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This paper is a revision of the paper read at the Third International Workshop on Human and Machine Cognition and was read at the Dept. of Philosophy, Carnegie-Mellon University, Sept. 1993. It is submitted sans section 5 to Law and Philosophy, 9/93.

Rule-Maker's and Rule-Follower's Meaning¹

R. P. Loui

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1. Introduction

Of poetry and painting, meanings can be discussed. Of rules, meanings can be discussed only in particular ways.

Literatists have invaded legal theory, and according to their axioms, hearer's meaning need not be speaker's meaning. Granted, no one had ever gone so far as to guarantee that rule-follower's meaning would be rule-maker's meaning. But to be a rule-follower is to discover the meanings of rules through certain processes and not others. Not just anything goes. For most rules, the meaning of the rule pertains to the way the rule can be used to construct conclusions. This is the pact that rule-followers and rule-makers enter; to do otherwise is to do something with the rule-maker's rules, other than to follow them.

Rule-makers can intend that their rules be used in any of a variety of ways. Rule-makers' intentions aside, there may be ways to follow a rule other than the way a rule-maker intended. Broadly construing the contexts in which rules are created, or broadly construing what constitutes rule-following, little can be said about how rule-following shall be constrained. The target of this discussion is narrower: the target is the legal rule, the rule that carries with it the authority of social relations, not necessarily the authority of a rule-maker's superior epistemics, nor merely the authority of a rule-maker's ability to create language. The responsibilities of the rule-follower are greater in this discussion, too. To reach a conclusion by following a rule, the putative rule-follower must at least make rational use of the rule in reasoning. To be otherwise inspired or mentally

1. This paper is a revision of the paper read at the Third International Workshop on Human and Machine Cognition and was read at the Dept. of Philosophy, Carnegie-Mellon University, Sept 1993. It is submitted sans section 5 to *Law and Philosophy*, 9/93.

The author thanks Mark Mittelman for sharing his expertise on Missouri Supreme Court and State Legislature practices; Henry Kyburg and Drew McDermott for their criticism; Thorne McCarty, and Edwina Rissland for their encouragement; and Don Berman for allowing these thoughts during his AI & Law session.

affected by the rule will not qualify as following it.

To enter the usual discussion about the interpretation of legal rules, suppose something about the nature of the legal system, the process of legislation, and the nature of people and their politics. To avoid this usual discussion about the interpretation of legal rules, while still seeking relevance to legal theory, analyze logico-linguistic aspects of rule-making and rule-following more generally. Analyze not so generally that the discussion becomes a history of the philosophy of language, but not so narrowly as to require reference to particular legal systems and political theories.

Herbert Lionel Adolphus Hart established the locus of just such a discussion in his landmark *Concept of Law*.² A central issue in the interpretation of rules is the problem of open-texture. A term is open-textured just in case the system of rules does not contain an explicit definition of the term. Hart attributes the terminology to Friedrich Waissman, who in turn owes considerable debts to Ludwig Wittgenstein. For open-textured terms in law, interpretation depends largely on the identifiable precedents of the terms' legitimate uses. Interpretation depends perhaps partly, too, on the intentions of the rule-maker, although attribution of this second dependence to Hart can be disputed, as for instance in a recent article of Brian Bix.³

Hart's example, "no vehicles in the park" includes at least two open-textured terms: the predicates, "vehicle" and "in the park." Says Hart of open texture:

There is a limit, inherent in the nature of language, to the guidance which general language can provide. There will indeed be plain cases constantly recurring in similar contexts to which general expressions are clearly applicable but there will also be cases where it is not clear whether they apply or not. ... Here something in the nature of a crisis in communication is precipitated: there are reasons both for and against our use of a general term, If in such cases doubts are to be resolved, something in the nature of a choice between open alternatives must be made by whoever is to resolve them. (pp. 123-4)

Hard cases of vehicles in the park abound in the imagination. *Concept of Law* gives the example of a model toy automobile taken into the park, which may not be in the purview of the rule.

The problem is not restricted to vehicles in parks; consider "home office," Edwina Rissland's

2. H.L.A. Hart, *Concept of Law*, Oxford, 1961.

3. B. Bix, "H.L.A. Hart and the 'open texture' of language," *Law and Philosophy* 10, 1991.

example,⁴ “perfected interest” Thomas Gordon’s example,⁵ ancient man’s “avenged homicide” or modern woman’s “offensive speech.”

