

Perceiving Law
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Note: A cleaned-up and revised draft will be publicly posted within the next week. This is meant only for the WINIR conference.

Abstract

The more we examine what is behind our most difficult legal questions, the more puzzling it can seem that we continue both to disagree strongly and, yet, to cooperate. If law is a reasoned enterprise, how is it that we are neither torn apart nor homogenized by our long social practice of it? I resolve this puzzle, and arrive at a richer understanding of law, by using the idea of modeling familiar from the natural sciences and mathematics. I show both that theorists can model legal systems as abstract systems of institutions, information flows, and institutional processing or reasoning and that the participants in a legal system themselves maintain and evaluate models of this sort. Understanding law this way clarifies numerous problems ranging from pluralism to legal interpretation. This work emphasizes four major points of the theory:

(1) Individuals' perception of law is an act of empathetic model-identification, model-building, and attitudinal judgment with respect to a perceived, ongoing instance of cooperation.

(2) All such models can be described as systems of information-connected institutions that each (a) receive inputs from other institutions, (b) process those inputs according to sets of reasons, and (c) produce informational output.

(3) Each institution is modeled by its participants as (a) maintaining its own set of reasons for decisionmaking, those reasons terminating in a local, ultimate rule of recognition but also (b) possessing rules that take account of the information produced by other institutions, such rules coming in various flavors of scrutiny and deference.

(4) The human conceptual system generates many such models depending on the question being asked and produces judgments through simulation. The fact that such modeling happens at many different scales, depending on the question contemplated, explains theoretical disagreement and agreement, otherwise puzzling problems of pluralism, and the moral/legal interface.

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INTRODUCTION

What follows is a general theory of legal systems. I know, I know. But bear with me.

A. Train Wrecks

After the death of Justice Scalia, Senate Majority Leader Mitch McConnell and other Republican leaders stated that they would not consider any Supreme Court nominations made by President Obama.¹ McConnell argued that the appointment would be highly consequential and therefore best made after the looming election, by the people's choice for the next President. Does this course of action, refusing even to consider a nomination, constitute a legitimate or illegitimate use of the Senate's power? On what grounds would we identify it as legitimate or illegitimate? Is that determination the same as judging the constitutionality of the Senate's inaction? How should citizens, courts, the President, and other legislators respond?

The Constitution, in a section conferring powers to the President, states that the President "shall nominate, and by and with the advice and consent of the Senate, shall appoint ambassadors . . . judges of the Supreme Court."² This clause is susceptible to many interpretations as its words are bent toward application. Perhaps it permits the Senate to refuse henceforth to hold hearings on any Supreme Court nominees, leaving plenary power in the Senate to decide even whether to advise and whether to consider consenting. It seems odd, though, that a single sub-institution of the federal government could, through steadfast inaction, cause there to be no judges at all left in the judiciary. Indeed, the Constitution appears to assume that there will be a Supreme Court and therefore at least one federal judge: "The judicial power of the United States, shall be vested in one Supreme Court . . ."³

One answer is that the actual words of the Constitution do not create an obligation for the Senate to consider a nomination and that these words are the end of the matter. The Senate has a power not to consent, and the only check on this is popular election. (Or, in the olden days, the check was in the state legislatures, the institutions that chose senators.) But do these words really confer on one institution an absolute privilege to negate utterly a power

¹ David M. Herszenhorn, *G.O.P. Senators Say Obama Supreme Court Pick Will Be Rejected*, N.Y. TIMES (Feb. 23, 2016) (<http://www.nytimes.com/2016/02/24/us/politics/supreme-court-nomination-obama.html>).

² U.S. Const. art. II, § 2.

³ U.S. Const. art. III, § 1.

given to another? Words could give life to a meaning inconsistent with the meaning of other words.

Reliance on words as authority or as the full embodiment of others' authority runs into another problem: reality. For example, the Constitution also grants to Congress the power to impeach and remove from office the President, Vice President, and "all civil officers of the United States." Would Congress have the power under this clause to remove from office the President, Vice President, all cabinet members, and the entire bench of the Supreme Court? The Speaker of the House would become president,⁴ and the entire Supreme Court and cabinet could then be appointed, perhaps from Congress' own ranks. If the Supreme Court has the ultimate power "to say what the law is,"⁵ would the new Justices be permitted to interpret the Constitution not to require further elections? If that is a "wrong" interpretation, what is the constitutional remedy?

B. Disagreement

Any reader of this article is more than able to construct the obvious and decent arguments on all sides of the above questions. The language, logic, and rhetorical form of such arguments are not difficult to grasp. That's not the problem. What makes selecting among legal solutions difficult, rather, is that there is no conceivable way to *prove* that any one of them is correct. There is no uncontroversial theory of truth in law. Correctness is always and ultimately relative to an authority. But there may not be agreement on what gives an authority its authority. What warrant is there for telling Mitch McConnell that he is wrong, that your criticism reflects something other than a difference of opinion or of premises?

If we cannot identify such a reason, it would seem an embarrassment for law's practitioners. After all, they purport to act as though constrained, as if their actions are subject to possible error, as if there is reason to believe they are correct and not just arbitrarily conveying meanings. But to know whether an action is erroneous or correct under the law, one must have a theory of legal truth, a theory that can be applied to determine the truth value of statements about a legal system.

Every legal statement concerns what some other person should do in the social context in which the legal system arises. A person should pay a fine. A judge should use some statutory text in making a decision. A jailor should confine a person designated as a prisoner. The Senate should hold confirma-

⁴ 3 U.S. Code § 19(a)(1).

