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

Ronald N. Weikers

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# COMPUTERIZED KNOWLEDGE REPRESENTATION AND COMMON LAW REASONING

*By Ronald N. Weikers*

*Contributing Author: David C. Shelton*

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION</td>
<td>224</td>
</tr>
<tr>
<td>II. THE KNOWLEDGE REPRESENTATION PROBLEM EXPLAINED: THE HUMAN MIND MODEL</td>
<td>225</td>
</tr>
<tr>
<td>III. LOGIC AND LEGAL ANALYSIS</td>
<td>226</td>
</tr>
<tr>
<td>IV. COMPUTERIZED LEGAL ANALYSIS</td>
<td>228</td>
</tr>
<tr>
<td>V. COMPUTER MODELING OF LEGAL CONCEPTS</td>
<td>230</td>
</tr>
<tr>
<td>VI. OTHER KNOWLEDGE REPRESENTATION TECHNIQUES</td>
<td>231</td>
</tr>
<tr>
<td>A. Pattern Matching</td>
<td>231</td>
</tr>
<tr>
<td>B. Learning</td>
<td>232</td>
</tr>
<tr>
<td>VII. A COMPUTER MODEL OF COMMON LAW LEGAL REASONING</td>
<td>233</td>
</tr>
<tr>
<td>VIII. THE PROLOG LANGUAGE</td>
<td>234</td>
</tr>
<tr>
<td>IX. PREDICATE LOGIC</td>
<td>235</td>
</tr>
<tr>
<td>X. AN APPLICATION OF PREDICATE LOGIC TO LEGAL REASONING: CACTUS</td>
<td>237</td>
</tr>
<tr>
<td>A. The Structure of Cactus</td>
<td>237</td>
</tr>
</tbody>
</table>

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I. INTRODUCTION

The law is an applied science which involves the analytic application of legal norms to fact patterns.1 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,2 statutes or codes, and judges’ personal predilections.3

The practice of law also involves a combination of inductive4 and deductive legal reasoning.5 Benjamin Cardozo identifies four distinct aspects of legal reasoning: logical analysis, historical development, custom, and social justice.6 Of these four aspects, only the first is purely

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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.”).


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.

deductive in nature and, therefore, most suited to computing.7

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.8 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.9 Memories are formed through the brain’s information pathways—pathways referred to as “traces.” This “subject model” of memory storage sug-

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.*


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. Legal analysis has been described as the logical derivation of legal conclusions from particular fact situations in light of some body of legal doctrine. Insofar as any and all logical systems can be computerized, and insofar as legal analysis involves logic, legal analysis can be computerized.

A computer is essentially a machine for explicating a logical system. Computers lend themselves to logical analysis mainly through three different logic operations: "tests," "conditional branches," and "repeats." 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. 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. Deductive analysis lends itself to computerization. Inductive analysis, however, involves classification of attributes

11. Id. at 30.
13. Id.
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.\(^{17}\) 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.\(^ {18}\) 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.\(^ {19}\) 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.\(^ {20}\) 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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18. Id. at 52.
19. Id. at 53.
20. Id. at 54.
additional objects as well.\textsuperscript{21}

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.\textsuperscript{22}

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.\textsuperscript{23} 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.\textsuperscript{24} 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.\textsuperscript{25} The West

\textsuperscript{21} See supra text accompanying notes 18-19 (the "Socrates" example of inductive reasoning).
\textsuperscript{22} I. COPI, supra note 5, at 54.
\textsuperscript{23} See supra text accompanying notes 8-9.
\textsuperscript{24} Meldman, supra note 10, at 40.
\textsuperscript{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.26 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

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. 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. Hohfeld based his system of analysis on four elements: rights, powers, privileges and immunities and their counterparts: duties, no-rights, liabilities, and disabilities. 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.

More recent efforts include the work of Georg von Wright, who developed an analytical model called deontic logic. 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. 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. 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.”

Another commentator suggests the use of structural representa-
tions.\textsuperscript{35} "These representations comprise relatively complicated structures assembled from primitive data items that represent relatively simple things and relations in the everyday world."\textsuperscript{36} 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.\textsuperscript{37} 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.\textsuperscript{38}

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.\textsuperscript{39} 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:

\begin{center}
<table>
<thead>
<tr>
<th>Binary Number</th>
<th>10111</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corresponding Powers of 2</td>
<td>43210</td>
</tr>
</tbody>
</table>
\end{center}

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 $16 + 4 + 2 + 1 = 23$.

\begin{itemize}
\item \textsuperscript{35} Meldman, \textit{supra} note 10, at 42.
\item \textsuperscript{36} \textit{Id.}
\item \textsuperscript{37} \textit{Id.} at 44.
\item \textsuperscript{38} \textit{Id.}
\item \textsuperscript{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:
\begin{center}
<table>
<thead>
<tr>
<th>Binary Number</th>
<th>10111</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corresponding Powers of 2</td>
<td>43210</td>
</tr>
</tbody>
</table>
\end{center}
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 $16 + 4 + 2 + 1 = 23$.\end{itemize}
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, 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. 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
general rules. "Martin's Law" stands for the proposition that one cannot learn anything unless one almost knows it already. Professor Winston demonstrates how a computer can learn class descriptions from positive and negative samples. He calls this procedure "hit and near miss." 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"—that is, the capacity for "common sense," or the intelligent reasoning which is generally characteristic of humans. The failure of this approach led researchers to direct their attention toward the development of teleozetic expert systems capable of receiving factual input in highly focused areas and applying the input to goals in the form of conditional statements. 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. 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-

42. Id.
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.
COMPUTER/LAW JOURNAL

Computer Aided Criminal Trial Evidence Admissibility Heuristic (CACTUS). 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.

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.

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:

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.\textsuperscript{53}

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.\textsuperscript{54}

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.\textsuperscript{55} 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.

\textsuperscript{53} See supra text accompanying notes 10-22.
\textsuperscript{55} See generally I. Copi, supra note 5 (a general discussion of logic).
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:

<table>
<thead>
<tr>
<th>CONNECTIVE</th>
<th>INTERPRETATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>“¬”</td>
<td>Negation (“Not”)</td>
</tr>
<tr>
<td>“&amp;”</td>
<td>Conjunction (“And”)</td>
</tr>
<tr>
<td>“∨”</td>
<td>Disjunction (“Or”)</td>
</tr>
<tr>
<td>“⇒”</td>
<td>Conditional (“If-Then”)</td>
</tr>
</tbody>
</table>


The truth value of each of the last seven complex statements, namely ¬P, ¬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 ¬P is false, “F,” ¬Q is false, P & Q is true, ¬P & Q is false, P ∨ Q is true, P ⇒ Q is true, and P ⇒ ¬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) = 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.56 These sections include an untitled section at the very top of the program containing the system commands—"nowarnings" and "code=3000."57 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.

56. See infra app. A.
57. Id., lines 80, 90.
The Prolog "database" section contains several elements including "question(string)". 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)," 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)." These asserted facts may then be used within the program's hierarchy.

The "predicates" section 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. These predicates are incorporated into clauses which are similar to predicate logic statements.

The "goal" section of CACTUS 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 in order to find the first clause where "inadmis" appears as the consequent. The first clause which contains "inadmis" as its consequent 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. The statements "hello," "confession-standing," "not(valid-confession)," and "not(fruit-poisonous-tree)," are predicates established by the programmer in the "predicates" section.

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.
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 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. 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. 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. 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...
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. 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?" 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

73. See id., panel 1.
74. See id., panel 2.
a search by the police?"75 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 le-
gitimate expectation of privacy in his own property which was the sub-
ject of a search?"76 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.77

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."78

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?"79 It is clear
that Doe will want to keep the cocaine from being entered into evi-
dence. Therefore, he will argue that he did have a legitimate expecta-
tion 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 De-
fendant's expectation of privacy in his own, or another's, property is so-
cially worthy?"80 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. Other-
wise, 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?"81 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. There-
fore, the answer to this question should be "N."