Gidon Gottlieb further clarifies the problem in *The Logic of Choice*⁶:

The decision on the meaning of the word-in-the-rule is not just a decision about linguistic usage; it is a decision whether to apply the rule or not Whereas the meaning of a word in common usage is settled by reference to its overall role in language, the meaning of the same word when it occurs in a rule may well be settled by reference to legal principle. It becomes a question of the application of law. ... Much adjudication turns on questions like this, ‘is a flying boat a ship for the purposes of ... property law?’ (p. 49)

Open-textured terms bear semblance to observational terms in science, to multiply instantiable concepts in functionalist theories, and to every word uttered in radical translation. Since legal theorists have adopted the phrase “open-textured,” calling terms “open-textured” prejudices the manner in which they ought to be interpreted. Calling a term “open-textured” suggests that the term is a legal term, occurring in a legal system according to which an adversarial process will determine the term’s applicability. Applying open-textured terms invites debate, discussion, dialogue, disputation.

It is a fact that legal terms are open-textured; their interpretation involves disputation: but need they have been open-textured in this sense? The aim here is to find inescapable an adversarial process of interpreting the terms that occur in rules functioning like legal rules. Moreover, the aim is to show how disputation underlies rule-following whenever certain purposes and social relations exist among rule-maker and rule-follower. The aim is to provide a logico-linguistic argument for a legal system’s requirement that interpretation involve disputation.

The strategy will be to recount the recent experiences of rule-making in a closely related enterprise, and to report the picture that emerges of interpreting rules there. Two decades of research on the representation of rules and the nature of reasoning with rules in computer systems has presented an opportunity to reflect on what is possible, and on what is possible but plain undesirable. The

4. E. Rissland, “Artificial intelligence and law,” *Yale Law Journal* 99, pp. 1957-1981, 1990.

5. T. Gordon, *The Pleadings Game: An AI Model of Procedural Justice*, doctoral dissertation, Darmstadt, 1993.

6. G. Gottlieb, *The Logic of Choice: An Investigation of The Concepts of Rule and Rationality*, Allen-Unwin, 1968.

picture emerges not just from experience with rule-based computer programs. More important is the abstract study of systems of rules and cases, their logic, their semantics, the algorithms that might describe their use, and their potential use in the automation of legal function. This research has led to a reconsideration of logic's relation to such rules. It has broken the Russellian gaze with which formalists have viewed the nature of rules and reasoning with rules.

2. Rule-Making for Designed Rule-Following

Automata follow rules by design; they permit free invention of the means by which rules are specified and interpreted. Since the automaton, rule-making has been more prolific than at any time in history, and rule-making has never been as studied.

Most of what are generally thought to be computer languages for imposing rule-following on automata are not much like the languages of legal rules. However, research in artificial intelligence and the theory of databases has led to a view of all stored data as knowledge, represented, potentially to be subject to reasoning. The study of languages for representing knowledge supposes that there will be assertion, which raises the semantical problem of interpreting assertions. For assertions used in even as mundane an activity as responding to database queries, some assertions guide function in the same way that rules guide behavior. Assertions in databases can be imperatives for computations, rules for generating answers.

More obviously relevant is the practice of programming explicitly with rules, where rules take the form of conditionals: antecedents paired with consequents. This form of programming, rule-based programming, is at the heart of artificial intelligence, as it occurs in expert systems and logic programming. Incidentally, this form of rule specification also occurs in the mathematical machine models such as the Turing machine, although there is no problem of semantics there.

In rule-based programming, the possibility of conflict among rules arises, as it does in systems of legal rules. Rule-makers choose to use defeasible rules: rules that admit exceptions, rules that can be defeated by other rules, or rules that exhibit other kinds of defeasance. Conflicts among rules are to be adjudicated. The application of a rule depends on the potential applicability of rules that would be defeating, and disputation is one way of managing this dependence.⁷

7. A sympathetic review of these issues can be found in Henry Prakken's dissertation, *Logical Tools for Modelling Legal Argument*, Computer/Law Institute, Vrije Universiteit, Amsterdam, 1993.

This is quite different from the situation envisioned by Hart (p. 125) of a “world fit for ‘mechanical’ jurisprudence.” Hart: if we were gods, not men, “we could make rules, the application of which to particular cases never called for further choice.” But even when we can escape the handicaps of “human and legislative predicament,” the “relative ignorance of fact” and “our relative indeterminacy of aim,” the language of rules and the means of interpreting rules exhibit the features of legal interpretation. Even as gods to machines, the rules we produce are the rules of leguleian man.

