

ARTIFICIAL INTELLIGENCE AND LAW USING RULE BASED EXPERT SYSTEMS

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"formal symbolic logic and argumentation theory - have been developing separately, in reciprocal incomprehension if not in open clash.

Scholars... have privileged the search for correctness, controllability, and certainty, and have therefor stressed the lack of rigour and the indeterminacy of theories of argumentation. ...

The theorists of argumentation have instead emphasized the conflict of opinions, the evaluation of alternatives... They have therefore condemned symbolic logic for its incapacity to capture these fundamental aspects of moral and legal reasoning.

*...
The tension between logic and argumentation must instead be overcome by extending formal methods outside the domain of deduction, to the moments of dialectical conflict... which characterise legal and moral reasoning."*

Giovanni Sartor, A Formal Model of Legal Argumentation, p 1.

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I. Introduction

A. Artificial intelligence in legal teaching and practice

This thesis models judges' decision making using automated inferencing (artificial intelligence). It does not model lawyers argumentation. Thus the principal tool used is monotonic and a presumption that all available factual information has been presented to the judge. The thesis does not assume "perfect" information but rather that all available information has been submitted to the judge and thus that the defeasability of arguments is irrelevant. The irrelevancy of argumentation permits a monotonic model of one aspect of legal reasoning, judge's decision making, based on propositional logic.

The thesis principally looks at deductive inferencing rather than inductive inferencing because deductive arguments from legislation are hierarchically superior to analogical arguments from cases: Statute law, being more general, trumps case law. Moreover, deduction is the main mode of inferencing in the civil law. Deduction is an easier problem to solve than induction and also a necessary first step in modelling inductive reasoning whatever principle or general rule is inferred by a court inductively on the basis of prior cases will then be applied deductively by that and future courts. That is, induction generates new general rules which must in turn be applied deductively. So modelling deductive inferencing is a necessary first step to modelling deductive reasoning.

The thesis develops diagnostic and didactic programs for teaching law as well a document generators for legal research and teaching. It also develops an extra-legal theory of justification and of judgement based on a combination of legal realism and Aristotelian moral theory. To this end it also examines competing infra-legal theories of argumentation (formalism and interpretive methods) and extra-legal theories of justification, notably legal realism and law and economics.

This examination of competing theories of extra legal justification¹ and infra-legal argumentation reveals some implicit problems in current taxonomy of legal theory. Legal

¹ "A great many of the classical jurisprudential problems are tied to problems about the use of abstract concepts in the regulation of human affairs. Thus Dworkin to a large extent bases his analysis of judicial discretion on his 'logical distinction' between 'legal rules' and 'legal principles'; Hart and Fuller devote a portion of their debate on legal positivism to a dispute about the 'core' the 'penumbra' and the 'open texture' of legal concepts; Levi describes the law as the prime example of a 'moving classification system'"

realism and formalism are not as incompatible as is generally believed; law and economics is not as objective or determinate as its proponents might like us to think; And legal realism, though an extra legal theory, is not in fact indeterminate if one is a moral cognitivist. Similarly, the dichotomy of legal realism and formalism is only partially accurate. The legal methods proposed by the realists suffer from the same flaw, manipulability, that the realists accused legal formalism of suffering from. These facts are revealed because representing law with computer programs forces implicit presumptions to be explicitly stated as decidable propositions. That in turn reveals possible conflicts and forces the programmer to resolve them. For these reasons computer programs are powerful tools for representing propositions of law.²

B. Limits of the theme

The thesis does not provide examples of automated theorem proving as languages such as prolog do this very well. Thus it does not consider resolution³ unification,⁴ or skolemisation⁵ algorithms. Resolution will likely prove useful for inductive inference from a case base. However until now the author has not needed to use these algorithms to represent legal inferencing through rule based expert systems. Our treatment of didactic software uses a rule based approach. The author has written about and programmed case based methods of legal reasoning elsewhere.⁶ However a rule based system seems more effective since deduction, if based on true premises⁷ leads to necessarily correct results

L. Thorne McCarty, *Reflections on Taxman: An Experiment in Artificial Intelligence and Legal Reasoning* 90 Harv.L. Rev. 837, 839 (1977).

² Computerized representation of the law "adds a strong dose of precision and rigor to these discussions of linguistic and conceptual problems. Its critical task is to clarify the concepts... in such a way that they can be represented in computer programs. This requires a degree of explicitness about the structure of these concepts that has never previously been attempted. When we describe concepts... we implicitly articulate theories about them; when we run the computer programs that embody these concepts, we test out the implications of our theories. Used in this fashion, the computer is the most powerful tool for expressing formal theories and spinning out their consequences that has ever been devised." Id. at, 839-840.

³ Uwe Schönung, *Logik für Informatiker*, Heidelberg: Spektrum (2000) p. 37.

⁴ Id. at 90.

⁵ Id. at 63.

⁶ See, *inter alia*, Eric Engle, *Using Wysh Computer Programs to Model the Alien Tort Claims Act*, 6 Yale J. L. & Tech. 161 (2004)

⁷ But see Gordon, *Computational Dialectic*, 2006a p. 12 "German conceptualism (Begriffsjurisprudez) adopted a deductive view of legal reasoning. In

modern terms, they sought to apply the axiomatic method to the law. The resolution to any conceivable legal dispute was contained, implicitly, in the axioms, waiting to be discovered by a process of deduction. This view depends critically on the "'correspondence theory of truth", which underestimates the difficulty of deciding whether the concrete facts of a case

should be subsumed under the general terms used in a statute." Such a view of deduction goes too far: Deduction without either teleological argument or equity will not lead to justice. On the different roles of law, equity and teleology in determining the just see generally Aristotle, *Nicomachean Ethics*, Book V.

whereas analogy yields results correct only to the degree of similarity between the analogical cases.

Neural networks and agents which learn (learning procedures) are also not treated in this work because it is still uncertain whether these methods will be as effective as rule based expert systems. Our discussion of Toulmin is limited to a sketch description merely intended to show why Toulmin structures would be a fruitful field for further research.

C. Interest of AI in law

This study is of both practical and theoretical interest. Practically, client management software (e.g., client billing), automated research, and document generation improve lawyer productivity. These practical applications have already moved from academic theories to commercial success in the legal workplace. AI in law, following this lead, has likewise begun to move from scientific laboratories to commercial application.⁸

Academically, computer analysis of law present crystalizes legal concepts, forcing the legal theorist to make explicit assumptions which would otherwise likely remain only implicit. This is very important in law because legal decisions are parsimonious and because legal concepts are often imprecise.⁹ The result of crystalizing imprecise concept exactly, demonstrated here, is that enthymematic presumptions¹⁰ are revealed and contradictions resolved or clarified.¹¹ Scientifically, computer models of law have at least a heuristic interest. Moreover, formalisation of legal rules is a difficult and fascinating problem!

Modus ponens is obvious to a human: Given

if p then q

⁸ Curtis E.A. Karnow *Liability for Distributed Artificial Intelligences* 11 Berkeley Tech. L.J. 147, 149 (1996)

⁹ "the jurisprudential literature is notoriously imprecise: the conceptual structures themselves are only vaguely defined and vaguely distinguished from one another; the dynamics of conceptual change appear only as suggestive metaphores." L. Thorne McCarty, *Reflections on Taxman: An Experiment in Artificial Intelligence and Legal Reasoning* 90 Harv.L. Rev. 837, 839 (1977).

¹⁰ Enthymemes are simply unstated / implicit presumptions - for a discussion thereof see: Thomas Gordon, Douglas Walton, *Pierson v. Post Revisited*, p. 7 (2004).

¹¹ "A formal model is necessarily a simplification of reality. It omits details, by esign, which in many contexts might be crucial; and so, by design, it will always be inadequate in some respects. And yet the simplification inherent in a formal model is also the source of its power and utility: it will often lead us to insights that would otherwise be obscured, overwhelmed by the complexity of our data. The unexpected consequences of our formulations may reveal surprising truths... or the inadequacy of the formulations themselves. These unacceptable conclusions must not be ignored but must be exploited systematically for the insights they can yield." *Id.* at 841.

if q then r
we deduce
if p then r¹²

Similarly,
if p then q
if not p then r
therefore q or r¹³
seems almost as obvious to us.

But how do we transfer human knowledge into a computable form? Prolog can solve these problems quite easily:

```
q:-p.  
r:-q.  
p.  
?-r.  
yes.
```

Likewise,

```
q :- p.  
r :- not p.  
?-q ; r.  
yes.
```

Prolog's control strategy is limited. Prolog automatically performs backward and forward chaining of a search tree testing the inferences for their interconnections. Forward and backward chaining is important for ampliative inferencing. However, the author has not used prolog here because the prolog user interface is not sufficiently user friendly: Most lawyers are not computer scientists. Thus, a usable interface is very important, which

¹² Symbolically,

```
p=>q  
q=>r  
----
```

```
p=>r
```

¹³ Symbolically,

```
p=>q  
-p=>r  
-----  
q+r
```

basically precludes prolog. Further, an important constraint of prolog is its treatment of negation as failure in searching.¹⁴ This may be sensible for predicate logic, but seems counterintuitive and a source of potential bugs because Prolog's control structure is limited¹⁵ and because prolog essentially assumes all propositions, unknown ones included, are false until proven true.¹⁶ For these reasons I did not choose prolog despite automatic forward and backward chaining.

This problem of access frustrated early efforts at computer programs to model the law.¹⁷ But it also explains why the field is so exciting: few computer programmers and even fewer academics have the skills of both a lawyer and computer programmer. Thus, though some research has been done and applications have been developed there are plenty of possibilities for genuinely innovative and useful work to be done in the field of computation and law.

D. Research Objectives

The objectives of this work are:

- 1) To develop a theory of justification which explains misconceptions of both realism and formalism, to demonstrate the limits of economic theories of law and to reveal and resolve contradictions and enthymemes among these theories.
- 2) To produce computer programs which:
 - a) model the theory of justification
 - b) demonstrate how computers can aide legal practice in document generation, billing, and research
- 3) To solve the problem of legal inferencing, including inductive ampliation, using rule based reasoning.

The solutions for deductive reasoning naturally yield necessarily correct conclusions provided our presumptions are correct. In contrast, the solutions for ampliative induction are only tentative probabalistic truths. Perhaps resolution will in the future provide a better

¹⁴ Prolog assumes all unknown facts are false due to negation as failure, Thomas Gordon, *Some Problems with Prolog as a Knowledge Representation Language for Legal Expert Systems*, Yearbook of Law, Computers and Technology vol. III, p. 52, 60 (1987).

¹⁵ Thomas Gordon, *Some Problems with Prolog as a Knowledge Representation Language for Legal Expert Systems*, Yearbook of Law, Computers and Technology vol. III p. 52, 58 (1987).

¹⁶ Thomas Gordon, *Some Problems with Prolog as a Knowledge Representation Language for Legal Expert Systems*, Yearbook of Law, Computers and Technology vol. III p. 52, 60 (1987).

¹⁷ *Id.* at, 882 (1977).

solution to the problem of inductive ampliation. Application of resolution to the problem of ampliative induction is not addressed here but is a path for possible future research.

E. Method and Problématique

The method to be applied is experiential and comparative. The thesis will examine existing work and attempt to apply any insights gained therefrom to a practical attempt to solve problems of justification, legal inferencing, and document generation by computer. Our problématique is to answer the following question: can computer programs model law, especially legal inferencing, for legal research, teaching, and practice? I try to answer this question using rule based expert systems. I conclude that computer programs can perform legal reasoning, but with some important limitations: It is not yet possible for a person to present a text to a computer and have the computer parse the text, transform the text into a legal problem and then present a solution to that problem. This is partly due to limitations on natural language parsers. The parser problem is not addressed here because it is an extremely complex topic and is more properly studied in the field of machine translation. Another important limit on automated legal inferencing - and also a reason that automated reasoning may become important - is the broad range of the law. Vast tracts of positive law are not coded. Yet once enough of the law is formalized any lawyer would have a general diagnostic to tell them what human experts they might best refer a client to.

Natural language representation of the law - client intake and diagnostic - is not yet possible. But what is possible, and what the program accompanying this article hopefully shows, is rule based legal expert systems. A program can present a jurist a series of questions, and from those questions determine a legal outcome - even in the abstract field of legal interpretation, where we are dealing not with substantive legal rules but rather with „meta-rules“ - rules for deciding rules. Though computers cannot at present (or in the near future) perform client intake they can serve as a diagnostic tool and memory aid, forcing lawyers to consider possible arguments they might otherwise omit by reminding them of some of the more obscure points of law that might otherwise be overlooked. Thus the computer assisted legal inferencing also has interest for practicing lawyers: programs to represent the law serve as a sort of legal compendium, a checklist if you will - not of various forms to be filled out but rather of arguments that could be made!

Computationally, the methodology applied is a procedural iteration through numerous questions, essentially a linear branching of several inquiries where each branch is developed based on answers to earlier queries. That seems straightforward. However much legal science is implicit, i.e. enthymematic. This formalization forces implicit legal methods to be explicitly defined and evaluated as computable functions. These methods were rendered explicit here. They include: Legal balancing tests. Legal balancing tests take a number of factors, weight each factor, and determine whether a certain threshold value is met. However, the numerical weighting of these values is expressed, if at all, using inequalities. The courts are very ambiguous as to the specific weights used in balancing tests. Even the factors to be considered in a balancing test are uncertain. Methods of other individual procedures are exposed as they occur throughout the text.

This work presents a general taxonomy of legal interpretation, describes the various legal interpretive rules, and attempts to hierarchize both legal rules (arguments) and justifications for arguments (reasons).¹⁸ To this end, it also presents a program for diagnostic checks of the law. Therefore this article has both theoretical and practical significance: Theoretically, it points out apories and enthymemes in the law. Practically, it permits legal practitioners to consider concrete legal problems from unusual angles they might otherwise overlook. To appreciate these arguments we must first expose the theoretical foundation of this paper.

F. Problem to be Solved:

The problem this thesis seeks to solve is the precise and exact representation of legal propositions, specifically, interpretive legal propositions, which are themselves formulated imprecisely or interpreted inexactly. This problematique leads me to adopt a procedural approach: a rule based expert system which explicitly formalizes and represents the imprecise rules and their inexact interpretation. This problem is seen as solved when the program can - as it does - return a determinate result to every case presented to it. This can thus be seen as a simulation of the law. I believe that another jurist who compared the

¹⁸ One of the best theorists of what I call extra-judicial justification is Sartor. Hierarchization of the infra-legal arguments is justified based on: "Applicability arguments, intended to contest or support the applicability of legal norms, preference arguments, to establish preference relations among norms, and interpretive arguments" Giovanni Sartor, *A Formal Model of Legal Argumentation*, *Ratio Juris* 7:177-211, 177 (1994) available at: http://www.cirfid.unibo.it/~sartor/sartorpapers/g Sartor1994_rj.pdf.

results returned by the program would agree that the arguments made are defensible even compelling. The arguments I present become compelling because, unlike other jurists, I explicitly enumerate and evaluate all arguments and their elements as computable functions. This requires explicitly defining enthymatic presumptions. This leads to a greater precision in the answer to the legal problem. Few would argue that an ill organized or vague argument would win out against one that is well organized and precise. The arguments when computationally formalized simply become clearer and better organized.

Statements about the law expressed in natural languages are usually imprecise or inexact and often both. This is partly because law is itself a formalisation: Irrelevant information is dropped (the names of the parties for example) and only relevant information retained. But this imprecision is also because mathematical and even logical representations of law are too simplistic. For example, most math in law involve simple inequalities for which no numerical value is affected.

The distinction between imprecision and inexactitude is temporal. Imprecise information is *a priori* difficult to foresee. For example, weather predictions are an example of imprecise information. We know it is likelier than not to rain and that the temperature is likely to fall within a given range, nothing more. Inexact information in contrast is information which, even after raw data has been emitted remains somewhat uncertain. For example, we know that the U.S. president John Kennedy was assassinated, yet it remains uncertain who exactly killed him and why. This temporal distinction is crucial to legal science since laws (legislation) govern situations *a priori* – predictions, whereas judicial decisions govern cases *ex posteriori*.¹⁹ Just as the legislature gives law for general cases, i.e. prior to a legal act, judges determine the law's meaning in specific instances i.e. after facts have occurred.²⁰ The problem of imprecise and inexact legal information exists, to a greater or

¹⁹ Some argue that language is inherently indeterminate. That is essentially a post-modernist view. The best view among post modernists is that words have intersubjective meaning. But even that cannot escape from material reality. In the end there is an intersubjective agreement as to the meaning of words as a correlation between objects and sounds. See Quine, Word and Object.

²⁰ But merely because there is ambiguity at the threshold of determination of a concept's applicability does not mean that there is no core meaning to words, objective in its material manifestation (object) intersubjective in its use (word). Verbal ambiguity does not mean that the role of the legislator as author of major premises to juridical syllogisms and the role of the judge as author of minor premises should be ignored or abandoned. Compare critically Gordon: "the "correspondence theory of truth"... underestimates

lesser extent, in all legal fields and all legal systems. This fact influences our implementation. Thus, the preparation (processing) of raw information to develop legal knowledge through formalisation is a major task in any computational representation of the law. How can we deal with imprecise and inexact concepts?

G. Definitions

In order to describe a theory of legal justification and decision making certain basic terms need to be defined. Explicit definition of the following terms should also help to avoid confusion. I have attempted to order these definitions hierarchically: those definitions which rely on other definitions are listed after those definitions which are atomic - though these definitions mutually refer to each other.

FUNCTORS

Functors are connectives in logical formula.

Conjunction (logical AND) *

Disjunction (logical OR) +

Negation (logical NOT) -

Implication (if... then) =>

Strict Implication (if and only if) <=>

Exclusive Disjunction (A and B but not both) /

Similarity ~

THEORETICAL LOGIC

the difficulty of deciding whether the concrete facts of a case should be subsumed under the general terms used in a statute. This is where Hart comes in. Hart recognized that the meaning of laws cannot and should not be fixed at the time of their enactment by a legislature. Rather, the meaning of the law must be continuously reinterpreted and re-evaluated in the context of deciding specific cases, in the courts. Hart noted that the ability of natural language to be imprecise is a feature, not a defect; it allows power to be delegated to the courts to decide issues in the context of concrete cases, when more information is available. This line of reasoning leads to a justification of the division of powers between the legislative and judicial branches of government." p. 12 **Computational Dialectics** Gordon, 1996 a. Gordon is right that the judge's role is to fill in details but the reason is not because of inherent linguistic ambiguity. The specialized role of courts and legislators arises from the fact that legislators establish general rules ex ante (major premises) and judges apply them deductively ex post to individual cases (minor premises). True, in the common law (unlike the civil law!) ampliative induction from a series of decided cases to a general rule is possible but such case law is still hierarchically inferior to the legislator. Nota bene: Judicial ampliation can however occur in the civil law -- through elaboration and elucidation of general principles of law.

Theoretical logic is the set of formal arguments generally considered correct in legal reasoning. It includes but is not necessarily limited to propositional logic, predicate logic, Aristotelian syllogistic, probabilistic logic, analogical reasoning, induction, deduction

PRACTICAL LOGIC

Practical reasoning²¹ (phronesis) is the determination of actions to be taken on the basis of given facts and preferences (goals). Given a preference or set of preferences P and a fact or set of facts F it is possible to induce action A if it is known that:

$F * A \Rightarrow P$

or

$F * A \Rightarrow \neg P$

Practical reasoning is also called common sense.

Reasoning and logic are not exact synonyms. They are however similar. Reasoning is practical logic - applied logic in daily life. Logic is a more general term and includes the various forms of theoretical logic.

LEGAL CONDITIONAL (RULE)

A rule is a conditional statements in the form of:

$p \Rightarrow q$

where p is a fact or set of facts and q some legal consequence.

Exceptions to rules²² "can be... expressed as statements contradicting the corresponding rules or denying their applicability."²³ We could model an exception as:

$p * \neg r \Rightarrow q$

$p * r \Rightarrow \neg q$

Again, formalization forces us to explicitly represent an enthymeme in the general rule ($p \Rightarrow q$), namely $\neg r$ is also a precondition to the conclusion.

²¹ Thomas Gordon, Douglas Walton, Pierson v. Post Revisited p. 6 (2004).

²² Of course, law is the interplay of rules and exceptions Thomas Gordon, Douglas Walton, *Pierson v. Post Revisited* p. 11 (2004).

²³ Giovanni Sartor, *A Simple Computational Model for Nonmonotonic and Adversarial Legal Reasoning*, Proceedings of the fourth international conference on Artificial intelligence p. 192 (1993) available at: http://portal.acm.org/ft_gateway.cfm?id=159001&type=pdf&coll=GUIDE&dl=GUIDE&CFID=35100162&CFTOKEN=89717481

CONSTITUTIVE RULE

A legal rule for the creation or destruction of other legal rules.²⁴

RULE OF INTERPRETATION (Interpretive rule)

A legal rule used to determine whether some other legal rule applies to a given set of facts.

CASE

A case consists of a fact or set of facts (P) and a rule or set of rules (Q) which, on the basis of those facts, do or do not apply to that case.

LEGAL METHOD/PROCEDURE

A technique for the imputation of some legal consequence to a given fact or facts.

EXTRA LEGAL THEORY

An extra legal theory is a theory of justification or argumentation which depends on presumptions not found explicitly in legislation or legal cases. If we think of a legal rule as a goal each justification provides an answer to the question "why should this goal apply". Initial justifications will be infra-legal, that is, within the legal system - e.g., the rule applies because the statute is facially plain; Eventually however justification, if carried far enough, leaves the explicit terms of the law and enters into implicit assumptions of moral theory, economics, history, philosophy, sociology, or any of the other human sciences: E.g., "The rule applies because it is economically efficient". Such extra-legal justifications are the result of an extra-legal theory.²⁵

INFRA LEGAL THEORY

²⁴ The definition is mine, however Sartor notes that "Law provides institutionalized procedures for the production of new legal norms." Giovanni Sartor, *id.* at p. 192.

²⁵ Sartor, for example, presents a theory of what I call extra-legal justification. When the infra-legal arguments (goals) are not reached (fail) then the extra-legal justification for the application of a legal rule must look either to assumptions or arguments:

"i. Assumption based approach. This approach tries to identify best or preferred subsets of the set of premises under consideration, i.e., to identify one (or some) consistent subset(s) of assumptions allowing all justified consequences being derived. Here the accent is on the whole of the knowledge base and a 'definitive' maximal selection is pursued from which every justified conclusion can be logically deduced (although a recomputation of that selection may be necessary after the changes in the knowledge base).

ii. Argument based approach. This approach, instead, looks for preferred arguments, i.e., arguments leading to justified consequences. Here the accent goes on single inferences, to wit on minimal sets of premises implying the desired conclusion. The argument construction is to be performed each time a consequence is derived." *Id.* at 193.

An infra legal theory of legal decision is a theory of decision based on application of legislation or custom using principles of theoretical or practical logic. Infra-legal and extra-legal are opposite terms. Rules of statutory construction, examined in this work, are examples of infra-legal theories.

THEORY OF JUSTIFICATION

A theory of justification attempts to provide reasons favoring the application of a legal conditional in a given case. We may also consider a theory of justification a substantive argument as to the applicability of a given rule.

THEORY OF ARGUMENTATION

A theory of argumentation is a statement of what type of legal reasoning is correct. Theories of argumentation may also be considered to be formal arguments, that is arguments as to the correct form of an argument.

These definitions are by no means complete. They are however at least a solid starting point for a theory of computable legal reasoning. Other less central terms may be defined in the text.

H. Outline

The thesis is developed as follows: First, it presents an exposition of an extra-legal theory of justification combining the thought of Aristotle on moral virtue with the legal realists. It then uses this theory of justification to develop a theory of judgement. It then presents an example of computer based legal inferencing through rule based deductions in cases of general legal interpretation. Next, it presents an example of probabilistic reasoning used to present ampliative induction of new legal rules from a given set of cases or rules. Finally, it presents examples of programs to aid legal practitioners in legal research, document generation and client billing.

I. Existing Solutions

I am aware of no legal inference engine which addresses the specific problem of legal interpretation - the determination of rules for making rules. Some legal inference engines do exist. The best one I have seen so far is WYSH at the Australasian Legal Information

Institute.²⁶ WYSH takes a declaratory approach and appears to be based on prolog. It has both a case based and rule based reasoning components. WYSH also appears to be based or influenced by FINDER. I am not aware of any general legal inference engines aside from WYSH and FINDER. I have however written legal inference to solve very specific problems. The engine I present here is different from WYSH in that it contains no case based reasoning component nor does it use backward and forward chaining. In that sense my engine is more limited. However, my engine is dedicated to the solution of a very specific and difficult legal problem: The determination of the interpretation of any legal rule by using various meta-rules. Thus, while my solution appears more limited - it can only answer the specific question whether an interpretive method applies - that problem is at the very heart of all legal argument. My solution is at once more limited and more useful. It does not claim to provide a general system for solving any legal problem. It does claim to provide a general system for solving any problem of legal interpretation.

J. Existing Literature

Initial work in computer assisted legal analysis tended to focus on computers as tools for legal teaching and research²⁷ using preprogrammed rule bases and automated search functions²⁸ with an emphasis on toy problems. The focus then shifted toward computers as tools for document generation - computers are well equipped to deal with that problem because the tasks involve "a relatively limited number of recurring forms and variations on forms."²⁹

²⁶ See, WYSH, at <http://www.austlii.edu.au/austlii/wysh/>.

²⁷ "Lawyers increasingly are looking at the many routine decisions which go into drafting documents, and the mechanical problems of pulling together the information needed to create documents, and thinking about how to automate the document assembly process. ... More recently, artificial intelligence has started to play a role in document assembly and should play an even greater role, because "expert systems" (a form of artificial intelligence) can make it significantly easier to construct and modify document assembly systems." Daniel B. Evans *Artificial Intelligence and Document Assembly*, 16 Law Prac. Mgmt. 18, 19 (1990).

²⁸ "The existing systems for computer-aided research and analysis in the law depend either on an exhaustive search through the full text of a body of legal materials and a retrieval of documents by key-words or combinations of key-words, or on a sequence of preprogrammed questions and answers about legal problem that is designed to terminate in a legal conclusion, in much the same style as a program for computer aided instruction." L. Thorne McCarty, *Reflections on Taxman: An Experiment in Artificial Intelligence and Legal Reasoning* 90 Harv.L. Rev. 837, 8399 (1977).

²⁹ Daniel B. Evans *Artificial Intelligence and Document Assembly* 16 Law Prac. Mgmt. 18, 19 (1990).

More recently computers have begun to be used for the task of legal simulations,³⁰ and continuing legal education³¹ as well as teaching with intelligent algorithms.³² The advantage of intelligent algorithms in didactic programs is the ability to engage students in dialogue.³³ Contemporary didactic programs can construct role playing environments, explicit abstract concepts and allow students to play with them and also support pedagogical dialogues.³⁴ Didactic programs can teach students how to do case based reasoning and show students how to analogize and distinguish cases and how to raise and meet counterarguments.³⁵ Intelligent algorithms have also been applied to diagnostic programs for legal analysis in legal practice.³⁶

Existing literature tends to focus on rule based expert systems,³⁷ though case based legal expert systems can be found.³⁸ However, existing expert systems do not generally use learning procedures: their knowledge base, ordinarily, is preprogrammed. Preprogrammed expert systems are still very useful where the knowledge base is built from years of human experience, where inferencing speed is essential and where a computer knowledge base is

³⁰ "Simulation techniques such as role playing also deal with these problems and at a lower cost. Another alternative has recently become feasible with the growth of the microelectronic technology. The rapid growth of microcomputing power has provided an excellent and useful alternative to large scale computer systems of the past thirty years." Margret M. Hazen & Thomas Lee Hazen, *Simulation of Legal Analysis and Instruction on the Computer*, 59 Ind. L.J. 195, 197-198, (1984).

³¹ *Id.*

³² An "intelligent tutoring environment" is a computerized instructional environment that employs artificial intelligence (AI) techniques. Kevin D. Ashley, *Designing Electronic Casebooks that Talk Back: The Cato Program*, 40 Jurimetrics J. 275, 277 (2000) (Describing CATO, an online and offline intelligent law tutor).

³³ "Ongoing improvements in CATO's ability to engage students in pedagogical dialogues point the way for electronic casebooks to talk back to students. Students will have a rich array of argument moves to make, and the electronic casebook will trump the student's point, concede, or sometimes introduce a new kind of argument in response. By reorganizing the electronic casebook's explicit information about cases and implicit knowledge of argumentation along the lines of CATO's knowledge sources, it is possible to orchestrate a real dialogue between a book and its reader." *Id.* at 278.

³⁴ *Id.* at 279.

³⁵ *Id.* at 293.

³⁶ David Sherman, *Expert Systems in Tax Law: Killing Two Birds with One Stone* ACM 0-8791-322-1/89/0600/0074 Proceedings of the second international conference on Artificial intelligence and law, Vancouver, British Columbia, Canada, p. 74 (1989) available at: <http://dx.doi.org/10.1145/74014.74025>.

³⁷ "In a rule-based system, one formulates the knowledge as rules of the form: IF antecedent THEN consequent" Uri J. Schild, Yael Saban, *Knowledge Representation in Legal Systems* 52 Syracuse L. Rev. 1321, 1323 (2002). They go on to ask: "... how can such a rule-based computer system deal with problems of syntactic or intrinsic semantic vagueness (open texture)?" *Id.* (Hereafter: Schild and Saban).

³⁸ "The case-based paradigm assumes that the knowledge base is a collection of examples. In a legal system the examples are cases (precedents). Given a 'problem,' e.g., a new legal issue, case-based reasoning (CBR) proceeds by searching the case-base and retrieving a case with an issue similar to the new case in some predefined sense. The problem is solved by adapting the solution from the retrieved case. Often retrieval yields several cases, from which one must select the most appropriate from which to adapt a solution. But what if the retrieved cases lead to conflicting conclusions in the new matter? Then the human user of the system must decide which solution to adopt. *Id.* at 1323-1324 (2002).

cheaper than a human expert.³⁹ For these reasons the form of most legal didactic programs has been rule based expert systems,⁴⁰ though recently some case based systems have also appeared.

Rule based expert systems seem to be the way forward because computer assisted legal instruction using them is easy to implement, cost-effective, and works.⁴¹ The advantage of expert systems is that they permit non-programmers (lawyers, for example) to modify a specialized knowledge base⁴² run under an inference engine written by professional programmers.⁴³ Moreover, as legal formalisation progresses a computer's knowledge base will eventually surpass that of any individual: the amount of knowledge a lawyer can learn in law school which explains one more reason expert systems will prove increasingly useful.⁴⁴

Preprogrammed expert systems are however not however the only possible solution to legal AI. Neural networks have on occasion been used represent law using AI, at least experimentally. Another possibility is autonomous intelligent agents. An intelligent agent collects and selects information, and makes inferences, recommendations, and decisions without authorization from a hierarchically superior agent.⁴⁵ They act independantly not on the basis of preprogrammed rules but rather experientially by comparing their programmed goals with the state of the external world through sensors and by influencing the external world through effectors to attempt to achieve their goals. Autonomous agents can also be equipped with procedures for learning new information.

³⁹ Curtis E.A. Karnow, *Liability for Distributed Artificial Intelligences* 11 Berkeley Tech. L.J. 147, 153 (1996).

⁴⁰ David Sherman, *Expert Systems in Tax Law: Killing Two Birds with One Stone* p. 78.

⁴¹ *Id.*, p. 75.

⁴² "We understand a knowledge-based system to be a computer system where the knowledge of the system (often called the domain knowledge-base) is a component separate from the 'engine,' i.e., the part of the system that reasons. This separation is important, as it allows legal experts to verify the knowledge without understanding how the engine operates. The separation is also convenient, since one can update the knowledge base without changing the engine in any way. Our concern here is with the knowledge-base, not the engine. We consider three ways of representing legal knowledge in the knowledge-base: knowledge expressed as rules, knowledge embodied in cases, and knowledge expressed by Toulmin structures. Our analysis shows how one kind of knowledge representation may be transformed into another." Schild and Saban at 1322.

⁴³ "Because an expert system approach will allow lawyers to add to the forms and the knowledge base without reprogramming or restructuring the document assembly system, it is better suited to the way lawyers think and work." Evans at 22.

⁴⁴ "The body of knowledge a lawyer can learn far exceeds what can be reasonably absorbed within a law school career." Hazen & Hazen at 196.

⁴⁵ *Id.*

As to content, initial research tended to focus on tax law,⁴⁶ as tax law is readily quantified and a very "mechanical" field of law. However, just about all areas of law⁴⁷ have been used as examples for computer assisted legal reasoning - though the law is by no means entirely described or represented.

Contemporary literature on using computers as aides to legal analysis tends to focus either on expositions of positive law or on meta-theoretic analysis of justificatory arguments. Justification theory appears to be the most recent development. However theories of argumentation remain important because they are more useful to practitioners: rule based expert systems which express or present theories of argumentation are useful to students didactically and practitioners diagnostically because their results are determinate within a given field of law. However they are less interesting to theorists because their precision is gained by sacrificing theoretical flexibility. Unlike justification theories, which seek to develop general theories about legal reasoning applicable in any field of law, rule based theories of argumentation focus on one and only one field of law. Interestingly, the architectural split between rule based and case based expert systems parallels a legal distinction between statutory rules and case law.⁴⁸

In terms of programming languages used the literature has naturally tracked the development of computer programming. Early work was done using LISP and hyperCard⁴⁹; More recent scholarship has focused on prolog⁵⁰ and most recently metaCard/Revolution have also been used to create rule based expert systems. Specialized languages for representing law such as WYSH, an online legal inference engine with both case based and rule based modules, have also been developed. Interestingly, neural networks to represent law have been considered only very recently and rather rarely.

⁴⁶ L. Thorne McCarty, *Reflections on Taxman: An Experiment in Artificial Intelligence and Legal Reasoning* 90 Harv.L. Rev. 837 (1977).

⁴⁷ E.g., Steven J. Frank, *Tort Adjudication and the Emergence of Artificial Intelligence Software* 21 Suffolk U. L. Rev. 623 (1987) (General survey of liability for malfunctioning AI) .