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

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?" 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. 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.”

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?”

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?” 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?” 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?” 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

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?” 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?” 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. 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?” 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.

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.

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.94 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-

tion of facts to a set of legal principles. 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. 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. 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

95. See supra text accompanying notes 23-26.
96. See infra text accompanying notes 97-98.
rarely attainable, and perhaps, undesirable, in a changing society. 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.

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

/* = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
= COMMENT =
THE FOLLOWING COMMANDS RELATE TO THE INTERACTION
OF THE CACTUS PROGRAM WITH THE PROLOG SYSTEM.
*/

nowarnings
code=2000

/* = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
= COMMENT =
THE FOLLOWING DATABASE FUNCTIONS ARE VARIABLE IN THE
SENSE THAT DIFFERENT VALUES ARE ATTRIBUTED — I.E.,
"INSTANTIATED" — TO EACH OF THE "STRING" AND "CHAR"
VARIABLES THROUGHOUT CACTUS, AND THE INSTANTIATED
COMMANDS ARE USED FOR VARIOUS SUBRoutines.
*/
database
question(string)
explanation(string,string)
answer(string,char)

/* = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
= COMMENT =
THE FOLLOWING PREDICATES IDENTIFY TO THE COMPUTER THE
VARIOUS CLAUSE FUNCTIONS IT WILL ENCOUNTER AS IT
PROCESSES THE HIERARCHICAL LOGIC STRUCTURE OF CACTUS
*/
predicates

admis
inadmis
search—standing
confession—standing
valid—search
valid—confession
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—jury
630 assistance—victims
640 non—routine—felony
650 gravity—crime
660 defendant—home
670 mobile—vehicle
680 seizeable—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
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<td>not—police—car</td>
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<td>not—own—home</td>
</tr>
<tr>
<td>1240</td>
<td>person—briefly—stopped</td>
</tr>
<tr>
<td>1250</td>
<td>not—interrogated</td>
</tr>
<tr>
<td>1260</td>
<td>voluntary—statement</td>
</tr>
<tr>
<td>1270</td>
<td>indirect—questions</td>
</tr>
<tr>
<td>1280</td>
<td>unlikely—elicit—response</td>
</tr>
<tr>
<td>1290</td>
<td>public—safety—exception</td>
</tr>
<tr>
<td>1300</td>
<td>waived—miranda—rights</td>
</tr>
</tbody>
</table>
knowingly—intelligently
implied—waiver
with—legal—counsel
not—initiated—proceedings
not—suspicion—focused
unaccusatory—questions
not—interrogation—restarted
miranda—again
unrelated—crime
defendant—communicated
street—questioned
fruit—poisonous—tree
independent—source
inevitable—discovery
attenuated—chain
surveillance
hello
type—crime
confession—conditions
defendant—property
third—party—property
affirm
clearbase
help
clearanswer
go—on
whose—property
warrant—used
filler1
filler2
filler3
filler4
filler5
filler6
filler7
filler8
filler9
filler10
filler11
filler12
THE FOLLOWING GOAL INDICATES THE STARTING POINT FOR THE COMPUTER'S ANALYSIS OF THE CLAUSES IN CACTUS. THAT IS, THE COMPUTER WILL FIRST DETERMINE WHETHER THE "INADMIS" CLAUSES IS SATISFIED. IF IT FAILS, THEN THE COMPUTER WILL DETERMINE WHETHER THE "ADMIS" CLAUSE IS SATISFIED.

THE FOLLOWING CLAUSES COMPRISE THE LOGICAL STRUCTURE OF CACTUS. SOME CLAUSES DEFINE MESSAGES OR QUESTIONS WHICH WILL BE POSED TO THE USER. THE REMAINING CLAUSES DEFINE THE LOGICAL RELATIONSHIP BETWEEN CLAUSES, THEREBY CREATING THE LOGICAL HIERARCHY OF CACTUS.

THE FOLLOWING "INADMIS" AND "ADMIS" CLAUSES ARE ALTERNATIVE CLAUSES WHICH OCCUPY A PARALLEL LEVEL IN THE CACTUS STRUCTURE, JUST BELOW THE TOP "GOAL" LEVEL. IF THE FIRST "INADMIS" CLAUSE FAILS, THEN THE COMPUTER WILL ATTEMPT TO SATISFY THE SECOND "INADMIS" CLAUSE. IF THAT FAILS AS WELL, THEN THE "ADMIS" CLAUSE WILL AUTOMATICALLY BE SATISFIED BY DEFAULT.

inadmis if hello,confession—standing,not(valid—confession), not(fruit—poisonous—tree),clearwindow,nl,
makewindow(4,15,9,"CACTUS DETERMINATION",0,0,25,80),
cursor(12,15),write("The evidence is INADMISSIBLE at defendant’s trial."),makewindow(2,139,9,"",20,0,5,80),
cursor(2,35),write("HIT ANY KEY"),readchar(X),removewindow,removewindow.

inadmis if search—standing,not(valid—search),
not(fruit—poisonous—tree),clearwindow,
nl,makewindow(4,15,9,"CACTUS DETERMINATION",0,0,25,80),
cursor(12,15),write("The evidence is INADMISSIBLE at Defendant’s trial."),makewindow(2,139,9,"",20,0,5,80),
cursor(2,35),write("HIT ANY KEY"),readchar(X),removewindow,removewindow.
admis if clearwindow, nl,makewindow(4,15,9,"CACTUS DETERMINATION",0,0,25,80),
cursor(12,15),write("The evidence is ADMISSIBLE at Defendant’s trial."),makewindow(2,139,9,"",20,0,5,80),
cursor(2,35),write("HIT ANY KEY"),readchar(X),removewindow,removewindow.
inadmis if search—standing,not(valid—search),
not(fruit—poisonous—tree),clearwindow,
nl,makewindow(4,15,9,"CACTUS DETERMINATION",0,0,25,80),
cursor(12,15),write("The evidence is INADMISSIBLE at Defendant’s trial."),makewindow(2,139,9,"",20,0,5,80),
cursor(2,35),write("HIT ANY KEY"),readchar(X),removewindow,removewindow.
admis if clearwindow, nl,makewindow(4,15,9,"CACTUS DETERMINATION",0,0,25,80),
cursor(12,15),write("The evidence is ADMISSIBLE at Defendant’s trial."),makewindow(2,139,9,"",20,0,5,80),
cursor(2,35),write("HIT ANY KEY"),readchar(X),removewindow,removewindow.

affirm if question(Case),readchar(Answer),
asserta(answer(Case,Answer)),answer(Case,'Y');
answer(Case,'y');question(Case),answer(Case,'P'),help;
question(Case),answer(Case,'p'),help.

help if makewindow(2,15,15,"CACTUS PRINCIPLE",1,0,9,80),
question(Case),explanation(Case,Phrase),
write(Phrase),cursor(6,35),write("HIT ANY KEY"),
clearanswer,readchar(X),removewindow,affirm.
clearbase if answer(X,Y),retract(answer(X,Y)),fail;
question(X),retract(question(X)),fail;clearwindow.
clearanswer if answer(X,Y),retract(answer(X,Y)),fail;go—on.
THE "HELLO" CLAUSE IS THE FIRST WINDOW THE USER WILL SEE WHEN HE RUNS THE CACTUS PROGRAM.