How legislating laws for societies compares to rule-making for automata is crucial here. There are many reasons why disputation enters legal interpretation: adversarial parties to a dispute, remnant opposition from the political process of legislation, the desire of a people to be governed by a system of laws that have the features of defeasibility and disputable rule application. Kent Greenawalt’s *Conflict of Laws and Morality*⁸ finds grounds for the defeasibility of rules in their conflicts with higher norms. Now suppose a setting in which these considerations are absent. Still, certain social relations demand that the logical application of language revert to interpretation dependent on dispute. So if disputational processes of interpretation appear inevitable when working with automata, surely they are inevitable among people.

3. The Logic of Analogy

Suppose first that the interpretation of rules is guided by the presence of precedent uses of terms. This need not be a restriction to Anglo-American or Common Law, as other legal systems may yet allow arguing that a rule applies based on cases, for example, on hypothetical cases. The observations of the next section are made without this supposition.

Again, Hart:

Faced with the question of whether the rule prohibiting the use of vehicles in the park is applicable to some combination of circumstances in which it appears indeterminate, all the person called upon to answer can do is to consider (as does one who makes use of a precedent) whether the present case resembles the plain case ‘sufficiently’ and in ‘relevant’ respects. (p. 124)

In rule-based systems, a similar phenomenon is observed. Far from the academic concerns of Hart,

8. Greenawalt, K. *Conflict of Laws and Morality*, Oxford, 1987.

the brochure to market an expert system to assist pathologists, INTELLIPATH, proclaims:

The system provides you with concise morphologic criteria for features and diseases. The system [also] offers instantaneous random access to high-resolution slides from videodisc libraries covering the broad spectrum of diseases and histologic features.⁹

The reason, explains designer Dr. Eric Horvitz, is that the rules in the system contain terms such as “many melanocytes.” “Many” to one physician may not be “many” to another. No matter how precise the “morphological criteria” elaborated by the system, at some point, examples are considered to be needed for interpretation.

We have text on every observation according to the experts, to assist the user to understand what an expert means by a subtle histologic feature, but that often is not enough. If a certain diagnosis indicates a few melanocytes and another indicates many, then compare video, ..., getting a sense for the subtlety and the difference between the distinctions.¹⁰

To the formal system of rules, “many melanocytes” means only that an observation was made that suffices to shift from one probability distribution to another. “Many melanocytes” means, as Gottlieb warned, enough melanocytes to fire the rule. The choice of the term “many” guides the interpretation, but the provision of examples is essential. An expert on such systems, William Clancey,¹¹ that the more complex the systems become, the more examples are needed effectively to ground the terms of the system.

In reasoning from examples, there are two main patterns that could be intended. One is reasoning analogically from cases; another is theorizing about the fit of rules to cases.

To analogize between a recorded case and the present case, that is, to cite precedent, find a relevant similarity between the two cases. Once found, properties of the recorded case may be argued to hold of the present case, except when the property is already known not to hold of the present case. If P and Q hold of the source, and P similarly holds of the target, then one may argue that Q holds of the target, providing one does not already know the target exhibits not-Q.

9. INTELLIPATH brochure, available from Knowledge Industries, Palo Alto, CA.

10. A. C. Farr, “Artificial intelligence may enable MD’s to make diagnoses,” *Orthopedics Today* 13, 1993, p. 25.

11. Commenting on a version of this paper at the Third Intl. Workshop on Human and Machine Cognition, Pensacola, May, 1993.

There are many possible analogies. Even for a finite number of cases finitely described, the legitimate grounds for analogy proliferate with creative use of language. Like the problem of excluding projection from “grue” in the scandal that is inductive reasoning, unacceptable grounds for analogies are to be excluded. Fortunately, there is some agreement on the logic of analogy. More specific analogies are considered better than less specific analogies. If a new case is found exhibiting not-Q, and if an additional property, R, in addition to P is shared between the target case and the source case, then there is a superior analogical argument that the target case is an instance of not-Q. There may be agreement on other aspects of analogical argument, such as what other kinds of rebuttals are appropriate. There may be enough agreement to propose how such argument might be systematized, as for example, by Kevin Ashley in his legal reasoning program, HYPO.¹²