⁴⁸ M. Sergot, F. Sadri, R. Kowalski, F. Kriwaczek, P. Hammond, T. Cory *The British Nationality Act as a Logic Program*, 29/5 Comm. ACM (May, 1986) p. 370.

⁴⁹ David Sherman, "Expert Systems in Tax Law: Killing Two Birds with One Stone" ACM 0-8791-322-1/89/0600/0074 p. 74 (1989). Available at:

http://portal.acm.org/ft_gateway.cfm?id=74025&type=pdf&coll=GUIDE&dl=GUIDE&CFID=37589794&CFTOKEN=43135941

⁵⁰ See, e.g., Francisco Scherer, *Artificial Intelligence and the Law: How to Develop a Rule-Based Expert System in Prolog*, 17.3 PCAI 34 (2003) available at: http://www.amzi.com/articles/ai_and_the_law.pdf

Whatever architecture is chosen, a program using AI to represent law should be able to do the following tasks:

- "1. Reason with cases (both real and hypothetical) and analogies;*
- 2. Reason with rules;*
- 3. Combine several modes of reasoning;*
- 4. Handle ill-defined and open-textured concepts;*
- 5. Formulate arguments and explanations;*
- 6. Handle exceptions to and conflicts among items of knowledge, like rules;*
- 7. Accommodate changes in the base of legal knowledge, particularly legal concepts, and handle non-monotonicity, that is, changes in which previous truths no longer hold as more becomes known;*
- 8. Model common sense knowledge;*
- 9. Model knowledge of intent and belief;*
- 10. Perform some aspects of natural language understanding."*⁵¹

Even if AI cannot do all these tasks perfectly it can clearly do all of them to some degree and some of them well. Programs for legal research, client management and education are no longer merely an academic curiosity they are part of daily legal practice.

⁵¹ Edwina L. Rissland, *Artificial Intelligence and Law: Stepping Stones to a Model of Legal Reasoning* 99 Yale L.J. 1957, 1964 (1990).

II. Extra-Legal Theories of Justification

A. The problem of justification

While systemic coherence of the law is possible, the law as a system is not necessarily coherent. By examining competing methods of interpretation we see tension and even contradiction in the law. For example: *expresio unius* on the one hand against *lex priori derogat posteriori* on the other; literalist interpretation may be trumped by teleological interpretation (when? why?). Certain interpretive methods favor expansive readings of terms or applications of a legal rule, others constrain the term or rule.⁵² The application of legal rules either depends on an infra-legal hierarchization of those rules - rules to determine the applicability of other rules - or on extra-legal justifications: reasons for the application or non-application of a rule based not in the terms of positive law, but rather in terms of economics, philosophy, sociology, moral theory, or some other human science.

The lack of meta-rules in the common law to clarify the hierarchy among interpretive rules is problematic both from the standpoint of legal certainty and the idea of the rule of law as based on foreseeable predictive statements of imputation of legal status.

In the continental civil law there is greater clarity as to the hierarchization of interpretive rules: first, plain meaning interpretation. Then contextual interpretation. Then, historical interpretation. Finally, teleological interpretation.⁵³ This hierarchization is similar to the common law but the common law seems less explicit to me because rules of interpretation are developed by the courts and not the legislator. Ambiguity in the hierarchy of interpretation in the common law may also be due to a greater amount of conflict between theories of justification in the English speaking world.⁵⁴ The hierarchization of rules of

⁵² In fact, legal argumentation is a constraint satisfaction problem. Thomas Gordon, Douglas Walton, *The Carneades Argumentation Framework*, p. 8 (2003).

⁵³ „Savigny distinguished, in modern parlance, textual, verbal or grammatical interpretation, systematic, structural or contextual interpretation, and historical interpretation“ Winfried Brugger, *Legal Interpretation, Schools of Jurisprudence, and Anthropology: Some Remarks from a German Point of View*, 42 Am. J. Comp. L. 395, 396-97 (1994).

⁵⁴ It is not that the interpretive hierarchy in the common law is non-existent. It is however at times ambiguous or only implicit. For example, "In the hierarchy of interpretive tools, of course, the statutory language comes first. Only when that language is ambiguous is it necessary to examine first the statute's structure and purpose, and then lastly the legislative history, which is last and least authoritative because it ultimately matters what legislators do, i.e. enact, not what they say about what they do. What various legislators say about a statute is often contradictory, unclear, ambiguous, or merely an expression of one of many competing views of a statute not necessarily shared by others who voted for it. In some instances, however, as here,

interpretation⁵⁵ - rules about making and using rules - is a key task for any theory of legal argumentation or justification.

The problem of computer aided legal analysis is to render explicit implicit or even arbitrary judicial choices. Expressing law as a computable algorithm forces implicit assumptions to be explicitly stated. This in turn brings to our attention enthymemes and apories in the law. Thus, the potential for computer aided legal analysis is to point out those enthymemes and to propose and present the necessary questions for the imposition of legal coherence on competing interpretive rules.

B. Contemporary Theories of Justification

Theories of justification and of argumentation (decision) present complex methodological questions.⁵⁶ Other authors simply accept legal indeterminacy.⁵⁷ This author addresses the dynamic nature of legal rules⁵⁸ by isolating extra-legal and infra-legal arguments from each other. Though extra-legal arguments are open ended and indeterminate,⁵⁹ infra-legal arguments can be represented using deterministic conditional statements. By splitting extra-legal justification (reasons) from infra-legal argumentation (rules) we avoid a counter-factual legal indeterminacy⁶⁰ that results from comingling justification and

unambiguous, clear, uncontradicted, and specific legislative history can serve as a reliable interpretive guide." *McDow v. Smith*, 295 B.R. 69, 78 (E.D.Va.,2003). However that is not a complete listing of all interpretive methods. Further, it seems clear that the higher courts have greater freedom of interpretation than lower courts.

⁵⁵ "The co-ordination of conflicting profiles of legal relevance is often accomplished by establishing preference relations, asserting that one norm prevails over the others generally or under specific circumstances." Giovanni Sartor, *A Simple Computational Model for Nonmonotonic and Adversarial Legal Reasoning*, p. 192.

⁵⁶ "What is the structure of a legal concept? What is the process by which legal concepts are transformed and modified? What are the arguments that lawyers characteristically make with respect to legal concepts? These are the kinds of questions that the analytical jurists once treated as essential, and the realists dismissed as irrelevant." L. Thorne McCarty, *Reflections on Taxman: An Experiment in Artificial Intelligence and Legal Reasoning* 90 Harv.L. Rev. 837 (1977).

⁵⁷ "In this process of theory construction, there is no single right answer. However, there are plausible arguments, of varying degrees of persuasiveness, for each alternative version of the rule in each new factual situation." L. Thorne McCarty, *An Implementation of Eisner v. Macomber*, Proceedings of the fifth international conference on Artificial intelligence and law, p. 277 New York: ACM (1995) available at: http://portal.acm.org/ft_gateway.cfm?id=222258&type=pdf&coll=GUIDE&dl=ACM&CFID=35100765&CF_TOKEN=13100532_ACM_0-89791-758-8/95/0005/0276

⁵⁸ "Legal rules are not static but dynamic... they are constantly modified to 'fit' the new 'facts'." *Id.* at 276.

⁵⁹ "Legal concepts cannot be adequately represented by definitions that state necessary and sufficient conditions. Instead, legal concepts are incurably 'open textured'." *Id.*

⁶⁰ "if we accept that the legal system contains general rules and exceptions, conflicting norms, principles expressing incompatible legal interests, and we take those aspects seriously, we must reject the traditional postulate of the consistency of the legal system, and consequently the image of the legal system as an

argumentation.⁶¹ While some laws are indeterminate⁶² due to bad drafting the great majority of laws are rather clearly determinate. I believe the problem of indeterminacy can best be solved by distinguishing infra-legal arguments from extra-legal justifications.

The heuristic interest in developing extra-legal theories of justification arises out of the fact that lawyers are likelier to agree on what arguments are plausible than on what arguments are correct.⁶³ Because law is essentially contested it may have inevitable indeterminate aspects which demand justification based on extra-legal bases. However, most aspects of law are in fact deterministic. Moreover, extra-legal justifications developed and deployed by lawyers seek to impose a coherence on the law favorable to their client.⁶⁴ Judges also seek to impose coherence on legal sources and interpretations. Because judges and lawyers seek to impose, respectively, objective and subjective coherence on the law legal argumentation is a dialectical process.⁶⁵ Aristotle teaches us that dialectical reasoning in the human sciences generates answers which, though only approximations, are nevertheless

axiomatic base, all of whose logical implications should be accepted as (justified) legal conclusions. We must, instead, come to consider the legal system as an argumentation framework, that is as a repertory of material to be used (in combination with the ascertained facts) in the struggle of competing arguments and meta-arguments." Giovanni Sartor, *A Formal Model of Legal Argumentation*, p. 19. Sartor's point is well made, however by fusing the legal argument with the extra-legal justification he is forced to reject a large chunk of legal science. If he merely separated a theory of extra-legal justification from infra-legal argumentation his position, already well argued, would become unbeatable.

⁶¹ "Some authors have attempted to avoid the conflict between logic and argumentation by distinguishing the internal justification of the legal decision, mainly intended as its deduction from consistent legal axioms, and the external justification of those axioms in which informal argumentative procedures play a major role. This... may ...motivate a minimisation of the role of formal methods: Since deductive procedures (and therefore the 'internal justification' as intended by those authors) find a very limited application in legal reasoning, the most significant aspects of legal reasoning are pushed into the indeterminate domain of external justification."

Giovanni Sartor, *A Formal Model of Legal Argumentation*, p. 1. However, I specifically consider analogical and inductive reasoning as well as deduction. It seems to me that there is a fundamental distinction between infra-legal arguments, which are essentially determinate, and extra-legal justifications, which are essentially indeterminate.

⁶² "Legal language often leaves a space of semantic indeterminacy. Some legal theorists postulate that in those contexts there is always just one right interpretation and only this interpretation is to be included in the legal system. This notion of legal system (the legal system as the set of the 'right' interpretations) is of very little use for modelling legal reasoning and representing legal knowledge since it simply assumes the result of legal reasoning, without considering the interpretive choices in the normative contexts and reasoning patterns in which they take place." Giovanni Sartor, *A Simple Computational Model for Nonmonotonic and Adversarial Legal Reasoning*, p. 193.

⁶³ L. Thorne McCarty, *An Implementation of Eisner v. Macomber*, p. 277.

⁶⁴ "The task for a lawyer or a judge in a 'hard case' is to construct a theory of the disputed legal rules that produces the desired legal result, and then to persuade the relevant audience that this theory is preferable to any theories offered by an opponent.

... one important component of a persuasive argument is an appeal to the coherence of the theory thus constructed." L. Thorne McCarty, *An Implementation of Eisner v. Macomber*, p. 285.

⁶⁵ Giovanni Sartor, *A Formal Model of Legal Argumentation*, p 16.

as accurate as possible.⁶⁶ Thus the indeterminacy in law as a system is not necessarily fatal to the decidability of individual legal propositions. An apparently indeterminate system nevertheless converges to determinate results.

Dialectics⁶⁷ help law escape from the indeterminicity that the eventual (inevitable?) resort to extra-legal theories of justification introduces to the rule base and case base of the positive law. In the abstract theoretical world the law appears at least potentially indeterminate, but in material praxis the dialectic of legal processes forces legal decisions to converge to determined results, even when extra-legal theories of justification are invoked for "hard cases".

The author uses a taxonomy which separates extra legal justification (reasons) from infra-legal argumentation (rules). Other taxonomies are possible. Sartor commingles justification and argumentation (I think erroneously) because he believes that the justificatory reasons are more important than the rules they justify.⁶⁸ That may be the case, but we can easily imagine between a facially clear statute and a theoretical justification such that the judge would merely enforce the positive law without regarding the justification. In other words, justification only becomes important where the law is somehow ambiguous.

More usefully, Sartor distinguishes between logical consequence, grounded consequence, plausible consequence and justified consequence.⁶⁹ It does seem sensible to distinguish between plausible and implausible arguments, between arguments which have been proven and arguments which win the dispute, but this degree of specificity was not necessary for the programs presented here.

⁶⁶ Aristotle, *Topics*, Book I.1 para. 2 (350 B.C.) available at: <http://www.4literature.net/Aristotle/Topics/>

⁶⁷ Dialectical reasoning always results in the creation of new knowledge through the synthesis of existing knowledge and falsification. Thomas Gordon defines computational dialectics as "Zeno is but one project in the field we call "computational dialectics". The subject matter of

this field is the design and implementation of computer systems which mediate and regulate the flow of messages between agents in distributed systems, so as to facilitate the recognition and achievement of common goals in a rational, effective and fair way." **Computational Dialectics**

Gordon, 1996 a. p. 10. I think that is a misuse of the term dialectic since in dialectics we have a discourse of competing these one of which is rejected or both of which are synthesized into a new and more coherent whole. Perhaps dialogical would be more accurate or simply "message passing".

⁶⁸ "If legal argumentation is a discourse in which - as Alexy (1992) points out, citing the German constitutional court - 'Reasons are put forward, other reasons are opposed, and finally the better reason should determine the decisions' its atomic components must be reasons. ...We represent reasons as inference rules, which have the form A if B... The formal property of inference rules... is monodirectionality. They can be used only forward (modo ponente) and not backward (modo tollente)"Giovanni Sartor, *A Formal Model of Legal Argumentation*, p. 2.

⁶⁹ *Id.* at p. 194.

Toulmin also presents a more complex theory of structures of justification: Toulmin structures. The components of a Toulmin structure are: Data, Claim, Qualifier, Warrant, Backing, and Rebuttal.⁷⁰ The advantage of Toulmin structures is that they are intuitive, even for non-programmers.⁷¹ Rule bases using Toulmin structures would be easy for lawyers to use, but it would be difficult for the programmer to build the inferencing engine and user interface:⁷² while numerous programming languages and algorithms such as resolution and unification exist for legal inferencing, there are no general tools or computer languages for using a Toulmin structure in law.⁷³ The author did not use Toulmin structures because they were not necessary in the programs presented here.

C. Law and Economics

Economic thought pervades Anglo-American legal discourse. The school of law and economics argues that the law does, or should, seek economically efficient outcomes. Law and economics is one extra-legal justification theory. However economic analysis of the law often does not result in clear answers. For example, if we say that that the law does, or should, seek economically efficient outcomes we must then answer the question: what is efficient? That is no easy question. The presumptions of economics - that an objective valuation of goods is possible, that goods are fungible, and that economic actors are rational profit maximizers - are simplifications used for economic modelling. If those simplifications were immediately transferred into law they would result in reductionism, the oversimplification of complex problems. The methodological problems in economic justification will be discussed in greater detail *infra*. At this point it suffices to note that economic analysis of law is an extra legal theory of justification.

It is also worth noting that economic analysis of law reveals that law is fundamentally conservative: burdens of proof weigh against moving parties; economic evaluation of interests in cost-benefit analyses and balancing tests favors the conservation of wealth and, by extension, the values of the wealthy.

⁷⁰ Schild and Saban at 1327 (2002).

⁷¹ *Id.* at 1326.

⁷² *Id.* at 1328.

⁷³ *Id.* at 1327-1328.

D. Formalism

Theories of justification can often be classified into dualistic opposites. The most obvious duality among justification theories is that of formalists against realists. Other similar dualistic splits exist between originalists and interpretivists (in constitutional law), between wholists and monists, between cognitivists and relativists. This list is by no means exhaustive since justification theory considers positions of other human sciences such as economics, philosophy, moral theory etc. Other dualities include epistemological realism (noetic/eidetic reality) vs. epistemological materialism (empiricism), moral cognitivism vs. moral relativism, and materialism vs. idealism.

Of these dualistic theories of justification the formalist-realist dichotomy is both the best documented and most influential, at least in contemporary American legal scholarship, I wish to focus on that for the moment as a representative type of the sort of meta-theoretic debates which apply to determine the selection of a legal interpretive method. This sketch is intended only to outline what ideas a comprehensive theory of justification would have to encompass.

Formalists argue for classical methods of logic such as induction and deduction using bright line tests. Formalism looks to legal form - procedure, logical rigor - and appeals to legal certainty, to predictability, and to procedural fairness. It is essentially an infra-legal theory of argumentation: because the positive law is clear there is, to a formalist, little reason to resort to extra-legal justifications which in all event would be undesirable as unpredictable and unfair since fairness, to a formalist, arises out of the ability to know beforehand whether conduct is prohibited by positive law. This has some justification in democratic theory: unlike legislators, judges are usually not elected but selected.

E. Realism

Legal realism proposes an extra-legal theory of justification. Realists argue for flexible standards, policies and teleology to guide the law.⁷⁴ Legal realists consider not what courts say but what they do.⁷⁵ Realists argue that law is fundamentally manipulable, even

⁷⁴ Christopher L. Kutz, *Not Just Disagreement: Indeterminacy And Rationality In The Rule Of Law*, 103 Yale L.J. 997, 1023 note 102 (1994).

⁷⁵ "The prophecies of what the courts will do in fact, and nothing more pretentious, are what I mean by the law." Oliver Wendell Holmes, *The Path of the Law*, 110 Harv. L. Rev. 991 (1997).

indeterminate. For realists the law is essentially a hoax⁷⁶ and the voice of authority is nothing more than fiat;⁷⁷ serving as the mask of power. The supposedly objective and predictable rules of law are, according to realists, in fact only manipulable rationalizations to justify the exercise of raw power. Realism looks to legal substance - whether an outcome is fundamentally fair - and places substance over form. That of course raises the question: what is fair? There, again, I think Aristotle has some convincing answers in Book V of *Nicomachean Ethics*.

Looking from these distinctions to the positive law it is noteworthy that there appear to be no legal rules to determine whether to use formalist methods (say, a bright-line test) or instead realist methods (say, a multi-factor interest balancing test, possibly, but not necessarily relying on economic analysis). This lack of hierarchisation forces the advocate to resort to extra-legal justifications ('efficiency', 'foreseeability', 'fairness' or other general notions of the good).

In some cases a judge can rely on earlier court rulings for guidance as to which method to apply. But that just begs the question: What justification did the court of first impression use to ground its decision? What will this court do when confronted with a new case where no precedent exists?⁷⁸ If the infra-legal arguments are not hierarchized the court will have to look to extra-legal justifications.

If we take the legal realists' seriously we would likely adopt antinomianism. Antinomianism is the idea that the law is not only fundamentally unfair, it is also inherently unfair, in all times and places. Anarchists, radical christians, and marxists tend to antinomianism. Of course, the idealistic and altruistic varieties of antinomianism are not the only possible response to the (supposed) inherent failure of law to order society. Cynical varieties are also possible. In that case rather than quitting the law altogether we

⁷⁶ „The realists of the twenties and thirties were also intent on demystifying the law, and insisted that the law's claim to determinacy and objectivity was a sham, but their critique was aimed at freeing law from the past (in particular, from its commitment to *laissez faire*). Their critique was a prelude to having the law become an effective instrument of good 'public policy.'., Owen M. Fiss, *The Death of the Law?* 72 Cornell L. Rev. 1, 9 (1986).

⁷⁷ The most interesting interpretation of the Oz story is that it is an allegory for the struggle between the gold standard and silver as the monetary basis of U.S. currency. Of course the voice of the wizard of Oz in the emerald green city represents fiat currency, the current standard and subject to inflation. Oz of course means ounce. See, Dan Hunter *Cyberspace As Place And The Tragedy Of The Digital Anticommons*, 91 Cal. L. Rev. 439 (2003).

⁷⁸ Thomas Gordon and Douglas Walton, argue that in such cases courts resort to principles. Thomas Gordon, Douglas Walton, *Pierson v. Post Revisited* p. 10 (2004).

would become very cunning snipes - the Machiavellis,⁷⁹ Leo Strauss's and Thrasymachi⁸⁰ of this world.

Or would we? I would like to suggest that Aristotle offers us a way out of the dilemma of cynicism or antinomianism.

F. Aristotle and Justification

Aristotle presents a theory of extra-legal justification based on the ideas of practical reasoning and moral virtue that lets us answer the snipes' arguments. What would Aristotle say about the law? Does the occasional necessity to resort to extra legal justification mean that law has failed?

1. Aristotle - Phronesis (Practical Reasoning: Prudence)

Prudential caution is the hallmark of Aristotle.⁸¹ Given legal uncertainty and the risk or reality of caprice or corruption Aristotle would, I believe, advise us to look at the problem prudentially to understand the problem of legal indeterminacy through patient experience. Rather than leaping to theoretical conclusions without first looking at practical consequences and actual facts Aristotle would likely counsel us to quietly observe the law to see what is really going on. He would advise us to avoid the extremes of the rash antinomian rebel. He would also counsel us not to accept the vice of greed and violence which mark a snipe, for selfish cynicism conducts us to ruin, whether at the hands of other snipes or due to our own error from a lack of information. Between the Scylla of cynicism and the Charybdis⁸² of antinomianism Aristotle would caution us to take the virtuous median between these two extremes and try to find the truest measure of the object of our scientific observation. He would even advise us to take our time while doing so - after all, in the face of systematic tyranny resorting to immediate violence would be suicidal. That is

⁷⁹ See, Machiavelli's *The Prince*, 1515 (Translated by W. K. Marriott) available at: <http://www.constitution.org/mac/prince00.htm> and <http://www.the-prince-by-machiavelli.com/>. However that work concerned only despotic rule. Machiavelli's work on democratic rule, *The Discourses*, might actually be more relevant to governance. Niccolo Machiavelli, *Discourses Upon The First Ten (Books) of Titus Livy* (1517) available at: <http://etext.library.adelaide.edu.au/m/m149d/> and http://www.constitution.org/mac/disclivy_.htm

⁸⁰ Plato, *Republic* circa. 350 b.c., (Translated by Benjamin Jowett), New York: P. F. Collier & Son, The Colonial Press (1901). Available at: <http://www.mdx.ac.uk/www/study/xpla.htm#338c>

⁸¹ Aristotle, *Nicomachean Ethics*, Book II part 3.

⁸² See, Homer, *Odyssey*, Book XII (translated by Samuel Butler). Available at: <http://www.uoregon.edu/~joelja/odyssey.html>

practical reasoning. Aristotle's strategy of taking time to reflect carefully on a problem and acting prudently thereafter permits subtle long term systemic changes which a more reactive short term extremist strategy would not. In sum, Aristotle would have us act in the right way (cautiously, but decisively) at the right time (where and when the system is weakest, where and when we are strongest). That incidentally is the simplest definition of Aristotelian justice: doing the right thing at the right time and place. For Aristotle, we reach diké, (justice) through phronesis, (prudence; practical wisdom).⁸³ Viewed in a tactical frame of reference, Aristotle's supposed ultra-conservatism - and Aristotle *is* sexist and ethnocentric - is a perfect framework for effective deployment of quiet, restrained and righteous anger!

Prudence is not the only point Aristotle would bring to the issue of abuse of the law. He would also advise us to understand dialectical methods.⁸⁴ The dialectic⁸⁵ can give us a good estimate of those things late modernity calls the subject of human sciences. For example, whether justice might arise out of conflict could be answered by dialectical reasoning. Might there be some synthesis of the competing opposition of antinomianism and cynicism? I think so.

Let us suppose that the more extreme version of legal realism is correct, that law is in fact nothing other than the mask of power.⁸⁶ Does that necessarily lead us to the conclusion that the machinations of legal decision making are unjust? No. It may even be that it is possible to reach outcomes which are in fact substantively just by using methods which in fact run rough-shod over procedural form.⁸⁷ That is the kernel of the legal realists' critique: for the realists, law should serve substantive justice, not procedural form, but in fact does the opposite.⁸⁸ The realists, and their successors the critical legal scholars,⁸⁹ felt that legal

⁸³ Mark C. Modak-Truran, *Corrective Justice And The Revival Of Judicial Virtue*, 12 Yale J.L. & Human. 249, 259 (2000).

⁸⁴ Aristotle, *Posterior Analytics*, (Translated by G. R. G. Mure) Book I, Ch. 1, Para. 1. (ca. 350 B.C).

⁸⁵ „dialectic is a process of criticism wherein lies the path to the principles of all inquiries“ Aristotle, *Topics*, (translated by: W. A. Pickard-Cambridge). Available at: <http://classics.mit.edu/Aristotle/topics.mb.txt>) Book I, Part 2 .

⁸⁶ See, e.g., Robin West, *Reconstructing The Rule Of Law*, 90 Geo. L.J. 215, 218 (2001) ("law in practice is easily co-opted by the strong toward their interest. When this co-opting occurs, law becomes a mask of power rather than a check upon it").

⁸⁷ That is, "the sort of theory envisioned by realists like Karl Llewellyn and Underhill Moore, according to which judges decide commercial law cases based on their sense of what would be fair or appropriate in the particular commercial context, rather than on the basis of legal rules or prior court decisions." Jules L. Coleman, Brian Leiter, *Determinacy, Objectivity, And Authority*, 142 U. Pa. L. Rev. 549, 586 (1993).

⁸⁸ See, e.g., John R. Thomas, *Formalism At The Federal Circuit*, 52 Am. U. L. Rev. 771, 776 (2003).

⁸⁹ see Duncan Kennedy, *Form and Substance in Private Law Adjudication*, 89 Harv. L. Rev. 1685 (1976).

formalism elevated procedural forms over substance.⁹⁰ And as a consequence, to the legal realists, formalism ignored substantive justice. Though they did not argue the following position, it is true that one could argue that legal formalism, if leading to substantively unfair outcomes would also be economically inefficient as it would generate social conflict and improperly allocate resources.

How could we reach practically defensible legal outcomes in a free-form legal system⁹¹ which only pretends to follow foreseeable rules? Through justification. First, we must determine the existence of objective values of good and evil. Such talk rings of conservatism because it is trendy to pretend (at least in superabundant societies) that values are somehow relative. Here in fact the conservatives and the realists successfully committed fratricide. They both believe that objective values exist and are worth fighting for. Unfortunately, they disagree radically about what those values were. Consequently, very weak and in fact reactionary values such as law and economics, emerged out of the miasma and confusion of pyrrhic cultural wars, for example, law and economics. In an a-moral but scientific world, cash money is the only objective standard. The result of the clash of modernist liberals against conservatives - both preaching very different ideas about morality - was a moral decline and a concomitant increase in criminality and violence, notably in the 1960s and 1970s.⁹² While one can dispute this characterization of reality, even if it be erroneous the fact is: If post-modernists argue that there are no moral values or that moral values somehow cloud scientific reasoning, then their system of justice based on something other than formal logic will necessarily fail, for it will inspire no action. Iconoclasts are generally not mythographers, for he who exposes the existence of myths cannot credibly make new ones.

If we can assume that the legal system is willing to ignore some misguided academics and continues to assert its own morality then we can also ask our question again in a more

⁹⁰ See, e.g., Leo Katz, *Root of Formalism: Form and Substance in Law and Morality*, 66 U. Chi. L. Rev. 566, 567 (1999).

⁹¹ This problem has been seen by other scholars. E.g. Samantha Adams, *Constitutional Law: Qualified Immunity and "Factual Correspondence" in New Mexico: The Tension Between Formalism and Legal Realism*, 32 N.M. L. Rev. 439, 440 (2002). "defining objectively reasonable conduct requires strict analogy between the factual circumstances in the case at bar with those in precedent cases. Outcomes, however, will vary depending upon whether the court applies a formalist or realist approach." Adam's comment is pregnant with un-self conscious nascent radical systemic critique which, like Chronos's children, will eventually devour the system which engendered it.

⁹² Jenia Iontcheva, 89 Va. L. Rev. 311, 327, note 85 (April, 2003) *Jury Sentencing as Democratic Practice*. Rising crime rates throughout the 1960s, 70s and even into the 1980s was true in Western societies generally. See, Josine Junger-Tas, *Sentencing in The Netherlands: Context and Policy* 7 Fed.Sent.R. 293, 1 (May/June, 1995).

meaningful sense: In a world that recognizes the existence of moral values how can a fair decision be rendered from an unforeseeable apparently arbitrary and capricious legal process? One possible answer is that while the legal system might very well be chaotic⁹³ in the sense that it is not foreseeable and in fact seeks to answer individual cases on their individual merits, that very fact is one guarantee of substantive justice. Further, we can even argue that there is a second and more powerful answer, namely a teleological argument. The teleological argument would propose that there is an inherent nature not only of objects and things but also of humans⁹⁴ and that this nature, while unavoidable, also guides us and directs our actions toward ends that in fact ensure not only our own individual survival but also that of our species, which is an objective measure of morality. While we might not like naturalism as it denies our malleability, when we see that at least a limited naturalism leads us to outcomes which are good for us both collectively and individually it is somewhat easier to accept. This is not the blind faith of the child or religious fanatic: it is simply common sense.

If justice is possible in a moral world despite law's fallibility how can law through teleology and intuition (in the Aristotelian sense of the word) reach substantively fair outcomes using methods which - if we accept the legal realists' position - are in fact arbitrary if not capricious?

What I would like to do in this paper is to ask the reader to think outside of traditional legal rules.⁹⁵ I would like the reader to try to escape, momentarily, from the black letter law, and to think about the law at the most abstract level possible⁹⁶ to think not only about the hierarchization or absence of hierarchization of infra-legal arguments but also about the competing theories of legal justification which attempt to lawyers and judges employ to impose coherence on competing legal rules. Examining law abstractly will allow us to see when and how law can operate in practice to reach substantively just results in a procedurally indeterminate manner. Abstraction will later have practical implications for

⁹³ See, e.g., Paul F. Campos, *The Chaotic Pseudotext*, 94 Mich. L. Rev. 2178 (1996). See also, Teubner Gunther, ed *Autopoietic Law: A New Approach to Law and Society*, Berlin: de Gruyter, 1987.

⁹⁴ "happiness, since this is what we state the end of human nature to be." Aristotle, *Nicomachean Ethics*, (W.D. Ross, translator) Book X, 6 available at: <http://www.theism.net/books/aristotle/nicomachean.htm>; "study the question of the constitution, in order to complete to the best of our ability our philosophy of human nature." *Id.* Book X, 9.

⁹⁵ See, e.g., Scott L. Cummings and Ingrid V. Eagly, *A Critical Reflection on Law and Organizing* 48 UCLA L. Rev. 443, 467. (2001)

⁹⁶ For an example of abstraction as a method and its insights see: Jean R. Sternlight, *Symbiotic Legal Theory and Legal Practice: Advocating a Common Sense Jurisprudence of Law and Practical Applications*, 50 U. Miami L. Rev. 707, 713 (1996).

judging and thus will bring the project back to the world of praxis by permitting the jurist to predict the likely methods a judge would use in legal decision-making. Thus a hierarchisation of different „meta rules“⁹⁷ (rules about rules) is possible,⁹⁸ at times within the legal system,⁹⁹ but more often through extra-legal justification using functionalist and teleological arguments.

2. Aristotle - Virtue and Vice

Aristotle's theory of justification relies not only on the idea of practical reasoning,¹⁰⁰ prudence, and dialectic. Aristotle also has a theory of moral judgement which serves well as a basis for justification. Just as Aristotle advises us to act prudently he also advises us to act virtuously.

Thinking abstractly, let us examine the claims of legal realism from the perspective of Aristotle. Aristotle argued, I think correctly, that virtue and vice exist (ignoring for the

⁹⁷ "As everybody admits, legal systems are hierarchical: They include criteria (meta-rules) which establish preference relations between norms. When we abandon the postulate of consistency and develop a logical model for reasoning with inconsistent information, a new understanding of those criteria is possible. They do not contribute to the creation of consistency - except in the special cases, defined by each legal system, in which a norm is to be considered as tacitly abrogated, or as invalid and therefore cancelled from the legal system or not admitted in it. Their purpose is, instead, to adjudicate the conflicts between lower rules, assigning relative priorities to them.

This representation has the advantage of explaining how weaker norms - although blocked in some cases by stronger incompatible prescriptions - may nonetheless determine justified legal conclusions in those cases in which the conflict does not arise, and automatically assert themselves when those stronger prescriptions are cancelled or defeated. In this perspective, the traditional principles for 'solving' antinomies (the principles of hierarchy, specialty and posteriority) can be represented as preference rules." Giovanni Sartor, *A Formal Model of Legal Argumentation*, p. 21.

⁹⁸ "to derive reasonable consequences out of a legal system including rules and exception, conflicting norms issued in subsequent times, prescriptions of different authorities, and alternative interpretations - we need inference procedures taking into account and ordering relation. This ordering can be built by assuming that higher legal sources are preferred to lower ones (hierarchical criterion), that subsequent norms are preferred to preceding ones (chronological criterion), that exceptions are preferred to rules (specialty criterion) that more plausible interpretations are preferred to less plausible ones (hermeneutic criterion)" Giovanni Sartor, *A Simple Computational Model for Nonmonotonic and Adversarial Legal Reasoning*, p. 193.

⁹⁹ "In dealing with dynamic normative systems a drastic solution is possible: old norms are to be deleted (abrogated) from the legal systems when conflicting with the new ones. Nevertheless, a softer strategy is also available: inconsistent norms issued through time can be preserved in the legal system, under the condition that precedence is given to the most recent ones. This last solution is normally to be preferred when the conditions for the application of the old rules are not fully subsumable into the conditions for the application of the new ones: these last norms can then be considered as exceptions." Giovanni Sartor, *A Simple Computational Model for Nonmonotonic and Adversarial Legal Reasoning* p. 192-193.

¹⁰⁰ Thomas Gordon and Douglas Walton regard all legal argumentation as practical reasoning. Thomas Gordon, Douglas Walton, *Pierson v. Post Revisited* p. 10 (2004).

moment what exactly is virtuous and vicious).¹⁰¹ For Aristotle, virtue is the mean between two vicious extremes. It also seems to be that we can always see in a legal dispute that one party is, in practical terms, stronger than the other. That is, one party has more resources, be it money, access to knowledge or any other instrumentality. Similarly, one party will normally have shown greater virtue than the other. So out of this we could construct a grid to describe how a judge might perceive four categories of litigants.