⁵ *Marbury v. Madison*, 5 U.S. 137, 177 (1803).

tion hearings. Each of these statements about what others should do is obviously moored to other suppositions concerning social obligations – that word, “should,” carrying an implication that other truths underwrite the truth of the assertion itself. It is only within the context of that set of supposed truths that the isolated truth or falsity of the statement follows.

When we find ourselves disagreeing about what the law requires, or what we should do, we must find our disagreement either in the premises, ultimate and interstitial, that yield our competing answers or in an error one of us has made in reasoning from them. Sound logic, dialogue, and training might be expected to decrease the incidence of the latter. The beast, though, lies in the former, finding that our disagreement stems from divergent premises. From here are launched thousands of volleys charging illegitimacy, judicial activism, tyranny, and mundane unreasonableness.

One might hope that we could just be clear about premises. We may hope that we could uncontroversially identify an agreed-upon set of starting points and interstitial glue, whether by studying the meaning of the word “law,” consulting religious texts, discovering the truth of natural axioms, or even designating by fiat a particular text as ultimately authoritative. But our disagreement concerning the rules of the game reflects disagreements concerning what the game is, revealing disparate attitudes toward and interpretations of these supposedly axiomatic texts, doctrines, and ideas. Minds can never truly and completely meet, because no mind is ever complete in its understanding of social reality. Our assessments and attitudes unfold. These attitudes simply cannot be corralled by any ultimate logic. Their genesis and evolution are in human minds, and they respond to the reality of lived experience, the collision of new problems with the old utterances.

I will argue that what we conventionally call law is just the conceptual side of cooperation. Every instance of human cooperation yields an explicit or implicit legal system governing that cooperation. This resulting legal system only exists, moment by moment, in the minds of participants as a capacity to generate mental models of the cooperation itself. The system is perceived as law, and in an important sense made real from the point of view of a participant, when she accepts models of the cooperation she identifies others as using. Further, these models consist of networked institutions exchanging information according to the institutions’ internally maintained models of their own decisionmaking. They exist in participants’ minds at many scales and can be generated on demand to answer questions about the cooperation. As I will discuss, our mental experience of cooperation, and thus law, is not substantially different in this respect from our other experiences of life. This idea, that law is the adaptive mental modeling of cooperation, is what I call the modeling theory of law. While it helps make sense of traditional but per-

sistent problems in legal theory, it also poses dramatic new questions for jurisprudence that point the way toward a science of law, giving up on law as itself a science.

C.A Legal System by Another Name

An example helps build an intuition I hope to reward in the analysis that follows. In many legal philosophical treatments, the playing of games is used as an instructive analogue to legal systems.⁶ As will become apparent, I view the playing of games, like all other instances of cooperation, as generative of legal systems. The continuity or separateness of “game” systems from other legal systems is a property of the models of the respective systems their participants maintain and, thus, a matter of social convention rather than ontology.⁷ So let us consider a friendly game of Monopoly.

Without saying much more about their reasons for doing so, three friends take Monopoly off the shelf, open the box, unfold the board, set up the cards, cash, and pieces, and begin to play. A few turns in, one player lands on States Avenue and announces that she does not wish to buy it. The next player then picks up the dice but is interrupted by the third, who tells the others they are forgetting to hold the auction.

“I’m sorry. The what?” comes the response. “Yeah, when you land on an unowned property but you don’t want to buy it, the property’s auctioned off to the highest bidder.”

“Ok... that’s not the way we’ve ever played. Sounds weird.”

“Those are the rules. I know a lot of people don’t know about it. But look.” The third player then picks up the yellowing instruction booklet and turns to page four:

⁶ Games examples.

⁷ Here, as I will discuss further *infra*, I agree with Brian Tamanaha’s argument that “law is whatever people identify and treat through their social practices as ‘law.’” BRIAN TAMANAHA, *A GENERAL JURISPRUDENCE OF LAW AND SOCIETY* 166 (2001). But I agree with him in two specific senses I believe compatible with his thesis: (1) The set of practices a society would call its “law” or its equivalent is identified by a social, conventional practice of mutual categorization. (2) The more general usage of “law,” the one I argue here is universal and which does not rely on a self-conscious societal labeling as such, is also socially constructed, arising from cooperation and the acceptance of identified mental models, which process results in “identify[ing]” and “treat[ing]” physical behaviors as part of a social construct.

Whenever you land on an unowned property you may buy that property from the Bank at its printed price. You receive the Title Deed card showing ownership; place it faceup in front of you.

If you do not wish to buy the property, the Banker sells it at auction to the highest bidder. The buyer pays the Bank the amount of the bid in cash and receives the Title Deed card for that property. Any player, including the one who declined the option to buy it at the printed price, may bid. Bidding may start at any price.⁸

The other two players tell the third that, whatever might be printed in the rules, that is not how anyone they know has ever played Monopoly. And it's not how they intend to play this game.

Each participant now has several things to think about. First, each might think about how the game ought to go, in light of its purpose, under the two possible rules. Which rule would make the game more fun, faster, more leisurely, less antagonistic, more competitive, fairer, easier, harder, more official? Each could, in other words, evaluate the rules directly for their desirability. Of course, the players might fundamentally disagree on what makes a rule desirable and on how the two rules under consideration would affect those desiderata. They could, thusly, disagree at a level of theory or of practice, reaching in either way different conclusions regarding how to play the game.

Their thinking about these rules, though, could occur on a level above such direct analysis. Who should make the decision about the rule? The possibilities here include the game's original makers, the publishers of this edition, some notion of the general public practice, whatever a majority of them decides would be most desirable, whatever a majority decides but only if each is genuinely attempting to interpret the written rules rather than to replace them, whatever the owner of the house in which they're playing wants to do, whatever the owner of the board game wants to do, whatever the player most on the verge of quitting the game wants to do, and so on.