Analogical argument is one of the least conclusive, the least demonstrative among so-called “non-demonstrative” forms of reasoning. It is easy to argue for a conclusion by analogy on trivial grounds, triviality cannot be excluded a priori; sometimes trivially grounded analogies are all that are available to guide reasoning. The solution, for those who traffic in analogical arguments, is to allow for arguments pro and con. Having heard grounds for believing that a term applies, one opens oneself to hearing grounds for believing why it does not apply. Irrational are those who will only form analogies that support a particular conclusion, who will not criticize non-demonstrative argument. Analogy-making is subject to dispute; successful computer modeling of analogical reasoning begins by recognizing that analogizing is a kind of defeasible reasoning, and defeasible reasoning is inherently disputational. The attempt to automate the logic of analogical reasoning has made clear its disputational nature.

Disputation arises merely from grounding the meanings of terms in cases. Nothing has been assumed about the defeasibility of rules in which the terms occur. Even for systems of rules that admit no defeasance and have no conflicts, disputation arises. Suppose a system has a single deductive rule: “demonstratively, if A then C”; for example the Confucian edict, “without exception, all things in moderation.” Suppose one case each of A and not-A: for example, a single case of “moderation” and a single case of “immoderation.” Disputation still arises in any application of the rule because there will be respects in which the target case is like the paradigm of A, and there will be respects in which the target case is like the paradigm of not-A.

12. Ashley, K. “Defining salience in case-based arguments,” *Proc. of the Intl. Joint Conf. on AI*, Morgan Kaufman, 1989.

The situation is worse with the library of morphology or the library of case law. In each, the description of cases is not yet rendered in a formal language. From the succinctness of the bitmap on disc or the natural language of text on West or Mead may yet spring any number of perceived similarities and dissimilarities to newly presented cases.

Amazingly, no logician has ever supposed that there is an ideal analogy.¹³ Analogy and countervailing analogy can continue as long as there is language in which to express new concepts of similarity, and as long as disputants are willing so to engage each other.

There is yet the possibility of rule-makers intending that rule-followers do something else with cases other than engage in disputes over aptness of analogies.¹⁴ Rule-makers could intend that rule-followers construct theories, that is, criteria, that best fit the cases provided.

An example of such a rule is “if the mass is doubled, then the acceleration is halved,” and of course for this rule the appropriate manner of interpretation is familiar to philosophers of science. The criteria for mass doubling depends largely on the precedent examples of doubling of mass. However, the selection of criteria with which to classify instances and non-instances of mass doubling need not fit all alleged past instances; the examples of mass doubling are prima facie examples, subject to further authoritative classification. The criterion for applying the term may trade considerations of error and simplicity, coherence and predictive power. Some past examples may be rejected as errors of measurement, or the casualties of Ockham’s razor’s cut. Past examples are just data. Prior classification is one person’s use of the data; subsequent classification is still free to reconsider the data.

In this vein, Trevor Bench-Capon recently¹⁵ proposed a connection network discriminator to determine when legal rules were applicable. The connection network would be trained on all of the positive and negative instances of a rule’s applicability. Through training, the connection network reinforces patterns of connections that are active during instances and inactive during non-

13. See, for example, the thesis of Stuart Russell, *Analogical and Inductive Reasoning*, Dept. of Computer Science, Stanford University, 1987.

14. At the most recent conference on AI and Law, Jeff Norman and I suggested that precedent-setting cases provide through their rationales new defeasible legal rules, or principles, instead of supporting the kind of single-instance projection that is usually called analogy. For coherence, an explanation is owed. What we described is a kind of analogy, just not the kind that necessarily defers to explicit rules. In any case, our suggestion was still disputational, open-ended, and constructive in the way that is here contended; in this context, the distinction is inconsequential.

15. T. Bench-Capon, “Neural networks and open texture,” *Proc. Fourth Intl. Conf. on AI and Law*, ACM Press, 1993.

instances. According to contemporary understanding of how such a network functions, a best-fit theory will ideally be constructed and applied by the machine.

Something about legal systems makes it unacceptable to say “according to the best fit of theory to cases, and incidentally, excluding some cases because they do not fit, the term applies to the current case.” Or, “this is a case of a prohibited vehicle in the park because so says the well-trained connection network, which, taking measure of vehicles in the park, non-vehicles in the park, vehicles not in the park, and so on, no doubt has settled on a theory of best fit.” Claims of fit could admit counterarguments, if for instance, the criterion of fit is disputable or the space of candidate theories was not exhausted when optimizing fit. Interpretations that produce best-fits of criteria to cases could indeed be disputational interpretations. But best-fit does not admit the right kinds of counterarguments.

