
16010 need not be re-read where Defendant voluntarily re-  
16020 initiates communication with police. Oregon v. Bradshaw,  
16030 462 U.S. 1039, 103 S.Ct. 2830, 77 L.Ed.2d 405 [1983].").
- 16040  
16050 explanation(segura2, "Evidence obtained by an illegal  
16060 search or confession is admissible where such evidence was  
16070 discoverable through a means independent from the illegal

- 16080 activity. *Segura v. United States*, 468 U.S. 796, 104 S.Ct.  
16090 3380, 82 L.Ed.2d 599 [1984].”).
- 16100
- 16110 explanation(nix, “Evidence obtained by an illegal search or  
16120 confession is admissible where such evidence would  
16130 nevertheless have been inevitably discovered by police.  
16140 *Nix v. Williams*, 467 U.S. 431, 104 S.Ct. 2501, 81 L.Ed.2d  
16150 377 [1984].”).
- 16160
- 16170 explanation(wongsun, “Evidence obtained by an illegal search  
16180 or confession is admissible where the causal link between  
16190 the illegal activity and discovery of the evidence is  
16200 attenuated. *Wong Sun v. United States*, 371 U.S. 471, 83  
16210 S.Ct. 407, 9 L.Ed.2d 441 [1963].”).



APPENDIX B  
A SAMPLE RUN-THROUGH OF CACTUS

Type "CACTUS"

< PANEL 1 >

CACTUS

HELLO.

Welcome to CACTUS, the  
Computer Aided Criminal Trial Evidence  
Admissibility Heuristic.

This program will enable the user to determine  
whether evidence obtained either by  
a search or confession may be admitted at a  
criminal trial.

NOTE: Where a letter response is requested  
by CACTUS, respond with only a single  
letter: 'Y', 'N', or 'P'.

< HIT ANY KEY >

Type any key

< PANEL 2 >

CACTUS

Is the instant evidence the result of a  
confession by Defendant to the police?

< Y > or < N > or < P > rinciple

Type "N"

&lt; PANEL 3 &gt;

CACTUS

Was the Defendant the target of a search  
by the police?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt;rinciple

Type "Y"

&lt; PANEL 4 &gt;

CACTUS

Did Defendant have a legitimate expectation of privacy  
in his own property which was the subject of a search?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt;rinciple

Type "P"

&lt; PANEL 5 &gt;

CACTUS

PRINCIPLE

If Defendant's own property was searched, he must have  
an expectation of privacy in such property for standing  
to contest admissibility of the evidence. *Rawlings v.*  
*Kentucky*, 448 U.S. 98, 100 S.Ct. 2556, 65 L.Ed.2d 633  
(1980).

HIT ANY KEY

Type any key

&lt;PANEL 6&gt;

## CACTUS

Did Defendant have a legitimate expectation of privacy in his own property which was the subject of a search?

<Y> or <N> or <P>rinciple

Type "N"

&lt;PANEL 7&gt;

## CACTUS

Did Defendant have a legitimate expectation of privacy in the property of another which was the subject of a search?

<Y> or <N> or <P>rinciple

Type "Y"

&lt;PANEL 8&gt;

## CACTUS

Can it be said that Defendant's expectation of privacy in his own, or another's, property is socially worthy?

<Y> or <N> or <P>rinciple

Type "Y"

&lt; PANEL 9 &gt;

## CACTUS

Did the police obtain a search warrant before they conducted the search?

<Y> or <N> or <P> rinciple

Type "N"

&lt; PANEL 10 &gt;

## CACTUS

Did Defendant have a dangerous weapon within his immediate control, and did the search occur contemporaneously with Defendant's arrest?

<Y> or <N> or <P> rinciple

Type "P"

&lt; PANEL 11 &gt;

## CACTUS

## PRINCIPLE

Police officers may make a warrantless search of an arrestee's person or home only insofar as the search is incidental to, or contemporaneous with, custodial arrest. *Chimel v. California*, 395 U.S. 752, 89 S.Ct. 2034, 23 L.Ed.2d 685 (1969).

HIT ANY KEY

Type any key

&lt; PANEL 12 &gt;

## CACTUS

Did Defendant have a dangerous weapon within his immediate control, and did the search occur contemporaneously with Defendant's arrest?

<Y> or <N> or <P>rinciple

Type "Y"

&lt; PANEL 13 &gt;

## CACTUS

Did the arresting officers make a search of Defendant's residence while accompanying Defendant in order to monitor his movements?

<Y> or <N> or <P>rinciple

Type "N"

&lt; PANEL 14 &gt;

## CACTUS

Did the arresting officers make a search of Defendant's person due to a reasonably held belief that Defendant was carrying a concealed weapon?

<Y> or <N> or <P>rinciple

Type "N"

&lt; PANEL 15 &gt;

## CACTUS

Were there others present at the site of Defendant's arrest who might have destroyed evidence while the arresting officers would otherwise have left to obtain a search warrant?