At a still higher level of thinking, each would consider what reason he or she has to select the reason that will dictate who decides what the rule is: the pursuit of pure fun, the recognition of a least ambiguous source to promote coordination, that hosting is an imposition and sociality is otherwise promoted by giving authority to hosts, that their continued relationships will be better if they just vote and get on with it. Our players are considering models of cooperative decisionmaking that involve different institutional actors

⁸ Hasbro Corp., *Monopoly: Property Trading Game from Parker Brothers* at 4, available at <http://www.hasbro.com/common/instruct/00009.pdf>.

transmitting information and different rules to be used to evaluate that information.

If the cooperation continues, then whatever rule they have chosen and even if they change their minds mid-game, they are still playing. It is possible that another person could observe them and snark that they are not really playing Monopoly. Fair enough, but that person cannot say that they are not playing a game. What is it that allows them to do so? And what gives each the ability to tell the others they are “doing it wrong,” not just undesirably?

If the cooperation continues, we have the continuation of a legal system. Each player is accepting the model of rules they think is being used by the others. Those accepted models may be incomplete and even at odds with one another. Indeed, each player has in mind not so much an encyclopedic list of rules – but a capacity on demand to produce rules and evaluate rules announced by others. Players maintain, generate, and evaluate models of their cooperation at scales relevant to the issues that arise. For example, it is possible they agree at the inception to “play the game,” by which they all mean “to play in conformity with ‘the rules.’” And by “the rules” they mean what they believe the instructions to say or mean. They each believe that each of the others has such a model in mind and cooperate on that basis. Whether the refinements and applications of these models as controversies arise result in discontinuing cooperation depends on the judgments of each as play evolves, as their naïve assumptions are challenged by facts that unearth formerly tacit commitments: to fun and friendship, perhaps. The cooperation, and thus legal system among them, may continue or disintegrate when one of them invokes the auction rule or when another proposes allowing a five-year-old to join and to move a number of spaces not reflected by her die roll but by her five-year-old, rampaging id. Their agreements and disagreements can occur at the level of fact, rule, identification of rulemaker, or rule for identifying rulemaker.

What really is different between our Monopoly game and the game underfoot in the Senate? Yes, different sorts of decisions are being made; different consequences are possible; different motivations may be found in participants. While the models of institutions and reasons each Senator maintains and generates, the ones that create the reality of cooperation in their minds, take account of different facts and values and involve different sources of information than do those of our Monopoly players, the basic process is the same. Modeling and acceptance form the internal, conceptual reality of cooperation.

D.A Way Forward

Thinking about constitutional train wrecks alongside boardgame players is one of the more visceral ways to consider the problem of disagreement in law. Does a political opponent's understanding of appropriate institutional action and reasons, the one leading her to argue that the Senate can do this or cannot do that, have the stability and fidelity to some principle, at some level of generality, that would lead you to accept it as legitimate, even if you disagree with her conclusion or perhaps even with her starting points? What deviations from your understanding of the right rules of Monopoly or, more generally, the manner in which friends should play board games would you tolerate?

This question, whether you accept the model of social reality that is implicit in an argument about the terms of cooperation, is the one that points the way to a deeper, more accurate, and more rigorous understanding of legal systems. More to the point: now that we are all, more or less, legal realists and acknowledge that there does not exist even the potential of an authoritative text that could definitively answer all legal questions,⁹ how are agreement and coherent disagreement still possible within the ordinary language of law? The answer lies in candidly acknowledging our continuous modeling and simulation of our social circumstances, not pretending no such models exist or that there is only one. "Who decides," conceived broadly to concern decisionmaking locus and the constitution of that locus, is not only a question that can promote compromise, but it can sharpen the proper frame of legal argument.

This Article is a description of what we are doing when we do law that (a) characterizes the concept of law as inevitably joined to the fact of cooperation, (b) helps make sense of the fact of legal agreement and disagreement, (c) suggests a hypothesis concerning the human conceptual system as it applies to law, and (d) lays the groundwork for more sophisticated, accurate, and necessarily interdisciplinary modeling of the evolution of legal systems.

I begin in Part I by arguing that law is the conceptual side of any instance of human cooperation. This move dispenses with the illusory problem of distinguishing law from other norm-thick but "unofficial" group activities. And it will allow us to make sense of the connection between moral principles and legal principles. Once the problem of law is understood as describing how human beings conceive of cooperation, we will become interested in the management within the mind of social complexity. In particular, I describe the organization of legal systems into public and private information-exchanging

⁹ LAURA KALMAN, *LEGAL REALISM AT YALE, 1927-1960* 229 (1986); Joseph William Singer, *Legal Realism Now*, 76 *CAL. L. REV.* 465, 465 (1988).

institutions. Legal systems, whether traditional or not, can be modeled as a collection of such institutions as a consequence of the fact that they derive from cooperative decisionmaking.

In Part II, I argue that not only may a legal system be modeled as above but that law itself arises from individual acts of modeling. It is social reality perceived and thus modeled. Our perception of law is a compound process of identifying the models of cooperation used by others, constructing our own models, and experiencing attitudes arising from the simulation of real and imagined inputs to those models. Cooperation, from the internal point of view of an individual, amounts to accepting models one perceives as describing the participation and decisionmaking of others.