	VIRTUOUS	VICIOUS
STRONG		
WEAK		

If morality exists and if law is intended to serve it then we can see that law serves:

- a) to punish the wicked¹⁰² and unjust and
- b) to encourage prudence and discourage imprudence¹⁰³ and
- c) to protect the weak against the strong.¹⁰⁴

These arguments when expressly stated in positive law are infra-legal but when unexpressed operate as extra legal-justifications from moral theory. This schema may be a reflection of some very fundamental principles of law.¹⁰⁵

We could of course find other ends of the law, i.e. other justifications. Preserving or encouraging the creation of wealth seems to be the driving justification in contemporary

¹⁰¹ Aristotle, *Nicomachean Ethics*, Book I, Ch. 5, Ch. 7. Of course, Aristotle does define the good, which for him is social, i.e. political life (because man is not self sufficient and the *polis* city-state serves as a means to the end of the good life).

¹⁰² "The criminal law punishes wicked acts." *Vallance v The Queen*; 108 CLR 56; 35 ALJR 182; [1963] ALR 461; 1961 WL 56270; 31 July 1961; HCA (S.Ct.Tasmania).

¹⁰³ "As a matter of economic and social policy, third parties should be encouraged to rely on their own prudence, diligence and contracting power, as well as other informational tools." (*Ratcliff Architects v. Vanir Construction Management, Inc.*, 88 Cal.App.4th at p. 605.). Thus it is no surprise that courts justify their decisions in practical terms: "To hold otherwise, would encourage profligacy and discourage sound investment and prudent management to the detriment of all concerned." *In re Marriage of McElwee* (1988) 197 Cal.App.3d 902,

¹⁰⁴ "The design of the law is to protect the weak and credulous from the wiles and stratagems of the artful and cunning, as well as those whose vigilance and sagacity enable them to protect themselves." *Young v. Thompson*, 794 N.E.2d 446, 448 (Ind.App., 2003); "Such laws are to protect the weak, the uninformed, the unsuspecting, and the gullible from the exercise of their own volition." *People v. Karns*, 81 Misc.2d 186, 365 N.Y.S.2d 725, 739 N.Y.City Ct., Mar 18, 1975; "Blue Sky laws are to protect the weak, uninformed investor." *Russell v. Southern National Foods, Inc.*, 754 So.2d 1246, 1250 Blue Sky L. Rep. P 74,214, (Miss., 2000).

¹⁰⁵ We see these principles reflected, for example, in laws against fraud, in laws against unjust enrichment, and throughout the criminal law

American legal theory. However I want to focus on the moral ends of the law because, while Richard Posner may disagree, Aristotle¹⁰⁶ and Plato¹⁰⁷ were very clear: money is a means to the end of a good life, and not the substance of the good life itself - and I agree with Aristotle and Plato on this point.

So, for that reason, and also in the interest of creating a simple but elegant model we can now ask ourselves: with these four categories how might a fair minded judge think about the substantive issues put forward by each of these types of litigant?

Good persons do good acts, and encourage others to do so by their example - they encourage the good. Good persons also avoid harmful acts and discourage others from doing harmful acts. Yet good persons are sometimes weak, and wicked persons are sometimes powerful. This is a problem of law: power can be evil - and law is an expression of power.

Let us back away from the dilemma of powerful and unjust persons, states, and acts precisely because it is troubling and cannot be immediately solved. Let us instead try to imagine the "easy case". While we often think about hard cases as being the most important ones, heuristically that is not necessarily so. Spotting easy cases may prune the branches of a decision tree early in our inquiry allowing a search algorithm to reduce the domain of values to be examined thus improving search speed and overall performance of an artificial intelligence agent to represent the law.¹⁰⁸ The easiest case is that where the party is both virtuous and strong, that is they have access to resources and their arguments are well formed and substantively sound as well. Now let us take the opposite case, what is the worse case we can imagine? That would be clearly where someone is vicious. But is it worse to be weak and vicious or strong and vicious? Perhaps it is against your intuition, but I would like to argue that in fact the worst case situation is a powerful but vicious litigant.

Imagine a judge facing a litigant who is powerful, maybe more powerful than the judge. The judge knows the litigant is vicious and will stop at nothing to win. Thus the unjust and

¹⁰⁶ „The life of money-making is one undertaken under compulsion, and wealth is evidently not the good we are seeking; for it is merely useful and for the sake of something else.“ Aristotle, *Nicomachean Ethics*, Book I, Ch. 5 para. 2. Available at: <http://classics.mit.edu/Aristotle/nicomachaen.mb.txt>

¹⁰⁷ "[W]e are compelled to gain money for the sake of the body. We are slaves to its service."

Plato, *Phaedo*, in 1 Plato 201, 231 (Harold North Fowler trans., Harvard University Press, 1995).

¹⁰⁸ Micheal Kearns and Yishay Mansour. *A Fast, Bottom-Up Decision Tree Pruning Algorithm with Near-Optimal Generalization*. In: *Proceedings of the 15th International Conference on Machine Learning*, 1998, Morgan Kaufmann Available at: <http://www.cis.upenn.edu/~mkearns/papers/pruning.pdf>

powerful place us in danger. In such a position cowards rise to the occasion by sinking to the depths of the best of the worst and rule in favor of the unjust. However, a just judge would be brave and rule against the vicious litigant no matter how powerful.

Now think of the opposite case, where the litigant is weak and powerless, but virtuous. I would like to argue that this is the second most easy case. It is the proverbial case of the weak grandmother who has few resources but who merits sympathy due to her advancing years and presumed wisdom.

What would be the second hardest case for the fair minded judge to decide? I think that would be the case where the litigant is both vicious and weak. Why is this an easier case than that of the vicious and powerful? Quite simply because the vicious person who is also weak is generally vicious in quite harmless ways, or rather ways which generally only harm themselves, such as alcoholics (at least those who do not also drive) or the promiscuous. This is also a slightly more difficult case because their weakness inspires our empathy, the nurturing desire to be merciful and to try to help them. Here our virtue actually tempts us into error. Of course sometimes the best help for moral failure is a firm rebuke. However in the case of the vicious and weak they generally cannot threaten the legislator or judge. Thus it is easier to rule against them than against the vicious and powerful.

So, with these assignments (which you may disagree with) we can rank-order the various positions a litigant may hold in the eyes of the judge.

	VIRTUOUS	VICIOUS
STRONG	Best (1)	Worst (4)
WEAK	Second (2)	Third (3)
	Best	Best

Thus comparing two different litigants - not in terms of formal legal arguments but in terms of substantive merit - the one with the lower ranking should be more likely to win, at least in a just legal system.

If this table is true, how does it affect the legal decision maker? What is the implication of this table for legal realism? Can we compare actual cases to this table in order to determine

whether judges in fact really think this way? If they do, are their legal reasons merely, as the legal realists think,¹⁰⁹ ex-post rationalisations for voluntaristic judicial decisions which purport to be a-priori judgments based on hermeneutical textual interpretation exercised in the interests of justice?

We could develop a neo-realism¹¹⁰ which would argue that judges do act as realist and „cooking the books“ when necessary, but that they do so in order to work substantive justice through flexible jurisprudence. However, that was not the position of the legal realists, at least prior to 1940 and certainly was not the position of their even more radical successors the critical legal scholars. They argued instead, and with increasing acuity over time, that judges use power to shape outcomes that favor their class interests.¹¹¹

I do not propose a neo-realist argument as my own position or theirs. I rather offer it as a practical explanation of how judges, lawyers and legal scholars can or might think about the exercise of power in order to determine whether and how it could in fact serve the interests of justice. Not all legal decisions appear to be solely motivated by power though judicial decision making by definition serves the interest of whatever class dominates a given society. Foucault, nuancing structuralism, points out the „soft“ apparent compromises of power¹¹² with the implication of what Mao said bluntly: when power offers a compromise it is loading sugar-coated bullets in its gun.¹¹³ It is not cynical to recognize the truth.

When determining this calculation of virtues and vices we can of course refine the inquiry to define specific virtues. Aristotle defines the forms of virtue as „justice, courage,

¹⁰⁹ See, e.g., Gary Minda, *Denial: Not Just a River in Egypt*, 22 Cardozo L. Rev. 901, 923 (March, 2001); Milton C. Regan, Jr., *How Does Law Matter?* 1 Green Bag 2d 265, 269-270 (Spring 1998).

¹¹⁰ Spencer Weber Waller, *Neo-Realism and the International Harmonization of Law: Lessons From Antitrust*, 42 U. Kan. L. Rev. 557, 591 (Spring, 1994).

¹¹¹ "The CLS scholars argue that judges reach decisions based on their previously held political and class interests" Sally Frank, *Eve was Right to Eat the "Apple": The Importance of Narrative in the Art of Lawyering* 8 Yale J.L. & Feminism 79, 85 (1996). (Citing: Arthur Austin, *Rhapsody of Word-Plays*, 71 N.C. L. Rev. 201, 230-31 (1992).) See also: 33 ELR 10170 *Integrating Sustainable Development into U.S. Law and Business*, Environmental Law Reporter Article February, 2003 (legal realism sees judges as advancing their class interests through rationalisation of the law).

¹¹² See e.g., MICHEL FOUCAULT, *LANGUAGE, COUNTER-MEMORY, & PRACTICE: SELECTED ESSAYS & INTERVIEWS* 205-217 (Donald F. Bouchard, ed. 1977) (delineating the various intersections of power, where it lodges and who it commands, with Gilles Deleuze).

¹¹³ Mao Tse Tung, *Quotations from Mao Tse Tung*, Ch. 24, "Correcting Mistaken Ideas". Peking Foreign Languages Press (1966). Available at: <http://www.marxists.org/reference/archive/mao/works/red-book/ch24.htm> (citing: "Report to the Second Plenary Session of the Seventh Central Committee of the Communist Party of China" (March 5, 1949), Selected Works, Vol. IV, p. 374).

temperance, magnificence, magnanimity, liberality, gentleness, prudence, [and] wisdom."¹¹⁴ This was not merely a beatific laundry list: it was a taxonomy. Aristotle also regarded right ambition, good temper, friendliness, truthfulness, and wit as virtues. Vice, for Aristotle, would be to manifest either extreme of which the virtue was the middle term: thus as to the virtue of liberality (right generosity) he would point to the vice of miserliness (spending too little, even to the neglect of one's own body) on the one hand and profligacy (over-spending, wastefulness). Theoretically, for Aristotle, there should be an extreme of either excess or deficit for every vice.¹¹⁵ However that results in a system that, strictly speaking, is manipulable. Take honesty: if we were honest all the time or dishonest all the time that might actually be a vice: Aristotle would probably argue that it would be possible to be honest in the wrong way or at the wrong time. However by this we can characterize any act of honesty or of dishonesty as in fact vicious or virtuous merely by saying that this particular instance of honesty or dishonesty was not appropriate at this time or this place. Thus, were we to blindly displace the debate about legal foreseeability to a debate on Aristotelian virtue and vice, even if we could completely ignore Aristotle's obvious sexism and racism, we would nonetheless reproduce the very problems we are trying to avoid: injustice resulting from inappropriate linkage between irrelevant categories and legal consequences therefrom. While Aristotle can (and in my opinion should) be the starting point of any debate about law and morality his ideas are not necessarily the ending point. Ambiguities can be eliminated by establishing Aristotle's teleology as the objective guide to what conduct is „medial“: namely, „the good“ and one of its manifestations „the good life“. By seeing the survival and prosperity of all persons as the objective measure of morality we are able to obviate criticism and successfully displace the debate on legal determinicity to a debate not on whether morality exists but rather as to what conduct is or is not moral and why or why not. Thus, Aristotelian virtues are certainly a good starting point - though not necessarily the end point - for defining our understanding - or describing judges understandings - of virtue and vice.

The argument that judges sometimes look not to the black letter law but rather to the relative virtue and vice of each of the litigants to determine the outcome of litigation is at

¹¹⁴ Aristotle, *Rhetoric*, Book I, Ch. 9. Available at: <http://www.public.iastate.edu/~honey1/Rhetoric/rhet1-9.html>

¹¹⁵ „Virtue, then, is a state of character concerned with choice, lying in a mean, i.e. the mean relative to us, this being determined by a rational principle, and by that principle by which the man of practical wisdom would determine it. Now it is a mean between two vices, that which depends on excess and that which depends on defect; and again it is a mean because the vices respectively fall short of or exceed what is right in both passions and actions, while virtue both finds and chooses that which is intermediate.“ Aristotle, *Nicomachean Ethics*, Book II, Ch. 6. Available at: <http://classics.mit.edu/Aristotle/nicomachaen.2.ii.html>.

least implicit in legal realism. The mistaken presumption of most contemporary thinking is that the result is caprice. Not at all. If acts can indeed be characterized as objectively moral or immoral, then removing judicial decision making from the arena of positive law to that of morality does not result in capricious decision making. Positive law, thanks to the realists, may be indeterminate, but indeterminate law only becomes capricious when it is also removed from any foundation in objective morality. That is an argument (rule) can be indeterminate on its own terms but through extra-legal justification (reasons) can be coerced to determinicity.

Is this description of legal process accurate? In fact judges quite overtly look at relative bargaining power of litigants when determining whether a contract be unconscionable.¹¹⁶ Judges also examine moral virtue, or the lack thereof, when examining cases of unjust enrichment: There, the plaintiff must prove that the defendant immorally reaped a benefit at plaintiff's expense.¹¹⁷ The question is: when do courts ever ignore the relative power and virtue of litigants? I would answer „never“. After all, the law rewards prudence and punishes imprudence generally.¹¹⁸

The legal realists were arguing that legal decision making is the rationalization of legal power.¹¹⁹ The critical legal scholars would come right out and say that legal decision is the superstructural justification for the the relations of productive forces.¹²⁰ Restated, for crits, the legal decision is a rationalization of power¹²¹ and reflects the class interests of the decision maker. This paper is trying to explore whether, if legal decision making were mere rationalization, that it still might be able to reach substantive justice and escape caprice in the law by looking „behind the scenes“ of legal language to consider substance: the relative virtue of the litigants and their comparative strengths and weaknesses. This is in fact the

¹¹⁶ See, e.g. *State Farm v. Ford*, 225 Wis. 2d 305;592 N.W. 2d 201;1999 Wisc. LEXIS 35, 30 (Wis. S.Ct. 1999): „We recognize that there may be some situations in which the disparate bargaining position between the parties is so great that it would be unconscionable to hold a part to such a contract.“

¹¹⁷ *Cady v. Bush*, 283 Minn. 105, 110, 166 N.W.2d 358, 361-62 (1969).

¹¹⁸ See, e.g., *Gnandt v. Dacruz*, *supra*, 1994 Conn. Super. LEXIS 1225, 1994 Ct.Sup. at 4707-08 (1994).

¹¹⁹ Sanford Levinson, *Constitutional Protestantism in Theory and Practice: two Questions for Michael Stokes Paulsen and one for his Critics*, 83 Geo. L.J. 373, 380 note 22 (December, 1994).

¹²⁰ "critical legal scholars, including Kennedy, have criticized orthodox Marxism for its rigid categorization of base economic forces) and superstructure the civil and social institutions, including law, which ideologically justify the base), as well as for its reduction of all interests to a struggle between workers and owners over capital. Kennedy in particular has found the critique of capitalism useful only to the extent that it exposes various mechanisms of oppression and inequality." Naomi Mezey, *Legal Radicals In Madonna's Closet: The Influence Of Identity Politics, Popular Culture, And A New Generation On Critical Legal Studies* (Book review) 46 Stan. L. Rev. 1835, 1837-1838 (1994).

¹²¹ See, e.g., Harold J. Krent, *Should Bouie Be Buoyed?: Judicial Retroactive Lawmaking And The Ex Post Facto Clause* 3 Roger Williams U. L. Rev. 35, 84 (1997)

implicit normative position of the realists: if law is rationalization anyway, why not make it a rationalization which serves the interests of substantive justice? Of course the Critics and Marxists too would say because the legal superstructure - legal theory, jurisprudence, religion, and other justifications of power - necessarily reflects the class interests of the ruling class. However, as Foucault and structuralists would point out, that does not change the fact that we should be looking at the machinery of power to determine where best to strike.

Do judges in fact follow their heart, their head, or their pocket-book? I want to suggest the hypothesis that while judging may follow any or all of these standards, individual judges tend to be rather consistent in their style of judging. To prove this hypothesis would require a case history of say half a dozen judges and a score of cases for each judge. This paper is not so ambitious, and instead merely wishes to present a model of judging and some empirical verification thereof. This verification is not looking at the individual judges styles of judging: rather it is examining several cases to show that they fit the model as described. To verify the model, we will now consider some cases not from their doctrinal legal perspective but rather from a pragmatic results oriented perspective.

III. An Extra-Legal Theory of Judgment

Having briefly described the realists' and formalists' positions and highly abstract models of legal decision that operate, if at all, only indirectly either as presuppositions or quite simply hidden from the view of the public (whether because the assumptions are merely implicit, or are subconscious or unconscious understandings, or are collective social mores) we can now try to integrate the two formalist/realist schema and Aristotle's thought on virtue, phronesis, and dialectic in order to try to develop a general algorithm of judicial decision making from an extra-legal perspective.

A. How Do Judges Think?

Judges can, approximately, be classified in a simplified model as "formalist" or "realist". "Formalist" judges, we are told, tend to be conservative, tend toward literal interpretations of the law and apply rigorous rules of formal logic in their decision making and justify their decisions by objectivity and foreseeability, i.e. on the basis of legal certainty. "Realist" judges, in contrast, are said to believe that law is flexible and fundamentally indeterminate and/or open textured; They believe (supposedly) that logic is manipulable and that law should serve substantive justice, not structural form.

Do judges in fact conform to the "formalist"/"realist" dichotomy? Only approximately, if at all, because some of the distinctions the realist/formalist dichotomy supposes do not in fact exist. I will try to show however that this typology, though a simplification, is however useful for modelling legal decision making.

While it is true that judges have literally dozens of interpretive methods (infra legal arguments) at their fingertips as well as a number of competing extra-legal justifications thereof, there are nevertheless important constraints on their power of decision making. Some infra-legal rules will simply be irrelevant. Others will be just as clearly relevant and applicable to the case at bar. Still, there may be some methods of interpretation where the judge's individual discretion could be brought to bear - so a qualified realist position of legal manipulability has some validity - especially when there is no general rule as to the hierarchization of rules of interpretation.

But the realist/formalist dichotomy runs into bigger problems when we consider legal methods (infra-legal rules). Categorizing interpretive methods as either formalist or realist is not always possible. Some legal methods appear to be formalist (e.g., deductive inference from statute), others appear to be realist (e.g., multifactor interest balancing, possibly with economic analysis), and still others defy classification as either formalist or realist (e.g., ampliative induction). Even when a categorization of a legal method as formalist or realist is possible that categorization is not too meaningful for the following reasons:

1) Axiologically, both realists and formalists were moral cognitivists. They believed moral values existed, but disagreed bitterly about what they were.

As a result, unexpectedly, moral cognitivism has been largely replaced by moral relativism, not because of the strength of relativist arguments but rather due to the mutual exhaustion and opposition of contending moral cognitivists. Extra-legal justifications based on moral theory have been severely undercut due to relativism. Economic or policy justifications are taken more seriously than moral justifications, at least in contemporary U.S. law.

2) Epistemologically, there is no split between formalism and realism. Both realism and formalism are empirical theories of material reality. Thus the principal epistemological split is between empirical materialism as opposed to noetic idealism („pure theory“). That split can be described using a shorthand of „Marx vs. Plato“ (both, incidentally, were communists) - and it did not in fact occur in the debates of realism vs. formalism. Any vestiges of this epistemological debate were and are only that. Platonic noetic theories have more or less been universally abandoned in favor of materialist arguments: arguments which range from Richard Posner on the right to Karl Marx on the left. Plenty of „classical“ legal scholars (formalists) are, like realists, materialists.

3) Politically, the "left" vs. "right" and "modern" vs. "ancient" dichotomy also breaks down. Realists and realist methods are associated with 'left' 'reform' movements as opposed to the right' 'conservative' methods of formalists. Yet formal methods of interpretation such as inductive ampliation allow the development of new rules out of old ones, creating room for reform. Teleological arguments are as old as Aristotle - they are hardly modern.

4) Economically, the realist/formalist dichotomy does not correspond to reality. Conservative judges have not had much difficulty adopting economic arguments. Yet economic arguments are clearly not an element of formal deductive logic. (Aristotelian syllogistic). Economic arguments, at best, could be classified as a type of phronesis, that is as practical reasoning. However I have not found any examples of economic cost-benefit analysis or of multi-factor interest balancing tests in Aristotle's *On Interpretation*, in *Nicomachean Ethics* or in the *Politics*. Nor do I expect to find them. Economic analysis of the law is in fact a very recent phenomenon. While we can say that formalists and neo-formalists have had no trouble adopting economic arguments because they are conservative, economic analysis is not the monopoly of the (neo)realists. Moreover, „Policy arguments“ a typical realist method are often (not always) in fact economic arguments.¹²² Similarly balancing tests, the flagship of realism, are also often economic arguments.

Consequently, I classify interpretive methods as either 1) rules of statutory construction 2) „formalist“ methods which constrain interpretation 3) „realist“ methods of interpretation that favor development of new legal rules and 4) economic and policy arguments which may open interpretation but only in a qualified manner.

B. How Should Judges Think? Great Legal Minds

These methodological tensions - the manipulability and uncertainty of law - could drive one to antinomianism, for the common law is not necessarily coherent at the systemic level. Yet it is nevertheless entirely possible for individual jurists to be not only self consistent but also to apply a rigorous procedure with a good faith claim to seek and do justice - to be faithful to a faithless system. Individual legal methods are in fact, generally, predictable. Yet the choice of which methods a judge will apply seems, well, arbitrary (in all senses). Great legal minds avoid caprice in their choice of arbitral rules by resorting to logic and morality. They carefully and conscientiously apply extra-legal justifications consciously and honestly by explicating their justifications and explaining why they use them. Judges seeking to apply infra-legal theories of legal decision faithfully in "hard cases" are just about inevitably forced, due to legal uncertainty and manipulability, to consider extra-legal theories of justification.

¹²² Some argue that policy arguments are a type of teleological argument. Thomas Gordon, Douglas Walton, *Pierson v. Post* Revisited p. 6 (2004). That is inexact. Policy arguments are based on normative choices. Teleological arguments on inevitable/inherent natural features of the topic.

The clarity of these „great legal minds“ is not due to the inner logic of the law expressing itself through them like the great spirit through the Delphic Oracle - though some great judges might think otherwise. Rather the clarity of „great legal minds“ expresses itself, or more accurately imposes itself, on the unruly and often contradictory mass of rules, regulations, cases, customs and codes which make up the law shaping some form of order out of the apparent incoherence.

I think Justice Cardozo is the best American example of a Judge who faithfully and intelligently applies the law objectively. Lords Lloyd and Denning are also contemporary examples of a fidelity to both law and justice which is admirable.¹²³ And of course Lord Coke is another example of how Justice and Law can beautifully mesh. Sadly such geniuses are truly rare. The author does not pretend to be as temperate or experienced as any of these scholars. However I do hope to expose some of the procedures that these jurists and other great jurists have used. All scientists, including legal scientists, stand on the shoulders of their predecessors. By exposing a variety of legal interpretive methods jurists can try to apply some of the ideas of these great legal minds in their own cases.

C. Hard Cases and Easy Cases

If the realist position is at least partially true, and some judges at least some of the time force the law to fit the facts and ignore procedural black letter law in the interests of substantive justice then how can we know when judges will be likely to do so?¹²⁴ This is a practical problem of legal realism: it generates a theory where prediction seems, at first glance, impossible.¹²⁵ In fact it is, and this paper tries to show how by answering this question: When do judges decide to reach their decisions based either on the interests of

¹²³ See, e.g. Brady Coleman, *Lord Denning & Justice Cardozo: The Judge As Poet-Philosopher*, 32 Rutgers L.J. 485 (Winter, 2001)

¹²⁴ "Legal realism can certainly point to evidence of political judges, but at the same time it is not proof that judges must be political. ...The typical first step in an argument for legal realism is the citation of cases in which judges have distorted the law in the service of their own political views. But the very argument that judges have distorted the law is testimony to a belief that the undistorted law can indeed be known and that the distortion is not therefore inevitable." Christopher Wolfe, *The Senate's Power To Give "Advice And Consent" In Judicial Appointments*, 82 Marq. L. Rev. 355, 367 (1999)

¹²⁵ "Legal realism--at least in the crude predictive version espoused by Holmes, Gray, Llewellyn, and Hughes--is the position that law is whatever a judge says *654 it is. [FN45] As a general theory of law, this predictive version of legal realism has been thoroughly discredited for over a generation." Theodore C. Falk, *Tax Ethics, Legal Ethics, And Real Ethics: A Critique Of A Formal Opinion* 85-352, 39 Tax Law. 643, 653-654 (1986).

substantive justice or practical politics as opposed to seeking „merely“ to fairly interpret and apply the law in an objective and disinterested way according to logical rules of inference?

I think that a methodical approach considering all possible cases ultimately yields an answer to the first question „When do judges cheat?“ and also implies an interesting question, not answered here, „What is judicial cheating?“. It seems that if judges at least sometimes rationalize the law to fit the facts then there are two possible cases: either the procedural law to be applied, the form if you will, reaches the results desired or not. Similarly the law either reaches those results which are substantively just or fails to do so. Thus we can establish another grid:

	L = J	L != J	
L = W	1	4	
L != W	2	3	

Case 1, where law (L) and justice (J) and the will of the judge (W) are congruent is the easiest case, we can describe this as substantively fair and procedurally correct and thus just. In such a case a judge is not at all obliged to force the law to fit the facts and in fact has no incentive to do so. Consequently the judge will almost certainly apply „classic“ legal methods: literal interpretation, painstaking definition of words (including chain definitions „a is b“, „b is c“, „c is d“), and formal logic, particularly analogy and deduction (though probably not ampliation since it is usually unnecessary in „easy cases“).

Let us now consider the hardest case: what of situation 4 where the law is not a reflection of the will of the judge but the law is just? I call this the hardest case because it is here where, if the judge is truly corrupt, either as a representative of his own personal interests or those of his class s/he will have to work the hardest to stretch the law to fit the facts. What is the second easiest case? I think the second easiest case must be where the law does not lead to a just outcome but the judge wishes to force the law to reach a just outcome. Here, while the conservatives will complain, rightly, about legal foreseeability and certainty the fact is the outcome practically justifies the means - a position not at all inconsistent with a materialist as opposed to idealist definition of morality. This then leaves as the second most difficult case those cases where judges support unjust laws, that is where the

law is congruent with the result the judge desires but is not congruent with objective justice. Objective justice is not defined in this paper - but the reader is urged to read book V of Aristotle's *Nicomachean Ethics*.¹²⁶ This is a hard case for a judge because they must do the wrong thing and incur the wrath of the wronged. However it is not as hard as it could be because the judge actually must not force the law to fit the facts.

D. Four Cases to Illustrate Best and Worst Case Legal Interpretative Scenarios

I've tried to select four cases from international tort law/human rights law for a brief analysis to exemplify the ideas illustrated above which I have written about elsewhere as well. I believe these cases illustrate each of the positions in schema II: the easy case, where the law compels the fair outcome desired by the judge. The hard case where the law compels an unfair outcome and the judge desires that unfair outcome. And the intermediate cases where the law compels a fair outcome and the judge does not desire that outcome and where either the law compels an unfair outcome and the judge desires the fair outcome. Let's try to see whether this schema can be applied to some cases in human rights law to see when and whether, where and how the law is twisted to fit the facts or the law blindly follows them.

1. Filartiga v. Pena Irala:

The easiest case for a judge is where the law and the desired result are congruent with each other.

Although *Filartiga v. Pena Irala* was essentially a case of first instance, we can say that the case was fairly decided and essentially consistent with a fair reading of U.S. and international law. In *Filartiga* an alien sued a foreign governmental official for acts of torture committed outside the scope of employment under the Alien Tort Claims Act. The court determined that international law sufficiently defined the crime and tort of torture and thus applied the ATCA holding the torturer liable in tort for the injuries he inflicted on *Filartiga*. While most would find the remedy in *Filartiga* unusual, few would disagree with the result reached there: those who commit grave human rights abuses should be punished. Further, the ATCA was clearly valid U.S. law, the rule against torture was also thanks to

¹²⁶ Aristotle, *Nicomachean Ethics*, Book V. available at: <http://classics.mit.edu/Aristotle/nicomachaen.5.v.html>.

the Convention Against Torture rather clearly valid international law and so the two worked together through honest legal interpretation to reach the result that the foreign tortfeasor was liable in the U.S. for the tort committed overseas. That result while perhaps surprising cannot be seen as a results oriented interpretation forcing the law to fit the facts. Rather *Filartiga* merely extended existing legal principles to their logical conclusion in a case which was, admittedly, essentially of first instance.

What about cases which reach a result with which we agree but that do so in a way that simply distorts the law out of any sort of fair reading? I.e. cases that argue that the constitution is „a living document“ and so requires a „flexible“ (i.e. manipulable) reading, that the law presents mere „standards“ and not fixed, rigid „rules“? That is, what about those cases where realist critiques of formalism are taken seriously, and where the realist argument appears to have carried the day serving not to distort law in the interests of personal or collective injustice but rather in the interest of justice? These are the toughest cases for anyone to be objective about because we care passionately about the result, and apparently so do others, though, strangely, they may disagree with us as to what the result should be. Are those cases and the interest of justice so important that we should be willing to override the idea of legality, „the rule of law“ if you will, and ignore procedure and form in order to achieve substance?

I would argue that in fact we disrespect democracy and undermine the natural functions of a healthy democracy when we allow judicial legislation through free floating legal interpretation. Such interpretation opens the door for other wide interpretations that lead to results we would disagree with, even results that lead to substantive injustice. Nevertheless the temptation judicial power presents may well overcome these concerns, particularly where the judiciary has decided, overtly or not, that moral values are subjective and that law is no more or less than the positive exercise of raw power, however politely stated. Such doctrinal moves are mistakes as they undermine democracy and justice. In fact they are really only possible in an unhealthy society which does not view morality as having any objective basis or in those dictatorships where positive law is justified not on morality but by force or in antinomian anarchical societies. And this reveals one of the weaknesses of the antinomian strategy as response to the problem of legal manipulability.

2. *Bigio v. Coca Cola*

In the field of international human rights law there are few instances where the courts „stretch“ the law to fit the facts. Even in domestic law such cases are the exception, generally involving however civil rights for example of racial minorities (*Brown v. Board of Education*) or of women (*Roe v. Wade*).

In *Bigio v. Coca-Cola* however the court - in *dicta* - seems willing to recognize that uncompensated expropriation, or at least uncompensated expropriation motivated by religious bigotry, while not a violation of *jus cogens* in the case at bar, would have been a violation of international law if committed by a state actor¹²⁷ - though: Egypt did nationalize the land which it then transferred to Coca-Cola! The court found that while jurisdiction did not exist under the Alien Tort Claims Act¹²⁸ (because there was neither state action by the defendant nor was the defendant a non-state actor acting under color of state law) there was jurisdiction based on diversity of citizenship.¹²⁹ The court declined to apply the voluntary abstention doctrines such as the act of state doctrine¹³⁰ (again, because there was no state action in the sale of the expropriated property to the successor in interest Coca-Cola Ltd.) and remanded the comity issue to the district court. This however ignored whether a sovereign has the prerogative of expropriation. Prior to the world wars it was clear that the absolute right of the sovereign over property on its soil was an attribute of sovereignty. Even as recently as *Banco Nacional de Cuba v. Sabbatino* the court was willing to recognize that due to differing legal systems (socialist and capitalist) expropriation without compensation was not a violation of international law.¹³¹ In other words, the court begs the question whether the expropriation could have been other than wrongful. In this sense, and to a lesser extent as to the question of jurisdiction, the court in *Bigio* is essentially forcing the law to fit the facts to reach the outcome it desires. That outcome is itself two edged: bigotry is evil and spoliation of the unpopular minority is always a real risk of popular rule. At the same time however vast income inequality, typical of most third world countries, is also an evil. However the judge in *Bigio* likely only saw the issue from the perspective of the judicial culture of an advanced capitalist regime and

¹²⁷ *Raphael Bigio, Bahia Bigio, Ferial Salma Bigio and B. Bigio & Co., v. The Coca-Cola Company and the Coca-Cola Export Company*, 239 F.3d 440;2000 U.S. App. LEXIS 36452, *20 (2d Cir. 2000).

¹²⁸ *Id.*, *4.

¹²⁹ *Id.*, *24.

¹³⁰ *Id.*, *30.

¹³¹ "there are many unsettled areas of international law, as there are of domestic law, and these areas present sensitive problems of accommodating the interests of nations that subscribe to divergent economic and political systems. It may be that certain nationalizations of property for a public purpose fall within this area." *Banco Nacional de Cuba v. Sabbatino, Receiver, et al.* 376 U.S. 398;84 S. Ct. 923;11 L. Ed. 2d 804;1964 U.S. LEXIS 2252, *96 (1964) (Act of state doctrine prevented U.S. court from overturning Cuban expropriation done in Cuba of U.S. property).

thus reached the result which would most likely favor the Bigio's. Of course, reductionist positions such as Marxism can be criticized here: would Marx says the judge would favor or disfavor the bourgeois capitalist Bigio or the capitalist enterprise Coca-Cola? In fact, Marx would argue that capitalism will ultimately favor the large multinational over the individual capitalist since a stock market crash resembles a shark feeding frenzy where the „small fish“ - the Bigios of the world - are devoured by the large fish - the Megacorps. That proposition may be generally true but as a predictor for individual cases it is only somewhat useful.

3. *Sampson v. Federal Republic of Germany*

In *Sampson v. F.R.G.* the plaintiff, who during World War II was a forced laborer in Germany, sought a remedy against Germany and the Jewish Claims Conference for failing to adequately compensate his labor.¹³² The central issue was whether statements by Germany could be taken as an implied waiver of Germany's state immunity where the former fascist government had violated non-derogable norms of international law (*jus cogens*).¹³³ The plaintiff's argument was that Germany could not enjoy immunity as to a violation of *jus cogens*. However, though it is true that Germany was obligated to respect the *jus cogens* norm as to other states, other states were not obliged to present Sampson a remedy for that violation.¹³⁴ Thus, if no waiver was found then the United States was not obligated to remedy the plaintiff's injury. The court further refused to imply a waiver of state immunity.