hello if clearwindow,nl,
makewindow(1,15,9, "CACTUS",0,0,25,80),
cursor(5,36),write("HELLO."),
cursor(8,30),write("Welcome to CACTUS, the"),
cursor(11,10),write("Computer Aided Criminal Trial Evidence Admissibility Heuristic"),
cursor(12,10),write("This program will enable the user to determine whether evidence"),
cursor(13,10),write("obtained either by a search or confession may be admitted at a"),
cursor(14,30),write("criminal trial."),
cursor(17,20),write("NOTE: Where a letter response is requested by CACTUS,"),
cursor(18,22),write("respond with only a single letter: ‘Y’, ‘N’, or ‘P’."),
cursor(22,35),write("<HIT ANY KEY>"),readchar(X).

search—standing if target,expect—privacy.
target if clearbase,asserta(question(target1)),
clearwindow,cursor(10,10),write("Is the instant evidence the result of a search"),
cursor(11,10),write("by police?")
cursor(20,35),write("<Y> or <N>"),
affirm.

expect—privacy if whose—property,socially—worthy.
whose—property if defendant—property; third—party—property.

defendant—property if clearbase,
   asserta(question(rawlings1)), clearwindow,
   cursor(10,10), write("Did Defendant have a legitimate expectation of privacy?")
   cursor(11,10), write("in his own property which was the subject of a search?")
   cursor(20,30), write("<Y> or <N> or <P>inciple"), affirm.

third—party—property if clearbase,
   asserta(question(rawlings2)), clearwindow,
   cursor(10,10), write("Did Defendant have a legitimate expectation of privacy")
   cursor(11,10), write("in the property of another which was the subject")
   cursor(12,10), write("of a search?")
   cursor(20,30), write("<Y> or <N> or <P>inciple"), affirm.

socially—worthy if clearbase, asserta(question(katz)), clearwindow,
   cursor(10,10), write("Can it be said that Defendant's expectation of"
   cursor(11,10), write("privacy in his own, or another's, property is")
   cursor(12,10), write("socially worthy?")
   cursor(20,30), write("<Y> or <N> or <P>inciple"), affirm.

valid—search if search—warrant; warrant—exception; plain—view;
   open—field; dog—sniff; surveillance.

plain—view if clearbase, asserta(question(brown)),
   clearwindow,
   cursor(10,10), write("Was the object of the search in plain view of")
   cursor(11,10), write("the arresting officers?")
   cursor(20,30), write("<Y> or <N> or <P>inciple"), affirm.

open—field if clearbase, asserta(question(oliver)), clearwindow,
   cursor(10,10), write("Was the object of the search discovered in"),
cursor(11,10), write("an open field by the arresting officers?")

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle

<Y> or <N> or <P> principle
corroborated—facts if clearbase, asserta(question(gates3)),
clearwindow,
cursor(10,10), write("Did the police get a search warrant by"),
cursor(11,10), write("relying on an informant who is honest in that"),
cursor(12,10), write("regard?")

cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
clearwindow,
cursor(10,10), write("Did the police get a search warrant by"),
cursor(11,10), write("relying on an informant who provided them with"),
cursor(12,10), write("information which corroborated the facts in this"),
cursor(13,10), write("case?")

cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
clearwindow,
cursor(10,10), write("Did the police get a search warrant by")

cursor(11,10), write("relying on an informant whose information was generally"),
cursor(12,10), write("self-verifying in nature?")

cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
good—faith—exception if not(misleading—affidavit),
not(rubber—stamp—magistrate), not(inadequate—affidavit),
not(facially—deficient).

misleading—affidavit if clearbase, asserta(question(leon1)),
clearwindow,
cursor(10,10), write("Did the police get a search warrant by"),
cursor(11,10), write("submitting a misleading affidavit to the issuing")

cursor(12,10), write("magistrate?")

cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
rubber—stamp—magistrate if clearbase, asserta(question(leon2)), clearwindow,
by”),
cursor(11,10),write(“submitting an affidavit to a rubber-
stamping magistrate?”),
cursor(20,30),write(“<Y> or <N> or <P> principle”),affirm.
iinadequate—affidavit if clearbase,asserta(question(leon3)),
clearwindow,
cursor(10,10),write(“Did the police get a search warrant
by”),
cursor(11,10),write(“submitting an inadequate affidavit to
the issuing magistrate?”),
cursor(20,30),write(“<Y> or <N> or <P> principle”),affirm.
facially—deficient if clearbase,asserta(question(leon4)),
clearwindow,
cursor(10,10),write(“Did the police get a search warrant
by”),
cursor(11,10),write(“submitting a facially deficient
affidavit to the”),
cursor(12,10),write(“issuing magistrate?”),
cursor(20,30),write(“<Y> or <N> or <P> principle”),affirm.
warrant—exception if search—incident—arrest;
exigent—circumstances;
home—arrest;automobile—scope;inventory—search;stop—
frisk;
administrative—search;consent—search.
search—incident—arrest if immediate—control;dorm—room;
probable—cause—weapon.
immediate—control if clearbase,asserta(question(chimel)),
clearwindow,
cursor(10,10),write(“Did Defendant have a dangerous weapon
within”),
cursor(11,10),write(“his immediate control, and did the
search occur”),
cursor(12,10),write(“contemporaneously with Defendant’s
arrest?”),
cursor(20,30),write(“<Y> or <N> or <P> principle”),affirm.
dorm—room if clearbase,asserta(question(chrisman)),
clearwindow,
cursor(10,10),write(“Did the arresting officers make a
search of"),
cursor(11,10),write("Defendant's residence while
accompanying"),
cursor(12,10),write("Defendant in an effort to monitor his
movements?"),
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
probable—cause—weapon if clearbase,
asserta(question(robinson)),clearwindow,
cursor(10,10),write("Did the arresting officers make a
search of"),
cursor(11,10),write("Defendant's person due to a
reasonably held"),
cursor(12,10),write("belief that Defendant was carrying a
concealed"),
cursor(13,10),write("weapon?"),
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
existent—circumstances if destroy—evidence;hot—pursuit;
threat—innoc—victims.
destroy—evidence if clearbase,asserta(question(kale1)),
clearwindow,
cursor(10,10),write("Were there others present at the site
of"),
cursor(11,10),write("Defendant's arrest who might have
destroyed evidence"),
cursor(12,10),write("while the arresting officers would
otherwise have left"),
cursor(13,10),write("to obtain a search warrant?"),
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
hot—pursuit if clearbase,asserta(question(kale2)),
clearwindow,
cursor(10,10),write("Did the officers arrest Defendant
while both Defendant"),
cursor(11,10),write("and the officers were in hot pursuit
from the scene of"),
cursor(12,10),write("Defendant's alleged crime?"),
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
threat—innoc—victims if clearbase,asserta(question(kale3)),
clearwindow,
cursor(10,10),write("Did Defendant pose a threat of injury
to himself or"),
cursor(11,10),write("to others?")},
cursor(20,30),write("<Y> or <N> or <P>inciple"),affirm.
cursor(10,10),write("Were the arresting officers providing assistance—victims if clearbase,asserta(question(thompson)),
clearwindow,
cursor(10,10),write("Were the arresting officers providing assistance to"),
cursor(11,10),write("victims of Defendant's alleged crime when they discovered"),
cursor(12,10),write("the evidence in question?")},
cursor(20,30),write("<Y> or <N> or <P>inciple"),affirm.
home—arrest if defendant—home,type—crime.
type—crime if non—routine—felony;gravity—crime.
non—routine—felony if clearbase,asserta(question(payton)),
clearwindow,
cursor(10,10),write("Was a home searched without a warrant during the")
cursor(11,10),write("course of Defendant's arrest for a crime other than a routine"),
cursor(12,10),write("felony?")},
cursor(20,30),write("<Y> or <N> or <P>inciple"),affirm.
gravity—crime if clearbase,asserta(question(welsh)),
clearwindow,
cursor(10,10),write("Did the gravity of the alleged crime require entry"),
cursor(11,10),write("by the police to enter a home in order to effect Defendant's arrest?")},
cursor(20,30),write("<Y> or <N> or <P>inciple"),affirm.
defendant—home if clearbase,asserta(question(steagald)),
clearwindow,
cursor(10,10),write("Was the search conducted in the home of a third"),
cursor(11,10),write("party after police officers, while acting upon an"},
cursor(12,10),write("arrest warrant for Defendant, failed to find"},
cursor(13,10),write("Defendant at the location stated on the warrant?")},
cursor(20,30), write(" <Y> or <N> or <P> rinciple"), affirm.