In the next two Parts, I develop a common language for the mental models people maintain about cooperation. In Part III, I derive a representation of legal systems as systems of information-connected institutions. Each such modeled institution (a) receives inputs from other institutions, (b) processes those inputs according to sets of reasons, and (c) produces informational output. And in Part IV, I describe models of institutional reasoning. Institutions within a legal system model (a) maintain their own sets of reasons for decisionmaking, those reasons terminating in a local, ultimate rule of recognition but also (b) possess rules that take account of the information produced by other institutions, such rules coming in various flavors of scrutiny and deference. The structure of rules in such models can be analyzed in terms of discrete levels as in our Monopoly example above.

In Part V, I briefly survey how the modeling theory of legal systems confronts the traditional questions of jurisprudence, including how laws are identified, how identification rules avoid infinite recursion, from where arises law's normativity, the relation of law to morality, and the problem of interpretation. The human conceptual system generates many models of reality and engages, subconsciously, in simulations, the choice of model and range of inputs depending on the question being asked. The fact that such modeling happens at many different scales explains both theoretical disagreement and otherwise puzzling problems of pluralism and the moral/legal interface.

In the concluding Part, I point toward scientific inquiry that could combine with the modeling understanding of law to help us better understand institutional behavior and legal pathologies.

The modeling theory of legal systems stakes out a jurisprudential claim. My core argument, that law can be identified with models of cooperation that are observer-dependent and that acceptance of observed models constitutes participation in law, is positivist, because it identifies law and its content with social facts alone. But the modeling theory does not fit comfortably within any of the dominant genres of theories of law. While it is indeed fundamentally positivist, it does not suppose there ever exists a system of identifiable

rules and is fully compatible with radical indeterminism. It acknowledges the problem of theoretical disagreement, but it is not interpretivist and eschews attachment to any form of right answer thesis. And it certainly does not depend on there being any inalterable rules that would underwrite the rest of a legal system. This is not a theory of natural law. It is, rather, a suggestion that if understanding cooperation is what we are ultimately after, then we must understand cooperation.

* * *

If this sounds complicated and foreign, I hope to convince you instead that the modeling understanding of law is natural and intuitively satisfying and that in it you may recognize your own thinking. For me, at least, taking account of law in this way feels as though it makes the puzzle fit together, that it directly describes a facet of social reality itself. The mathematician Paul Erdős once identified the curious, emotional appeal of some proofs over others. The story he would tell is that God maintains a book of theorems with their perfect proofs.¹⁰ In mathematics, there are often many ways to prove an assertion. Some are emotionally disappointing but, nonetheless, undoubtedly correct. One feels after reading proofs of this sort a kind of resignation, that while, yes, the assertion must be true, you still do not understand why. It is as though you have been driven blindfolded from one place to another. You cannot deny that you have gotten from there to here, and so you must admit a way between those points exists. But you can hardly say that you know or understand it.

Other proofs, however, feel as though they express the “real reasons” for things. You can read several proofs of a theorem, finally get to a book proof, and say to yourself, “Ah! That’s why.” Even the life of logic is not purely logic.¹¹

We have an innate desire to understand the real reasons for things. And so it is with the law. We want the explanations for legal results that both oscillate and soothe our minds in that familiar way that recalls learning something for the first time. What we need is a way to understand the cooperative behaviors we call law that makes sense of the fact that people disagree about what the law should be, what it is, and whether there is an obligation to follow it. To know such a way, I will now argue, is to see the mass of human experience from the eyes of a human who understands by modeling and simulating, to see what our point of view privileges as the reality of things.

¹⁰ See, e.g., MARTIN AIGNER AND GUNTER M. ZIEGLER, *PROOFS FROM THE BOOK*, *preface* (1998).

¹¹ Cf. OLIVER WENDELL HOLMES, JR., *THE COMMON LAW* 1 (1881) (“The life of the law has not been logic: it has been experience.”).

II. LAW AS THE CONCEPTUAL SIDE OF COOPERATION

A. The Problem of Understanding What Law Is

Let us begin by grasping, as though outside observers, the immensity of the problem we face in identifying a group's law and in understanding how it is contested. What behaviors in that group would lead us to say that law is occurring among them and what that law is? For starters, the group's members are, at the very least, communicating: written laws, opinions, verbal orders, rules, and perhaps the information implicit in acts of enforcement. If there is any sort of coordination among human beings, it must somehow involve the transmission of thought through the air gap that separates our skulls. After all, "[t]here is no direct communion between the minds of men," but instead we must "resort[] to the outward manifestation of that which moves us inwardly, that is, to signs."¹²

To engage in the practice of law would seem, therefore, to mean participating in the processing and ordering of certain communications. One sense in which we can speak of "the law" is as general term that describes a group's network of information flows and the processes it uses to connect inputs to outputs, such as that network exists to further the cooperation of the participants. It is necessarily a human-made system for processing and producing information, and one such system (bearing observer-dependent descriptions) exists for each observed system of cooperation.

So understood, law was our first computer. Indeed, it remains our most complex. One might recoil from this description, abhorring a notion of human interpersonal endeavor reduced to cold, metallic, and incessant gears. But that reaction misunderstands both the law and the computer.¹³

¹² Francis Lieber, *LEGAL AND POLITICAL HERMENEUTICS, OR, PRINCIPLES OF INTERPRETATION AND CONSTRUCTION IN LAW AND POLITICS WITH REMARKS ON PRECEDENTS AND AUTHORITIES* 2 (1839).