Substantively speaking, this case reaches a result which is very difficult to accept. Forced labor was a policy of the Third Reich particularly in the late war years. Such labor was either undercompensated or uncompensated and performed in conditions with little regard to worker safety. However, legally speaking, the formal distinction made by the court while leading to substantive injustice is defensible. Germany, whatever political choices it made, did not expressly waive its state immunity. So the court was obviously reluctant to imply

¹³² *Jacob Sampson, Plaintiff-Appellant, v. Federal Republic of Germany and Claims Conference, Article 2 Fund*, Defendants-Appellees. 250 F.3d 1145; 2001 U.S. App. LEXIS 10581, *1. (7th Cir., 2001).

¹³³ "Specifically, Sampson and Amicus argue that a violation of a non-derogable *jus cogens* norm of customary international law constitutes an implied waiver of a foreign state's sovereign immunity." *Id.* at *10. (7th Cir., 2001).

¹³⁴ "although *jus cogens* norms may address sovereign immunity in contexts where the question is whether international law itself provides immunity, e.g., the Nuremberg proceedings, *jus cogens* norms do not require Congress (or any government) to create jurisdiction." *Id.* at 250 F.3d 1145; 2001 U.S. App. LEXIS 10581, *17. (7th Cir., 2001).

such a waiver for fear of usurping the foreign-policy prerogative of the executive.¹³⁵ This case seems to reflect the type of case where a judge seeking to faithfully apply the law would say „my hands are tied“. The decision does not seem „forced“ to reach the result desired by the executive - though the executive obviously wanted to preserve Germany’s immunity, otherwise it would have chosen not to grant such immunity. The elements where judicial appreciation was possible: namely, whether customary international law post-Erie remains a part of federal common law and whether the U.S. will be bound by international customs arising out of treaties to which the U.S. is not a party¹³⁶ - are sufficiently „open“ questions that the court could have applied a „principled“ realism to reach a result to augment plaintiff’s compensation. That the court did not does not however mean that the court was an „unprincipled“ realist. Rather it means that the court tried to do its best to faithfully interpret black letter law where the black letter law was grey. The judge in *Sampson* was either prudent judge or uncreative but not an evil judge.¹³⁷

4. *Byung Wha An et al. v. Doo-Hwan Chun, et. al.*¹³⁸

The facts in *Byung Wha An* are relatively clear. A Korean person sued a Korean General in the United States for violation of a U.S. law, the Alien Tort Claims Act . However the case was determined inadmissible on the procedural ground of a lack of jurisdiction. If we look at this case in terms of our schema it is No. 4, the hard case where we have a weak plaintiff against a strong defendant. The defendant is at least accused of a horrid crime, torture, and the plaintiff’s position looks sympathetic. However this is a hard case precisely because the defendant is powerful. In fact the case was decided against the plaintiff on jurisdictional grounds. Here it seems an allowable inference that the court determined that no jurisdiction would exist because it would be embarrassing to the United States to indict a prominent leader from a close U.S. ally. I would like to argue that *Byung Wha An* is an example of the court reaching the wrong results for the wrong reasons.

¹³⁵ *Id. at:* 2001 U.S. App. LEXIS 10581, *28;250 F.3d 1145.

¹³⁶ *Id. at* 250 F.3d 1145;2001 U.S. App. LEXIS 10581, *20. (7th Cir., 2001).

¹³⁷ Unless, despite irony, we accept the argument“s by Martin Heidegger“s lover Hannah-Arendt that fascism was a „banality of evil“. See Hannah Arendt, *Eichmann in Jerusalem* (1964).

¹³⁸ 1998 U.S. App. LEXIS 1303,*

Byung Wha An and Young-Kae An, v. Doo-Hwan Chun, Tae-Woo Roh, Sae-Chang Choe, Sae Dong Chang, Wha-Pyung Hur, Sam-Soo Hur, Kwan-Dal Chung, Hak-Sung Yoo, Jun-Byung Park, Hee-Do Park and Hak-Bong Lee, No. 96-35971 United States Court Of Appeals For The Ninth Circuit, 1998 U.S. App. LEXIS 1303.

If *Byung Wha An* is an example of results oriented jurisprudence which ignores the legal form and puts whatever content the judiciary wishes into the law which can result in injustice.

E. Interpolating multiple graphs to infer a general algorithm of judicial decision

Earlier we have seen two graphs which might illustrate how judges decide cases. A simple interpolation of schema one and two yields only three cases: the judge either decides cases based on an objective good faith interpretation of the law, or the judge makes decisions as the realists predict, based on the interests of the ruling class, or the judge makes their decisions as the realists want judges to decide, with only formal regard to procedure and a central focus on substantive justice. Now in case one the law will never be distorted to fit the facts to reach a desired outcome, for there is no desired outcome, other than to apply with fidelity the law (if such be possible considering the mass of potentially contradictory legal authorities) as it is and not as we would wish it to be. The second two cases are however examples of voluntarist interventionist judges who shape the law to fit their purposes be they base or noble.¹³⁹ And that is the risk of judicial voluntarism, particularly in a „value free“ or „morally neutral“ world: that judging will degenerate into the pure „taste“ of the judge and no longer reflect any objective standard at all.

Let us look at case one, that of the „high fidelity“ judge: how do our two graphs work together? When that judge is presented with a „hard case“ they will apply the law as they see it not as the wish it were. However this judge’s decisions will certainly reach unjust outcomes, but s/he will complain, „my hands are tied!“. This judge's opinions will always reflect what the law is however and will be easily justified.

What about the case of the legal realist? There we see two cases, the virtuous altruistic realist, and the vicious opportunistic realist.

The typical example of this type of the virtuous legal realist might be former U.S. Chief Justice Brennan. Though we can always argue that any reform merely placates rebellion and serves the system, if we ignore that point we can say that his decisions did not exclusively serve the interests of the ruling class but also sought to achieve substantive

¹³⁹ See, e.g., Stephen L. Carter, *The Right Questions in the Creation of Constitutional Meaning*, 66 B.U. L. Rev. 71,77 (1986)

justice sometimes even going against the short term interests of the ruling class. This type of judge, because they reach just decisions, can afford to generate controversy. They can afford to be honest and admit that they are realists and that the law is a form to achieve a substantive result.

In contrast, the vicious legal realist might be the late Chief Justice Rehnquist. Rehnquist, whom I would call the first of the contemporary Supreme court's „neo-formalists“, ¹⁴⁰ is fully aware of realism's claims and power and nonetheless purports to be nothing other than a „high fidelity“ judge - all the while reaching deep to propose legal interpretations that serve the interests of the ruling class and deflects law from justice by privileging transactional justice („arithmetic“ justice, i.e. justice as the exchange of equal values) over proportional justice („geometric“ justice, just relations between unlike things by reference to some common third point) ¹⁴¹ to reach results just like their liberal counterparts of whom they so mightily and unpersuasively complain. However the claims of the realist opportunists to merely seek to apply the law objectively and impartially should be taken seriously not because of any deference to authority or any other naivety. Rather we have to at least listen to those who give lip service to objectivity and impartiality because both are in fact key features of just decision making.

Of course no judge exemplifies exclusively any one of these cases. Judges at times are faithful servants of law and justice, at times serve justice but not law, and some judges even serve law at the expense of justice. However seeing these three cases might help us predict what a judge is likely to conclude if we know from their past record which case they most closely exemplify.

From this simplified model we will in fact discover 16 possible decision models, though in fact some of those 16 judge-types are redundant or the distinctions fine enough that they can be safely ignored. We still arrive at over a half dozen different models of judicial reasoning which we can apply with reasonable distinction to different judges. Further, this refined model will allow us to „flush out“ the opportunistic realists by examining not merely what they say but also what they do and why. We now proceed to the more

¹⁴⁰ James G. Wilson, *The Morality of Formalism*, 33 UCLA L. Rev. 431, 477, 449 (December, 1985). On neo-formalism generally see, William J. Woodward, Jr., *Neoformalism in a Real World of Forms* 2001 Wis. L. Rev. 971 (2001); John E. Murray, Jr., *Contract Theories and the Rise Of Neoformalism*, 71 Fordham L. Rev. 869 (December, 2002).

¹⁴¹ Aristotle, *Nicomachean Ethics*, Book V. (Translated by W.D. Ross) available at: <http://classics.mit.edu/Aristotle/nicomachaen.5.v.html>.

complex model which interpolates the two graphs earlier discussed to develop a general algorithm of legal decision-making based not on legal form but on the questions of morality and power which underlie the law.

F. Describing, Explaining and Predicting Judicial Behavior Based on Interpolation of the Two Graphs

To develop our algorithm we need to represent a series of values as variables. Thus, whether a particular law is just, the will of the judge (and whether that will is congruent with the law), the virtue of the litigant the the strength of the litigant. Those are all are variables in the following equation:

Law(Just)
Judge(Will)=Law
Litigant(Virtue)
Litigant(Strength)

Or, in shorthand

L(J)
j(W)=L
l(V)
l(S)

Each of which will be either false (0) or true (1)

The following table attempts to classify each type of judicial style depending on the sixteen possible combinations of the values of these variables:

L(J) j(W)=L l(V) l(S)
0000 realist opportunist
0001 realist opportunist
0010 realist opportunist
0011 realist opportunist
0100 unprincipled unjust and lax
0101 unprincipled unjust and cowardly
0110 principled originalist
0111 principled originalist

1000 realist altruist
1001 realist altruist
1010 realist altruist
1011 realist altruist
1100 possibly dissembling a principled originalist
1101 probably dissembling a principled originalist
1110 probably a principled originalist
1111 possibly principled originalist(?)

Note that „probably“ means more likely than not, „possibly“ means less likely than not.

Now wherever $j(W)=L = 0$ we know we are dealing with a realist judge. At the same time, where $j(W)=L = 0$ and $L(J) = 0$ we are dealing with a realist who seems to be seeking to do justice i.e. an altruist. On the other hand, where $j(W)=L = 0$ and $J(L) = 1$ then we know we are dealing with an opportunist. Where the will of the judge corresponds to the law - i.e., $j(W)=L = 1$ and where the law is just, we should expect the judge to act like an originalist, to argue for very conservative views that legal interpretation should closely follow the text, if only to shore up their own legitimacy for later realist ventures (whether opportunistic or altruistic). This judge will appear to be a principled originalist,¹⁴² although to know that with certainty we would have to examine the harder cases where the judge's will-power and the law are at odds with each other.

The most difficult combination to classify is where the judge's will corresponds to the law and where the law however is unjust. There, one possibility is the case of the truly principled originalist who believes systemic interests such as democracy are best served by not permitting judicial intervention to short circuit decisions of elected authorities. Truly principled originalists are rare, in part because of the difficulties of interpreting a single unified meaning to the actions of a group of men hundreds of years ago based on scanty, conflicting records. The other possibility is simply that the person is unjust and perhaps also is serving an unjust regime.

Perhaps looking at the qualities of the litigant who wins will allow us to refine this inquiry further? In the case of the litigant who is vicious we can conclude that it is more likely that

¹⁴² Justice Scalia has been described as a "principled originalist". Sean B. Cunningham, *Is Originalism "Political"?* 1 Tex. Rev. L & Pol. 149, 161 (Spring, 1997). Which may be true; But Scalia's fidelity to his conception of the law is greater than his catholicism. Unlike the Pope, Scalia supports the death penalty.

the judge is unjust rather than that the judge is so principled that they elevate the rule of law above substance. Where the injustice is the result of fear of the power of the litigant we may say that the judge is a coward.¹⁴³ Where the litigant is weak we must conclude the judge is somehow lax. To the principled originalist of course the strength or weakness of the litigant would actually be irrelevant.

What about our hidden realists? Those who, while exercising realist interpretations, pretend to be, for example, originalists?¹⁴⁴ Can looking at the virtue or strength of the litigant flush out their true sentiments? I would like to suggest that where the litigant is unjust but the laws and will of the judge are in their favor that the principled judge would be more likely to resort to realist methods. However in cases where the litigant is virtuous we cannot say whether the judge would resort to such methods: the judge could reach the desired result through results oriented jurisprudence or through reasonable fidelity to formalist methods. Where the litigant is weak however we can say that the judge would be less likely to resort to opportunistic methods.

Naturally, a predictive function could be developed

$$f(j)=\text{mean}(D[1],D[2],\dots D[n])$$

-or-

$$f(j)=\text{mode}(D[1],D[2],\dots D[n])$$

Wherein D[1]...[n] are the descriptions that would be applied to each decision of the judge (whether the simplified version: originalist, realist altruist, or realist opportunist) or the more complex 16 descriptions in the second table. $f(j)$ could look at the mean (average) of decisions. We could also look instead to the decision which most frequently occurs (median). Or we could combine the two such that we would look at the median result but if there were two or more equal medians that we would then look at the mean result either of

¹⁴³ "There are cowardly appellate judges as well as cautious ones, there are personal prejudices, there are general prejudices which reach the level of besotted bigotry, there are the sly as well as the skillful, not every appellate judge is industrious or steady in attention or careful in his work, politics and 'management' can be found inside the court and out, there have even been crooks on the appellate bench. And so what? Taken all together, such things do not materially alter the whole picture: the appellate bench has stood up throughout our history" Karl N. Llewellyn, *The Common Law Tradition* 133 (1960).

¹⁴⁴ Some scholars are willing to note the intellectual dishonesty of originalism or at least some originalists. E.g., "originalism,' ... proclaims (or pretends) that we should, as a normative matter, feel obligated to conform to the desires of our long-dead ancestors", Sanford Levinson, *Bush v. Gore and the French Revolution: A Tentative List of Some Early Lessons*, 65 *Law & Contemp. Probs.* 7, 30, note 111 (Summer 2002); "originalist approaches to constitutional interpretation tend to hide that choice by pretending it does not exist" David A. Sklansky, *The Fourth Amendment and Common Law*, 100 *Colum. L. Rev.* 1739, 1810 (November, 2000).

those cases where medians were equal or of the entire set. I personally think the mode would be the more accurate representation since while we could arbitrarily assign values of 1, 2 and 3 to each of the three modes of decision (originalist/formalist, interpretive/realist altruist,¹⁴⁵ interpretive/realist opportunist)¹⁴⁶ whichever value is assigned the worth of 2 would contain an unfair bias to be the more likely determined average value.

With this predictive algorithm we could, theoretically, be able to judge in a future case the likely determination of this particular judge. While that might be of use to lawyers it does pose some uncomfortable questions for the idea that law is an objective prevision of the future and not an *a posteriori* affectation of a legal judgment to a given set of facts.¹⁴⁷

A calculus of virtues and vices might be possible and can be a useful element in an overall legal inference engine. We can approximately determine the various judicial styles by carefully analyzing their decisions and looking at factors which, supposedly, do not directly influence the legal decision of the judge. The predictive value of this model is only approximate because these factors, if even acknowledged, only influence judicial decision indirectly. Further, while some judges might consider, overtly or covertly, the factors presented in graphs I and II in making legal decisions, other courts may well in fact simply apply and interpret the law within its own mechanical rules of production. However

¹⁴⁵ "The altruists (Kennedy's word for the legal realists) deflated the claim that such rule making was neutral by showing how those rules served specific class interests, were politically biased, and did not result from the judges' mechanical interpretation of the law.", James G. Wilson, *The Morality of Formalism*, 33 UCLA L. Rev. 431, 465 (December, 1985). Also see: Kennedy, Form and Substance in Private Law Adjudication, 89 Harv.L.Rev. 1685 (1976) (individualism, altruism, formalism and informality run are dualist opposites running throughout legal interpretation).

¹⁴⁶ Re realist-opportunists, Peter Stein, *Justinian's Compilation: Classical Legacy and Legal Source*, 8 Tul. Eur. & Civ. L.F. 1, 6 (1993) notes that the interplay of realism and opportunism even plagued ancient Roman law!

¹⁴⁷ Behind the argument whether law provides "rules" or "standards" lurks a challenge to the idea that the law provides an objective prevision of the future. In other words, legal realism carries with it a potential to legitimate ex post legislation. Of course historically (and probably constitutionally as well) statute law must be objective previsions of the future (*ex ante*). Adjudication of cases is of course a determination after the fact (*ex post*) whether the conduct of the plaintiff was a breach of the ex ante determinations of law (whether manifested in statutes, custom, or case law). Thus "Arguments about and definitions of rules and standards commonly emphasize the distinction between whether the law is given content *ex ante* or *ex post*. For example, a rule may entail an advance determination of what conduct is permissible, leaving only factual issues for the adjudicator. (A rule might prohibit 'driving in excess of 55 miles per hour on expressways.') A standard may entail leaving both specification of what conduct is permissible and factual issues for the adjudicator. (A standard might prohibit 'driving at an excessive speed on expressways.')" Steven E. Harbour, *Restrictions on Post-Employment Competition by an Executive under Georgia Law*, 54 Mercer L. Rev. 1133, 1195.

(Spring 2003). On this score the formalists have the upper hand. Realism here opens the door to capricious rule. Coupled with a radical relativist axiology the result in the 1930s was often fascism.

whether this is the case could be determined as to individual judges with a manageable knowledge base of a dozen or more cases.

The question whether and to what extent judges in fact force the law to fit the facts by recasting laws in a results oriented manipulation of the legal system can thus only be partially answered. That is especially true because judges who do place their thumbs on the balance of justice, whether in the interests of substantive justice or merely to represent their class interests as members of a ruling elite in an advanced industrial society¹⁴⁸ would not admit to it. Further, in some cases the class interests of the ruling class and justice coincide. There it is probably not possible to say, from a theoretical perspective, whether the judge is principally representing their class interests or the interests of justice. However by examining other cases decided by that judge we may be able to arrive at a database large enough to allow that question to be resolved.

In fact, to answer the questions raised here would ultimately require a study of hundreds of cases from dozens of jurisdictions. I hypothesize that such a study would lead to only partially conclusive results. This is partly because, even if courts were (deliberately or not) weighing and balancing not laws but virtues and vices, they might not be able to admit to be doing so. Indeterminicity of such a study would also arise due to the limitations of the material (should the study only consider torts? Contract? Both?) and the fact that legal standards change over time and sometimes are not the same in different jurisdictions even at the same point in time. Further it would require a satisfactory general model of morality to define virtue and vice. I do think such a model, based on whether the particular act favors individual and species survival is possible, however such an ambitious project is clearly beyond the scope of an article.

The author has contented himself in this sketch with presenting a simplified Aristotelian schema, but has indicated that Aristotle's categories of virtue and vice may be incomplete due to Aristotle's belief that virtue was just about always a mean between extremes, which was probably a reflection of Aristotle's belief in dialectical synthesis as the outcome of competing thesis. As Nietzsche notes, synthesis is not the only possible outcome of oppositional duality, mutual exclusion is another one¹⁴⁹ in which case Nietzsche's belief

¹⁴⁸ William H. Page *The Ideology of Law and Literature* (Book Review) 68 B.U. L. Rev. 805 808-809 (1988).

¹⁴⁹ "how can something originate in its opposite, for example rationality in irrationality, the sentient in the dead, logic in unlogic, disinterested contemplation in covetous desire, living for others in egoism, truth in error? Metaphysical philosophy has hitherto surmounted this difficulty by denying that the one originates in the other and assuming for the more highly valued thing a miraculous source in the very kernel and being of

that being virtuous means at times to be extreme¹⁵⁰ would possibly be correct.¹⁵¹ I would like here to merely indicate that my view of moral theory is a combination of Aristotle and Nietzsche, that morality is generally a median between extremes, but that at times extremism is in fact virtuous. In any event the moral theory is not reflected in the program which leaves it to the end-user to determine abstractly whether the party is moral and the weight to be attached thereto.

the 'thing in itself.' Historical philosophy, on the other hand, which can no longer be separated from natural science, the youngest of all philosophical methods, has discovered in individual cases (and this will probably be the result in every case) that there are no opposites, except in the customary exaggeration of popular metaphysical interpretations, and that a mistake in reasoning lies at the bottom of this antithesis: according to this explanation there exists, strictly speaking, neither an unegoistic action nor completely disinterested contemplation; both are only sublimations" Friedrich Nietzsche, *Human, all too Human*, (1878) available at: http://www.publicappeal.org/library/nietzsche/Nietzsche_human_all_too_human/sect1_of_first_and_last_things.htm

¹⁵⁰ "8 Toward a psychology of the artist. -- If there is to be art, if there is to be any aesthetic doing and seeing, one physiological condition is indispensable: frenzy. Frenzy must first have enhanced the excitability of the whole machine; else there is no art. All kinds of frenzy, however diversely conditioned, have the strength to accomplish this: above all, the frenzy of sexual excitement, this most ancient and original form of frenzy. Also the frenzy that follows all great cravings, all strong affects; the frenzy of feasts, contests, feats of daring, victory, all extreme movement; the frenzy of cruelty; the frenzy in destruction, the frenzy under certain meteorological influences, as for example the frenzy of spring; or under the influence of narcotics; and finally the frenzy of will, the frenzy of an overcharged and swollen will. What is essential in such frenzy is the feeling of increased strength and fullness. Out of this feeling one lends to things, one forces them to accept from us, one violates them" Friedrich Nietzsche, *Twilight of the Idols*, "Skirmishes Of An Untimely Man" p. 8 (1895) available at: <http://www.handprint.com/SC/NIE/GotDamer.html>.

¹⁵¹ Friedrich Nietzsche, *Human, All Too Human* (1878) (Translated by Helen Zimmern, R. J. Hollingdale, and Marion Faber) Ch. I.1. Available at: <http://www.geocities.com/thenietzschechannel/human1.htm#first> available in German at: <http://www.magister.msk.ru/library/babilon/deutsche/nietz/nietz06g.htm>

IV. Infra-Legal Theories of Argumentation: Interpretive Methods

Extra-legal justification play themselves out accross infra-legal rules of decision. Regardless of systemic coherence in the law due to conflicts between bases of extra-legal justification individual legal methods themselves are essentially deterministic. The conflicts and ambiguities between various legal methods, while real, are not so great as realists present them to be.

A. Formal Rules of Statutory Construction

The following interpretive methods taken separately, are reasonably determinable. Yet, when viewed as a whole, there is tension. This tension is the result not of an inevitable resort to extra-legal justification. Rather it is due to inadequate hierarchization of the interpretive methods in the common law. One of the tasks of legal science in the common law should be to more precisely prioritize rules of interpretation.

I have attempted to present these interpretive methods according to my impression of their hierarchical importance. I attempt to present those arguments first which the court will apply first. These are formal rules of positive law. If those fail, increasingly general interpretations and justifications therefore are presented. Thus the teleologically most important rules are presented last, while the formally most important rules of interpretation are first as that appears to be the general principle governing the hierarchisation of interpretive rules.

1. Literal or "plain meaning" interpretation

"Plain meaning" arguments state that the law means what it says, nothing more or less. One can however attack a plain meaning argument as being tautological. More articulate renditions of the "plain meaning" rule of interpretation state that the statute should be interpreted to mean not what the judiciary thinks it should mean but rather what the legislator facially stated. This is more defensible as it provides criteria to determine whether and when a meaning is "plain".¹⁵² Literal or literalist interpretation is a synonym

¹⁵² See, e.g., Anthony D'Amato, *Counterintuitive Consequences of "Plain Meaning"*, 33 Ariz. L. Rev. 529 (1991); Michael S. Moore, *Plain Meaning and Linguistics--A Case Study*, 73 Wash. U. L.Q. 1253 (1995); Arthur W. Murphy, *Old Maxims Never Die: The "Plain Meaning Rule" and Statutory Interpretation in the "Modern" Federal Courts*, 75 Colum. L. Rev. 1299 (1975); Stephen F. Ross, *The Limited Relevance of Plain*

for interpretation according to the plain meaning of the text, though with somewhat perjorative overtones.

Yet, although plain meaning is a rule of interpretation, „[c]ourts are sometimes, in the interest of justice, willing to ignore the plain language of a statute.“¹⁵³ A court may reject a literalist interpretation where such interpretation does not conform to „the circumstances surrounding their adoption, or for that matter, with the context, subject matter, historical background, effects and consequences, spirit and purpose, or any other factor to which courts advert in determining a statute's meaning." the court may reject the literalist interpretation.¹⁵⁴ That is, a literal interpretation of a statute is not admissible where it would lead to „an absurd result“.¹⁵⁵

2. Syntactic Interpretation / Grammatical Interpretation

Syntactic arguments state that when interpreting a statute we must carefully parse each and every term and consider its syntactic position within the sentence in order to resolve linguistic ambiguities.¹⁵⁶ Linguistic ambiguities arise out of syntax: For example, does "and" mean "both / and" or merely "either / or"? Does "or" mean "either a or b but not both", or instead "either a or b and possibly both"? Again such interpretation must not be used to reach an absurd result.¹⁵⁷ One example illustrates the problem: Must cruel and unusual punishments be both cruel and unusual to be unconstitutional or merely cruel or unusual? In syntactic interpretation, the position of the word within the sentence, punctuation, conjunctions, and any other syntactic clues are taken as evidence of the meaning intended to be imparted to the statute by the legislator.

Meaning, 73 Wash. U. L.Q. 1057 (1995); Frederick Schauer, *The Practice and Problems of Plain Meaning: A Response to Aleinikoff and Shaw*, 45 Vand L. Rev. 715 (1992); David A. Strauss, *Why Plain Meaning?*, 72 Notre Dame L. Rev. 1565 (1997).

¹⁵³ *Davis v. Department of Labor*, 317 U.S. 249 (1942). Also see: *Director, Office Of Workers' Compensation Programs, United States Department Of Labor V. Perini North River Associates Et Al.*, 459 U.S. 297;103 S. Ct. 634;74 L. Ed. 2d 465;1983 U.S. LEXIS 14;51 U.S.L.W. 4074 (1983).

¹⁵⁴ See *Hurley v. Arizona*, 2002 Ariz. App. LEXIS 16, 16;202 Ariz. 3; 39 P.3d 527 (Citing *Zamora v. Reinstein*, 185 Ariz. 272, 275, 915 P.2d 1227, 1230 (1996)).

¹⁵⁵ "Although we must give effect to the statute's plain and ordinary meaning, the General Assembly's intent and purpose must prevail over a literalist interpretation that leads to an absurd result." *Lagae v. Lackner*, 996 P.2d 1281, 1284, 29 Colo. Law. No. 5 237 (Colo. 2000); "Statutes should not be construed so as to lead to an absurd result." *Kiriakides v. United Artists Communications, Inc.*, 312 S.C. 271, 440 S.E.2d 364 (1994).

¹⁵⁶ On syntactic argument see: L. Allen & M. Caldwell, *Modern Logic and Judicial Decision Making: A Sketch of One View*, Law and Contemporary Problems 213, 226 (1963).

¹⁵⁷ For example, where a counterfeiter argued that a word modified only the word immediately preceding it and not the entire group of words, the court held through syntactic argument that the criminals exculpatory argument was no valid defense. *U.S. v. Stanley* 23 F.3d 1084, 1086 (1994).

Syntactic arguments are usually countered by the argument that the legislator is not always fine in its draftsmanship and as such the syntactic interpretation is searching for non-existent, overly-subtle distinctions. Rather, goes the realist argument, the interpretive function should look to the purpose and function of the law than empty formalism.

Like syntactic arguments, grammatical arguments parse the sentence structure looking for clues as to the legislative intent. Here however the focus is not on individual words and their positions in the sentence but rather on phrases, clauses, and also parts of speech. Thus it is only a slightly more wide ranging variant of syntactic argumentation and runs into similar objections: that it searches for a non-existent and unrealistically precise legislative intent within a statute which was either badly drafted or even intentionally ambiguous. In the case where the ambiguity can be shown for political reasons to be intentional the judicial function has every right to intervene to clarify the otherwise ambiguous law.

3. Historical/genetic interpretation

In this form of interpretation we examine the legal history surrounding the creation of the statute in a search for legislative intent.¹⁵⁸ The usual argument against such interpretation is that the legislative intent is ambiguous or even non-existent, particularly when the case at bar is one of first impression and not within the imagination of the legislator at the time the legislation was enacted.

4. Legal Completion (Rechtsergaenzung) / Legal Interpretation

This type of interpretation seeks to cure lacunes (gaps) in the law by examining a phrase in the law with respect to that same phrase as elsewhere defined in the law.

5. Contextual interpretation/systematic interpretation

Contextual interpretation (also known as systematic interpretation)¹⁵⁹ interprets the particular law as an expression of a general law and thus determines the law according to

¹⁵⁸ "In historical analysis, the interpreter attempts to identify what the founders of a legal document wanted to regulate when they used certain words and sentences; here, both the specific and the general declarations of intent are of crucial importance." Winfried Brugger, *Legal Interpretation, Schools Of Jurisprudence, And Anthropology* 42 Am. J. Comp. L. 395, 397 (1994).

¹⁵⁹ "in German jurisprudence, contextual interpretation is called systematic interpretation. Under this approach, ambiguous words are eliminated by reference to other related provisions or concepts in which the

the superior hierarchical norm.¹⁶⁰ No new rule is inferred rather the existing rule is expanded or contracted so that it is congruent with hierarchically superior norms.¹⁶¹ Contextual interpretation is almost the opposite of seeking legislative intent: in systematic interpretation, the legal interpretation is determined not by reference to legislative intent but squarely within the legal text itself.¹⁶²

Systematic interpretation of the law is exceptional in the common law because (for example) "courts are constitutionally limited to resolve only those issues brought before the bench, a comprehensive, systematic interpretation of the Loft Law is not to be expected."¹⁶³ It is an accepted method of interpretation in international law. For example, systematic interpretation of the U.N. charter interprets a rule "in the general structure and scheme of the Charter" [of the United Nations¹⁶⁴]. The legal rule is thus determined by comparing it with other rules established in the treaty or by referring to the entire structure of the treaty.¹⁶⁵

6. Systemic interpretation/synthetic interpretation

same word or term appears. For example, if, in the abortion question, one has to determine whether the term "life" in the constitution comprises unborn human life, one can search for the meaning of "life" in other legal texts to discover what protection "life" has received on the constitutional level. The main goal of contextual interpretation usually is the furtherance of the consistency and coherence of all relevant legal norms, that is, legal certainty. If possible, legal terms or concepts should have consistent meanings in all the places where they are being used. At the very least, their meanings should not conflict!" Winfried Brugger, *Concretization Of Law And Statutory Interpretation*, 11 Tul. Eur. & Civ. L.F. 207, 237 (1996).

¹⁶⁰ "In systematic interpretation, one attempts to clarify the meaning of a legal provision by reading it in conjunction with other, related provisions of the same section, or title, of the legal text, or even other texts within or outside the given legal system; thus, this method relies upon the unity, or at least the consistency, of the legal world." *Id.* at 396-397 (1994).

¹⁶¹ For an application of the principle of systematic interpretation see *Case Concerning Border and Transborder Actions (Nicar. v. Hond.)*, 1988 I.C.J. 69, 94 (Dec. 20); Advisory Opinion No. 13, *Competence of the International Labor Organization to Regulate, Incidentally, the Personal Work of the Employer*, 1926 P.C.I.J. (ser. B) No. 13, at 23. (Cited in Karsten Nowrot, Emily W. Schabacker, *The Use Of Force To Restore Democracy: International Legal Implications Of The Ecowas Intervention In Sierra Leone*, 14 Am. U. Int'l L. Rev. 321, 341 (1998)).

¹⁶² "logical-systematic [interpretation]... does not seek to discover the (purely subjective) intention of the legislator, but rather seeks the logical objective meaning of the statute, as an expression of the law. According to this second approach, legal texts have a meaning of their own, implicit in the signs of which they are composed, and independent of the actual or presumed will of their authors." Eduardo Garcia Maynez, *The Juridical Technique: Excerpts From Introduction To The Study* (33d ed., 1982). Translated by Robert S. Barker and republished in 30 U. Miami Inter-Am. L. Rev. 131, 141 (1998).

¹⁶³ *Franmar Infants Wear, Inc. v. Rios*, 128 Misc.2d 996, 491 N.Y.S.2d 975, 998, (N.Y. City Civ. Ct., 1985).

¹⁶⁴ *Certain Expenses of the U.N.*, 1962 I.C.J. at 162.

¹⁶⁵ "Under the systematic method of interpretation, the meaning of the norm is ascertained by comparison with other norms set forth in the treaty and by referencing the entire structure of the treaty."

Karsten Nowrot, Emily W. Schabacker, *The Use Of Force To Restore Democracy: International Legal Implications Of The Ecowas Intervention In Sierra Leone*, 14 Am. U. Int'l L. Rev. 321, 341 (1998).

In synthetic interpretation rule one ($r1$), two ($r2$)... to rule rN , whether or not hierarchically equal, imply together a new rule rule $rN+1$. Rather than interpreting rule one in the light of rule two through n , synthetic interpretation derives a new rule. Thus, $r1$ and $r2$ imply $r3$ ($r1*r2=>r3$).

Synthetic interpretations argue that we should view the law in question as one thread in a larger tapestry; as such this individual law cannot be interpreted in a vacuum. Rather we must consider the other laws which flank it in order to understand the meaning of this law within that context. Synthetic interpretation is an argument for open ended interpretations of laws which might otherwise be plain facially.

For example, reading the Nineteenth Amendment's alteration of the Fourteenth Amendment so that their combined force is to ensure constitutional equality for women is an exercise in "synthetic interpretation" of the Constitution.¹⁶⁶ Namely the interpreter synthesizes two or more legal texts into a whole which in fact may be greater than the each part because those two parts work together synergistically.¹⁶⁷ Systemic interpretation in international laws will "focus on the aims of the treaty and its institutional objectives"¹⁶⁸.

7. Maxims of Legal Interpretation

We now look at methods of legal interpretation presented as maxims of law. These interpretive methods are all represented in the program which accompanies the article.