One problem is that best-fit allows dismissal of the classifications of prior cases. The new theory’s exclusions could be cavalier, could disregard the authority of the rule-maker and enlarge the role of rule-follower.

Consider the rule “castle early in chess” supplemented with a corpus of some chess arrangements deemed early and some arrangements deemed not. Either analogical use of cases, or freer theorizing about earliness in chess is possible. The possibilities depend on the social relation between rule-maker and rule-follower. If the rule-maker foresees a growth in the nascent skill of the rule-follower that could surpass his own skill, then authority may pass from rule-maker to rule-follower, and unexplained failure to fit cases is the acceptable price paid for improved chess theory. If, on the other hand, the rule-maker intends that the rule-follower operate within the edict, with no authority to alter the edict, then the rule-follower had better theorize so as to fit all cases. Chess masters will deal differently with the prodigious and the remedial.

Judges, especially appellate judges, are free on some legal theorists’ accounts to exempt themselves from prior decisions without explanation. In so doing, judges might be exercising privileges of rule-makers not rule-followers. Judges have certain authorities not possessed by all rule-followers, for instance not possessed by rule-following bureaucrats. It is popular to say that what jurists do is “theorize” about cases and rules, and this language would seem to prejudge best-fit theorizing. But this vague language could equally well describe the result of analogizing disputationally, seeking distinctions among cases, reasoning about their rationales, and finding socially defensible grounds for holding some similarities to be more important than others in order

to adjudicate disputes. That is simply a different kind of theorizing.

Best-fit theorizers seeking to apply terms could still be forced to select as criteria the simplest theory that fits all the data. This usurps no authority and produces socially defensible answers. It may also raise issues about the basis on which cases can be distinguished, which like analogizing, drives future theorizing.

The problem now has to do with purpose. The allure of cases guiding interpretation was that here was an escape from the closed system of rules. If Weissman and Hart were right about the futility of seeking further rule-based criteria for applying terms, then rule-followers formulating rules are not making progress, even if they adhere perfectly to the constraints imposed by prior cases. If rule-followers are superior rule-formulators or if the bandwidth for communicating rules is restricted, then some of the rule-making labor can usefully be divided. Such division may allow the meanings of the rules to be discovered with good effect. Applying the rules thus resulting from the rule-follower's theorizing raises no interpretation problem since the rule-follower now is the rule-maker. Rule-followers become rule-makers. Sometimes experts are unwilling to take so liberal a view of their expert system users; sometimes lawmakers are unwilling to be so liberal with their ministers and fonctionnaires.

4. Defeasibility as Shorthand and as Basis for Construction

Formalizations of rules are easily perceived as arbitrary webs of connected symbols, meeting the world only at undefined terms with their "texture" opened wide. Some rule-makers seek critical control over interpretations and do so largely by providing cases, intending that the cases be used in particular ways.

Ignoring the cases, the interactions among defeasible rules are of such a nature that the most reasonable intention for their use is disputational. Artificial intelligence's investigations of reasoning with pure systems of rules leads to this conclusion.

Again, care is needed because rule-makers are free to intend whatever they want. Some sets of defeasible rules are intended only as a convenient shorthand.

For example, as a rule, the *sgn* function on natural numbers is everywhere 1 (one). At zero, however, the *sgn* function takes the value 0 (zero). Here is a terse specification. The same could have been said indefeasibly: if x is a positive natural number, then $sgn(x) = 1$; if x is zero, then

$sgn(x) = 0$. Sometimes the defeasible rules are significantly more convenient. All scheduled passenger flights from St. Louis to French destinations have been recorded; that is, defeasibly, there is no flight from St. Louis to any given destination. The recorded flights are St. Louis to Paris, St. Louis to Lyon, and St. Louis to Metz. To say the same is possible with indefeasible rules, but cumbersome: there are the three flights as mentioned; there is no flight from St. Louis to St. Malo, no flight from St. Louis to St. Germain-des Vaux, no flight from St. Louis to St. Pierre-Quiberon, and so on. Again, the motivation for defeasible form is convenience.