¹³ There is a surprisingly sparse literature on the similarities between legal systems and complex software. One line of research, which seems to have been prominent when personal computing was new, is concerned with understanding law in a way that could be reduced to computation. See, e.g., Jon Bing, *Legal Rules, Discretionary Norms, and Computer Programs*, in *COMPUTER SCIENCE AND LAW* 119-22 (Bryan Niblett, ed.) (1980) (describing the steps of legal decisionmaking, from legal sources to interpretation to actionable legal norms, and noting the potential for reduction to interpretive compilers); Susan Jones, *Control Structure in Legislation*, in *COMPUTER SCIENCE AND LAW* 157-67 (Bryan Niblett, ed.) (1980) (attempting to replicate the procedure and substance of an intestate succession statute using the computer language LEGOL2, focusing on control flow structures); R Kowalski & M Sergot, *The Use of Logical Models in Legal Problem Solving*, 3 *RATIO JURIS* 201-218 (1990) (suggesting the modeling of law in ways that could be reduced to computation using logic-oriented programming languages and identifying simple applications of law that lend themselves to

On the one hand, our law is not divorced from the mental activity of decisionmaking. It is not some foreign, imperial oracle we consult but, rather, the working models we stitch together among ourselves in order to cooperate and to decide what to do. It is indeed a network of certain information flows to produce outputs from inputs. It is the chain of communications that end in action understood as deriving from the group.

And, on the other hand, computing is not deterministic in the sense that many imagine. Just as software is dynamic and can be made to react as unpredictably as its stream of input, so, too, law, the software of our society that we run in parallel in human minds, can be staggeringly complex in its evolution and output. So observing that law's basic function is to connect inputs to outputs is not really simplifying the problem of understanding law so much as it is standardizing the vocabulary of further work.

The hardware and software that constitute our legal systems are not a simple series of if-then statements. Our experience of law and authority is plural and complex. The system's potentially wild collection of processes and data is not the pre-programmed expression of a singular human will or even the indelible carvings in stone tablets of a single group. Nor is it often the collective will, however we might understand it, of a single group. Instead, we find ourselves governed by the constraints of the multiple communities of which we are a part, some recognizing one another, others strangers. For me, these include the laws of the United States and the states, local zoning ordinances, the terms of my employment, the constraints imposed by family, the norms of neighborliness, the terms of various contractual agreements, the morality into which I have become socialized, the principles for living at which I have arrived on my own, and other limitations of which I am hardly aware. We are the subjects of a cacophony of authorities, and each of these, through mutually allocated constraints, grants us entitlements, the negative spaces for living we sometimes call our property and liberty, and defines for us limitations, our duties and liabilities.

How can there be order in all this? How can law be an intricately pursued collective enterprise rather than a field of warring, coercive utterances? To make the problem clearer: swept up as I am in so many overlapping communities, what am I to make of their various conditions, whether styled as rules or not? Are some of them the law? What makes them so? And how do they

calculation, including aiding in drafting by testing outputs and serving as expert systems for lawyers to test scenarios of legal application).

There is, however, some more recent scholarship exploring the analogy, perhaps induced by a perceived second-wave of computation in social science, the era of big data. See generally W Li et al., *Law is Code: A Software Engineering Approach to Analyzing the United States Code*, 10 J. BUS. & TECH. L. 297 (2015).

fit together? What theory of law best makes sense of this complex web of constraints?

When we say that one has an understanding of a group's law, we mean, necessarily, that he or she has a satisfactory mental model of its practice. To talk about a complex social practice is, if one looks closely enough, to describe the scarcely even countable number of interactions of many trillions of atoms.¹⁴ A model, in the sense of mathematics or the natural sciences, is a toy universe, a game with a small number of pieces and rules, the playing of which may analogize well or poorly to the features of reality in which one is truly interested.¹⁵ A metal rod across which heat is conducted may be described as a one-dimensional continuum, each point possessing a finite number of qualities, like heat energy and density. A group of ranchers on an open rangeland may be described as calculating machines with particular maximization goals, the rangeland basically a resource equivalent to a number, the ranchers' actions being still other numbers with fixed relationships to the rangeland's numbers.¹⁶ A volcano is modeled with clay, baking soda, and vinegar. The science fair participant's attitude toward this tabletop construction is driven by the small number of features of the actual volcano he or she believes salient in producing the phenomena associated with it that are of interest at the time.

In explaining what law's practice is, we are necessarily explicating a model of idealized parts and rules. Legislatures, attorneys, statutes, adjudication: no matter how detailed our description of these parts, our use of them in explaining the physical reality of law can only be by analogy. And indeed, by talking as if the pieces and rules of our hypothetical game are the real things themselves, we sometimes elide the possibility that one source of theoretical disagreement is the use of different models to describe what those in disagreement are observing, that the actual disagreement is about the right choice

¹⁴ Even to narrate reality as the evolution of positions and energies of atoms is to speak within the bounds of a particular model. Atoms, themselves, are high-level constructs.

¹⁵ See, e.g., R.I.G. Hughes, *Models and Representation*, Proceedings of the 1996 Biennial Meeting of the Philosophy of Science Association, 2, S325–S336 (2008). Hughes nicely describes the process and use of the modeling of physical reality as a composition of denotation, demonstration, and interpretation. *Id.* at S328–29. “A mathematical representation should not be thought of simply as an idealization or an abstraction. Like an analogical representation, it presents us with a secondary subject that has, so to speak, a life of its own. In other words, the representation has an internal dynamic whose effects we can examine. From the behavior of the model we can draw hypothetical conclusions about the world over and above the data we started with.” *Id.* at S331.

It is no accident that so many philosophers of law have been drawn to the rules of games as analogies. See, e.g., H.L.A. HART, *THE CONCEPT OF LAW* 142–145 (2nd ed. 1994). The only mistake in so doing, as I will argue, is failing to recognize that the playing of games is more than just analogous to conducting a legal regime, it *is* conducting a legal regime.