The number of interpretive methods, their occasional mutual contradiction, and the absence of rules for prioritizing them hierarchically is problematic for the rule of law. Judges could argue that the hierarchies of these rules are determined by customary law. But even if true, appealing to common sense and the common law to hierarchize these interpretive rules permits a voluntarist judge to impose his subjective will on the supposedly objective process.

a. Expressio Unius

¹⁶⁶ See Bruce Ackerman, *Constitutional Politics/Constitutional Law*, 99 Yale L.J. 453, 459 (1989).

¹⁶⁷ See, L. Allen & M. Caldwell, *Modern Logic and Judicial Decision Making: A Sketch of One View*, 28 Law and Contemporary Problems 213, 226 (1963).

¹⁶⁸ Michael H. Lane, *International Trade Customs Modernization and the International Trade Superhighway*. 95-96 (1998).

Expressio unius est exclusio alterius is a specific type of grammatical interpretation.¹⁶⁹ It is synonymous with *inclusio unius est exclusio alterius*.¹⁷⁰ It is a rule of statutory construction. It can be summarized as holding that "the express mention of one thing implies the exclusion of another".¹⁷¹

Thus „where a law expressly describes a particular act, thing or person to which it shall apply, an irrefutable inference must be drawn that what is omitted or not included was intended to be omitted or excluded“. ¹⁷² Further, *expresio* can also be applied to other similar statutes: „explicit direction for something in one provision, and its absence in a parallel provision, implies an intent to negate it in the second context“¹⁷³.

In sum, where the legislator gives a list of exceptions to a rule that list shall be considered exclusive.¹⁷⁴ However, *expressio unius* is subject to legislative intent: where the legislative intent is clearly contrary, *expresio unius* will not apply.¹⁷⁵ Thus some of the interpretive rules are explicitly hierarchized - this does not however appear to be the case for all the interpretive rules in the common law.

b. Exceptio firmat regulam in casibus no exceptis

Exceptio firmat regulam in casibus non exceptis (An exception affirms the rule in cases not excepted).¹⁷⁶ This maxim appears to be a reformulation of *expressio unius*.¹⁷⁷

c. Eiusdem generis

¹⁶⁹ *Burgin v. Forbes*, 293 Ky. 456, 169 S.W.2d 321,325; *Newblock v. Bowles*, 170 Okl. 487, 40 P.2d 1097, 1100.

¹⁷⁰ *Palmer v. Fleetwood Enterprises, Inc.*, 2003 WL 21228864, Nonpublished/Noncitable, (Cal. Rules of Court, Rules 976, 977), , Cal.App. 3 Dist., May 28, 2003.

¹⁷¹ *Manchin v. Dunfee*, 174 W. Va. 532, 327 S.E.2d 710 (1984); see also *State ex rel. Riffle v. Ranson*, 195 W. Va. 121, 128, 464 S.E.2d 763, 770 (1995) "Expressio unius est exclusio alterius (express mention of one thing implies exclusion of all others)".

¹⁷² *People v. Aarons*, 305 A.D.2d 45, 759 N.Y.S.2d 20, 2003 N.Y. Slip Op. 13374, (N.Y.A.D. 1 Dept., Apr 24, 2003).

¹⁷³ *Clinchfield Coal Co. v. FMSHRC*, 895 F.2d 773, 779 (D.C. Cir. 1990).

¹⁷⁴ See *People v. Municipal Court* (Runyan) 20 C.3d 523, 551, 143 C.R. 609, 574 P.2d 425 (1978).

¹⁷⁵ See *In re Joseph B.* 34 C.3d 952, 957, 196 C.R. 348, 671 P.2d 852 (1983).

¹⁷⁶ *William W. Wyer, Plaintiff V. Board Of Environmental Protection, And State Of Maine*, Defendants. 1999 Me. Super. LEXIS 135, 15 (1999).

¹⁷⁷ See, *Bankers Sec. Life Ins. Soc. v. Kane*, 689 F.Supp. 1164, S.D.Fla., Jun 27, 1988.

Where specific words enumerate persons or things, general words following them are not to be construed in their widest sense but rather are limited to apply only to persons or things of the same class specifically mentioned. The general words following the specific words shall be interpreted no more generally than the specific preceding words. Thus *ejusdem generis* is a type of syntactic argument. In fact it closely resembles *expresio unius* but appears to refer to contracts rather than statutes.¹⁷⁸

d. *Generalibus specialia derogant*

Where two rules hierarchically rules of law conflict with each other one using specific terms, and the other general terms, any conflict in interpretation resulting is resolved by determining that the special section is controlling: this is summarized in the maxim: *Generalibus specialia derogant* - Special provisions derogate from general ones.¹⁷⁹ "Where the special statute is enacted after the general statute, the applicable maxim of statutory interpretation is '*generalibus specialia derogant* (special things take from general)'"¹⁸⁰ Thus, "The general principle to be applied to the construction of acts of Parliament is that a general act is not to be construed to repeal a previous particular act, unless there is some express reference to the previous legislation on the subject, or unless there is a necessary inconsistency in the two acts standing together."¹⁸¹ Because, "the legislature having had its attention directed to a special subject, and having observed all the circumstances of the case and provided for them, does not intend by a general enactment afterwards to derogate from its own act when it makes no special mention of its intention so to do."¹⁸²

e. *Lex posterior derogat legi priori lex posterior derogat anterior/lex posterior derogat priori*

The maxim *lex posterior derogat priori* states that „between an earlier and a later law, the later prevails.“¹⁸³ At first this may seem to be in conflict with the maxim *expresio unius*. Consequently a brief explanation of why that is not in fact the case seems warranted.

¹⁷⁸ See, e.g., *U.S. v. LaBrecque*, D.C.N.J., 419 F.Supp. 430, 432; *Aleksich v. Industrial Accident Fund*, 116 Mont. 127, 151 P.2d. 1016, 1021.

¹⁷⁹ *Holloway v. Henderson*, 203 Ala. 246, 82 So. 344 [(1919)]; *McFountain v. State*, 203 Ala. 329, 83 So. 53 [(1919)], and cases cited; *Ex parte Central Iron Co.*, 209 Ala. 22, 95 So. 472 [(1923)]; *Herring v. Griffin*, 211 Ala. 225, 100 So. 202 [(1924)].

¹⁸⁰ *Bank of Montreal v. Signet Bank* (C.A.4, 1999), 193 F.3d 818, 833; *Blue Mountain Serv. Corp. v. Zlateff* (1989), 53 Wn. App. 690, 694, fn. 1, 769 P.2d 883; *Brown Paper Mill Co., Inc. v. Commr. of Internal Revenue* (C.A.5, 1958), 255 F.2d 77, 79.

¹⁸¹ *Bovill, C.J., Thorpe v. Adams*, L.R. 6 C.P. 135.

¹⁸² *Bovill, C.J., Thorpe v. Adams*, L.R. 6 C.P. 135.

¹⁸³ *Gouveia v. Vokes*, 800 F.Supp. 241, 250-251 (E.D.Pa., 1992).

One argument against the binding authority of legal maxims is that they are contradictory.¹⁸⁴ However the author's research reveals that this is generally not the case. Several methods at first glance do seem redundant: *ejusdem generis*, *generalibus specialia derogant*, *exceptio firmat regulam in casibus no exceptis*, *expressio unius est exclusio alterius* (or *inclusio unius est exclusio alterius*): They but all appear to express the idea that a posterior general statute must be contextualized by the prior specific statute such that the general instances in the second statute (or contract in the case of *ejusdem generis*) may not be interpreted more generally than, or in conflict with, the prior statute absent express legislative intent.

The maxim of *lex posterior derogat priori* might at first appear to be in conflict with the maxim *expressio unius*. But we must remember that just as we read statutes so that they are not in conflict with each other or with the constitution so must we also read maxims. *Lex posterior* states that a later law will supplant an earlier law. It expresses the general case. Thus a true example of *lex posterior* is the case where the prior law is simply abrogated completely (the general rule). *Expresio unius* is then the special case where the prior law addresses the subject with specific terms and is followed by a later statute which expresses the subject in more general terms. Further this can be seen as a fair interpretation when we see that *expresio unius* only applies where no specific legislative intent can be found to overturn the earlier law. Finally, these maxims all serve to implement the democratically elected legislature and operate according to predictable rules of formal logic. Thus, though the maxims do not always have express hierarchies such hierarchization can be derived.

f. Concretisation

Concretization is essentially a principle of administrative law interpretation according to which the judge takes a function of „filling gaps“ to help realise the legislative scheme for the administrative agency. Concretization views laws, particularly laws which determine administrative procedures, as foundational bricks and mortar and regards the decisions of administrative courts as being the mortar which fills in the open texture of the foundational laws. One judge states:

¹⁸⁴ Karl Llewellyn, *The Common Law Tradition* 371 (Little, Brown & Co. 1960) (discussing the pairing of mutually contradictory maxims of statutory interpretation, designed to show the unfeasibility of the formalist approach).

"I view the process of administrative rule-making that sharpens the line between acceptable and nonacceptable conduct as akin to what jurisprudence does in concretizing the norms of a statute by judicial decision-making that addresses itself to specific case scenarios. The term is derived from Hans Kelsen's *General Theory Of Law And State* 119, 135, 397 (1945) (reprinted 1961). Kelsen explained the concept of concretization in the following passage:

‘From a dynamic standpoint, the individual norm created by the judicial decision is a stage in a process beginning with the establishment of the first constitution, continued by legislation and custom, and leading to the judicial decisions. The process is completed by the execution of the individual sanction. Statutes and customary laws are, so to speak, only semi-manufactured products which are finished only through the judicial decision and its execution. The process through which law constantly creates itself anew goes from the general and abstract to the individual and concrete. It is a process of steadily increasing individualization and concretization.’¹⁸⁵

g. Actor Incombit Probari

This argument is merely the statement of the general principle that the moving party must bear the burden of proof. As such it is a part of every method previously considered and is only mentioned here so that the practitioner does not forget to include it.

h. Dura lex sed lex

Dura lex, sed lex is an early maxim which in fact states legal positivism. For positivists, the law is the law is the law and as such the court is bound to obey it regardless of the consequences since the function of the court is merely to adjudicate and not to make law. An argument of *dura lex, sed lex*, is not very persuasive before contemporary courts.¹⁸⁶

B. Formal Methods of Interpretation

¹⁸⁵ *Oklahoma, v. Keating*, 1998 OK 36;958 P.2d 1250;1998 Okla. LEXIS 40, 53;69 O.B.A.J. 1672 (1998). Also see: *Federal Trade Commission V. Ruberoid Co.*, 343 U.S. 470;72 S. Ct. 800;96 L. Ed. 1081;1952 U.S. LEXIS 2627;1952 Trade Cas. (CCH) P67,279 (1952) ("The right or obligation results not merely from the abstract expression of the will of Congress in the statute, but from the Commission's completion and concretization of that will in its order."). (Citing Kelsen); *State v. Martin*, 532 P.2d 316, 323 (Alaska 1975) (holding that 'absent judicial concretization, the ordinary citizen desiring to comply with the law would be forced to speculate' about the laws impact on him); *In re Grayson-Robinson Stores, Inc.*, 321 F.2d 500, 502 (2d Cir. 1963) (holding that concretization uses the specific facts of a particular situation to give appropriate meaning to judicial decisions); *United States v. Articles of Drug Labeled Colchicine*, 442 F. Supp. 1236, 1241 (S.D.N.Y. 1978).

¹⁸⁶ See, e.g. *In Re: Arturo Cobos, Julia Cobos And The City Of Edinburg*, 994 S.W.2d 313;1999 Tex. App. LEXIS 4129, 6 (1999).

Just as the „realist“ (in the constitutional context „interpretivist“) methods tend to „open up“ interpretation to allow creative lawyering and judging, so do „formalist“ (in the constitutional context „originalist“) arguments reduce the possible range of applications of a legal rule. Rightly or not, just as „realism“ is seen as „left wing“, „formalism“ is seen as „conservative“.

1. Deductive argument (syllogism)

Deductive Argument reasons from general principles to specific instances.¹⁸⁷ Statutory interpretation is often a type of deductive argument: the statute provides a general rule and the specific facts of the case are argued as fitting the rule. In common law courts that is about the extent of deductive argument - and indeed, courts sometimes make errors in logic.¹⁸⁸ However in civil law, deductive reasoning by the court plays the principle role. In

¹⁸⁷ "The syllogism, which is in the form of a 'categorical syllogism,' suffers from the classic fallacy of the 'undistributed middle.' An essential rule in deductive reasoning is that what is known as the 'middle term' in a categorical syllogism must be distributed, that is, referred to in its entirety, in at least one premise. See D. Lind, *Logic and Legal Reasoning* 130 (2001). The rationale underlying this rule is described as follows: Professor Copi [I. Copi, *Introduction to Logic* (7th ed. 1986)] has reminded us that the conclusion of any syllogism asserts a connection between two terms. This connection is justified only if those terms --the major and minor terms--can be connected with each other through or by means of the middle term. For the two terms that become part of the conclusion to be connected through a third, at least one of the two must be related to the whole of the class designated by the third or middle term. Otherwise each may be connected with a different part of the class and not necessarily connected with each other at all.

It is critical, therefore, that the middle term encompass a larger universe than the minor term. Compared then to the minor term, which reflects only part of the class, the middle term is considered 'distributed.' If the middle term does not represent the larger portion of the class being considered, and represents or is equivalent to the portion represented by the minor term, we say that the middle term is 'undistributed.' When this occurs the connection to the conclusion cannot be justified; when this occurs we have the fallacy of the undistributed middle. To put it in a formula, the fallacy occurs whenever it is argued that because x and y belong to the same class or possess a common property, they are identical. Some examples of the fallacy may help. Because business executives read the Wall Street Journal, a man who reads the Journal is a business executive. The ACLU supports the Democratic ticket; therefore, all those supporting the ticket adhere to ACLU causes. R. Aldisert, *Logic for Lawyers: A Guide to Clear Legal Thinking* 148 (1989) If neither premise refers to the whole of the class represented by the middle term, the argument commits the fallacy of the undistributed middle." *Colorado, v. Martinez*, 51 P.3d 1046;2001 Colo. App. LEXIS 2161, 11 (Colo. App. Div. 1, 2001).

¹⁸⁸ For an example of clearly erroneous misapplication of the U.S. federal appeals court see, *Miller, Kissiah And Margulies V. Champion Enterprises and Young* 346 F.3d 660;2003 U.S. App. LEXIS 20431, 22;2003 FED App. 0359P (6th Cir., 2003). There the court misapprehends the distinction between inductive and deductive inference. Deductive inference leads to necessary truths provided the major and minor premises are well formed. Probabilistic reasoning, which the court in Miller subsumes into deductive reasoning is a mode of inductive inference. It is not a form of deductive inference. The court states: "In *Vencor*, we provided a definitive explanation of the meaning of a 'strong inference': Inferences must be reasonable and strong--but not irrefutable. 'Strong inferences' nonetheless involve deductive reasoning; their strength depends on how closely a conclusion of misconduct follows from a plaintiff's proposition of fact. [emphasis added to point out

civil law courts it is essential to argue deductively from generally recognized principles of law to determine outcomes in specific cases. Deductive argument plays a much greater role in civil law jurisdictions than inductive argument in common law jurisdictions and vice versa. Since deductive argument is a form of syllogistic (propositional) logic and uses formal methods such as modus ponens, the rule of identity etc., deduction (as opposed to inductive or probabilistic logic) it is possible to accuse (in my opinion unjustly) deductive reasoning of "formalism".

2. Bright line tests

Bright line tests are merely „either-or“ binary tests of a sort „either guilty or innocent“ dependant on fixed objective indicia. They derive of course from the Aristotelian axiom of identity $A=A$ and of non contradiction A or not A .

To a realist, bright line tests are the essence of elevating form over substance.¹⁸⁹ To the formalist, bright lines, essential to legal certainty, are the bulwark of the rule of law, for law must be foreseeable to be valid both in the sense of its own legitimacy and in the sense of an effective admonition to potential law-breakers prior to the fact. Whether a judge is "formalist" or "realist" will of course influence whether they are likely to respectively apply or bypass bright line tests.

3. Analogical argument

Arguments by analogy hold that the decision in case A should apply to case B because cases A and B have several facts in common and the points which they do not have in common are essentially irrelevant to the applicability of the decision. Analogical arguments have the form:

$A \Rightarrow X$

$A \sim B$

error] Plaintiffs need not foreclose all other characterizations of fact, as the task of weighing contrary accounts is reserved for the fact finder. Rather, the 'strong inference' requirement means that plaintiffs are entitled only to the most plausible of competing inferences. 251 F.3d at 553." Moreover, the court in *Helwig V. Vencor*, 251 F.3d 540; 2001 U.S. App. LEXIS 11236, 30; Fed. Sec. L. Rep. (CCH) P91,445 (6th Cir., 2000) makes the exact same error!

¹⁸⁹ See, e.g., Duncan Kennedy, *Form and Substance in Private Law Adjudication*, 89 Harv. L. Rev. 1685 (1976).

B => X¹⁹⁰

The argument of analogy is that likes should be treated alike. That is:

"Legal analogy is conceived as a process of generation of a hypothetical rule, which supplies the lack of law for a certain particular case. In other words, legal analogy is said to be an act of replacing a requirement A of statute rule A=>X by other requirement B to generate a hypothetical rule for a given case, provided these two requirements are similar with respect to some important legal aspects."¹⁹¹

Analogical reasoning is central to the common law but is not at all peripheral to civil law systems where it does appear as well though perhaps not as frequently. However:

"Logicians teach that one must always appraise an analogical argument very carefully. Several criteria may be used: (1) the acceptability of the analogy will vary proportionally with the number of circumstances that have been analyzed; (2) the acceptability will depend upon the number of positive resemblances (similarities) and negative resemblances (dissimilarities); or (3) the acceptability will be influenced by the relevance of the purported analogies.

For Appellants to draw a proper analogy, they had the burden in the district court, as they do here, of showing that the similarities in the facts of the two cases outweigh the differences."¹⁹²

4. Proof by contradiction (*reductio ad absurdum*)

Reductio arguments are elegant and powerful in simplicity but in the author's opinion - and that of some courts¹⁹³ - they are somewhat risky as they depend on the truth of all

¹⁹⁰ Hajime Yoshino *Towards a Legal Analogical Reasoning System: Knowledge Representation and Reasoning Methods*, Proceedings of the fourth international conference on Artificial intelligence and law, p. 110 New York: ACM (1993) (1993 ACM 0-89791-606-9/93/0006/00110) available at: http://portal.acm.org/ft_gateway.cfm?id=158990&type=pdf&coll=GUIDE&dl=ACM&CFID=35102182&CF_TOKEN=22624914

¹⁹¹ Id. at 110.

¹⁹² *In Re: Linerboard Antitrust Litigation*, 305 F.3d 145;2002 U.S. App. LEXIS 18296, 31-32;2002 Trade Cas. (CCH) P73,790;53 Fed. R. Serv. 3d (Callaghan) 999 (3d. Cir. 2002), citing *Irving M. Copi & Keith Burgess-Jackson, Informal Logic* 166 (3d ed. 1996); Arthur L. Goodheart, Determining the Ratio Decidendi of a Case, 40 Yale L.J. 161, 179 (1930); John H. Wigmore, *Wigmore's Code Of The Rules Of Evidence In Trials At Law* 118 (3d ed. 1942); John Stuart Mill, *A System Of Logic Ratiocinative And Inductive* 98-142 (8th ed. 1916) („Two things resemble each other in one or more respects; a certain proposition is true of one; therefore it is true of the other.).

presumptions in the argument. Essentially, an argument by *reductio* presumes the opposite of what is to be proven, and shows that that presumption leads to a logical impossibility (in theoretical terms) or to an absurdity (in practical terms). Vulgar forms of this argument can be criticized as mere tautologies which only assert the position of the opponent is ludicrous. However, well-formed *reductios* grant the opponents major premise but show that that premise entails a conclusion which is either logically impossible or practically ridiculous. That is the risk of the *reductio*: one grants an opponent's premise, an undesirable move generally, but here a gambit. If the gambit succeeds the argument is generally won. If it fails, it will likely be lost.

5. Inductive Argument

Arguments by induction - the principal engine of common law reasoning,¹⁹⁴ but only secondary in the civil law¹⁹⁵ - are similar to arguments by analogy. Inductive logic, reasoning from particular instances to general rules is the opposite of deductive logic, which is reasoning from general rules to particular cases.¹⁹⁶ Both are admissible forms of

¹⁹³ "*Reductio ad absurdum* arguments frequently are untrustworthy, and this one should be examined with care. Cf. J. Parreco & Son, 567 A.2d at 46 (warning against judicial overeagerness to invoke the "absurd result" doctrine as a guide to construction)." *Antoinette Richardson, Appellant, V. Nationwide Mutual Insurance Company, Appellee*. 826 A.2d 310;2003 D.C. App. LEXIS 418, 117 (D.C. Ct. App., dissenting opinion, 2003).

¹⁹⁴ "The engine of the common law is inductive reasoning. It proceeds from the particular to the general. It is an experimental method which builds its rules in tiny increments, case-by-case. It is cautious advance always a step at a time. The essence of its method is the continual testing and retesting of its principles in "those great laboratories of the law, the courts of justice" (Smith, Jurisprudence, p. 21)" 28. *Hearst Corp. v. Clyne*, 50 N.Y.2d 707, 717, 409 N.E.2d 876, 431 N.Y.S.2d 400 (N.Y., 1980).

¹⁹⁵ See, e.g., Charles H. Koch, Jr., *Envisioning A Global Legal Culture*, 25 Mich. J. Int'l L. 1, 55 (2003)

¹⁹⁶ „Logic is the branch of philosophy which attempts to determine when a given proposition, or a group of propositions, permit us to correctly infer some other proposition or conclusion. Logic has two branches: deductive logic and inductive logic. Deductive logic or argument deals with the rules for determining when an argument is valid; that is with reasoning which attempts to establish conclusive or ‘valid‘ inferences. On the other hand, inductive logic or argument is not concerned with ‘valid‘ or conclusive inferences but is any argument whose premises provide some, but not absolute support for, a conclusion. Therefore, the conclusion of every inductive argument is merely probable, given the truth of the premises (propositions or evidence) upon which it is based. Inductive reasoning is sometimes called ‘scientific‘ or ‘probability‘ theory or ‘natural‘ reasoning, and is concerned with the rational but inconclusive relation between evidence and a conclusion drawn from the evidence. Inductive logic or argument is always involved when reasons (evidence) provides some but not absolute, support for the truth of a given conclusion. It is always involved in the factual aspect of a trial where the objective is to establish the truth as to certain evidentiary propositions and from those propositions to draw or infer a conclusion as to the truth of some ultimate fact, such as the guilt or innocence of the accused in a criminal case. Much of the difficulty with the legal analysis of the difference between the sufficiency of the evidence and the weight of the evidence in a circumstantial evidence case arises from a lack of appreciation for the substantial difference in nature between deductive reasoning, which is usually used to solve legal problems by use of an authoritarian major premise and inductive reasoning which is founded on natural laws relating to cause and effect and the normal association of facts and events in nature and human affairs.“ *Dunn v. State*, 454 So.2d 641, 646 Fla.App. 5 (Fl. App.1984)

reasoning in the common law¹⁹⁷ though deduction generally corresponds to statutory law and induction to case law.

In an inductive ampliation we infer a general rule to govern a series of similar cases from the fact that that series of cases had both a similar rule and similar facts. Sometimes the common law is presented as being ampliative. However knowing the conservatism of judges and the dislike of the common law for deductive reasoning - at least outside of legislation - the better view is that common law case based reasoning is strictly based on analogy and does not, generally, amplify new propositions from existing cases. Though the highest court clearly does amplify new rules in exactly this way, the lower courts tend not to and the circuit courts not at all. Inductive ampliation and reasoning by analogy are similar but not the same. In ampliation we infer a new rule from an existing set of cases and rules. In reasoning by analogy we apply the rule in one case to determine the rule in another case due to their factual similarity.¹⁹⁸ No new rule is inferred in the case of reasoning by analogy, unlike inductive ampliation.

C. Realist Legal Methods

The following arguments can be considered „realist“ as many of them - for example, probabilistic reasoning, have only come to be accepted in the last century and further because they tend to „open up“ the interpretation to allow application to new cases or even to create new rules altogether.

¹⁹⁷ "evidence can be either direct or circumstantial; that we can establish truth via inductive reasoning, as well as by deductive reasoning." *Rosanna P. Wilson Versus Piccadilly Cafeterias, Inc.* (La. Ct. App. 1st Cir., 1998) 739 So. 2d 802;1998 La. App. LEXIS 3960, 4.

¹⁹⁸ "The government's argument is bottomed by what logicians call inductive reasoning by analogy, or reasoning from one particular case to another. To draw a proper analogy between two entities is to indicate one or more respects in which they are similar and thus argue that the legal consequence attached to one set of particular facts may apply to a different set of particular facts because of the similarity of the two sets. We are satisfied that the government has met its burden. We believe that the facts in the case at bar closely resemble those in *Drayton*. " *United States Of America V. Homero C. Tapia*, 309 F.3d 1283;2002 U.S. App. LEXIS 23261, 13-14. (10th Cir. 2002); „For Appellants' argument to prevail, therefore, they must demonstrate that the facts in *Newton* are substantially similar to the facts in the case at bar, what logicians call inductive reasoning by analogy, or reasoning from one particular case to another. To draw an analogy between two entities is to indicate one or more respects in which they are similar and thus argue that the legal consequence attached to one set of particular facts may apply to a different set of particular facts because of the similarities in the two sets. Because a successful analogy is drawn by demonstrating the resemblances or similarities in the facts, the degree of similarity is always the crucial element.“ *In Re: Linerboard Antitrust Litigation* (MDL No. 1261), 305 F.3d 145;2002 U.S. App. LEXIS 18296, 30-31;2002 Trade Cas. (CCH) P73,790;53 Fed. R. Serv. 3d (Callaghan) 999 (3d. Cir. 2002).

1. Probabalistic reasoning

The classical problem of joint tortfeasors presents an ideal foil for exposition of probabalistic reasoning. Probabalistic reasoning occurs when we have several potential tortfeasors, a definite victim, and an instrumentality common to all tortfeasors. The idea is to argue that each potential tortfeasor should be held liable even though the cause in fact of the damage cannot be proven to avoid the absurd result of non-liability which would otherwise occur. This is sometimes referred to as „market share liability“. Probabalistic arguments are also made in cases of multiple causation or mutual causation - for example, in comparative negligence regimes where the plaintiff and defendant both partially contributed to the resulting accident.

Probabalistic reasoning looks at stochastic processes in order to determine what is most likely to have happened. For example, if a plaintiff has 90% of the market share of a product,¹⁹⁹ say asbestos. Defendant suffers from injuries resulting from exposure to asbestos. A probabalistic argument would hold that, if the actual source of the asbestos could not be proven (due, say, to multiple exposure to various potential sources over several years) then the defendant should be held liable in proportion to the likelihood that their product caused the injury. Supposing that there was a 80% likelihood that the injury was in fact caused by asbestos. Then the defendant would, using probabalistic reasoning, be liable for 72% of the damages to plaintiff (90% of 80%). Thus the strength of the argument is proportionate to its probability.²⁰⁰ A probabalistic proof need not, as illustrated above, be 100% certain:

"Proof of a material fact by inference from circumstantial evidence need not be so conclusive as to exclude every other hypothesis. It is sufficient if the evidence produces in the mind of the trier a reasonable belief in the probability of the existence of the material fact."²⁰¹ Inferences are determined as valid or not depending on whether the inference is "so

¹⁹⁹ See, *Sindell v. Abbot Laboratories*, 26 Cal.3d 588, 163 Cal.Rptr. 132, 607 P.2d 924, cert. denied, 449 U.S. 912, 101 S.Ct. 285, 66 L.Ed.2d 140 (1980).

²⁰⁰ "In law (as elsewhere), this level of certainty derives, as discussed, from (1) the strength of our belief that the facts supporting the conclusion are true; and (2) the weight of the correlation between the facts and the conclusion." (Citation omitted; internal quotation marks omitted.) *Goldhirsh Group, Inc. v. Alpert*, 107 F.3d 105, 108 (2d Cir. 1997).

²⁰¹ *State of Connecticut v. David L. Copas*, 252 Conn. 318; 746 A.2d 761; 2000 Conn. LEXIS 54, 36-38 (Supreme Court Of Connecticut, 2000., citing *Service Road Corp. v. Quinn*, 241 Conn. 630, 641, 698 A.2d 258 (1997); accord *Pierce v. Albanese*, 144 Conn. 241, 256, 129 A.2d 606, appeal dismissed, 355 U.S. 15, 78 S. Ct. 36, 2 L. Ed. 2d 21 (1957).

unreasonable as to be unjustifiable."²⁰² That is, an inference may be merely supported by the evidence and does not need to be compelled by the evidence as the only possibility.²⁰³ Juries are permitted to „chain“ several inferences into a series of inferences leading to a conclusion which would not be supportable if the inferential chain's elements were viewed separately.²⁰⁴ A jury is free to make inculpatory as well as exculpatory inferences.²⁰⁵

2. Comparative argument

The essence of comparative argumentation is that the courts of this jurisdiction should be willing to compare the decisions of other jurisdictions in making their determinations as to what the law is or should be. For example, in *Geddes & Lawrence v. Texas*²⁰⁶, the U.S. Supreme court considered decisions of the European Court of Human rights in reaching the decision that criminalization of homosexual acts was unconstitutional. Comparative method was also used by the Supreme Court in *Eastern Airlines, Inc. v. Floyd*²⁰⁷, to determine the interpretation of the French words *lésion corporelle* in a treaty to which the U.S. was a signatory and in which French was the official language. Similarly the *Pinochet*²⁰⁸ cases in Britain cited extensively to U.S. decisions as persuasive evidence of British law as to immunity, comity and other common law doctrines relevant to international law.

3. Teleological argument (also called logical interpretation)

Teleology, also known as final causality,²⁰⁹ is the idea of Aristotle that objects contain within themselves the blueprints of their own ultimate development. Thus, the teleology of an acorn is a mighty oak; The teleology of a boy is a man. Legal teleology argues that law

²⁰² *State v. Ford*, 230 Conn. 686, 692, 646 A.2d 147 (1994).

²⁰³ *State of Connecticut v. David L. Copas*, 252 Conn. 318;746 A.2d 761;2000 Conn. LEXIS 54, 37 (Supreme Court Of Connecticut, 2000).

²⁰⁴ *State v. Crafts*, supra, 226 Conn. 244.

²⁰⁵ *State v. Stanley*, 223 Conn. 674, 681, 613 A.2d 788 (1992).

²⁰⁶ *Geddes & Lawrence v. Texas* 539 U.S. 2003.

²⁰⁷ 499 U.S. 530 (1991).

²⁰⁸ See, e.g., *Regina v. Bartle and the Commissioner of Police for the Metropolis and others ex Parte Pinochet* (House of Lords) (25 November 1998) available at:

<http://www.parliament.the-stationery-office.co.uk/pa/ld199899/ldjudgmt/jd981125/pino01.htm>

²⁰⁹ Journal of Law and Religion Book Review Essay *John Courtney Murray and the American Civil Conversation*, 10 J.L. & Religion 589 (1993).

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serves as an intermediate to the ultimate end of justice²¹⁰, whether distributive (also known as 'geometric' or 'social' justice)²¹¹ or commutative (also known as 'arithmetic' or 'transactional' justice).²¹²

For example, a teleological argument of criminal law would hold that the purpose of a criminal law is not merely to deter and punish but also to correct so that the criminal reaches their full human potential. Teleological arguments have appeared in areas of law as diverse as equal protection jurisprudence²¹³ and banking law - and teleological argument can trump literal arguments.²¹⁴

4. Multi-factor interest balancing tests

Multi-factor interest balancing tests are the interpretive tool which epitomizes legal realist thinking. In such test the court weighs the interests of all relevant parties - not necessarily merely the interests of the plaintiff and defendant. The court then determines the relevant weight of these various interests and then determines which group of interests is predominant and uses this preponderation to determine whether and how the law applies. Multi-factor interest balancing tests however can be easily manipulated. First, the question is: which parties interests should be balanced (and why?). Then which interests should be considered in the balance (and why?). Finally, what weight should be applied to the various interests to be balanced? The competing interests are generally not specified by the legislator - the weights to be applied certainly are not. Multi-factor balancing tests allow judges to manipulate legal outcomes by a) selection of persons with interests to be considered b) selection of interests of relevant parties to be considered c) determination of

²¹⁰ "law itself is a teleological endeavor, and that its purpose is to guide people as they go about their daily activities. As such, the law should be clear and understandable, for how can people follow its dictates if it is not? If you take away that clarity to a sufficient extent, it is proper to question whether you are dealing with law at all, as opposed to raw power. In that regard, see, Lon J. Fuller, *The Morality of Law*, (Yale University Press, 1964)." 21. *U.S. v. General Dynamics Corp.*, 644 F.Supp. 1497, 1500; 33 Cont.Cas.Fed. (CCH) P 75,070, (C.D.Cal.,1986).

²¹¹ See, Aristotle, *Nicomachean Ethics*, Book V. (c. 350 B.C.)

²¹² *Id.*

²¹³ „To demonstrate a violation of the equal protection clause, the movant must prove that a classification is ‘wholly arbitrary or does not teleologically relate to a permissible government objective.’“ *Kite v. Marshall*, 661 F.2d at 1030.

²¹⁴ "We recognize that we are interpreting section 1729(c)(2) teleologically, not literally. That is, our interpretation is guided by a desire to fit the section to nonhostile situations in which the Bank Board and the state authority concur in the need to accomplish quickly and smoothly the imposition of a federal receivership of a state savings and loan association. To frustrate this joint desire by insistence upon ceremonies that are meaningless, at best, and financially dangerous, at worst, strikes us as unwise." *Fidelity Sav. and Loan Ass'n v. Federal Home Loan Bank* 689 F.2d 803, 813, (9th Cir. 1982).

weight to be attached to the relevant interests of relevant persons. Multi-factor interest balancing tests are the principal vehicle of judicial activism (for realists) and judicial legislation (for formalists).