&lt; Y &gt; or &lt; N &gt; or &lt; P &gt; rinciple

Type "Y"

&lt; PANEL 16 &gt;

## CACTUS

Did the officers arrest Defendant while both Defendant and the officers were in hot pursuit from the scene of Defendant's alleged crime?

&lt; Y &gt; or &lt; N &gt; or &lt; P &gt; rinciple

Type "N"

&lt; PANEL 17 &gt;

## CACTUS

Did Defendant pose a threat of injury to himself or to others?

&lt; Y &gt; or &lt; N &gt; or &lt; P &gt; rinciple

Type "Y"

&lt;PANEL 18&gt;

## CACTUS

Were the arresting officers providing assistance to victims of Defendant's alleged crime when they discovered the evidence in question?

<Y> or <N> or <P>rinciple

Type "N"

&lt;PANEL 19&gt;

## CACTUS

Was a home searched without a warrant during the course of Defendant's arrest for a crime other than a routine felony?

<Y> or <N> or <P>rinciple

Type "Y"

&lt;PANEL 20&gt;

## CACTUS

Was a search made of a readily mobile vehicle?

<Y> or <N> or <P>rinciple

Type "N"

&lt; PANEL 21 &gt;

## CACTUS

Was a search made of an automobile by officers who had probable cause to believe that there were seizable items inside?

<Y> or <N> or <P> rinciple

Type "N"

&lt; PANEL 22 &gt;

## CACTUS

Was a search made of an automobile by officers who had already placed Defendant in custodial arrest?

<Y> or <N> or <P> rinciple

Type "N"

&lt; PANEL 23 &gt;

## CACTUS

Did police conduct an inventory search of Defendant's automobile?

<Y> or <N> or <P> rinciple

Type "N"



&lt; PANEL 24 &gt;

## CACTUS

Did the arresting officers search Defendant's person, without first moving him to another location, under reasonable suspicion that Defendant was carrying a weapon?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt; rinciple

Type "N"

&lt; PANEL 25 &gt;

## CACTUS

Did the arresting officers search Defendant's person, without first moving him to another location, based on a tip from a reliable informant?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt; rinciple

Type "N"

&lt; PANEL 26 &gt;

## CACTUS

Did the arresting officers search Defendant's person, or any of his containers, without first moving him to another location, because Defendant appeared to fit a drug courier profile?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt; rinciple

Type "N"

&lt; PANEL 27 &gt;

## CACTUS

Was the search conducted in a place of business in an attempt by officers to find illegal aliens?

<Y> or <N> or <P> rinciple

Type "N"

&lt; PANEL 28 &gt;

## CACTUS

Were/Are the arresting officers able to provide specific and articulable facts which provided reasonable suspicion to search Defendant's person or containers?

<Y> or <N> or <P> rinciple

Type "N"

&lt; PANEL 29 &gt;

## CACTUS

Did the arresting officers have reasonable suspicion to stop and search Defendant's car, and did they confine their search to the passenger compartment of Defendant's car?

<Y> or <N> or <P> rinciple

Type "N"

&lt; PANEL 30 &gt;

## CACTUS

Did the search consist of a seizure of Defendant's person  
for the sole purpose of fingerprinting Defendant?

&lt; Y &gt; or &lt; N &gt; or &lt; P &gt; rinciple

Type "N"

&lt; PANEL 31 &gt;

## CACTUS

Did the search consist of a seizure of a residence while a  
search warrant was being obtained?

&lt; Y &gt; or &lt; N &gt; or &lt; P &gt; rinciple

Type "N"

&lt; PANEL 32 &gt;

## CACTUS

Was the search conducted for health inspection  
purposes?

&lt; Y &gt; or &lt; N &gt; or &lt; P &gt; rinciple

Type "N"

&lt; PANEL 33 &gt;

## CACTUS

Did the search consist of a school inspection of students  
by school administrators?

&lt; Y &gt; or &lt; N &gt; or &lt; P &gt; rinciple

Type "N"

&lt; PANEL 34 &gt;

## CACTUS

Did the search consist of a liquor or firearms inspection  
by the appropriate governing authority?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt; rinciple

Type "N"

&lt; PANEL 35 &gt;

## CACTUS

Did Defendant consent to the search?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt; rinciple

Type "N"

&lt; PANEL 36 &gt;

## CACTUS

Did a third party give his consent to a search by police  
which revealed the instant evidence?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt; rinciple

Type "N"

&lt; PANEL 37 &gt;

## CACTUS

If the police conducted an illegal search or or obtained  
an illegal confession, was the same evidence discovered  
or discoverable through an independent source?

&lt;Y&gt; or &lt;N&gt; or &lt;P&gt; rinciple

Type "Y"

<p>CACTUS DETERMINATION</p>
<p>The evidence is ADMISSIBLE at Defendant's trial</p>