¹⁶ See Garrett Hardin, *The Tragedy of the Commons*, 162 *SCIENCE* 1243, 1244–45 (1968).

of models.¹⁷ A legal argument operates within a model, proceeding according to its rules and objects, and thus passes over acres of vacant intellectual terrain, the unargued, unremarked landscape of reality that the model idealizes. To put it concretely, our model tells us what needs to be argued with facts and theory and what can be assumed or otherwise ignored.

I advance here a theory of law and thus assert a model of law. But I use the modeling concept even within the model itself. That is because my theory of law conceives of law as a composition of individual acts of modeling by participants. The complexity of such a view will be dramatically reduced if we can establish a few things up front. First, in this Part, I will clarify what I believe we are trying to model when we ask what law is. Second, I will describe the common elements of models of law. In the next Part, I will describe the nature of law in terms of individual perceptions of and judgments concerning models. It is there I set out existence criteria for law. In the Parts that follow, I will develop a common language for describing models of legal systems and observe some consequences for theory and practice.

B.Law and Cooperation: Of What Is Law a Model?

Let us establish first that the perception of a legal system is identical to the perception of cooperation. Human cooperation instantiates a legal system, and to observe a legal system is to observe cooperation.¹⁸ This will reveal that the struggle to distinguish law from not-law is often better understood as an effort to distinguish different cooperative instances from one another, rather than ontologically distinct concepts.

Publics

People transcend the mere plural of “person” and become a public only when they desire, for whatever reasons, to do at least some minimal set of things together and only with respect to those things. Sure, it is possible to imagine

¹⁷ Felix Cohen is famous for his devastating critique of judicial use of unreal constructs, like “corporation,” as though they have physical substance, obscuring actual reasons for decisions with fake-physical nonsense. Felix Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUM. L. REV. 809 (1935). But even Cohen noted that transcendental categories had their utility. “[M]yths may impress the imagination and memory where more exact discourse would leave minds cold.” *Id.* at 812. Models, though, are more than myths. They are our reality, not lies we tell ourselves. The sin identified by Cohen was circularity, not the fact that all our categories never quite map the world as it is.

¹⁸ Portions of this section are adapted from an earlier work of mine. Christian Turner, *Origins of the Public/Private Theory of Legal Systems*, in PRIVATE LAW: KEY ENCOUNTERS WITH PUBLIC LAW 117 (Kit Barker and Darryn Jensen, eds., Cambridge University Press, 2014).

multiple, solitary individuals acting separately upon the landscape, never cooperating. They may even act in ways that are mutually but not purposefully advantageous.¹⁹ Yet there still would be no public there, as there is only individual volition not coordination among the collection of human beings.²⁰

In contrast to the non-interactive, individual wills that characterize mere parallel collections of human beings, or non-publics, law is the name we give to the process by which a public realizes its shared purposes through the management of a set of coercive resources. Such resources always exist where cooperation is present, because coercion, as I use the term, is implicit in co-

¹⁹ It is conceptually possible but hard to imagine non-intentional groups, where humans come together to accomplish a task that would be impossible without their joint inputs but where they are each unaware of the other. See, and I really mean see, *UPSTREAM COLOR* (film) (Shane Carruth, dir., 2013); see also CHRISTIAN LIST AND PHILIP PETTIT, *GROUP AGENCY: THE POSSIBILITY, DESIGN, AND STATUS OF CORPORATE AGENTS* 33 (2011) (noting the possibility of cooperation through cell-structures, where a coordinator brings together functional groups that are unaware of each other). My notion of cooperation does not require awareness of cooperation between *each* pair of participants, thus capturing cell-structured groups, but it does require participation in a group.

²⁰ This definition of a public demands more than some such definitions and less than others. Sociologists, in search of what we mean by “public opinion,” have distinguished crowds, “defined by their shared emotional experiences,” and masses, “defined by their interpersonal isolation.” CARROLL J. GLYNN, SUSAN HERBST, MARK LINDEMAN, GARRETT J. O’KEEFE, AND ROBERT Y. SHAPIRO, *PUBLIC OPINION* 12 (3rd ed. 2016) (citing VINCENT PRICE, *PUBLIC OPINION* (1992)). But a public is a group that discusses its divisions on issues confronting it. *Id.* at 13 (citing HERBERT BLUMER, *COLLECTIVE BEHAVIOR* (1946)). Robert Park’s notion, dating to his 1904 dissertation, of the difference between a public and a crowd strikes even closer to the idea here and to what follows: A public thinks and reasons together based on “facts,” which are “idealized structures” that “take the place of concrete reality.” They are idealized objects that make public communication practicable. ROBERT E. PARK, *THE CROWD AND THE PUBLIC AND OTHER ESSAYS* (1972).

Legal scholars have sometimes converged on the same notion. See Robert Post, *The Constitutional Concept of Public Discourse: Outrageous Opinion, Democratic Deliberation, and Hustler Magazine v. Falwell*, 103 HARV. L. REV. 633-38 (1990) (“A public, in other words, is constituted precisely by the ability of persons to speak to one another across the boundaries of divergent cultures.”). Post’s notion of a public was aimed at understanding the structure of public discourse and the role of the First Amendment in protecting that discourse. He drew on the work of sociologists who attempted to explain how publics arise from mere groups in response to the challenge to cooperation posed by cultural diversity. *Id.* (citing Carroll Clark, *The Concept of the Public*, 13 SW. SOC. SCI. Q. 311, 314 (1933)). But the apparent demandingness of the criteria for public-constituting discourse (of the kind the First Amendment is intended to protect) is not really any greater than my apparent undemandingness. Post required there be (1) more than a single culture so that there was some contest to be worked out through discourse, (2) a desire to preserve heterogeneity, (3) some common basis of communicative objects (facts, ideas, issues), (4) reasons to engage in the discourse (whether profit or other purposes), and (5) “commonly accepted standards of meaning and evaluation.” *Id.* at 634-36.