The irony is, one of the principal critiques of the legal realists was that formal logic was manipulable and used to conceal judicial legislating. Further, the selection of relevant persons, interests and the weight thereof also opens up balancing tests to criticism as being unforeseeable, manipulable, subjective and unjust. These criticisms can only be answered by introducing economic and policy arguments into legal balancing tests.

5. Economic and Policy Arguments

One key problem in balancing of competing interests - particularly in a world of moral scepticism - is assigning a relative value to each interest to be considered in the balance. This representation can either be done using logical operators of comparison (greater than, less than, positive, negative) or by determining numerical values of each interest. Both approaches merely displace the problem of determining the relative importance of competing interests. At least the values of an interest can be objectively defined (sometimes) in a market context: where goods are fungible and markets clear due to minimum transaction costs and nearly perfect information competing interests can be evaluated and balanced by market forces, either directly on the open market or indirectly through courts. We thus now examine economic and policy arguments, for policy arguments will show themselves to be often - not always - themselves determined by market forces.

a. Economic argument

Economic arguments are extremely popular in the United States „[T]he common law is best explained as if the judges were trying to maximize economic welfare. Common law adjudication brings the economic system closer to the results that would be produced by effective competition - a free market operating without significant externality, monopoly, or information problems.“²¹⁵ Of course that ignores entirely the Marxian critique, seemingly born out by giant companies such as Standard Oil and Microsoft, that the natural tendency of capital is to monopoly due to economies of scale enjoyed by large established

²¹⁵ Richard Posner, *The Economics of Justice*, Cambridge: Harvard Univ. Press, p. 4-5 (1981).

businesses and entry costs for new businesses. One can thus criticize law and economics of suffering from reductionism: it reduces complex transactions to one fungible standard, money. In fact not all transactions are fungible. Not all values are quantifiable. Nor is there a market for all possible transactions. Thus the reductionist position of economic arguments can lead to theoretical absurdities. Naturally, there is a place for qualified economic arguments, namely where those arguments are contextualized by other values which are not transferrable or quantifiable. However the singular success of economic arguments in the United States has led to a commodification of law which ignores non-market values causing injustice and was probably in no small part the result of the collapse of the idea of objective morality due to competing versions of morality posited by realists and formalists undermined simultaneously by moral relativists claiming to be following the ideas of Hume and Nietzsche.²¹⁶

For the above reasons, though market arguments will be at least considered in other common law countries, in most civil law countries they are viewed, rightly, with skepticism. Market arguments are merely one tool for crafting justice, and not even the best one. Formal logic plays a much greater role in law courts than market forces.

b. Policy Arguments

Arguments from policy are a sort of teleological argument. They look at the goals served by the laws in order to interpret the meaning of the law. However, if policy arguments are to avoid question begging then we need to determine what the exact policy or policies are that justify the interpretation.

One legal policy goal is legal certainty. Legal certainty is favored because disputes must, for economic reasons, end. Legal disputes are one transaction cost and thus influence the marketplace. Sometime those influences are necessary and good. At other times they are inefficient. Thus legal certainty is really an argument about economic efficiency: legal rules should be final and determinable to reduce transaction costs in order to encourage the devotion of resources to production of new goods rather than redistribution of existing goods.

²¹⁶ See, e.g., Friedrich Nietzsche, *Antichrist; Beyond Good and Evil*. See David Hume, *A Treatise Of Human Nature*, Book III, Part I § 1.

A similar policy argument is judicial economy. Arguments of judicial economy state that the judiciary has limited resources to deal with manifold problems. Consequently, an argument from judicial economy argues that the judiciary should not answer a given legal question or should answer it only under particular circumstances in order to conserve limited judicial resources. Again, this is in fact an economic argument: an argument from judicial economy is simply a question of the proper distribution of limited resources, which is regarded as the central question of economics.

Similarly, policies of economy argue that the law should favor the conservation of scarce resources. While most environmental lawyers might at first be surprised, environmental law is also economic, for it concerns itself with the conservation of precious limited resources. Arguments from economy, i.e. cost-cutting and savings arguments, occur throughout the law and are in no wise limited to environmental law questions. Here the question is not wealth creation or distribution but wealth preservation.

„Free market“ arguments are another common policy argument, most notably in the United States. The argument here is that the law should encourage market forces to operate freely, generally allowing the law of supply and demand to drive the economy. Not only the (often fictional) autonomy of parties speaks in favor of freedom of contract. So also does the fact that contract law creates the conditions necessary for market exchange explains why freedom of contract is a fundamental principle of contract law.

Similarly, policy arguments that hold that the law should encourage the production of wealth run throughout law, and most particularly throughout the common law. In contrast, policies of equitable wealth distribution, while figuring relatively prominently in European national legal systems including to some extent that of the U.K. generally are ignored in American legal policy arguments. However such arguments are not completely ignored: for example, laws prohibiting usury and encouraging charity are a primitive examples of laws designed to ensure minimal equity in wealth distribution even in the United States.

These facts, that many supposedly non-economic arguments can be recast in economic terms and that not only wealth production but also wealth conservation and wealth distribution can, like balancing tests, be recast as economic arguments are important reasons to explain the rise of law and economics as the dominant legal theory in contemporary American legal discourse. That is not however to say that the law is determined, contra Richard Posner and David Friedman, solely by economic arguments. As

I have explained, not all values are capable of monetisation, not all goods are fungible, and markets and information are often imperfect. Economic actors are not perfectly rational - they can even be irrational. However, given the failure of moral cognitivism, both on the left and the right to forge consensus as to common objective moral values the only remaining values in a decentered and destabilized society were economic. Recentring political and legal discourse on the economy however has resulted in growing wealth inequalities and the carceral state. Consequently this shift, from moral values to market values, though subtle and perhaps at times imperceptible is in fact extremely dangerous. And that is the ultimate implication of this exposition of legal method. All these arguments, though implicit in the various methods described and analyzed by the computer program accompanying this article, are only implicit in the program. We now turn to a consideration of the program in order to understand its structure, form, capabilities and most importantly its limits.

V. State of the Art in Research

What methods in computer science are most appropriate to represent the fact that legal knowledge is often imprecise and/or inexact and at the same time force formalisations of legal knowledge to be more exact? The system proposed here is a rule based expert system. That is, it is set of rules which represent events that fulfill conditions triggering actions. Other approaches are possible. However they were not as well adapted to solving this specific problem: Unambiguous formalization of implicit legal knowledge. Because forming a rule base requires explicitly coercing data and models of rules the disambiguation of legal rules is best achieved using a rule based expert system as that leaves no room for enthymemes arising from an automatic inferencing mechanism (a declaratory approach) using forward and backward chaining.

A. Knowledge Based Systems

1. Knowledge: Definition

There is no generally accepted definition for the concept "knowledge". Knowledge based systems attempt to explicitly store knowledge and to process it automatically. Data processing distinguishes between data, information and knowledge.²¹⁷

a. Implicit knowledge

Implicit knowledge is difficult to describe verbally or formally because it is unconscious. Implicit knowledge contains components which are not immediately recognized as knowledge. For example, the problem solving knowledge of an expert or the hidden knowledge in an algorithm are hidden knowledge.²¹⁸ The expert has so internalized their problem solving algorithm that it is implicit in all they do. Since s/he does not need to explicit the algorithm to solve the problem for a client s/he does not. As is seen in the

²¹⁷ Björn Meyer, *Reihenfolgen und Konfigurationswissen in wissenbasierten Diagnosesystemen im Kunden-Support*, as yet unpublished Diplomarbeit, p. 25 (2004) (Hereafter, *Meyer*)

²¹⁸ Meyer, p.26.

formalization of legal knowledge, implicit knowledge runs throughout the law in the form of ambiguous statements and implicit presumptions.

b. Explicit Knowledge

i. Declarative Representation of Knowledge (knowing that)

A declarative representation of knowledge represents individual facts as atoms, statically, usually in a database. In contrast a procedural representation of knowledge (knowing how) presents data as the outcome of processes. Rather than storing and accessing information statically, the information is implicit in any number of algorithms. To determine the value of a piece of information procedurally one must instantiate the algorithm. Each approach has its advantages. A procedural approach lends itself to abstraction and is more compact. A declarative approach allows processor cycles to be spared and may be more rapid.²¹⁹

These low level hardware issues were not relevant to the approach implemented here. If we were examining a case base (a set of legal decisions) a declaratory approach might have made sense. However we are examining a (meta) rule base - a series of legal rules, instantiated in cases, which are used to determine how to apply other legal rules. Because the meta rules are fundamentally a rule base a procedural approach using rules ('laws') which imply factual outcomes (instantiated 'cases') seemed a better method.

c. Knowledge types:

Knowledge can be further refined into:

Facts in a problem field

Knowledge about connection of facts and

Facts about reasoning mechanisms and heuristics.²²⁰

We can also consider

²¹⁹ Meyer, p.27.

²²⁰ Meyer, p. 28.

Strategic knowledge
Case specific knowledge
Rule based knowledge
Knowledge based on a specific field
General Knowledge²²¹

These considerations did not however seem relevant to the implemented solution presented here and thus are only mentioned in passing.

Data can be presented as: Facts, rules, rules of thumb (approximations), vague ('fuzzy') knowledge, experiential knowledge (i.e. conditional inequalities such as (if $a > 30$) situation descriptions (IF THEN scenario) heuristics (optimisation of a search space through constraints) and Conditions (fixed data). In the implemented solution we are trying to disambiguate the vague knowledge and rules of thumb used by courts and even legislators and coerce these into experiential knowledge and situation descriptions, i.e. taking vague or indeterminate statements and recasting them as determinate and unambiguous computable functions using a rule based expert system. Thus a fair amount of the work in this representation involved knowledge extraction.

d. Knowledge Extraction

Knowledge extraction in this implementation was simply a matter of the author formalizing and above all justifying his knowledge of the law. This explains why though the solution establishes a rule base to study a rule base cases are cited to support the decisions made by the rule base. Ordinarily, a knowledge engineer must extract expert knowledge from experts via unstructured interviews.²²² In this implementation that consisted essentially of determining the legislators rules and then linking relevant cases instantiating those rules in the declaration component.

²²¹ Meyer, p. 29.

²²² Meyer, p. 30.

Knowledge acquisition may thus be either direct or indirect. Direct knowledge acquisition occurs when the knowledge engineers themselves input/formalize the expert knowledge themselves. Indirect knowledge acquisition occurs when the knowledge is acquired from a third party by a knowledge engineer and then formalized/input into the program.

In this particular implementation the author is a legal expert. Thus the knowledge extraction was simpler than would ordinarily be the case.

2. Knowledge Based Systems

A knowledge based system is a software system in which the specialist knowledge of an application (domain knowledge) is represented explicitly and independantly of general problem solving knowledge.

Knowledge based systems make a clear and careful distinction between 1) knowledge representation (the knowledge base) and 2) data processing (the inferencing used to reference the case base). Knowledge based systems have, at least implicitly, a learning component for knowledge acquisition.²²³

The knowledge base contains specific knowledge unique to the domain being represented. The inferencing component (data processing) uses procedures (algorithms) for problem solving which are application independant.

The data processing (inferencing) component must, using the available knowledge base, recognize sequences and dependancies and compare these with stored correct configurations and then present a solution.²²⁴ The implemented solution does so.

Knowledge based approaches also make a clear distinction between problem description and solution.

²²³ Meyer, p. 14.

²²⁴ Meyer, p. 15.

3. Expert Systems:

Expert systems are special knowledge based systems in which the domain knowledge is sourced from an expert.²²⁵ Expert systems have also been defined as programs in which a narrowly defined field of application reaches or exceeds the problem solving ability of a human expert. Expert systems attempt to emulate the ability of human experts, above all their ability to solve problems. An expert system can be applied only to its specialized field of knowledge.

Experts have the following advantages:

- 1) Above average abilities to solve problems in a specific field.
- 2) The ability to provide a best estimate of the most likely solution in the face of ambiguous facts.
- 3) They have heuristic knowledge - knowledge of how to find knowledge, knowledge,
- 4) of how to solve problems.

The ability to solve problems in the face of incomplete and/or uncertain knowledge.

But expert systems also have disadvantages: Experts are rare and expensive. A human expert can also lose their expert knowledge for example if their health declines.²²⁶

An expert approach was proper for modelling law since the knowledge is highly specialized and not easily accessed.

Expert systems consist of several components: A dialog component (input-ouput), a declaration component (explanations), a knowledge acquisition component (acquires new problem or solution knowledge), a problem solving component (inferencing, data processing), an interface for the experts, and an interface for end-users.

a. Dialog component - Input-Output I/O

²²⁵ Meyer, p. 16.

²²⁶ Meyer, p. 17.

The dialog component of an experts system is also known as the interview component. It is the visible interface for the end user of the system. In my implementation the dialog component in this implementation uses dialog boxes to ask the user for information which is then used to determine what other information must be obtained in order to solve the legal problem presented. This implemented solution can be compared to forward chaining, but the solution presented is procedural not declarative.

b. Declaration component

The declaration component gives explanations and justification for the inferred solution. In this implementation the program does include a declaration component - a field in which explanations for the computers reasoning appear.

c. Knowledge Acquisitions Component:

The knowledge acquisition component,²²⁷ supports the construction of the knowledge base. My implementation was procedural, not declaratory. Thus the knowledge acquisition component, if appearing, would be a learning procedure. However, I determined that learning procedures for this problem were unnecessary as the problem, though involving general inferencing strategies, is a well defined one: the determination of uncertain information in the interpretation of legal rules.

The knowledge acquisition component of a knowledge based system is responsible for the determination of new knowledge in the system, as well as the transformation of that knowledge and erasing of existing knowledge. This component is very important in the start of the construction of a knowledge base. With the aid of this component an expert can introduce new knowledge into the system so that the knowledge base can be the basis for solution of further cases.

d. Data Processing (inferencing)

²²⁷ Meyer, p. 22.

The problem solving component (data processing component) processes stored knowledge and attempts to form a solution for the specific problem from the gathered knowledge (symptoms). The problem solving component can draw conclusions and develop new knowledge which is then introduced into the knowledge base. One part of this component thus acquires new knowledge, which then serves as the basis for more new knowledge. In my implementation inferencing is pre-programmed as a set of rules (conditionals) which if met determine whether the application of other conditionals also apply.

e. Interface for the experts:

Because the author was also the expert and because the system is procedural and not declaratory there was no need for an interface to obtain new expert knowledge. The disadvantage is that the engine is static and unchanging. The advantage was simplicity. Since this engine only solves a limited general class of legal problems this limitation was accepted as a necessary outcome of the fact that resources are limited in any problem solving effort.

f. User Interface

This interface is the actual surface which is used for the end users. By means of the user interface the communication with the system occurs so that symptoms of problems can be taken up and analysed as well as presenting the solution to the end user.²²⁸ In my implementation the user interface consists of a simple graphical user interface with buttons and fields. The user interface also includes dialog boxes which are also part of the dialog component.

The functioning of a good expert system depends on the integration of unequivocal facts (specialized knowledge - the engine, whether a procedural rule base or a declaratory case base) with the apparently subjective knowledge of a specialist. A large part of the work in this thesis was formalizing and justifying the author's expert knowledge. The expert's

²²⁸ Meyer, p. 23.

knowledge must be --and in this implementation was-- formalized and represented in a machine readable form in order to be further processed by the computer.²²⁹

4. Formalisation.

Formalisation of knowledge is a process of abstraction which represents the important aspects of an application field while ignoring those which are irrelevant. The problem of course is: What information is relevant?²³⁰ Formalisation was extremely important in this implementation since one of the objectives was to force legal language to become more precise in order to present critiques of the law intended reduce legal uncertainty.

5. Characteristics of a good knowledge system.

A knowledge system must be complete, abstract, economical, non-redundant, and transparent.

Completeness means that the system should be able to solve the problem, that is it must have all elements necessary for solving the problem posed. In this implementation, by limiting the number of problems to be solved to a well defined general class (legal interpretation) completeness is obtained. An incomplete solution is worse than no solution since it only generates confusion.

Abstraction - when the formalisation ignores irrelevant details it is abstract. Thus, for example, the names of parties or even the dates of events are generally not relevant legally speaking. In the abstraction from the facts that Green sued Black, Green is abstracted into 'plaintiff' and Black is abstracted into 'defendant'. Good abstraction is indispensable to a good program.

²²⁹ Meyer p. 24.

²³⁰ Meyer, p. 33.

Economy - the formalisation should use as few expressions as possible. Given the indeterminate and ambiguous nature of many legal problems economy is perhaps the least important criteria to a good implementation of a legal problem solving program. Economy is a desirable goal for this problem but an uneconomical solution, while inelagant, could still reach a correct result and even for the correct reasons.

Redundancy - multiple syntactic forms for the same semantic result - should be avoided. This is really just a restatement of the criteria of economy. Since the implementation does not present a programming language the redundancy criteria was really not relevant. Further, sometimes a redundant U/I is desirable to make things easier for the user - for example, where both a menu item and a button or a command line keyword implement the same instruction.

Transparent - the representation of knowledge should be comprehensible and visible. Since the purpose of the program is to make processes clear to the users it is more than merely desirable that the programs processes be transparent. While an opaque program would still reach the right result the user would not know the reasons for the result. The user is clearly better knowing not only what the result is but also why the result is.²³¹

B. The Symbolic Level

1. Sub Symbolic Representations

Sub-symbolic representations of ideas are not expressed in conscious terms. Rather a sub-symbolic representation relies on physical processes to determine outcomes. Neural networks are the leading example of sub-symbolic representation. A neural net simulates the networked connections of neurons in a brain. If sufficient neurons fire then a conclusion is instantiated. Neural networks are most famously used in optical recognition. They offer the benefit of trainability: A neural network is trained through exposure to stimuli to react, and can be retrained or even in theory train itself.

²³¹ Meyer, p. 34.

However, legal knowledge is largely already formalized. The rules we wish to represent are already formalized at the symbolic level. The law is presented as conditional assertions (if-then statements). Thus a neural network approach only would offer the advantage of trainability. However learning procedures can be readily implemented using a symbolic approach. This explains why the neural network approach is not examined here.

Within symbolic approaches however there are numerous choices. These can be largely described as either

- a) Declaratory Approaches (knowledge based)
- b) Procedural Approaches (sequentially based).

In practice however, declarative and procedural approaches are often complementary.²³² The solution proposed here was essentially procedural though I do also present a declaratory model to illustrate the limitations of a declaratory approach to the goal of disambiguating legal knowledge.

2. Symbolic Representations

Symbolic representations of knowledge are formalisations. These formal systems – of which Euclidean geometry is perhaps the most well known, though propositional logic and predicate calculus are other examples – are abstract. Abstraction allows a formal system to claim representational power, to determine not only the instantiated cases but also to have an algorithm by which to determine the outcome in as yet uninstantiated cases. The knowledge represented symbolically is already formalized as concepts. In this implementation, because legal knowledge is already represented symbolically, it was much more practical to implement a symbolic solution to the problem.

C. The Operational Level

²³² Meyer, p. 34.

1. Declaratory Approaches

The more famous examples of declaratory languages are prolog and lisp. Lisp is considered by many to be deprecated but is still used, notably in cognitive science. Prolog is not considered deprecated. In prolog a rule base is established (a set of conditionals). The prolog knowledge-base can then answer queries. The heart of the prolog engine is tasked with forward chaining - inferring implicit new facts from known facts and with backward chaining - searching for the existence of necessary preconditions to desired goals. However the forward and backward chaining engines are themselves implemented procedurally. While I do present a procedural chaining engine as an exercise as part of this work I did not choose prolog because it is not easily understood by non-programmers. A declaratory approach offers the advantage of an adaptable knowledge base that can grow easily with time.

a. Bayesian Networks

A bayesian network is a set of hierarchically organized nodes wherein each node influences connected nodes according to a determined weight. While a bayesian network might be a good way to represent uncertain knowledge such as the factors and weights in a balancing test I chose not to use Bayesian networks because the objective was not merely to obtain a defensible solution to the legal problem but also a solution which forces tacit legal knowledge to be explicitly rendered. The Bayesian network seems to be a sub-symbolic solution. As explained earlier, law is already expressed symbolically so a sub-symbolic solution was less than practical.

b. Petri Networks

Petri networks are a network approach to parallel processing. However the problem I am solving does not require parallel processing. I also see no advantage here since I am not trying to instantiate the arguments of a plaintiff, defendant, and judge as independant parallel processes to then be balanced off against each other. Such an approach would be

possible and might be an interesting application of parallel processing but my formalisation is achieved more simply using a rule based approach.

2. Procedural Approaches

A procedural approach involves a program with a number of definite steps which when implemented will solve a given problem queried. I chose a procedural approach to solving this problem because I wished to obtain definite results to a complex legal problem: Namely, the problem of legal interpretation, i.e. of meta rules (rules for determining how rules are applied). This problem could have been solved using a declaratory approach. However there are only a limited number of interpretative rules - less than a couple dozen in fact - so the ability of the knowledge base to grow or learn was not important for this formalisation. The center of this formalisation was the determination of implicit knowledge - whether inexact or imprecise. A declaratory approach, even if it reached answers as to which knowledge was imprecise and how it ought to be properly extended would not necessarily be reproducible or immediately transparent. In computer science there is often more than one way to solve a given problem.²³³

Here, the problem was the determination of implicit legal knowledge. This problem was better solved procedurally because the objective was to force the expert to render the implicit tacit knowledge explicit through formalisation. A declaratory solution would have been less transparent and probably also less accurate.

a. Rule Based Systems

In a rule based systems knowledge is represented in the form of if-then conditionals.²³⁴

Conditionals take the general form of:

If *condition* then *action*

The solution here implemented is a rule based system.

²³³ Meyer, p. 19 citing Russel and Norvig, 1995.

²³⁴ Meyer, p. 42.

The conditional, when triggered, describes a transition from one state to another state of a system. Conditions are a consequence for individual conditional elements. The elements can contain concrete values or variables. Logical operators are also allowed in rules. ACTIONS arise from a consequence of actions which add, change, or erase elements in working memory. The modifications of the rule bases is possible and allows a weak form of learning capability. Thus one speaks not of simple rules but of rules of production.

The rules in a rule based system are ordinarily determinate - which is the case of the solution implemented. The rules reach a determined state by propagations based on logic.²³⁵

Determinate rules were of course necessary since our objective was to discover legal ambiguity and then try to present explicit unambiguous solutions to areas of legal ambiguity.

Elements of a rule based system:

The elements of a rule based system are:

- 1) Facts
- 2) Rules and
- 3) A rule interpreter.²³⁶

In my implementation, facts are provided by the user through the dialog component. The rules are coded procedurally in the inferencing component. There is no learning component in my implementation. The rule interpreter is also coded procedurally and uses the rules of propositional or predicate calculus to infer legal consequences from factual inputs.

In a rule based system the rule is the abstract portion of knowledge and the fact is the

²³⁵ Meyer, p. 43.

²³⁶ Meyer, p. 43.

concrete part. Facts are usually based on observations or experiences.²³⁷

b. Semantic Networks

There is no generally accepted definition of semantic networks.²³⁸ Semantic networks are also called associative networks. They are a structure of data which allow the representation of connections and fact patterns. Semantic networks are not to be seen as independent knowledge representations, rather they serve to make connections clearer so that a better overall view of the represented knowledge becomes possible.²³⁹ Semantic networks did not seem relevant to me as a solution for the problem of legal indeterminacy in rule interpretation.

c. Non-monotonic logics for the representation of temporally conditioned knowledge:

Non-monotonic logics were not used since the knowledge to be represented is not temporally conditioned. The problem to be illustrated was legal uncertainty, not factual uncertainty. Thus we could presume that all facts were known or knowable. Since information was assumed to be perfect and complete and since the problem to be solved was not whether a particular defendant is in prison on a certain day or whether a certain factual inference was valid or not non monotonic logics were not relevant. Rather the problem was to determine whether a given litigant's arguments for an extensive or narrow interpretation of a legal rule would be heard. Since law is already represented symbolically in monotonic logic such a logic was used here.

As has been shown there are numerous methods for representing knowledge. However, the representation I wished to implement was focussed on the determination of the meanings of imprecise rules and their inexact consequences. Thus, a procedural approach was best adapted to this task since it forces the knowledge engineer to explicit implicit knowledge

²³⁷ Meyer, p. 45.

²³⁸ Meyer, p. 47.

²³⁹ Id.

rather than hoping that the knowledge base or neural network expands and grows to cover (and somehow explain?) the knowledge to be represented.

VI. Legal Inferencing

Statements of the law can often be represented as statements of propositional logic. Thus, the legal formula:

Theft consists of caption, asportation, and animus furundi
can be restated as
caption * asportation * animus furundi => theft.

The classical logical connectors - „if and only if“ (equivalence), „if...then“ (implication), negation, conjunction (A and B) and disjunction (A or B) all occur in legal statements.

Statements of formal logic can be tested and formally proven or disproven using computer programs. The resolution method, for example, is intended to be used to permit complex theorem verification using proof by contradiction (i.e. *reductio ad absurdam*). Naturally, the question which arises is whether and to what extent legal statements can be inferred automatically using a computer program.

To answer this question we need to consider some basic points about the structure of the law. First, the law is a theoretically a self consistent system yet in practice is not. That is, statements of courts and legislators should not contradict each other: the law of contradiction (A or not A) is, in theory, a valid legal proposition. However, in practice, indeterminicity and even contradiction are normal parts of daily life. That is, we presume and interpret legal statements to be part of a self consistent system in theory, but in reality that is often not the case. For example, trial courts occasionally make statements that superior courts reject. If all legal statements were in fact self consistent in practice there would be no need for courts of appeal. Similarly, even the legislator can contradict itself. Again, rules of construction exist to guide these types of conflicts of norms. For example, where the legislator makes two inconsistent statements (laws) the one made later in time is presumed to negate at least as much of the prior law as necessary to preserve the self-consistency of the legal system.

As well as understanding the necessity and limits of legal self consistency we must also understand something about the admissibility of legal arguments. Essentially, I think there

are several types of useful logical tasks and arguments which can be made before a court and which can be modelled with computer programs. These are:

A. Analogical reasoning in Law

Analogical reasoning is the argument that one observed instance of a phenomenon has a number of factors in common with another observed instance of what is presumed to be the same phenomenon. As the two observed instances are similar as to given factors they are likely similar as to factors to be proven as well. Analogical reasoning is a key element of case based reasoning in the common law, but is not unknown in civil law. Note that analogical reasoning does not involve the inference of a new rule from an existing case base. Rather, it is arguing that because the facts in two cases are similar the rule governing both cases should also be similar. Analogical reasoning can also arise in the context of statutory interpretation. For example, where we have a statute, and we know that observed facts are within the terms of the statute we can argue that similar facts are also covered by that statute. Similarly, if we have a case with a given ruling and the facts in a new case are sufficiently similar to the old case we should apply the rule in the old case to the new case.

We shall see that analogical reasoning is a subset of the problem of ampliative induction. Thus if we solve the problem of analogical reasoning we have partially solved the problem of ampliative induction.

Analogical reasoning may be compared to probabilistic reasoning. In my opinion however that comparison has limits. In analogical reasoning we determine that two cases are sufficiently similar that the same rule should apply to govern them. In probabilistic reasoning in contrast we determine that it is more likely than not that a certain fact is true and thus that a legal rule applies.

Here is an algorithm in pseudocode to determine whether a case is analogical to another case:

```
weight: $(+/-)
//facts favoring application of rule are positive values
//facts disfavoring application of rule are negative values
//fact's weight is determined by economic analysis
```

```

repeat with casebase
  repeat untill all facts in case n are entered
    get fact
    get weight of fact
    threshold case n := threshold case n+weight of fact
  end repeat
  if Y>threshold then threshold = Y
  get rule
end repeat

```

```

repeat untill all facts in case 2 are entered
  get fact
  get weight of fact
  X:=X+weight of fact
end repeat

```

```

if X > threshold then
  rule applies
else
  rule does not apply
end if

```

B. Economic Analysis - weighting factors in analogies and balancing tests

To render a legal proposition computable we must make it explicit. In balancing tests and analogical arguments this raises the problem of choice and weighting of relevant factors to be considered by the court. For example, two facts might be relevant to a decision, but one fact might be much more important than the other. Computationally variable weights of the factors in a balancing test can be accomplished simply by using integer rather than boolean values and/or by using a multiplier for a factor.

Methodologically however we still have to determine what value to assign to the factors, i.e. their weight. The most objective way to weight factors in a balancing test seems to be the use of economic values in determining the weight of factors to be balanced. Yet that also raises problems: not all goods are fungible; some goods are inherently inalienable or legally so. Further, even for goods which are able to be alienated there is not always a market of ready buyers for the good. Even if the good is alienable and there are buyers is the economic value of the right that which the holder of the right would sell it for or that which a non-holder of the right would buy it for? How would the seller's or buyer's price be determined?

There the court's hold that the value of the good is the price that a willing buyer would pay and that a willing seller would sell at on an open market. However this often results in fictive values being assigned to rights. Thus the use of economic valuation to determine wieghts in balancing tests is not as objective as we might at first think and is beset with methodological difficulties.

Another problem of using propositional logic to model law is that not all legal statements are expressed as boolean values. Some legal statements are expressed as inequalities (e.g., $A > B$). For example, in the common law of torts, it is often said that the duty to pay damages to an injured party arises where the cost of preventing the accident is less than or equal to the cost of curing the accident. Inequalities express themselves generally in familiar forms like

$$P > X \Rightarrow Q$$

$$P < X \Rightarrow \sim Q$$

i.e. using the functors „greater than“, „less than“, „greater than or equal to“, „less than or equal to“.

Economic analysis may be helpful, for example, to determine the weight of a fact in determining whether a rule applies or in determining the balance of competing interests. Since economic analysis is important this paper also presents an algorithm for it. Here is the pseudocode:

fictive price of fact:=price of good on open market if an open market existed

get fact

if fact = fungible then

 weight of fact := market price of fact

else

 market price of object := fictive price of fact

 weight of fact := market price of fact

end if

C. Probabalistic reasoning

Probabilistic reasoning is used by courts to cope with uncertainty. However probabilistic reasoning has some serious limits. Probabilistic reasoning yields only possible and not necessary truths. For example, if we know that it rains four days a week, on average, in Bremen, then we know it is likely to rain tomorrow. It may not rain tomorrow - but it is likely to.

In propositional logic probabilistic arguments are not permitted because the object of propositional logic is necessary truths, and not merely likely truths. A model of law can use propositional logic as a starting point but must go further and also use probabilistic logic as well as intuitionist logic,²⁴⁰ to represent not merely known values that are true and false but also indeterminate²⁴¹ values. A legal logic for AI should be able to reason analogically²⁴² and dialectically.²⁴³ and should consider the problem of open-ended rules by using non monotonic logic²⁴⁴ Thus propositional logic alone is inadequate to model legal reasoning. In combination with probabilistic reasoning and trivalent logic however propositional logic is an important base for modelling legal reasoning.

D. Ampliative induction

²⁴⁰ L. Thorne McCarty, *An Implementation of Eisner v. Macomber*, 1995 ACM 0-89791-758-8/95/0005/0276 p. 278.

²⁴¹ For the positivist, where the sovereign has not acted, both alternatives represent future contingents, similar to Aristotle's example, ["t]here will be a sea battle tomorrow." Tomorrow it will be either true or false that there is a sea battle, and once a judge has spoken "p" or "~p" will be law, but what are the truth values of those propositions today? Is the truth value today simply the same as it will be tomorrow, though today unknown, or are the statements neither true nor false?

While the law of the excluded middle holds that one of the two is true today, that "law" represents only one response to the issue of indeterminates. The two potential responses were taken up by different post-Aristotelian schools of philosophy. The Stoics, in keeping with their determinist metaphysics, adopted the principle of bivalence. Since the occurrence or non-occurrence of tomorrow's sea battle is already determined by past events, the truth value of the sea battle proposition is already fixed today. The Epicureans, in contrast, allowed for indeterminacy in their metaphysics, where chance occurrences or human choice played a role. In keeping with that position, they rejected the principle of bivalence and held that the sea battle proposition is neither true nor false but of indeterminate or neuter truth value.

Kevin W. Saunders, *What Logic Can and Cannot Tell Us about Law*, 73 Notre Dame L. Rev. 667, 670-671 (1998)

²⁴² Yoshino, at 110.

²⁴³ Giovanni Sartor, *A Formal Model of Legal Argumentation*, p. 1.

²⁴⁴ Giovanni Sartor, *A Simple Computational Model for Nonmonotonic and Adversarial Legal Reasoning*, p. 192.

Ampliative induction is the process of inferring a new formula from a set of given formulas. Thus for example, given a series of court decisions, is it possible to infer new or different rules from the set of decisions? This is the inductive ampliation of new rules of law from existing cases. Ampliation can either occur where we have a knowledge base that is unambiguous, where all connectives are known and no statements are inconsistent. Alternatively, ampliation can also be attempted where the knowledge base is ambiguous - not all connectives in the logical statement are known and/or the logical statements of law are not self consistent. Can a computer program amplify new rules of law from an existing knowledge base? How? This question is unanswered here but should guide future research. A simple ampliative inference engine is provided among the programs accompanying this article but I have at most only partially solved the problem of ampliation. A better solution may well be to rely on prologs automatic forward and backward chaining to model ampliation.

E. Abductive reasoning

A final legal method is abductive reasoning.²⁴⁵ Strictly speaking, abductive reasoning is flawed: an abductive argument presents possible, not necessary conclusions. If we know when it rains it is wet ($p \Rightarrow q$) and that it is wet it may be that it is raining - or it may be that there has been a flood. However abductive arguments can show us interesting search paths and thus have a heuristic interest. Knowing that it is wet we should then ask whether it is raining. Knowing that it is dry, we should not ask whether it is raining. Thus abduction can show us search paths which should be followed or eliminated from consideration. Abductive arguments are also partially formed probabilistic arguments.