mobile—vehicle if mobile—vehicle; seizable—items;
custodial—arrest.

mobile—vehicle if clearbase, asserta(question(carney)),
clearwindow,
cursor(10,10), write("Was a search made of a readily
mobile"),
cursor(11,10), write("vehicle?"),
cursor(20,30), write(" <Y> or <N> or <P> rinciple"), affirm.

seizable—items if clearbase, asserta(question(ross)),
clearwindow,
cursor(10,10), write("Was a search made of an automobile by
officers who"),
cursor(11,10), write("had probable cause to believe that
there were seizable items inside?"),
cursor(20,30), write(" <Y> or <N> or <P> rinciple"), affirm.

custodial—arrest if clearbase, asserta(question(belton)),
clearwindow,
cursor(10,10), write("Was a search made of an automobile by
officers who")
cursor(11,10), write("had already placed Defendant in
custodial arrest?")
cursor(20,30), write(" <Y> or <N> or <P> rinciple"), affirm.

inventory—search if filler2, scope—inventory—search,
incarcerated—inventory—search.

filler2 if clearbase, asserta(question(opperman)),
clearwindow,
cursor(10,10), write("Did police conduct an inventory
search of Defendant's"),
cursor(11,10), write("automobile?")
cursor(20,30), write(" <Y> or <N>"), affirm.

scope—inventory—search if clearbase,
asserta(question(opperman)), clearwindow,
cursor(10,10), write("Was an inventory search of
Defendant's automobile"),
cursor(11,10), write("confined only to the passenger
compartment, and not"),
incarcerated—inventory—search if clearbase,
asserta(question(lafayette)),clearwindow,
cursor(10,10),write("Was an inventory search of Defendant’s automobile?"),
cursor(11,10),write("performed after Defendant was incarcerated?"),
cursor(20,30),write(" <Y> or <N> or <P> principle"),affirm.

stop—frisk if carrying—weapon;informant—stop—frisk;
drug—courier;illegal—aliens;specific—articulable;
car—stop—frisk;finger—printing;seizure—apartment.

carrying—weapon if clearbase,asserta(question(terry)),
clearwindow,
cursor(10,10),write("Did the arresting officers search Defendant’s person?")
cursor(11,10),write("without first moving him to another location, under reasonable"),
cursor(12,10),write("suspicion that Defendant was carrying a weapon?")
cursor(20,30),write(" <Y> or <N> or <P> principle"),affirm.

informant—stop—frisk if clearbase,asserta(question(adams)),
clearwindow,
cursor(10,10),write("Did the arresting officers search Defendant’s person?")
cursor(11,10),write("without first moving him to another location, based on a tip"),
cursor(12,10),write("from a reliable informant?")
cursor(20,30),write(" <Y> or <N> or <P> principle"),affirm.

drug—courier if clearbase,asserta(question(mendenhall)),
clearwindow,
cursor(10,10),write("Did the arresting officers search Defendant’s person")
cursor(11,10),write("or any of his containers, without first moving him to another")
cursor(12,10),write("location, because Defendant appeared to fit a")
cursor(13,10),write(" drug courier profile")
cursor(20,30),write(" <Y> or <N> or <P> principle"),affirm.
illegal—aliens if clearbase, asserta(question(delgado)),
cursor(10,10), write("Was the search conducted in a place of business in"),
cursor(11,10), write("an attempt by officers to find illegal aliens?")
cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.

specific—articulable if clearbase, asserta(question(place2)),
clearwindow,
cursor(10,10), write("Were/Are the arresting officers able to provide"),
cursor(11,10), write("specific and articulable facts which provided"),
cursor(12,10), write("reasonable suspicion to search Defendant’s"),
cursor(12,10), write("person or containers?"),
cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.

car—stop—frisk if clearbase, asserta(question(long)),
clearwindow,
cursor(10,10), write("Did the arresting officers have reasonable suspicion to"),
cursor(11,10), write("stop and search Defendant’s car, and did they confine their"),
cursor(12,10), write("search to the passenger compartment of Defendant’s car?"),
cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.

finger—printing if clearbase, asserta(question(hayes)),
clearwindow,
cursor(10,10), write("Did the search consist of a seizure of Defendant’s person"),
cursor(11,10), write("for the sole purpose of fingerprinting Defendant?"),
cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.

seizure—apartment if clearbase, asserta(question(segura)),
clearwindow,
cursor(10,10), write("Did the search consist of a seizure of a residence while"),
cursor(11,10), write("a search warrant was being obtained?"),
cursor(20,30), write("\textlangle\text Y\rangle\text or\textlangle\text N\rangle\text or\textlangle\text P\rangle\text principle"), affirm.

administrative—search if health—inspection;
school—inspection; liquor—inspection.

health—inspection if clearbase, asserta(question(camara)),
clearwindow,
cursor(10,10), write("Was the search conducted for health
inspection purposes?")
cursor(20,30), write("\textlangle\text Y\rangle\text or\textlangle\text N\rangle\text or\textlangle\text P\rangle\text principle"), affirm.

school—inspection if clearbase, asserta(question(tlo)),
clearwindow,
cursor(10,10), write("Did the search consist of a school
inspection of students by")
cursor(11,10), write("school administrators?")
cursor(20,30), write("\textlangle\text Y\rangle\text or\textlangle\text N\rangle\text or\textlangle\text P\rangle\text principle"), affirm.

liquor—inspection if clearbase, asserta(question(colonnade)),
clearwindow,
cursor(10,10), write("Did the search consist of a liquor
or firearms inspection by the")
cursor(11,10), write("appropriate governing authority?")
cursor(20,30), write("\textlangle\text Y\rangle\text or\textlangle\text N\rangle\text or\textlangle\text P\rangle\text principle"), affirm.

consent—search if filler3; filler5.

filler3 if filler4, defendant—voluntary—consent.

filler4 if clearbase, asserta(question(consent1)),
clearwindow,
cursor(10,10), write("Did Defendant consent to the
search?")
cursor(20,30), write("\textlangle\text Y\rangle\text or\textlangle\text N\rangle\text or\textlangle\text P\rangle\text principle"), affirm.

defendant—voluntary—consent if right—refuse,
not(subtle—coercion), not(defendant—custody),
not(intimidating—environment), not(inferior—intelligence),
police—contact, not(vulnerable—state—mind),
not(limit—consent).

right—refuse if clearbase, asserta(question(consent1)),
clearwindow,
cursor(10,10), write("Was Defendant aware that he had
the"),
cursor(11,10),write("right to refuse the search?"),
cursor(20,30),write("<Y> or <N> or <P>ninciple"), affirm.
cursor(10,10),write("Was Defendant subtly, or otherwise,
coerced"),
cursor(11,10),write("by police officers to give his
consent?")
cursor(20,30),write("<Y> or <N> or <P>ninciple"), affirm.
cursor(10,10),write("Was Defendant in police custody at
the time when?")
cursor(11,10),write("he gave his consent?")
cursor(20,30),write("<Y> or <N> or <P>ninciple"), affirm.
cursor(10,10),write("Did Defendant consent to the search
amidst a")
cursor(11,10),write("generally intimidating
environment?")
cursor(20,30),write("<Y> or <N> or <P>ninciple"), affirm.
cursor(10,10),write("Was Defendant of inferior
intelligence or education")
cursor(11,10),write("at the time of his consent?")
cursor(20,30),write("<Y> or <N> or <P>ninciple"), affirm.
cursor(10,10),write("Did Defendant have sufficient prior
contact with")
cursor(11,10),write("the police so that he was, more
probably than")
cursor(12,10),write("not, aware of his right to withhold
consent?")
cursor(20,30),write("<Y> or <N> or <P>ninciple"), affirm.
266 COMPUTER/LAW JOURNAL [Vol. IX

vulnerable-state-mind if clearbase,
asserta(question(consent7)),clearwindow,
cursor(10,10),write("Was Defendant in a particularly
vulnerable state"),
cursor(11,10),write("of mind at the time when he gave
consent?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.