Quite a different use of defeasibility is the system of rules: by presumption, one may not park; red stickers permit parking in red spaces; yellow stickers permit parking in yellow spaces. To specify an equivalent indefeasible system requires not only the rules: yellow stickers do not permit parking in red spaces, and so forth; but also a rule such as: if no successful argument can be made for having a red sticker, such as stickers of indeterminate color, stickers undisplayed, stickers from the prior year at the onset of the new year, then parking is not permitted in red spaces. If the qualifications are finite, perhaps the defeasible rules can be rewritten.

Rewritable systems of defeasible rules depend on disputation only in a shallow sense. To apply a defeasible rule requires that exceptions be considered. Rules do not provide warrant for their conclusions locally; the warrant they provide depends on whether any defeaters or exceptions apply. The meaning of rules is holistic in this sense. If there is an algorithm for rewriting the rules that does not simulate disputation, then the rewriting followed by the indefeasible application of the resultant demonstrative rules need not be disputational.

More profound, and more prevalent, are defeasible rules that are intended not to be rewritten, not to be a shorthand for a decision table too cumbersome to express. By design, some rule-makers provide defeasible rules as inputs to a deliberative process through which rational belief is constructed. The process does not guarantee that all rules that are applicable will be discovered to be applicable. It does not guarantee the order in which rules will be considered. Computer scientists call such processes “non-deterministic” because their outputs are not fully determined by their inputs; they are not functions of their inputs. They are also called “non-monotonic” because the process need not settle on a single answer as time passes.

Processes of this kind define social terms such as negotiated settlement or nominee confirmation. They appear in computational models for a different reason. The rule-following of the automaton is bounded in resources, especially computation. An effective way to cope with resource-bounded

reasoners that are incapable of producing an ideal decision, if such a thing exists, is to depend on process. Thus, the rationality of the conclusion is based on the rationality of the procedure.

A rule-maker, faced with a rule-follower who has limitations, had better tailor the expression of the edict so that it can be followed despite the limitations. A rule-maker can say, "if checkmate can be guaranteed forty moves after this move, then make this move." A rule-maker can say, "if there is with absolute certainty no deductive proof of A, then infer not-A."¹⁶ Some logical decisions, some computations, are beyond all possible automata. Human rule-followers often are capable of even less effort. To require that all rules be considered in all argument-producing combinations, is to be constantly wishing for compliance.

Defeasibility provides a solution. Defeasible rules permit conclusions based on partial computations, computations in quantities better suited to the capabilities of the rule-follower. Defeasible rules permit rules to be used locally; there is a going forward of deliberation by using the rule, and a going forward as defeating conditions are sought. The original computational interest in such rules was because they permitted computers to "jump" to conclusions that could not otherwise have drawn.

Disputation is one of the right ways to manage computations with defeasible rules. Rational belief cannot be founded on arbitrary deliberation with defeasible rules. As with accusation and rumor, nothing is achieved with defeasible rules unless claims are subjected to dispute. If resources are limited, they have to be used well. Having built a non-demonstrative argument for a proposition based on defeasible rules, some effort should be spent considering how it could be criticized. The remaining resources may not suffice to identify an effective counterargument lurking in the depths of argument possibilities. Still, the quality of the warrant conferred on the non-demonstratively supported proposition depends on having spent maximum available resources trying to criticize the argument, and failing. A manager seeking to reach a decision by disputational deliberation, who pits a quick researcher against sloth, or who appoints mental inferiority to debate brilliance, will have nothing result that can be believed. The process, if it is to confer warrant, must be fair and efficient.

Linking the rationality of the outcome of a process to the nature of the process is called procedural rationality.¹⁷ The resulting inference is called ampliative, because it is not contained in the

16. This is the so-called rule of "negation-as-failure," which is useful for constructing certain kinds of databases.

meanings of the premises. The logical view implied is constructive. I have called the activity a dewriting of the rules, in contrast with the rewritings that are alone possible in the classical logico-linguistic view.¹⁸

Bertrand Russell conceived of the conditional as a rewriting of an asymmetrically negated disjunction,¹⁹ and in Alfred North Whitehead's words, there was no "further, additional logic",²⁰ of rules. Alfred Tarski conceived of logic as governed by a consequence function, which mapped sentences to their meanings, to their complete sets of entailments.²¹ Artificial intelligence has tried to adopt these classical views, and found that an alternate view is needed in practice. AI supposes makers of rules with no disputes in their own minds, with complete envisagement for a domain, with willing rule-followers, with all linguistic conventions in waiting; and AI finds that makers of rules choose defeasible rules. Some choose out of sheer convenience; others choose because of how communication, complexity, and computation mix. Even when it is possible to follow a rule to the letter, theory and practice show that it can be better to dispute what it means to follow a rule to the letter. Rule-makers choose "negation-as-failure," "non-monotonic rules," and "defeasible reasoning" in the AI laboratory; law-makers and legal systems can be no less dependent on disputation.