It is interesting that all of these definitions share the concept of a group of communicating entities that share some purpose, that are an interaction of minds and not just bodies. I require nothing more than that but also nothing less. Anything more embeds views concerning how cooperation is not just accomplished at all but how it is best accomplished.

operation itself. If two humans cooperate, there is always the risk that cooperation will be discontinued or, put positively, there is always the promise that cooperation might continue. That minimal, potential inducement is all we need to observe that cooperation is implicitly laden with conditions. “The law” is just the group’s maintenance of this system of conditions.²¹

Of course, the cooperative enterprise may be, and usually is, more complex, with additional means beyond defection to ensure continued participation. For example, if the reason two collaborators continue their cooperation is that one has threatened the other with violence, then the coercion is plain. But no matter how plain or hidden, a public, by definition, engages in processes to effectuate joint purposes, and these processes necessarily include among them the management of coercive resources: law.²²

Modern societies comprise layer upon superimposed layer of publics and, therefore, legal systems. Corporations are publics. Families are publics, as are churches, law faculties, school districts, and criminal gangs. Even two cooperating individuals engaged in traditional contracting are a public. All are self-consciously groups, and all have different processes that maintain the cooperative ties that define them, achieving the purposes that draw their constituents together.

Many mystifying legal questions begin to resolve once we notice that we belong to multiple, interacting publics and are therefore governed by multiple, interacting legal systems. This is intuitively obvious, as we find ourselves subject to family rules, local laws, state and national laws, rules of the workplace, and the like. Each such public’s maintenance of its cooperative system defines its legal system. Likewise, every legal system can be seen as a constitutive property of a public. The concept of law and the concept of a public are therefore inseparable, one yielding the other.

One might object that, for example, contracting parties are not a separate public but, rather, a private arrangement within a broader public. They are

²¹ Here, at the beginning of this elaboration, the definition of law might appear more singular, more Platonic, than I ultimately intend. As will be shown, there is no single idea of a group’s cooperation but only its members’ perceptions of that cooperation. To understand the law from the point of view of its participants, we will need to understand law as a concept that takes account of how its participants perceive the conditional cooperation they observe. That additional complexity can, however, be held in abeyance for now.

²² Christian List’s and Philip Pettit’s definition of joint intention captures much of the idea of a public and its cooperation that I identify here. See CHRISTIAN LIST AND PHILIP PETTIT, *GROUP AGENCY*, *supra* note XX at 33-34. It has four features: (1) a shared goal, (2) individual contribution, (3) interdependence (meaning that intentions are formed at least partly because of beliefs that others have the same intentions), and (4) common awareness (a belief that others have these beliefs about the group). They contrast a group of people cooperating to carry a piano downstairs, in which there is joint intention, to bargain hunters who collectively drive the price of a good down to a competitive level (a group that lacks joint intention among them). *Id.*

private parties using the apparatus of a state's laws to achieve their own purposes. This is neither true nor false. Rather it is only a possible description, or model, of complex phenomena actually occurring in the world.

A subgroup together with its purposes can be private relative to a public in two senses. First, it might be private in the sense that it is free to pursue its own conception of the good *and* that the public will use its coercive resources to aid in that effort. In this case, a coercive resource of this private group is the potential to resort to the coercive resources of the public in which it is embedded. In what we usually refer to as our legal system, contract law is the body of law that identifies such private institutions and the conditions under which the public will lend its coercive resources to such institutions' privately made laws.

The other sense of "private" relevant here is one implying a yet further degree of separation from the public of which the group's members are also a part. Such a private group within a public is one that pursues its own purposes outside the system of conditional coercion maintained by the public. The maintenance of manners among friends, for example, might not be enforceable according to the rules of the public in which they are otherwise embedded. So from the perspective of that public, whatever "law of manners" exists among these friends is "private private" law, not private law in the sense of the first type of private subgroup. Whatever enforcement of the friends' rules is to occur must be accomplished through the coercive resources this group of friends maintains on its own, not those maintained by the public.²³

Importantly, though, each private group, of either of the above two types, is another public when viewed from within itself by its members. A private group maintains its own coercive resources and has, as we will see in what follows, models for their use. This yields a principle of group relativity, that groups within a public can be either public or private subgroups but *also* can be viewed as constituting another public, perhaps having thick interactions with other publics. A family is both a public and a private entity within a broader public.

The models of cooperation that give form and meaning to the cooperation within a given public also give rise to whatever self-conception as a group its members maintain, that is to whether its members think of the group as an independent source of rules and obligations, an organ of the broader group, or both. But more on subgroups will follow after we have developed a concrete language of cooperation.

²³ There is much more to say here. The public has many choices to make concerning when to allow private private rules to be maintained and when to preempt them, prohibit them, or incorporate them. But that is a subject for another day.

An old idea

The identification of law with the management of a public's coercive resources, the threats a public can make in order to foster cooperation, is so natural that it has been central, at least implicitly, to a diverse array of theoretical approaches to the concept of law. The simplest positivist model, conceptually, is probably Austin's, which characterizes law as the commands of a sovereign backed by threats.²⁴ The same type of approach is implicit in Blackstone's great work, which described law as "rule[s] of civil conduct prescribed by the supreme power in a State, commanding what is right, and prohibiting what is wrong."²⁵

For Oliver Wendell Holmes, legal duties were "nothing but a prediction that if a man does or omits certain things he will be made to suffer in this or that way by judgment of the court."²⁶ Even as Holmes wrote against the idea that the acts of legislatures or the writings of judges established and reflected a separate, formal system of rules, he acknowledged as a premise that a public's legal system is efficacious on account of its ability to engender cooperation through the threat of unpleasant consequences.