F. Inductive arguments:

We can model court decisions as one or more logical implications. Ordinarily these formulas use + or * as connectives and possibly also negation. Thus cases (and legislation for that matter) could be generally modelled as:

$$p_1 + p_2 \dots + p_n \Rightarrow q$$

or

²⁴⁵ "Abduction identifies the potential answers relevant to solving a specific problem or answering a given question. Induction recommends a potential answer to be adopted as the warranted solution." Edwina L. Rissland, Kevin D. Ashley, R.P. Louis, AI and Law: A fruitful synergy, p. 178 (2003).

$$p_1 * p_2 \dots * p_n \Rightarrow q$$

Of course, it is possible in practice to mix the connectives. e.g., $p_1 * p_2 \dots + p_n \Rightarrow q$. However due to the complexities of representing logical formulae in natural language legislation generally only uses series of conjunctions or disjunctions, possibly with negation and often enough with ambiguity. Courts are then left with the task to try to clarify the often only implicit statements of the legislator, essentially providing the parentheses or rendering conjunctions or disjunctions unambiguous. Again, a series of interpretative rules which we examined earlier aids the courts in this task: statutes shall be interpreted according to their plain meaning. Only if the statute is unclear on its face will the court then examine other interpretive guides such as legislative history, purpose of the legislation, structural position of the law within the legal code etc.

At least where statements of the law are unambiguous it is possible to represent them as formulas using classical logic. Our knowledge base of a legal system would then consist of a series of formulae. It would then be possible to compare these formulae with each other to derive new formulae therefrom inductively. For example, if we had two cases, $p \Rightarrow q$ and $\neg p \Rightarrow r$ we could then derive $q + r$ as a necessary consequence. Or if we had two cases $p \Rightarrow q$ and $q \Rightarrow r$ we could then infer $p \Rightarrow r$ therefrom. Likewise, from the two cases $p \Rightarrow r$ and $q \Rightarrow r$ follows $p+q \Rightarrow r$. A more complex example is,

$$(p_1 + p_2) * p_3 \Rightarrow q$$

$$(p_1 + p_2) * p_4 \Rightarrow r$$

$$((p_1 + p_2) * p_3) * ((p_1 + p_2) * p_4) \Rightarrow q * r$$

These inferences follow from logical laws. Consequently, it should be possible to create an inference engine which would calculate them. The unification and resolution algorithms would be likely to be used to deduce these third formulas from the existing case base.

G. Modelling Law With Computers

Modelling law with computers can reveal enthymematic premises and apories in the law. Explicit representation of ambiguous legal formulae in computer programs exposes gaps in reasoning, false dichotomies and other logical errors in the law or our understanding of it.

Thus computer models of the law can be used to discovery contradictions and ambiguities in the law.

H.. Useful Tasks for Legal AI

1. Testing for Legal Consistency or Contradiction

Determining whether a lower court decision contradicts or coheres with the decisions of higher courts and legislation is the central task of legal reasoning. That is, knowing that the law is a self consistent system in theory, but that in practice it is not always so, what statements of an inferior legal decision maker will be (or will be likely to be) modified, amended or overruled by a higher one? That is, to what extent, and how, can the problem of legal inconsistency - the central problem and task of legal reasoning - be modelled and solved using a computer program? This task - testing legal statements for consistency within the legal system - is the end toward which the remaining methods of reasoning aim to satisfy. The following methods can be used when analyzing a case base to determine whether it is self consistent and to determine whether new statements of law can be inferred from it.

2. Exposing Ambiguous Laws

The case of unambiguous legal statements seems both computationally difficult but logically clear. However not all statements of law made by courts or legislators are unambiguous. How could new rules be induced from a case base consisting of ambiguous statements due either to implicit assumptions or poor draftsmanship? The problem is laid out as follows:

Given the situation where

- a) we know a set of facts
 - b) we do not know the legal functors connecting the facts (and, or)
 - d) all given facts are relevant and all relevant facts are given
 - e) and the legal conclusion that arises from the known but ambiguous facts
- derive the functors which connect the facts and any new rules of law from the case base.

Thus for example, given the following knowledge base,

1,A

1,2,A

1,2,3,A

2,3,4,A

where numbers represent instantiated variables having the same value and letters the legal conclusion that follows, what rules would result?

If we can determine rules which govern this knowledge base we should then be able to determine whether a legal consequence („A“ in this example) follows from a set of hypothetical facts such as

given: 2

A?

given: 3,1

A?

given: 4

A?

If we can propose rules to govern the known cases and predict results in unknown cases we should also be able to represent our thinking as an algorithm and transform it into a computer program.

In fact, this problem is much easier than the case where the statements of law are unambiguous. Here we would simply use probabilistic reasoning to determine the likely rules and connectives in the knowledge base.

For example, given the facts f_1 to f_n and the legal conclusion r_1

$f_1, f_2, f_3 \Rightarrow r_1$

$f_2, f_4 \Rightarrow r_1$

we would first establish possible interpretations using connectives. One interpretation would be:

$f2 + f4 \Rightarrow r1$

$f1 + f2 + f3 \Rightarrow r1$

another interpretation would be:

$f2 * f4 \Rightarrow r1$

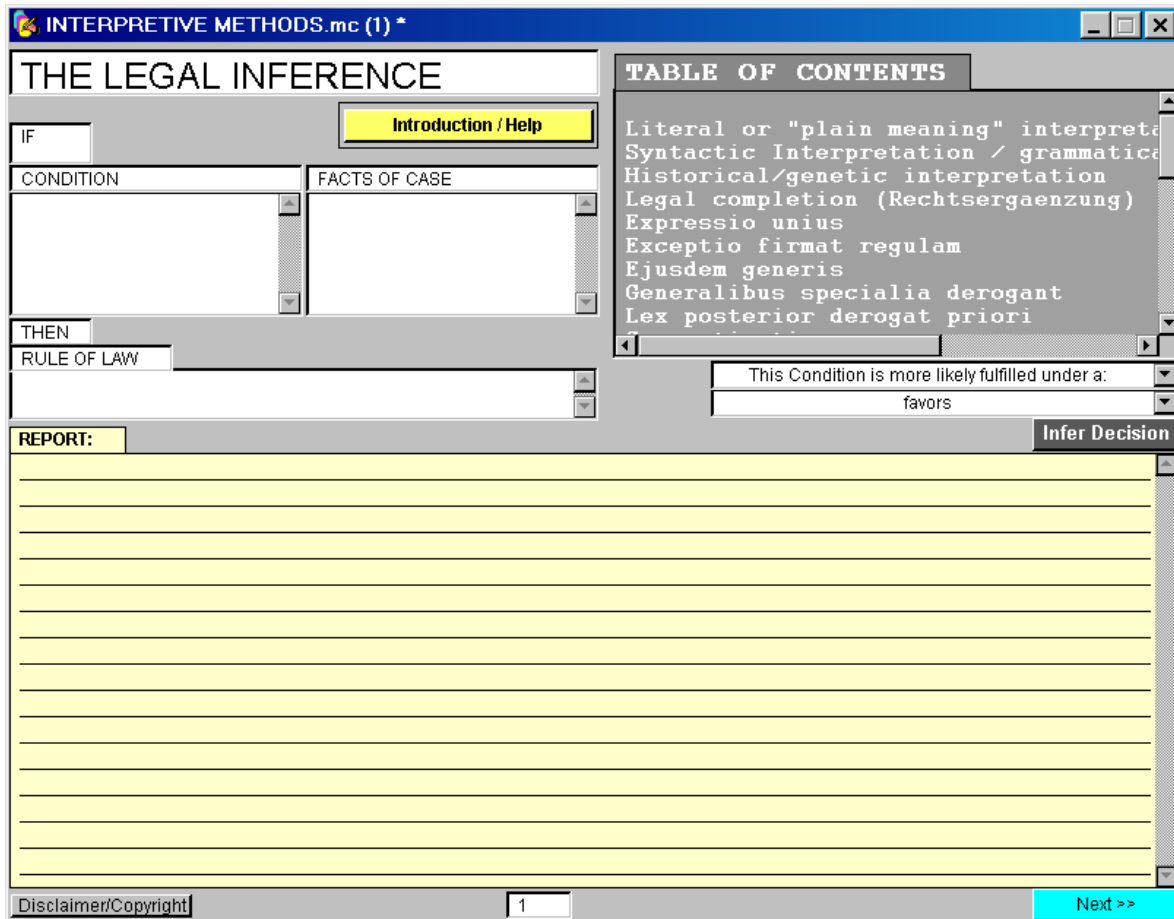
$f1 * f2 * f3 \Rightarrow r1$

Our probabilistic inference would compare the facts in the new undecided case to the facts in the existing case base. If the majority of the facts in the undecided case are to be found in a majority of the existing cases in the case base then we can conclude that it is more than likely that the new case will be governed by the same rule which governs the existing cases. Similarly if there are very few facts common to both the new undecided case and the existing case then it is likely that the rule in the existing case base does not apply to the new as yet undecided case. Finally if there are no facts in common between the new undecided case and the existing cases then the rule in the existing cases almost certainly does not apply. Probabilistic reasoning does not yield necessary conclusions only likely ones.

For example, given $1,2,3 \Rightarrow Q$ and $2,3 \Rightarrow Q$ we could infer that, from 2 alone it is possible that Q follows, but less than likely.

VII. Evaluation of the Implemented Programs:

The program solves each problem presented through a query system. Based on answers provided the program then asks other questions. That is, the hierarchically highest questions are asked first. Based on the answer to those questions dependant questions are then asked. Based on the answer to the dependant questions a final determination is made. This might seem a trivial computation problem as it is procedural and linear. However expert knowledge is required to justify each and every step in the inference. Further, expert knowledge was required to render explicit tacit knowledge in the solutions presented by courts.

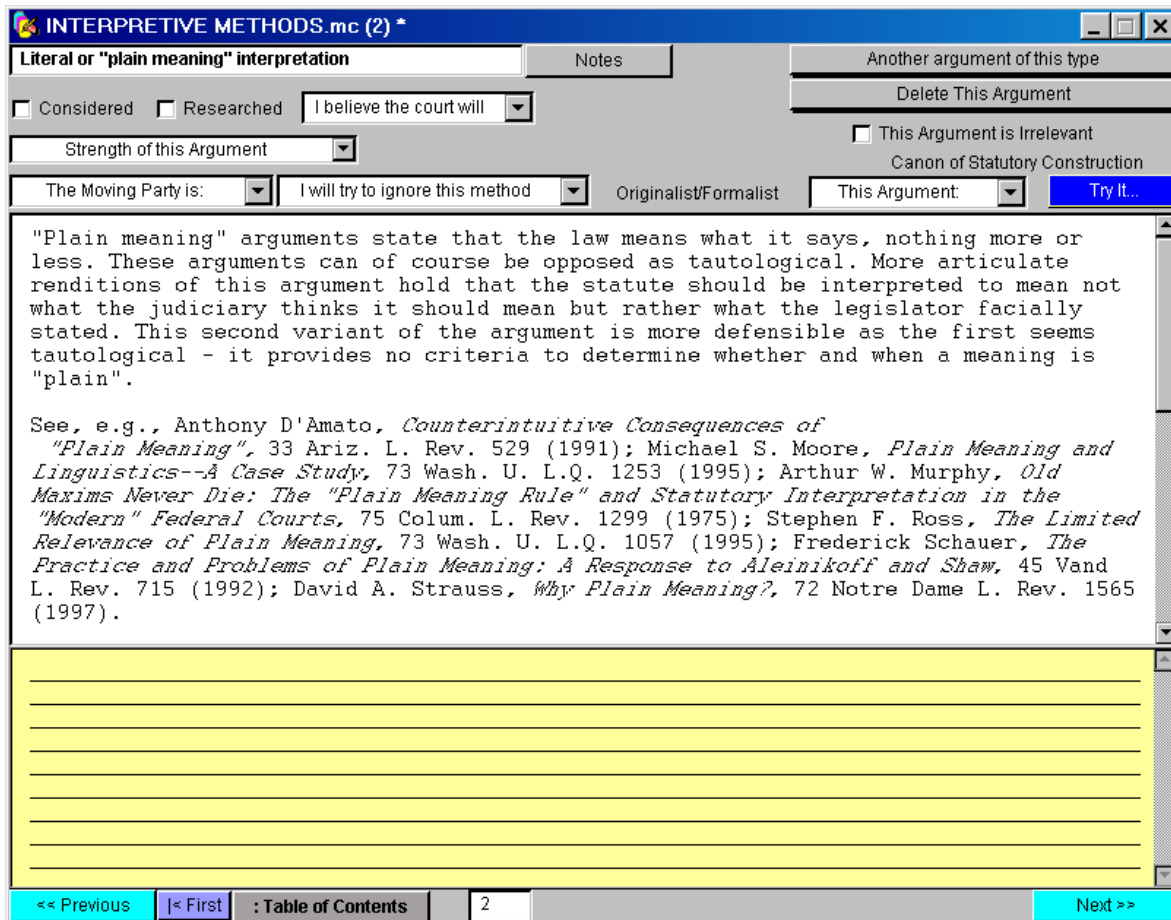


The program is implemented in a hypertext form. Each rule has its own page. The program includes documentation ('Help' functions). The first screen of the program contains the table of contents, notes for the user (i.e. information which does not affect the program's run but which the user may want to remember for their own purposes) and the declaration

component (report). The declaration component is on the first page because an early implementation allowed all rules to be simultaneously tested: That resulted in confusion and uncoordination since some rules might or might not be relevant. Worst, that implementation resulted in long strings of dialogs (20 or more). It did function but was inelegant. The declaration component also appears on each rule's page. This allows the declaration component on the first page to contain all arguments made during the program's run while the declaration components on each page give only the reasons for the decision as to the application of the specific rule on that page. Thus if a user wishes to make multiple queries of multiple rules and have results for all the queries they have them on the first page of the program.

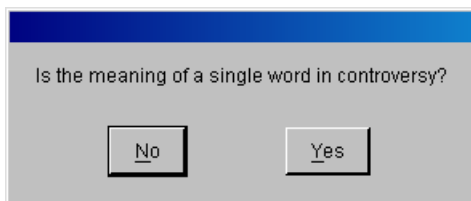
A. Legal Inferencing

Since there are numerous rules we will only examine one rule as an example of how the other rules function since they are structurally similar. An argument for a "plain meaning" interpretation basically holds that the law means what it says, no more or less. Using only one rule as an example of several rules for purposes of evaluation is possible because each rule follows a general form namely: The rule name is listed at the top of the screen. The user notes may be shown or hidden with the notes button. The user may indicate whether the issue has been researched, whether the issue is relevant, (irrelevant arguments are skipped) and the strength of this argument. The user can indicate which party (plaintiff or defendant) is proposing the argument.



In the white field a brief explanation of the law is given as a reference. The yellow field will contain the result of the inquiry.

Sample run:



No was clicked:

And the computer decided:

INTERPRETIVE METHODS.mc (2) *

Literal or "plain meaning" interpretation

Notes

Another argument of this type

Considered Researched I believe the court will

Delete This Argument

Strength of this Argument

This Argument is Irrelevant

Canon of Statutory Construction

The Moving Party is: I will try to ignore this method Originalist/Formalist This Argument: Try It...

"Plain meaning" arguments state that the law means what it says, nothing more or less. These arguments can of course be opposed as tautological. More articulate renditions of this argument hold that the statute should be interpreted to mean not what the judiciary thinks it should mean but rather what the legislator facially stated. This second variant of the argument is more defensible as the first seems tautological - it provides no criteria to determine whether and when a meaning is "plain".

See, e.g., Anthony D'Amato, *Counterintuitive Consequences of "Plain Meaning"*, 33 Ariz. L. Rev. 529 (1991); Michael S. Moore, *Plain Meaning and Linguistics--A Case Study*, 73 Wash. U. L.Q. 1253 (1995); Arthur W. Murphy, *Old Maxims Never Die: The "Plain Meaning Rule" and Statutory Interpretation in the "Modern" Federal Courts*, 75 Colum. L. Rev. 1299 (1975); Stephen F. Ross, *The Limited Relevance of Plain Meaning*, 73 Wash. U. L.Q. 1057 (1995); Frederick Schauer, *The Practice and Problems of Plain Meaning: A Response to Aleinikoff and Shaw*, 45 Vand L. Rev. 715 (1992); David A. Strauss, *Why Plain Meaning?*, 72 Notre Dame L. Rev. 1565 (1997).

The interpretive method Literal or "plain meaning" interpretation does not apply in this case. Literal or "plain meaning" interpretation does not apply in this case. Consequently, the reasoning of this method is irrelevant and is not reported.

<< Previous |< First : Table of Contents | 2 | Next >>

Here is a more complicated problem. Each dialog box is answered "yes".

Is the meaning of a single word in controversy?

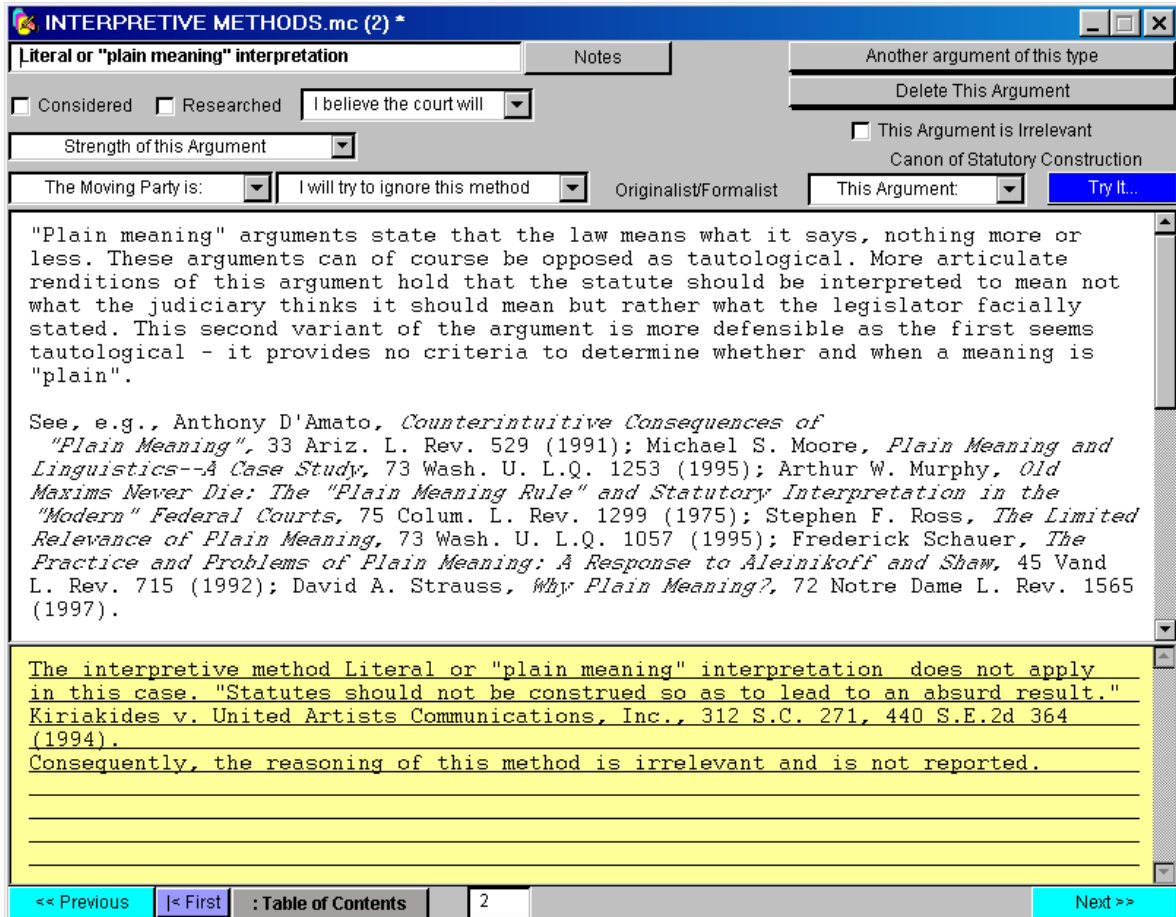
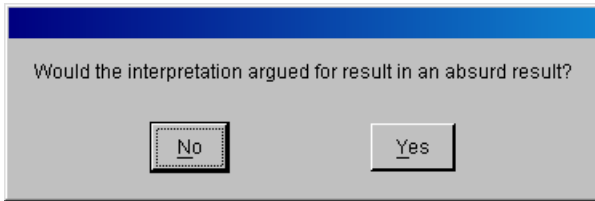
No Yes

Is the meaning of the word self evident?

No Yes

Is the law to be interpreted a statute?

Yes No

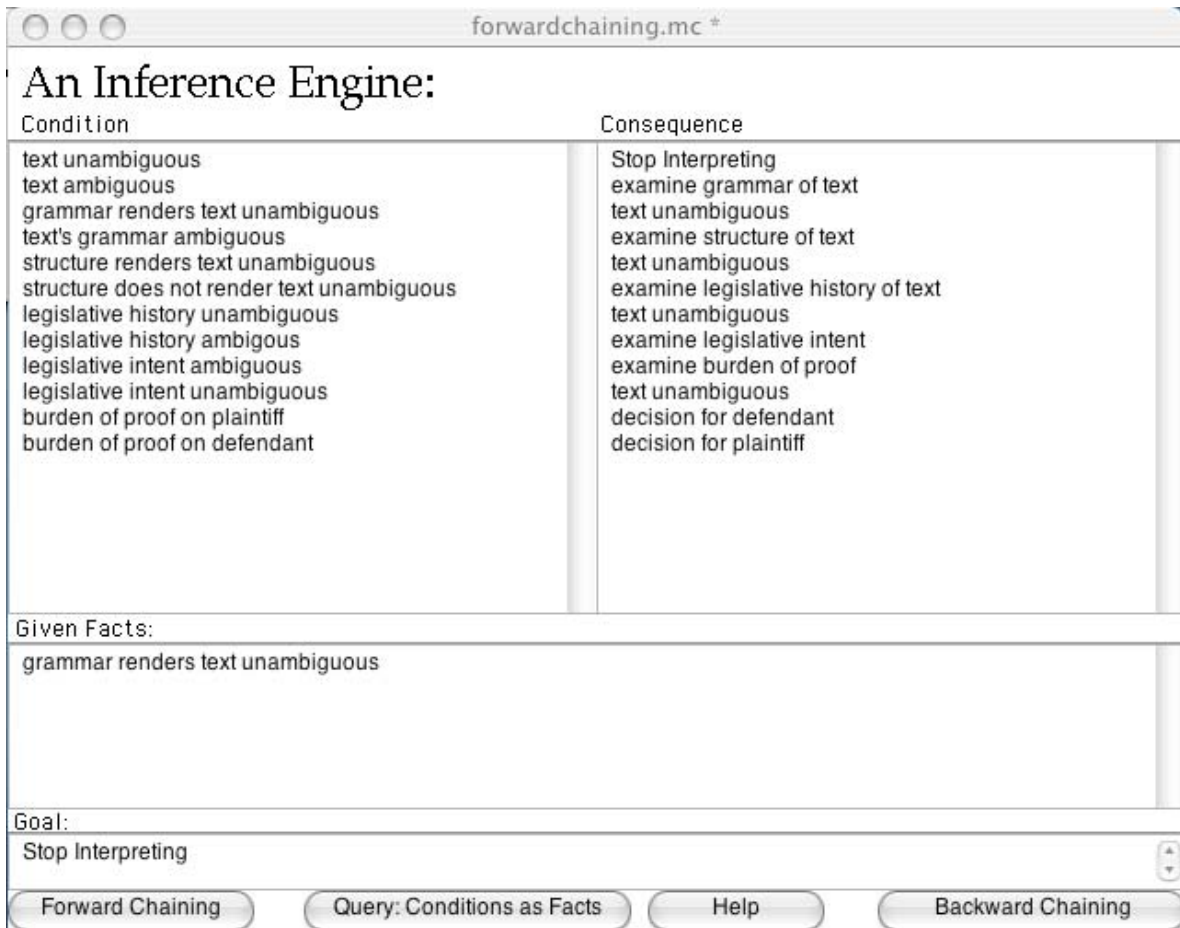


As can be imagined, there are over a dozen arguments, each of which having about 5 dialog boxes per decisions and perhaps as many as a dozen possible reasoning chains leading to a decision. This also explains why only one rule is examined as an example for the purposes of evaluation. While an exhaustive listing of all possible problems and solutions (about a half dozen, on average) would be possible for each of the interpretive rules presented (around a dozen) that would require about 100 separate evaluations. That would be tedious particularly since all rules follow the same structure: A query followed by a further query dependant on the answer to the prior query. This limited evaluation is hopefully adequate to

show that the program works and how it works. Each rule implements a series of dialogs to acquire the needed information to reach a decision as to whether a rule of legal interpretation applies or not.

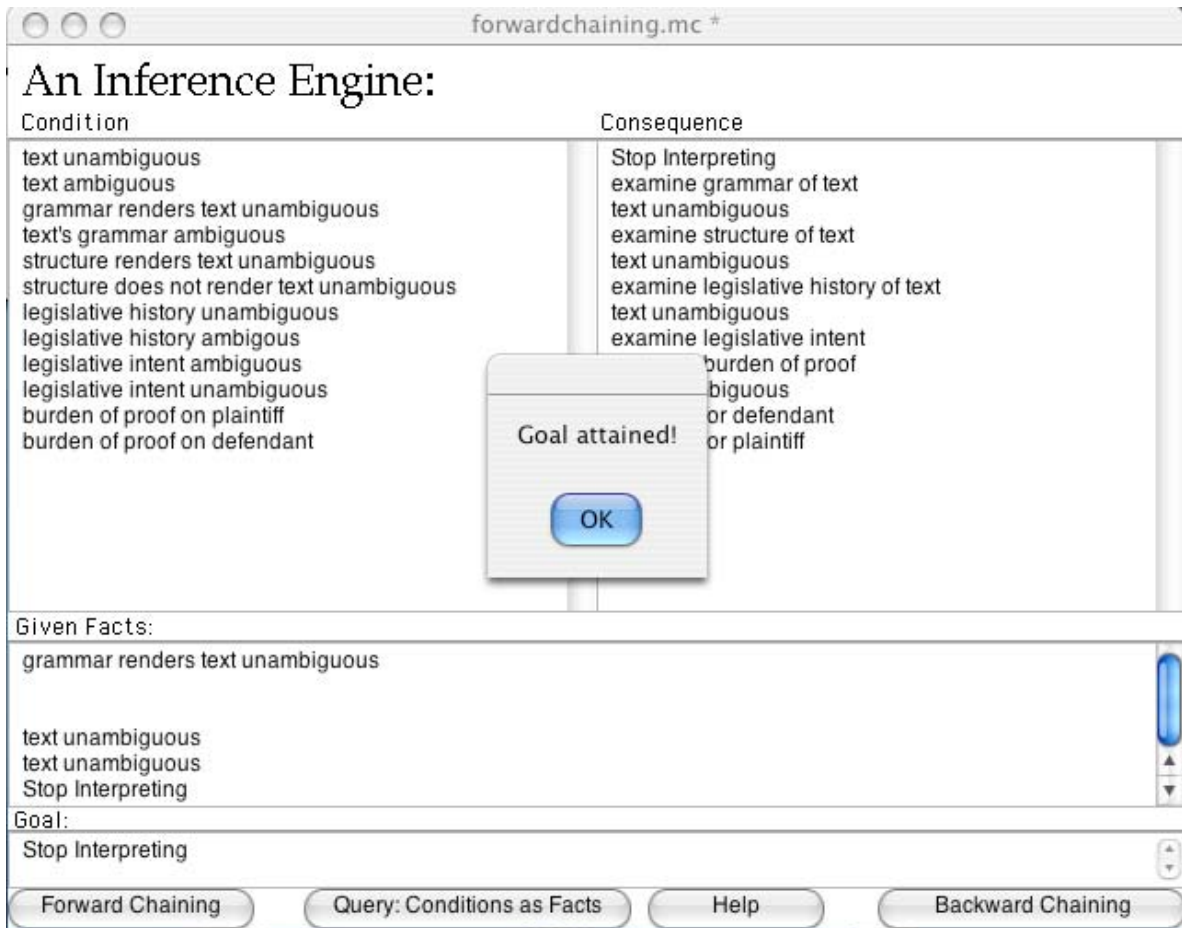
I also developed, by way of comparison, a simple declaratory approach, namely an inference engine using forward and backward chaining. I think that this engine is less useful as the degree of formalisation is at a lower level. Above all the declaration component is much less developed. Of course, one could develop the knowledge base in this engine more extensively. But that would avoid exactly what I wanted to do in this formalisation: Force the explicit mathematical representation of legal rules which are often expressed imprecisely.

Here is the inference engine, with a simple rule base. Conditionals of rules are on the left. Consequences triggered by instantiated rules on the right.



Facts are also provided, as well as a goal. The "query" button allows uptake of new knowledge (it is part of the interview component). The forward chaining button performs a forward search from known facts to implicit consequences and the consequences of those consequences. The backward chaining button performs a query from the goal, known rules which lead to that goal, to query whether facts exist which trigger the rule resulting in the goal, to rules which if triggered would imply the fact necessary to trigger the rule and so on.

Here as an example for verification a simple forward chaining exercise. Clicking the forward chaining button results in the following:



The goal has been attained. But what was the reasoning? A simple declaration component explains the reasoning in a dialog

box.

forwardchaining.mc *

An Inference Engine:

Condition	Consequence
text unambiguous	Stop Interpreting
text ambiguous	examine grammar of text
grammar renders text unambiguous	text unambiguous
text's grammar ambiguous	examine structure of text
structure renders text unambiguous	text unambiguous
structure does not render text unambiguous	examine legislative history of text
legislative history unambiguous	text unambiguous
legisla	
legisla	
legisla	
burde	
burde	

Chain of reasoning: IF grammar renders text unambiguous THEN text unambiguous
IF text unambiguous THEN Stop Interpreting

Given Facts:

- grammar renders text unambiguous
- text unambiguous
- text unambiguous
- Stop Interpreting

Goal:

- Stop Interpreting

Forward Chaining Query: Conditions as Facts Help Backward Chaining

So we see the chaining is quite logical: At the start it was explicitly known that the text meant that this rule was in its own terms unambiguous and required no further interpretation.

What about backward chaining? Similar in principle, now we reason from a desired goal to test whether preconditions of that goal are met, and if any preconditions to the preconditions exist.

forwardchaining.mc *

An Inference Engine:

Condition	Consequence
text unambiguous	Stop Interpreting
text ambiguous	examine grammar of text
grammar renders text unambiguous	text unambiguous
text's grammar ambiguous	examine structure of text
structure renders text unambiguous	text unambiguous
structure does not render text unambiguous	examine legislative history of text
legislative history unambiguous	text unambiguous
legislative history ambiguous	examine legislative intent
legislative intent ambiguous	burden of proof
legislative intent unambiguous	ambiguous
burden of proof on plaintiff	defendant
burden of proof on defendant	plaintiff

Precondition Met!