limit-consent if clearbase,asserta(question(consent8)),
clearwindow,
cursor(10,10),write("Did Defendant revoke his consent or
limit it?")
cursor(11,10),write("so as to exclude the area which
revealed the")
cursor(12,10),write("instant evidence?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.

filler5 if filler6 and third-party—consent.
filler6 if clearbase,asserta(question(consent9)),
clearwindow,
cursor(10,10),write("Did a third party give his consent to
a search")
cursor(11,10),write("by police which revealed the instant
evidence?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.

third—party—consent if -power—authority;possessory—
interest;
defendant—agent;assumed—risk;apparent—authority.

power—authority if clearbase,asserta(question(consent9)),
clearwindow,
cursor(10,10),write("Did the third have the power of
authority to")
cursor(11,10),write("give his consent?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.

possessory—interest if clearbase,
asserta(question(consent10)),clearwindow,
cursor(10,10),write("Did the third party have a possessory
interest")
cursor(11,10),write("in the thing searched?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"),affirm.
defendant—agent if clearbase, asserta(question(consent11)),
clearwindow,
cursor(10,10), write("Was the third party acting as
Defendant’s"),
cursor(11,10), write("agent when he gave his consent?")
cursor(20,30), write("<Y> or <N> or <P> principle"), affirm.

assumed—risk if clearbase, asserta(question(consent12)),
clearwindow,
cursor(10,10), write("Can it be said that Defendant assumed
the risk"),
cursor(11,10), write("that the third party would give his
consent?")
cursor(20,30), write("<Y> or <N> or <P> principle"), affirm.

apparent—authority if clearbase,
asserta(question(consent13)), clearwindow,
cursor(10,10), write("Did the third have the apparent
authority"),
cursor(11,10), write("to give his consent?")
cursor(20,30), write("<Y> or <N> or <P> principle"), affirm.

/* = COMMENT =

THE FOLLOWING CLAUSES DEAL WITH ISSUES WHICH RELATE
TO EVIDENCE GATHERED THROUGH A CONFESSION BY THE
DEFENDANT TO POLICE.
*/

confession—standing if clearbase, asserta(question(conf)),
clearwindow,
cursor(10,10), write("Is the instant evidence the result of
a confession by"),
cursor(11,10), write("Defendant to the
police?")
cursor(20,35), write("<Y> or <N>"), affirm.

valid—confession if miranda—rights, confession—conditions.
valid—confession if waived—miranda—rights,
with—legal—counsel.
miranda—rights if not(filler9),filler10.
filler9 if clearbase,asserta(question(miranda1)),
cursor(10,10),write(“Was Defendant read his Miranda rights before”),
cursor(11,10),write(“he confessed to police?”),
cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.
filler10 if not-custody,not—interrogated;
public—safety—exception;not—initiated—proceedings.
not—custody if street—questioned;general—cooperation;
car—briefly—stopped;not—stationhouse;not—police—car;
not—own—home;person—briefly—stopped.
street—questioned if clearbase,asserta(question(miranda1)),
cursor(10,10),write(“Was Defendant questioned by the police on the street?”),
cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.
general—cooperation if clearbase,asserta(question(orozco)),
cursor(10,10),write(“Did Defendant voluntarily answer questions from the”),
cursor(11,10),write(“police while they were all on the street?”),
cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.
car—briefly—stopped if clearbase,
asserta(question(beckimer)),clearwindow,
cursor(10,10),write(“Was Defendant’s car briefly stopped by officers in the”),
cursor(11,10),write(“flow of traffic for a misdemeanor traffic violation”),
cursor(12,10),write(“during which time he answered police questions?”),
cursor(20,30),write(“<Y> or <N> or <P>rinciple”),affirm.
not—stationhouse if clearbase,asserta(question(beckwith)),
cursor(10,10),write(“Did Defendant answer police questions while he was”),
cursor(11,10),write("outside of the police stationhouse, and while he was"),
cursor(12,10),write("otherwise not in police custody?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"), affirm.
not—police—car if clearbase, asserta(question(brewer1)),
clearwindow,
cursor(10,10),write("Did Defendant answer police questions while he"),
cursor(11,10),write("outside of a police car, and while he was"),
cursor(12,10),write("otherwise not in police custody?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"), affirm.
not—own—home if clearbase, asserta(question(miranda2)),
clearwindow,
cursor(10,10),write("Was Defendant arrested and interrogated within his own home?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"), affirm.
person—briefly—stopped if clearbase,
asserta(question(terry2)), clearwindow,
cursor(10,10),write("Did Defendant answer questions while he was only briefly stopped?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"), affirm.
not—interrogated if voluntary—statement; indirect—questions;
not(unlikely—elicit—response).
voluntary—statement if clearbase,
asserta(question(miranda3)), clearwindow,
cursor(10,10),write("Were any statements made by Defendant truly volunteered?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"), affirm.
indirect—questions if clearbase, asserta(question(miranda4)),
clearwindow,
cursor(10,10),write("Were Defendant’s statements made in response to questions")
cursor(11,10),write("which were only indirect in nature, e.g., regarding")
cursor(12,10),write("his identity?")
cursor(20,30),write("<Y> or <N> or <P>rinciple"), affirm.
unlikely—elicit—response if clearbase,
asserta(question(innes)),clearwindow,
cursor(10,10),write("Did police carry on a discussion in
Defendant's presence which"),
cursor(11,10),write("was likely to elicit a response from
Defendant?")
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
public—safety—exception if clearbase,
asserta(question(quarrels)),clearwindow,
cursor(10,10),write("Were the police forced to take
immediate action"),
cursor(11,10),write("which caused them to fail to
administer to the"),
cursor(12,10),write("Defendant his Miranda rights?")
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
not—initiated—proceedings if not(not—suspicion—focused);
not(unaccusatory—questions).
not—suspicion—focused if clearbase,
asserta(question(brewer2)),clearwindow,
cursor(10,10),write("Had police suspicion focused on
Defendant when they first")
cursor(11,10),write("asked him questions; i.e., was he a
primary suspect?")
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
unaccusatory—questions if clearbase,
asserta(question(escobedo)),clearwindow,
cursor(10,10),write("Were police questions of an
accusatory nature?")
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
waived—miranda—rights if filler11,filler12.
filler11 if clearbase,
asserta(question(miranda5)),clearwindow,
cursor(10,10),write("Did Defendant waive his Miranda right
to remain")
cursor(11,10),write("silent immediately prior to the
alleged")
cursor(12,10),write("confession?")
cursor(20,30),write("<Y> or <N> or <P> principle"),affirm.
10010 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)),
10140 clearwindow,
10160 cursor(10,10), write("Could Defendant’s waiver of his 
10180 Miranda rights be inferred"),
10200 cursor(11,10), write("from his other words or behavior?"),
10220 cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
10240
10260 with—legal—counsel if clearbase,
10290 asserta(question(miranda6)), clearwindow,
10310 cursor(10,10), write("Was Defendant in the presence of his 
10330 legal counsel when he"),
10350 cursor(11,10), write("answered police questions?"),
10370 cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
10390
10410 not—interrogation—restarted if miranda—again;
10430 unrelated—crime; defendant—communicated.
10480
10490 miranda—again if clearbase,
10520 asserta(question(miranda7)), clearwindow,
10540 cursor(10,10), write("Was interrogation restarted after 
10560 Defendant refused to speak,"),
10580 cursor(11,10), write("and was Defendant re-read his Miranda 
10600 rights?")
10620 cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
10640
10670 unrelated—crime if clearbase,
10700 asserta(question(mosley)), clearwindow,
10720 cursor(10,10), write("Was interrogation restarted 
10740 concerning an unrelated crime?"),
10760 cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.
10780
10800 defendant—communicated if clearbase,
10830 asserta(question(bradshaw)), clearwindow,
cursor(10,10), write("Did Defendant restart further
communication of his own avail?")
cursor(20,30), write("<Y> or <N> or <P>rinciple”), affirm.