Disputation over meaning is a curiosity: there is not necessarily an ideal resolution intended, nor necessarily a best answer to be discovered; nevertheless, meaning is not free for the taking. Disputation over meaning results in particular constructions of meanings. It is altogether possible for rule-makers to intend such constructions upon their rules.

5. Those Who Follow Rules

There are those who exercise the authority of rules: individuals empowered by social organization to impose rule-following on others. There are bureaucrats, officers, administrators, governors, umpires, police, librarians, middle managers, hall monitors, and guards at the desk of the gymnasium.

17. H. Simon, *The Sciences of The Artificial*, MIT Press, 1969.

18. See also R.P. Loui, "Ampliative inference, dialectic, and computation," in *Philosophy and AI*, R. Cummins and J. Pollock, eds., MIT Press, 1991; R.P. Loui, "How a formal theory can be normative," *Journal of Philosophy* 90, pp. 137-143, 1993..

19. A. Whitehead and B. Russell, *Principia Mathematica*, Cambridge, 1910-1913.

20. A. Whitehead, *Essays in Science and Philosophy*, Philosophical Library, 1948; p. 111.

21. A. Tarski, "The semantic conception of truth and the foundations of semantics," *Philosophy and Phenomenological Research* 4, 1944.

They can provide, withhold, control, determine, impose fines, write tickets, tell one what one can wear, how one can drive, where one can play, how much noise one can make, and (I am afraid to say) sometimes, what one can say.

Society has decided to constrain volition, and there are some people whose job it is to carry out the task: those who are given the rules, then given the authority.

What should they know? They are armed with rules. Should they know something else? Should they know the rationales of the rules? Should they understand the context in which the rule was adopted, the context in which it continues to have mandate? Should they know how to reason with the rules, have ideal deductive abilities? Are rules always enough, or should they know too the cases?

These are questions that could be about the constitution of society and the relation of society to individual, about law, about government. But they could also be questions about organization and rationality. They could be questions about language, communication, and cognition.

If meaning is disputational, those who exercise the authority of rules should reason with the rules in certain ways. They must interpret rules through a fair and efficient process; they must be sensitive to counterarguments.

I do not suppose that it is a good idea for persons to be excepting themselves from rules. There are a lot of individuals with whom we have to live, upon whom we can all agree that some restraint be imposed. Also, I have met the surly officer, contemptuous bureaucrat, teenage desk monitor, orthodox administrator, unyielding Sabbatarian. I am not comfortable suggesting that the nature of language is such that policies must be interpreted by those who are in a position to interpret. Circuit and appellate courts interpret policies, and judges are honorable. If every bureaucrat were permitted, in fact required, to be an adjudicator, honest men would be lynched daily.

The alternative is worse. An institutional or social edict is produced. Someone is given the power to exercise the authority of that edict. But defeasible rules are followed as if they were deductive. "It says here that if A, then C, and here is a case of A. This demonstrates C." What if the rules or cases contain grounds for the argument "if A & B then not-C," and this is a case of A & B? Following one rule is not following that which society provided, since society provided more than one rule, so under what authority can C be claimed? One might as well be following some other edict from some other society.

Rules are made to be broken? No; but they are not the exclusive inputs to deliberations, either.

Rule-followers unreceptive to certain kinds of protest are at fault. “Sorry; that’s what the rules say. ’Can’t discuss this; ’don’t have the authority” In truth, here is authority overstepped. A party to a disputation, especially an adjudicator, must admit argument, counterargument, and rebuttal, from all recognized sources. To close discussion, to bring early termination of deliberation, is to adjudicate most aggressively. The rules say that certain kinds of arguments can be formed, and they have force in the appropriate context, a context which includes opportunity for counterargument. No argument without counterargument. No interpretation without adjudication. No meaning without interpretation.

We know some things about social organization purely from our study of logic and language:

To be insensitive to counterargument is to be autocratic. It does not follow the language of the law, the edict of the authority from which power derives. It is a doing of something else, a making of one’s own rules, or more literally, a making whatever one will of the rules. It is a violation of what one has been asked, and permitted, by society to do.