Given Facts:

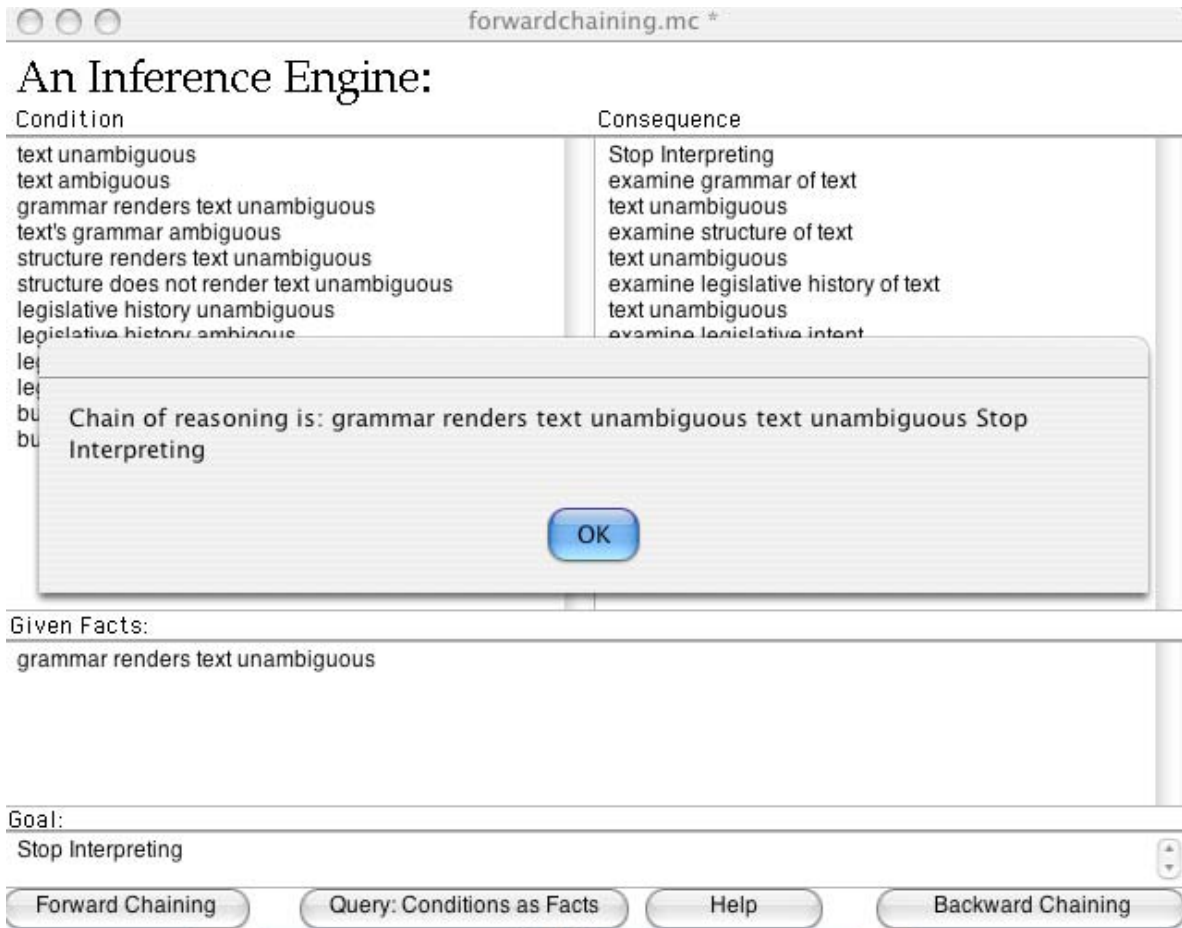
grammar renders text unambiguous

Goal:

Stop Interpreting

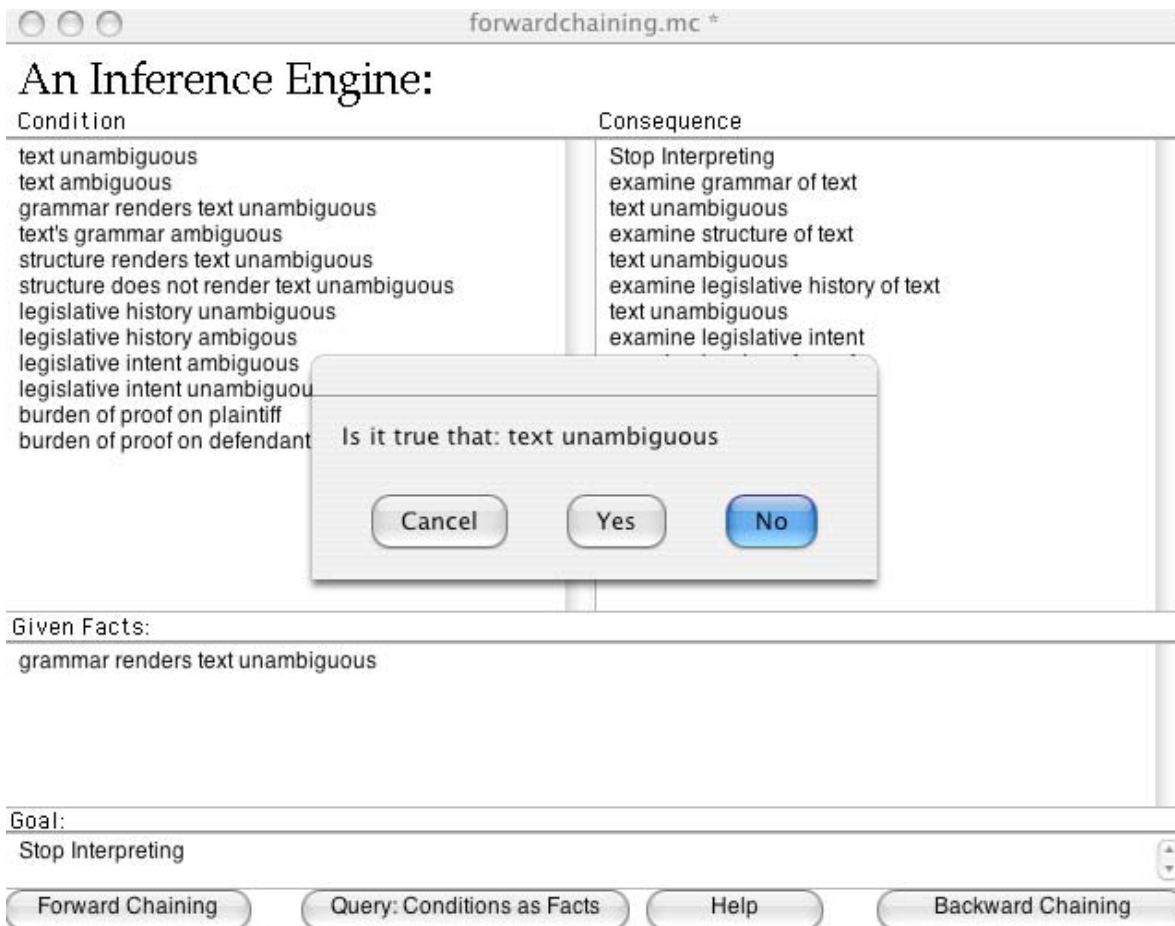
▲ ▼

Again, the declaration component is a simple dialog box illustrating the chain of reasoning



Unlike forward chaining, backward chaining in this implementation does not add newly discovered implicit facts to the known facts. This limitation of the program could be readily overcome.

As a feature, users can test whether each condition is a given fact by using the "Query: Conditions as facts" button.



The user is simply asked if a fact in the conditions is given. If so that fact is added to the list of given facts.

The main advantage of the declaratory approach is that the users has greater flexibility and can create their own database. However for exactly this reason it is uncertain whether the user will be rigorous in their pursuit of legal authority for their claims. Since legal authority is given in the procedural implementation I did not include legal authorities in the declaratory implementation. This omission is also explained by the fact that I simply wanted to write a basic chaining type of inference engine to demonstrate that it was an alternative approach with advantages (flexibility in the rule base) and disadvantages (limitations in the declaration component; and above all, the user is no longer exposed to or forced to create a cogent legal justification for their formalisation of legal rules). Since the goal of the simulation was to obtain a very precise formalisation of legal rules I do think that the procedural approach is better, at least for the resolution of a specific problem.

Because the source code of the declaratory approach is both more compact and more interesting (it relies on recursion) it is included as an annex to this thesis.

B. What was demanded of the program:

The program is intended to be able to determine whether a legal interpretive rule applies or not to a given legal dispute. Legal interpretive rules are applied hierarchically and determine whether other substantive rules apply. Legal interpretation is one of the most complex areas of the law since good arguments can always be found on both sides. However the program makes an exhaustive list of all possible arguments and presents a precise determination. Lawyers and judges present and justify their arguments in ambiguous terms and indeed rely on ambiguity where necessary to support their weaker arguments. The methods presented in this program render explicit all implicit information.

C. What the program is capable of doing

The program is, given answers to a series of queries, able to determine whether a legal interpretative rule or legal justification applies or not which in turn determines whether a substantive rule (not modelled in this program) would apply or not in the case. Further, the arguments provided are legally sound.

D. What the program is incapable of doing

The does not learn any new interpretive methods. No learning procedures were implemented in this program. A model learning procedure for legal interpretation is provided in a separate program to demonstrate that such is possible and that I am capable of such work. However learning procedures were simply not relevant to the task at hand here: The determination whether an ambiguous rule of interpretation results in the application or non-application of a rule, or whether other rules of interpretation must be resorted to.

The program is a rule base. It is not a case base. The program does not develop a knowledge base and its knowledge of the law does not grow with time. However the program does not claim to be a general solution for any legal problem. It claims to be a specific solution for a very important set of related legal problems which deal with a key aspect of all legal arguments: Interpretation and justification. A rule based approach would likely require hundreds of cases to be able to develop answers approximately like those achieved using the rule based approach implemented here because of legal ambiguity (implicit presumptions either in legislation itself or in judge's interpretations of legislation).

E. The Limits of the Program

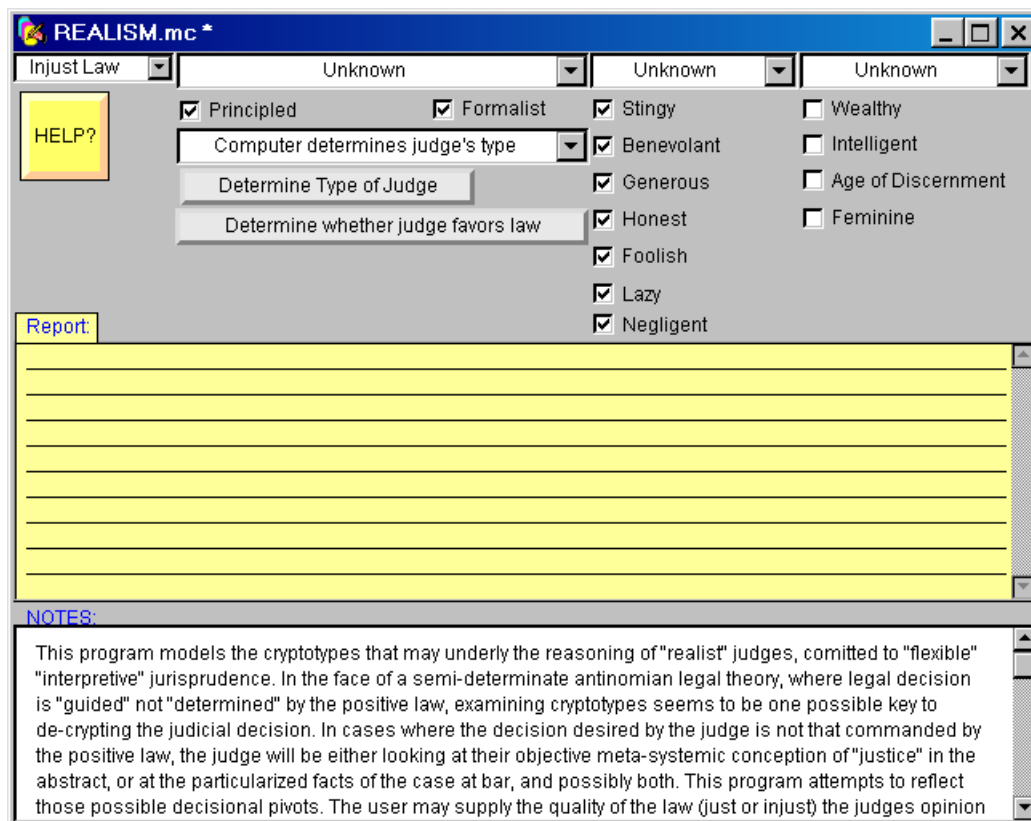
This program is limited in that it does not permit the user to establish and develop a knowledge base. Nor does it use learning procedures. However the knowledge base is pre-programmed because there are in fact less than two dozen interpretive rules: The terms of the rules are often ambiguous. The rules themselves are however finite. Of course learning procedures and an expandable rule base and case base would be useful in a more ambitious program. However the important issue is not merely to reach computational results but rather to obtain computable results which are also legally correct.

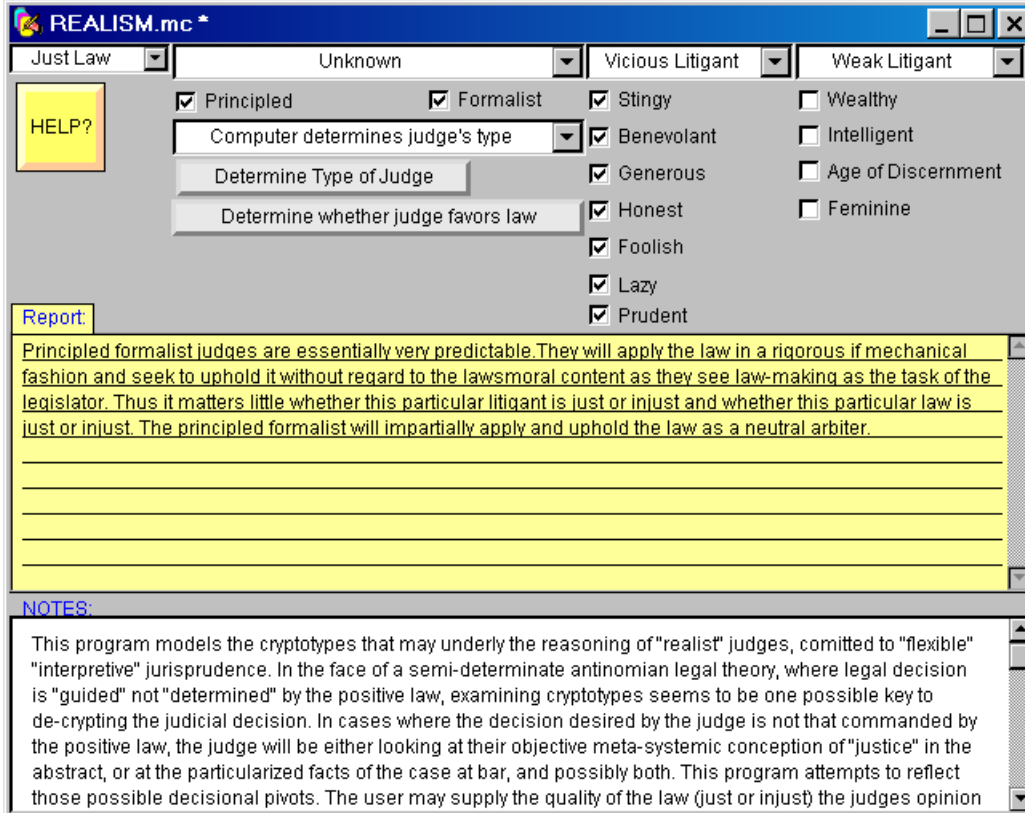
This program solves one class of problems well: The use of rules of interpretation to determine whether other legal rules apply to a given case at bar. This program goes further than previous work of the author which focussed on solution of specific problems rather than efforts toward a general solution of legal problems. Future implementations can expand on this base and may, if appropriate, implement methods (notably chaining, learning procedures and case based reasoning) to solve more general problems - but always on the basis of solid legal reasoning as well as sound computation.

F. A Theory of Judging: Judging Judges

The remaining programs presented are of secondary or tertiary interest to the central theme of the thesis. Thus a briefer verification of their functionality seems appropriate.

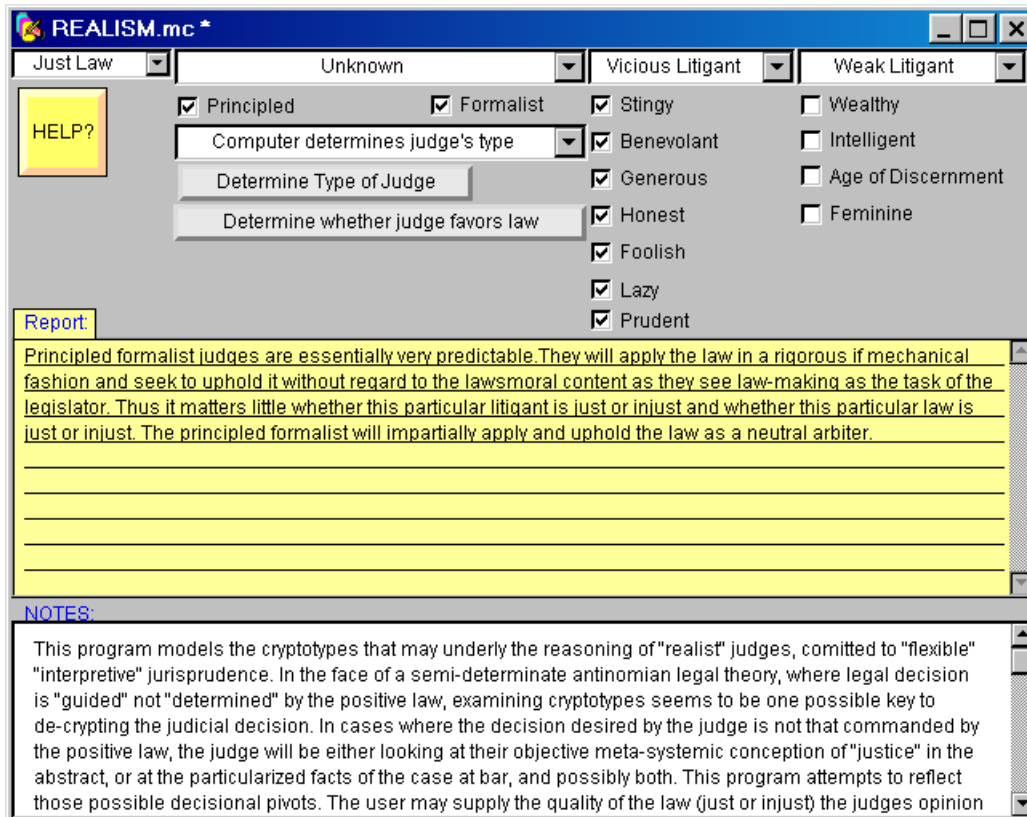
The first program concerns the theory of practical judgement: Not what judges say, but what they do. Having looked at the objective law we can now ask about subjective factors in judicial decision making. The objective of this program is to help describe a theory of judgement. The theory of judgement proposes that judges are either pragmatic realists or conservative formalists and that judges are either honest and principled or dishonest and unprincipled. The model also proposes that judges consider the virtues and vices of litigants and also possibly the strengths and weakness of litigants. Thus the objective of this program is to try to illustrate that model. The user is able to indicate the various moral characteristics of the litigant, and/or the style of judging of the judge. Given sufficient information the program can then determine either: A) Whether the judge is a principled, unprincipled, realist or formalist (thus one of four combinations). B) Whether, given the judge's style (principled, unprincipled, realist or formalist) and the virtus and vices and strengths and weakness of a litigant the judge would apply a given law.





To determine the style of judging, whether the judge favors the law indicators of the type of judge (principled/unprincipled; formalist/realist) must be supplied as well as the virtues and vices of the litigant and the strength of the litigant.

Inversely, given a style of judging, characteristics of the litigant (virtues and vices; strengths and weaknesses), whether the judge upholds the law and whether the law is just we can determine what type of judge we are dealing with (principled or unprincipled, realist or formalist). If we know the litigant (virtuous/vicious; weak/strong) and whether the law is just and whether the judge is principled and whether the judge we can determine whether the judge will support application of that law. For example:



This program is mostly interesting as a curiosity. Rarely are subjective factors of judicial decision making examined or inquired into in this manner. The characterisation of judges as realist or formalist, as principled or unprincipled is clearly defensible. The various virtues and vices as well as strengths and weakness of litigants are also defensible. This program thus serves to help elaborate a pragmatic model of judges behavior.

G. Data Management: Briefmaker

Briefmaker is a simple data-management program. Essentially it attempts to constrain the user to write a correct legal brief. Briefmaker forces the author to properly list the authorities they rely on and also tries to weave facts and law together to form coherent arguments. Briefmaker is not a perfect parser by any stretch of the imagination. However it

does create a basic legal brief and hopefully saves the lawyer from forgetfulness. It is thus an aide to legal practitioners. Screen shots follow:



BriefGenerator.MC (2) *

Argument: Delete excess lines

Legal Issue: (Question Presented)
Whether the program functions fulfilled the contract's terms.

Rule of Law
A party to a contract has a right to the fulfillment of the promised performance by their contracting partner.

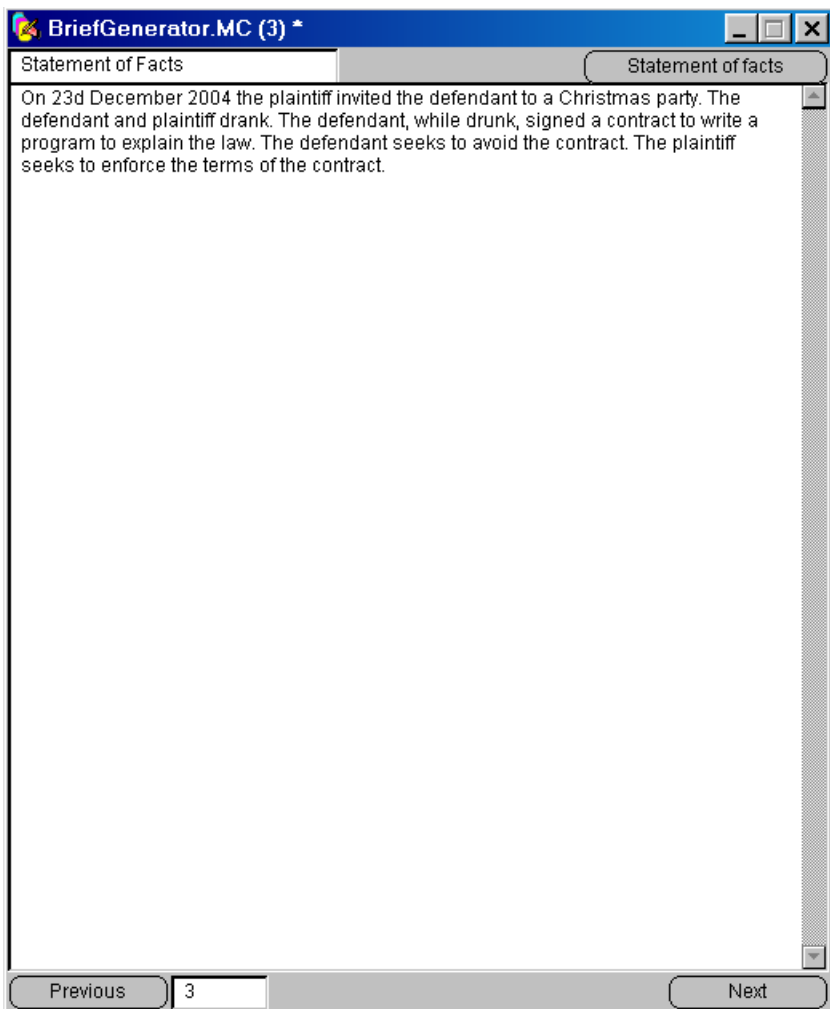
Legal Authority
123 The Case of Fiction N.Y. 2d, 455.

Relevant Facts - in favor
The program works.
The contract was specific in its terms.
The contract was signed.
The contract was in writing.

- against
The contracting partner was drunk when they signed the contract.

Conclusion
The contract should not apply as the contracting partner lacked legal capacity to enter into a binding contract.

Previous This Argument New Argument Clear Next



BriefGenerator.MC (4) *

Table of Authorities

Constitutions

Sort

Statutes

§ 127 BGB

Sort

Case Law

Fictitious Case 123 N.Y., 455.
Seller v. Buyer 77 N.Y. 123.

Sort

Treaties and International Conventions

Sort

Treatises and Reference Works

Black's Law Dictionary

Sort

International and Foreign Materials

Art. 13 C.C. Francais

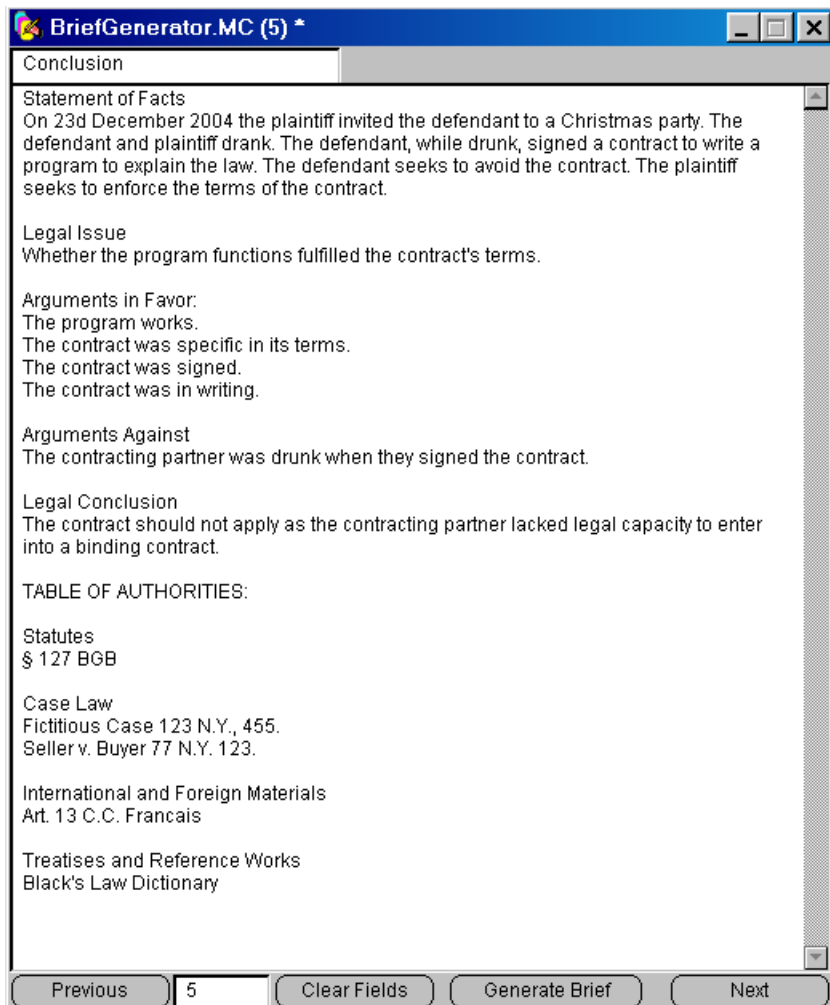
Sort

TABLE OF AUTHORITIES

TABLE OF AUTHORITIES:

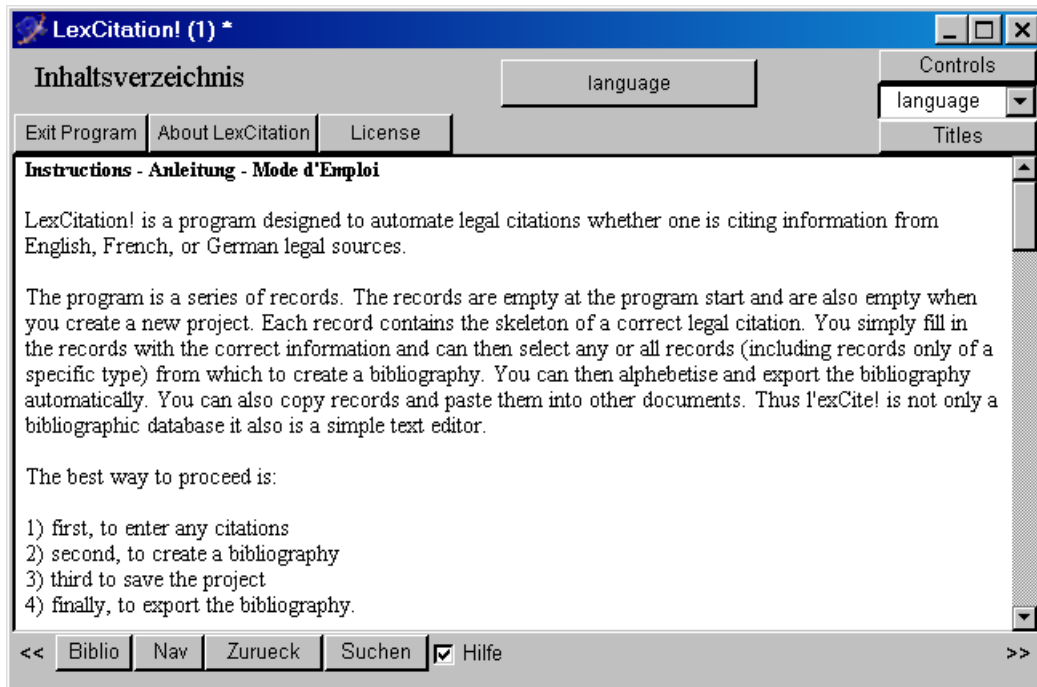
Statutes
§ 127 BGB

Previous 4 Clear Fields Table of Authorities Next



H. Data Management: Lexcitation

A final program „Lexcitation“ tries to help legal scholars to form international legal citations correctly. The various citation formats of Germany, France, and the U.S. were used as musters for the common law and civil law respectively. The program interface is multi-lingual. In total the program consists of 37 screens for there are about four sources of law (constitutions, laws, cases, law review articles) for 3 countries, plus explanations andf formatting. At worse the program serves as a ready reference to international legal citation style. It may be of use to academics as it does auto-format entries in the correct style for appellate litigation and law review writing.



VIII. Conclusions

The formalisation of legal argumentation (legal rules) and justification (reasons for rules) presented here has revealed implicit assumptions underlying justification and argumentation that in turn reveal contradictions and apories in legal theory and practice. We have seen that the supposed dichotomy of legal realism and formalism is only partially correct; that legal realism is determinate when linked to a theory of objective morality; that realist legal methods are no more or less manipulable than formalist legal methods; and that economic of the law are also objective and less determinate than commonly supposed and so are only a partial solution to the problem of legal indeterminacy. Thus, this work has also presented a theory of justification grounded in Aristotelian moral theory. Legal indeterminacy does not arise in legal practice because the dialectic of legal conflict converges to decidable propositions and should make explicit at least those presumptions about argumentation and justification which are relevant to the case at bar. Legal certainty could be described therefor as an emergent process.

Computationally, this work has used rule based expert systems to represent both justification (extra-legal reasons) and the positive law (infra-legal argumentation). This has revealed methodological ambiguities in legal definitions: principally, the absence of adequate hierarchization of legal interpretive methods in the common law; secondarily, the weaknesses of multi-factor interest balancing tests (what interests are to be considered? what weights are to be assigned to these factors?) and finally, the limitations on economic theories of law to propose answers to those questions (not all goods are fungible; actors are not necessarily rational; information is imperfect; transaction costs exist; objective valuation states only a range of possible values and is at best difficult, at worst impossible). These weaknesses in legal method are revealed by a computational analysis which in turn explains the interest of justification: if legal methods are not in themselves necessarily determinate then at times we must look at (extra-legal) justifications - whether in moral theory, philosophy, economics, or any other science.

I chose to use rule based expert systems for the implementation of the programs because they are a proven method to effectively represent propositions of law. The rule bases presented are capable of inferring logical consequences deductively, analogically, or probabilistically. I also chose a rule based expert system because clarity in the user interface is very important: non-programmers are the intended audience of these programs.

To conclude, the use of computers in law has moved from simple automated search and office management programs to didactic programs and finally to diagnostic programs with increasing application of "intelligent" algorithms over time. Programs display increasing sophistication not only due to improved computer speed and memory but also due to software development. The question facing researchers is not whether computers can be used effectively in legal research but how to best use them. As far as tasks go, computers clearly are already useful in teaching and research as well as in legal practice. As far as software technologies go, neural networks may show themselves to be useful, but they have not yet; Prolog could be used for some legal inferencing (deductive inferencing for example) but has an unfriendly interface. Further, modelling analogical reasoning in Prolog seems difficult; Modelling probabilistic logic seems even more problematic. Rule based expert systems, in contrast, are a proven technology. Since their data structures are more flexible they can successfully model deduction, induction, analogy, and ampliation. To combine the flexibility of a rule based expert system with the forward and backward chaining capabilities of Prolog may be the best future - and indeed the WYSH language system does allow that, albeit with no ready module for probabilistic reasoning.

In all events, the future of automated legal inferencing is both challenging and bright. Hopefully these programs illustrate some of the problems and possibilities of this fascinating field.

IX. Future Research

Future research on legal inferencing, particularly inductive ampliation, could examine the possibility of using resolution and unification to represent inferences from a case base and chaining of inferences, likely using prolog. Justification theory would certainly profit from a study of the application of Toulmin structures to legal inferencing. Learning procedures, that is inferential methods which learn based on user inputs which modify not only a knowledge base but also the inference engine are another potential area of research. Legal inferencing would also profit from a critical examination of economic analysis of law, especially the question of weighting of factors and of representing values as integer inequalities or with boolean values seem to be refinements of the basic themes.

Autonomous agents and learning procedures are two more fields for potential future work. Natural language parsing should however not be taken up as a field of research for

computer AI since that field has been addressed already in the field of computable linguistics and because inverse parsers and dialog boxes can be used to work around contemporary limits on automated language parsing.

Future implementations of this program may incorporate forward and backward chaining component as well as to developing learning procedures. I have developed forward and backward chaining algorithms. They are presented not as part of the solution implemented but to show that they are possible and may be used in the future. They may form part of a future doctoral thesis.

Computer driven legal inferencing should focus, in order, on:

1st - analogical reasoning

2d - probabalistic reasoning

3d - inductive inference

4th - remaining problems (weighting of the relevance of facts, representation of laws using inequalities, abduction as heuristic method)

as the simpler problems are more readily solved and may also contribute to solving the more complex ones.

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United States v. Stanley 23 F.3d 1084, 1086 (1994).

Vallance v The Queen; 108 CLR 56; 35 ALJR 182; [1963] ALR 461; 1961 WL 56270; 31 July 1961; HCA (S.Ct.Tasmania).

William W. Wyer, Plaintiff V. Board Of Environmental Protection, And State Of Maine, Defendants. 1999 Me. Super. LEXIS 135, 15 (1999).

Young v. Thompson, 794 N.E.2d 446, 448 (Ind.App., 2003);

ANNEX: SOURCE CODE FOR THE DECLARATORY IMPLEMENTATION SOURCE CODE (NOT INCLUDING HELP OR FACTUAL QUERY BUTTONS: JUST THE INFERENCE ENGINE)

FORWARD CHAINING BUTTON:

```
on mouseUp
  put card field "goal" into goal
  repeat with i = 1 to the number of lines in card
  --TEST CONDITONS FOR EXISTING FACTS
  field "facts"
    repeat with j=1 to the number of lines in card
    field "condition"
      put line i of card field "facts" into f
      put line j of card field "condition" into cond
      if f=cond then
        put return & line j of card field "consequence"
          after card field "facts"
        put "IF" && line j of card field "condition" &&
          "THEN" && line j of card field "consequence" & return after chain
        put true into doMe
      end if
    end repeat
  end repeat
end repeat

repeat with i = 1 to the number of lines in card
field "facts"
  if goal=line i of card field "facts" then
    answer "Goal attained!"
    answer "Chain of reasoning: " & chain
    exit mouseup
  end if
end repeat
--TERMINATION TEST ELSE RECUR
if doMe = true then send mouseup to me

repeat with i = 1 to the number of lines in card
field "facts"
  repeat with j = i+1 to the number of lines in card
  field "facts"
    if line i of card field "facts" = line j of card
    field "facts" then
      delete line i of card field facts
    end if
  end repeat
end repeat
end mouseUp
```

BACWARD CHAINING BUTTON:

```
on mousedown
  global chain
  put "" into chain
  put card field "goal" into goal
  put goal into chain
  get testFacts(goal)
end mousedown
```

```
function testFacts thisCondition
  global chain
  repeat with j = 1 to the number of lines in card
  field "facts"
    if line j of card field "facts" = thisCondition
      then
        answer "Precondition Met!"
        answer "Chain of reasoning is: " & chain
        put line j of card field "facts" into
        preCondition
        put preCondition & " " before chain
        return preCondition && j
      else
        get isConditionAConsequence(thisCondition)
      end if
    end repeat
  return "nil"
end testFacts
```

```
function isConditionAConsequence thisCondition
  global chain
  repeat with j = 1 to the number of lines in card
  field "consequence"
    if line j of card field "consequence" =
    thisCondition then
      put line j of card field "condition" into
      preCondition
      put precondition & " " before chain
      get testFacts(precondition)
      return line j of card field "condition" &&
      thisCondition
    end if
  end repeat
end isConditionAConsequence
```