confession—conditions if voluntary—confession;

independent—proof.

voluntary—confession if totality—circumstances; not(filler7).

totality—circumstances if not(abusive—method),
not(poor—condition), not(police—force).

abusive—method if clearbase, asserta(question(confession1)),
clearwindow,
cursor(10,10), write("Did the police use abusive methods to
elicit a confession from"),
cursor(11,10), write("Defendant?")
cursor(20,30), write("<Y> or <N> or <P>rinciple”), affirm.

poor—condition if clearbase, asserta(question(confession2)),
clearwindow,
cursor(10,10), write("Was Defendant in poor mental or
physical condition"),
cursor(11,10), write("at the time of his confession?")
cursor(20,30), write("<Y> or <N> or <P>rinciple”), affirm.

police—force if clearbase, asserta(question(confession3)),
clearwindow,
cursor(10,10), write("Did the police use force, threats or
deception to elicit a")
cursor(11,10), write("confession from Defendant?")
cursor(20,30), write("<Y> or <N> or <P>rinciple”), affirm.

independent—proof if clearbase, asserta(question(jackson)),
clearwindow,
cursor(10,10), write("Was there proof, independent of
Defendant’s confession?")
cursor(11,10), write("that he committed the alleged
crime?")
cursor(20,30), write("<Y> or <N> or <P>rinciple”), affirm.

filler7 if filler8, unnecessary—delay.
filler
if clearbase, asserta(question(confession4)),
clearwindow,
cursor(10,10), write("Was there a substantial delay between the time"),
cursor(11,10), write("of Defendant's arrest and his arraignment"),
cursor(12,10), write("during which time the Defendant confessed?")
cursor(20,30), write(" <Y> or <N> or <P>rinciple"), affirm.
unnecessary—delay if testimony—conflicts;
not(judge—unavailable).
testimony—conflicts if clearbase, asserta(question(mcnab)),
clearwindow,
cursor(10,10), write("Did the delay cause Defendant's confession to"),
cursor(11,10), write("conflict with his testimony at the time of his"),
cursor(12,10), write("trial?")
cursor(20,30), write(" <Y> or <N> or <P>rinciple"), affirm.
judge—unavailable if clearbase,
asserta(question(confession4)), clearwindow,
cursor(10,10), write("Was the delay due to the unavailability of a judge"),
cursor(11,10), write("to arraign Defendant?")
cursor(20,30), write(" <Y> or <N> or <P>rinciple"), affirm.

/* == PROBLEM ==
   = COMMENT =
THE FOLLOWING "FRUIT OF THE POISONOUS TREE" CLAUSES
ENABLE EVIDENCE WHICH WAS OBTAINED BY UNLAWFUL POLICE CONDUCT TO BE ADMITTED AT TRIAL.*/
fruit—poisonous—tree if independent—source;
eventually—discovery; attenuated—chain.
independent—source if clearbase, asserta(question(segura2)),
clearwindow,
cursor(10,10), write("If the police conducted an illegal search or obtained an illegal"),
cursor(11,10), write("confession, was the same evidence discovered or discoverable"),
cursor(12,10), write("through an independent source?"),
cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.

inevitable—discovery if clearbase, asserta(question(nix)),
clearwindow,
cursor(10,10), write("If the police conducted an illegal search or obtained an illegal"),
cursor(11,10), write("confession, would the same evidence inevitably have been"),
cursor(12,10), write("discovered nonetheless?")
cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.

attenuated—chain if clearbase, asserta(question(wongsun)),
clearwindow,
cursor(10,10), write("If the police conducted an illegal search or obtained an illegal"),
cursor(11,10), write("confession, was the causal link between the illegal action and"),
cursor(12,10), write("the evidence attenuated?")
cursor(20,30), write("<Y> or <N> or <P>rinciple"), affirm.

cursor(10,10), write("<Y> or <N> or <P>rinciple"), affirm.

cursor(10,10), write("<Y> or <N> or <P>rinciple"), affirm.

THE FOLLOWING CLAUSES DEAL WITH THE PRINCIPLES WHICH UNDERLIE THE CONFESSION AND SEARCH CLAUSES ABOVE. THESE ARE THE MESSAGES WHICH ARE DISPLAYED ON THE COMPUTER SCREEN WHEN THE USER PRESSES THE LETTER "P".

explanation(rawlingsl,"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].").

explanation(rawlings2,"If a third party's property was searched, Defendant 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].").
Defendant's expectation of privacy in searched property must be considered a socially worthy expectation for standing to contest admissibility of the evidence. Katz v. United States, 389 U.S. 347, 88 S.Ct. 507, 19 L.Ed.2d 576 [1967].").

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

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

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

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

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

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

If police rely on an informant to obtain a search warrant which reveals the evidence in question, the warrant is valid only insofar as the informant is

If police rely on an informant to obtain a search warrant, the evidence revealed is admissible only if the facts of the case corroborate the information provided by the informant. Illinois v. Gates, 462 U.S. 213, 103 S.Ct. 2317, 76 L.Ed.2d 527 [1983]."").

If police rely on an informant to obtain a search warrant, the evidence revealed is admissible only if the information provided by the informant is ‘self-verifying’ in nature. Illinois v. Gates, 462 U.S. 213, 103 S.Ct. 2317, 76 L.Ed.2d 527 [1983]."").

If police submitted a misleading affidavit to a magistrate in order to obtain a search warrant, then that warrant is invalid. United States v. Leon, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984]."").

If police submitted an affidavit to a ‘rubber-stamping’ magistrate in order to obtain a search warrant, then that warrant is invalid. United States v. Leon, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984]."").

If police submitted an inadequate affidavit to a magistrate in order to obtain a search warrant, then that warrant is invalid. United States v. Leon, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984]."").

If police submitted a facially deficient affidavit to a magistrate in order to obtain a search warrant, then that warrant is invalid. United States v. Leon, 468 U.S. 897, 104 S.Ct. 3405, 82 L.Ed.2d 677 [1984]."").

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]."").

Police officers may conduct a warrantless search of an arrestee’s residence while accompanying Defendant in order to monitor his/her
explanation(robinson, "Police officers may conduct a warrantless search of an arrestee’s person only if the officer has a reasonably held belief that the arrestee is carrying a concealed weapon. United States v. Robinson, 414 U.S. 218, 94 S.Ct. 467, 38 L.Ed.2d 427 [1973].").

explanation(vale1, "Police officers may conduct a warrantless search of an arrestee’s premises where others are present who may destroy vital evidence while the officer takes the arrestee to police headquarters. Vale v. Louisiana, 399 U.S. 30, 90 S.Ct. 1969, 26 L.Ed.2d 409 [1970].").

explanation(vale2, "Police officers may conduct a warrantless search of an arrestee’s premises only insofar as the arrest was made after the officers were in ‘hot pursuit’ of the arrestee from the scene of an alleged crime. Vale v. Louisiana, 399 U.S. 30, 90 S.Ct. 1969, 26 L.Ed.2d 409 [1970].").

explanation(vale3, "Police officers may conduct a warrantless search of an arrestee and the area within his immediate control if the arrestee poses a threat to himself or to others. Vale v. Louisiana, 399 U.S. 30, 90 S.Ct. 1969, 26 L.Ed.2d 409 [1970].").

explanation(thompson, "Police officers may conduct a warrantless search of an arrestee’s premises in order to find victims or other suspects. Thompson v. Louisiana, 469 U.S. 17, 105 S.Ct. 409, 83 L.Ed.2d 246 [1984].").

explanation(payton, "Police officers may make an arrest within the arrestee’s home only if the arrest is for something other than a routine felony. Payton v. New York, 445 U.S. 573, 100 S.Ct. 1371, 63 L.Ed.2d 639 [1980].").

explanation(welsh, "Police officers may make an arrest within the arrestee’s home only if the gravity of the underlying offense necessitates doing so. Welsh v. Wisconsin, 466 U.S. 740, 104 S.Ct. 2091, 80 L.Ed.2d 732 [1984].").
Evidence is inadmissible where police officers act upon an arrest warrant, enter the home of a third party, and discover the evidence in plain view. Steagald v. United States, 451 U.S. 204, 101 S.Ct. 1642, 68 L.Ed.2d 38 [1981].


Police officers may make a warrantless search of any part of an automobile if they have probable cause to believe that there are seizable items therein. United States v. Ross, 456 U.S. 798, 102 S.Ct. 2157, 72 L.Ed.2d 572 [1982].

Police officers may make a warrantless search of an automobile only if the driver has already been placed in custodial arrest. New York v. Belton, 453 U.S. 454, 101 S.Ct. 2860, 69 L.Ed.2d 768 [1981].

Police officers may make an inventory search of an arrestee's impounded automobile which extends only to the passenger compartment, and to containers therein. State v. Opperman, 247 N.W.2d 673 (S.D. 1976).

Police officers may conduct an inventory search of an arrestee's impounded automobile only after the arrestee has been incarcerated. Lafayette, 462 U.S. 640, 103 S.Ct. 2605, 77 L.Ed.2d 65 [1983].

Police officers may 'stop and frisk' a person only insofar as they have reasonable suspicion to believe that he/she is carrying a dangerous weapon. Terry v. Ohio, 392 U.S. 1, 88 S.Ct. 1868, 20 L.Ed.2d 889 [1968].

Police officers may make a warrantless search of a person based on information from a reliable informant. Adams v. Williams, 407 U.S. 143, 92 S.Ct. 1921, 32 L.Ed.2d 612 [1972].
explanation(mendenhall,"Police officers may make a warrantless search of a person, or any of his containers, if that person fits a 'drug courier profile.' United States v. Mendenhall, 446 U.S. 544, 100 S.Ct. 1870, 64 L.Ed.2d 497 [1980].").

explanation(delgado,"Police officers may stop and frisk individuals in a place of business where such officers are attempting to discover illegal aliens. Immigration and Naturalization Serv. v. DelGado, 466 U.S. 210, 104 S.Ct. 1758, 80 L.Ed.2d 247 [1984].").

explanation(place2,"Evidence obtained without a search warrant in public areas is admissible only if the officers provide specific and articulable facts which create a reasonable suspicion. United States v. Place, 462 U.S. 696, 103 S.Ct. 2637, 77 L.Ed.2d 110 [1983].").

explanation(long,"Evidence obtained by officers from a warrantless search of an automobile is admissible only if the search was limited to the passenger compartment. Michigan v. Long, 463 U.S. 1032, 103 S.Ct. 3469, 77 L.Ed.2d 1201 [1983].").

explanation(hayes,"A person may be seized and detained for fingerprinting purposes, given probable cause. Hayes v. Florida, 470 U.S. 811, 105 S.Ct. 1643, 84 L.Ed.2d 705 [1985].").

explanation(segura,"Police officers may seize and occupy an arrestee's residence while other officers leave to obtain a search warrant. Segura v. United States, 468 U.S. 796, 104 S.Ct. 3380, 82 L.Ed.2d 599 [1984].").

explanation(camara,"Evidence obtained from a health inspection is admissible at trial. Camara v. Municipal Court, 387 U.S. 523, 87 S.Ct. 1727, 18 L.Ed.2d 930 [1967].").

explanation(tlo,"Evidence obtained from an inspection of students by school administrators is admissible at trial. New Jersey v. T.L.O., 469 U.S. 325, 105 S.Ct. 733, 85 L.Ed.2d 720 [1985].").

explanation(colonnade,"Evidence obtained from a state liquor
and firearms inspection may be admitted at trial. Colonnade Catering Corp. v. United States, 397 U.S. 72, 90 S.Ct. 774, 25 L.Ed.2d 60 [1970]."

explanation("consent1","Evidence obtained from a consenting Defendant is admissible only insofar as the Defendant knew that he had the right to refuse the search. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").

explanation("consent2", "Evidence obtained from a consenting Defendant is admissible only insofar as the Defendant was neither expressly nor subtly coerced. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").

explanation("consent3", "Evidence obtained from a consenting Defendant is admissible only insofar as the Defendant was not in police custody at the time. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").

explanation("consent4", "Evidence obtained from a consenting Defendant is admissible only insofar as the Defendant was not subjected to an intimidating environment. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").

explanation("consent5", "Evidence obtained from a consenting Defendant is admissible only insofar as the Defendant is not of low intelligence or poor education. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").

explanation("consent6", "Evidence obtained from a consenting Defendant is admissible if the Defendant has had prior contact with the police. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").

explanation("consent7", "Evidence obtained from a consenting Defendant is admissible only insofar as the Defendant was not in a vulnerable state of mind. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].").
Evidence obtained from a consenting Defendant is admissible only if the Defendant's words or conduct did not limit his consent so as to exclude the searched area. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].

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

Evidence obtained by police who relied upon the consent of a third party is admissible if the third party had a possessory interest in the thing searched. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct. 2041, 36 L.Ed.2d 854 [1973].

Evidence obtained by police who relied upon the consent of a third party is admissible if the third party acted as Defendant's agent. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct.2041, 36 L.Ed.2d 854 [1973].

Evidence obtained by police who relied upon the consent of a third party is admissible if the Defendant assumed the risk that a third party would give his consent. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct.2041, 36 L.Ed.2d 854 [1973].

Evidence obtained by police who relied upon the consent of a third party is admissible if the third party had apparent authority to give his consent. Schneckloth v. Bustamonte, 412 U.S. 218, 93 S.Ct.2041, 36 L.Ed.2d 854 [1973].

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

A confession obtained by police from an arrestee who is in poor physical or mental
condition is not admissible at trial. Jackson v. Denno, 378 U.S. 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].

explanation(confession3, "A confession obtained by police who used force, threats, or deception to elicit the confession is not admissible as evidence at trial. Jackson v. Denno, 378 U.S. 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].").

explanation(confession4, "A confession is inadmissible if it is made during a long delay between arrest and arraignment, unless the delay was caused by the unavailability of a judge. Jackson v. Denno, 378 U.S. 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].").

explanation(jackson, "A confession is inadmissible unless there is also some independent proof linking Defendant to the crime. Jackson v. Denno, 378 U.S. 368, 84 S.Ct. 1774, 12 L.Ed.2d 908 [1964].").

explanation(mcnab, "A confession made during an inexcusably long delay between the time of arrest and arraignment is inadmissible at a federal trial. McNabb v. United States, 318 U.S. 332, 63 S.Ct. 608, 87 L.Ed. 819 [1943].").

explanation(mirandal, "Answers to non-intrusive police questions made briefly on the street are admissible at trial. Miranda v. Arizona, 384 U.S. 436, 86 S.Ct. 1602, 16 L.Ed.2d 694 [1966].").

explanation(orezco, "Answers made voluntarily to police by an arrestee who generally cooperates are admissible at trial. Orozco v. Texas, 394 U.S. 324, 89 S.Ct. 1095, 22 L.Ed.2d 311 [1969].").

explanation(beckimer, "Miranda warnings must be administered before Defendant may answer questions by police officers who stopped Defendant's car in traffic for a misdemeanor traffic violation. Berkemer v. McCarty, 468 U.S. 420, 104 S.Ct. 3138, 82 L.Ed.2d 317 [1984].").

explanation(beckwith, "Miranda warnings need not be given before Defendant answers police in a comfortable environment outside the stationhouse, e.g., in Defendant's own home. Beckwith v. United States, 425 U.S. 341, 96
 COMMON LAW REASONING

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
A confession obtained from Defendant is admissible if a waiver of his Miranda rights could have been inferred from Defendant's words or behavior. North Carolina v. Butler, 441 U.S. 369, 99 S.Ct. 1755, 60 L.Ed.2d 286 [1979].

A confession from Defendant must be made in the presence of Defendant's legal counsel, unless Defendant has waived his right to counsel. Miranda v. Arizona, 384 U.S. 436, 86 S.Ct. 1602, 16 L.Ed.2d 694 [1966].

Miranda rights must be administered to Defendant if police suspicion has focused on Defendant. Brewer v. Williams, 430 U.S. 387, 97 S.Ct. 1232, 51 L.Ed.2d 424 [1977].

Miranda rights must be administered to Defendant before police ask questions of an accusatory nature. Escobedo v. Illinois, 378 U.S. 478, 84 S.Ct. 1758, 12 L.Ed.2d 977 [1964].

If Defendant refuses to answer questions after having his/her Miranda rights administered, Miranda warnings must again be given if police initiate further questioning. Miranda v. Arizona, 384 U.S. 436, 86 S.Ct. 1602, 16 L.Ed.2d 694 [1966].

If Defendant refuses to answer questions after Miranda rights were read, Miranda warnings need not be re-read where Defendant voluntarily re-initiates communication with police. Oregon v. Bradshaw, 462 U.S. 1039, 103 S.Ct. 2830, 77 L.Ed.2d 405 [1983].

Evidence obtained by an illegal search or confession is admissible where such evidence was discoverable through a means independent from the illegal

"Evidence obtained by an illegal search or confession is admissible where such evidence would nevertheless have been inevitably discovered by police. Nix v. Williams, 467 U.S. 431, 104 S.Ct. 2501, 81 L.Ed.2d 377 [1984]."").

"Evidence obtained by an illegal search or confession is admissible where the causal link between the illegal activity and discovery of the evidence is attenuated. Wong Sun v. United States, 371 U.S. 471, 83 S.Ct. 407, 9 L.Ed.2d 441 [1963].""."
Type "CACTUS"  

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

CACTUS

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

<Y> or <N> or <P>rincible

Type "N"
CACTUS

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

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

Type "Y"

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 "P"

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
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"

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"

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

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

Type "N"

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"

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
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 \(<P>\) principle

Type "Y"

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 \(<P>\) principle

Type "N"

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 \(<P>\) principle

Type "N"
<table>
<thead>
<tr>
<th>PANEL 15</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CACTUS</strong></td>
</tr>
<tr>
<td>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?</td>
</tr>
<tr>
<td>(&lt;Y&gt;) or (&lt;N&gt;) or (&lt;P&gt;)inciple</td>
</tr>
<tr>
<td>Type “Y”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PANEL 16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CACTUS</strong></td>
</tr>
<tr>
<td>Did the officers arrest Defendant while both Defendant and the officers were in hot pursuit from the scene of Defendant’s alleged crime?</td>
</tr>
<tr>
<td>(&lt;Y&gt;) or (&lt;N&gt;) or (&lt;P&gt;)inciple</td>
</tr>
<tr>
<td>Type “N”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PANEL 17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CACTUS</strong></td>
</tr>
<tr>
<td>Did Defendant pose a threat of injury to himself or to others?</td>
</tr>
<tr>
<td>(&lt;Y&gt;) or (&lt;N&gt;) or (&lt;P&gt;)inciple</td>
</tr>
<tr>
<td>Type “Y”</td>
</tr>
</tbody>
</table>
### PANEL 18

**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 \(<P>\)inciple

Type "N"

### PANEL 19

**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 \(<P>\)inciple

Type "Y"

### PANEL 20

**CACTUS**

Was a search made of a readily mobile vehicle?

\(<Y>\) or \(<N>\) or \(<P>\)inciple

Type "N"
### PANEL 21

**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 $<P>$

Type "N"

### PANEL 22

**CACTUS**

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

$<Y>$ or $<N>$ or $<P>$

Type "N"

### PANEL 23

**CACTUS**

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

$<Y>$ or $<N>$ or $<P>$

Type "N"
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?

\(<Y> \text{ or } <N> \text{ or } <P>\text{inciple}\)

Type "N"

CACTUS

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

\(<Y> \text{ or } <N> \text{ or } <P>\text{inciple}\)

Type "N"

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?

\(<Y> \text{ or } <N> \text{ or } <P>\text{inciple}\)

Type "N"
CACTUS

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

\(<Y>\) or \(<N>\) or \(<P>\)inciple

Type "N"

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 \(<P>\)inciple

Type "N"

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 \(<P>\)inciple

Type "N"
<table>
<thead>
<tr>
<th>PANEL 30</th>
<th>CACTUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the search consist of a seizure of Defendant's person for the sole purpose of fingerprinting Defendant?</td>
<td></td>
</tr>
<tr>
<td>(&lt;Y&gt;) or (&lt;N&gt;) or (&lt;P&gt;)inciple</td>
<td></td>
</tr>
</tbody>
</table>

Type "\(N\)"

<table>
<thead>
<tr>
<th>PANEL 31</th>
<th>CACTUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the search consist of a seizure of a residence while a search warrant was being obtained?</td>
<td></td>
</tr>
<tr>
<td>(&lt;Y&gt;) or (&lt;N&gt;) or (&lt;P&gt;)inciple</td>
<td></td>
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</tbody>
</table>

Type "\(N\)"

<table>
<thead>
<tr>
<th>PANEL 32</th>
<th>CACTUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was the search conducted for health inspection purposes?</td>
<td></td>
</tr>
<tr>
<td>(&lt;Y&gt;) or (&lt;N&gt;) or (&lt;P&gt;)inciple</td>
<td></td>
</tr>
</tbody>
</table>

Type "\(N\)"

<table>
<thead>
<tr>
<th>PANEL 33</th>
<th>CACTUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the search consist of a school inspection of students by school administrators?</td>
<td></td>
</tr>
<tr>
<td>(&lt;Y&gt;) or (&lt;N&gt;) or (&lt;P&gt;)inciple</td>
<td></td>
</tr>
</tbody>
</table>

Type "\(N\)"
Did the search consist of a liquor or firearms inspection by the appropriate governing authority?

\(<Y>\) or \(<N>\) or \(<P>\)inciple

Type "N"

Did Defendant consent to the search?

\(<Y>\) or \(<N>\) or \(<P>\)inciple

Type "N"

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

\(<Y>\) or \(<N>\) or \(<P>\)inciple

Type "N"

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

\(<Y>\) or \(<N>\) or \(<P>\)inciple

Type "Y"
**CACTUS DETERMINATION**

The evidence is **ADMISSIBLE** at Defendant's trial