Holmes' account is a significant refinement of Blackstone's model. Blackstone assumes a "supreme power" and so fails to capture the complexity of law in most societies. By focusing on the predictions of law's subjects rather than the supremacy of law's makers, Holmes permits us to recognize as legal systems even those featuring rampant non-compliance and those that operate within and among societies that have pluralistic and competing sources of rules. A public pursuing cooperation may take the form of a violent dictator demanding and obtaining absolute obedience, but it may only be a weak social aggregation among much stronger ones, providing only slight disincentives to defection.

This, too, is the view of Robert Cover. "Legal interpretation is (1) a practical activity, (2) designed to generate credible threats and actual deeds of violence, (3) in an effective way."²⁷ Cover was writing about formal legal systems like those of modern nation-states, but his insight is broader: that law is the name for a public's practical working out of the use of its coercive capacities, whatever they are, most often for maximum effect given all the public's competing values. Among law and economists, it is a given that "the

²⁴ John Austin, *LECTURES ON JURISPRUDENCE OR THE PHILOSOPHY OF POSITIVE LAW* 88-106 (3rd ed., 1869).

²⁵ William Blackstone, *1 COMMENTARIES ON THE LAWS OF ENGLAND* 44 (Oxford: Clarendon Press, 1765).

²⁶ Oliver Wendell Holmes, *The Path of the Law*, 110 *HARV. L. REV.* 991, 992 (1897).

²⁷ Robert M. Cover, *Violence and the Word*, 95 *YALE L.J.* 1601, 1610 (1986).

fundamental thing that law does is to decide which of the conflicting parties will be entitled to prevail.”²⁸

Even H. L. A. Hart, writing against Austin’s command theory, did not deny coercion’s omnipresence in legal systems. In the Postscript to his *Concept of Law*, he stated:

Legal rights and duties are the point at which the law with its coercive resources respectively protects individual freedom and restricts it or confers on individuals or denies to them the power to avail themselves of the law’s coercive machinery.²⁹

Coercion, Hart agrees, is law’s ultimate action, even if not its purpose. The purpose of law, of course, is cooperation, and coercion and the threat of coercion are means a public has to achieve it. Law is the process for managing such threats, even if they will, one hopes, usually provide guidance for right conduct rather than signals about the expected cost of non-compliance.

All of these observations reduce, in their weakest forms, to an unremarkable assertion about human cooperation. When we engage in cooperation, we do so against a set of information about the consequences of defection. The positive framing — that cooperation is about pursuing joint benefits — is equivalent, because a consequence of defection is the potential loss of such benefits. The ability to impose consequences inheres in the idea of a public as a set of cooperating people. It is the management of information concerning these coercive resources that is the legal system bound to the cooperation.

Institutions

Publics are groups of people, and to the extent a public “acts,” it does so through the actions of the people that compose it. Of course, humans undertake all sorts of actions. Only some of these actions refer to a public in which the actor is embedded. I may ride my bike to work, have a cappuccino at my local coffeehouse, and read to my children. Which of these is a “public act” depends on the processes governing the various publics of which I am a member.

I define an institution as a group within a public that generates information recognized as legally relevant by the public’s secondary rules.³⁰ A given group of people may at times and with respect to some actions be an

²⁸ Guido Calabresi and A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1090 (1972).

²⁹ Hart, *supra* note XX at 269.

³⁰ We have not arrived at a theory of rules yet. Modeling theory and a theory of rules go together and will be developed below. For now, the intuitive notion that a legal institution is one that generates legally relevant information will suffice, as will Hart’s description of secondary rules. *Id.* at XX.

institution in a public and at other times not. When my colleagues and I vote on faculty matters, we are an institution within the university. When we share food and drink afterwards, we are not that institution. This is a function of the secondary rules within the university that recognize the former but not the latter as the producers of information salient, ultimately, to the management of the university's coercive resources.

Because a public is not a group of people acting in parallel, but a cooperating group of people, it must communicate, in the form of information, intentions among its members. This is why the practice of law consists of a union of institutions and information. It is a process by which a public evolves, its members exchanging publicly relevant information and acting on the basis of that information.

H. L. A. Hart's definition of law, the union of primary and secondary rules, is not wrong or even so much incomplete, as such. But without emphasizing more explicitly the nature of law's practice, as an exchange of information among institutions, we have too static a picture of law as an abstract set of rules, like the instruction book that accompanies a board game. The practice of law is a dynamic, bustling zoo of institutions generating and consuming information. All of a public's law is contained in a self-referential and continuously altered set of information, whether one takes that information to be the diverse array of data that permits Holmesian predictions of judicial action or the Hart-like sources of signals that provide grounds for criticism of rule-breakers.

Consider a statute, an opinion, or an executive order. While physical coercion — which could include the acts of handcuffing, jailing, and seizing — is law's effect, what we customarily call the law itself is the information that officials use to decide what to do. A police officer who puts me in a squad car is not "doing the law," but, rather, she is hopefully acting in accordance with the law, meaning consistently with the information the collective, through institutions, has generated regarding what actions its representatives will take in response to various events. Even the fact that the individual putting me in the car is a police officer, bearing some special status within the collective, is not a "natural" or mind-independent fact. Rather, that individual has clothed herself in the official garb, has acted as if the universe of legal information justifies her actions, and has been treated by others as if she is doing what the collective wishes. If she is wrong about this, knowingly or not, the law will not approve her actions and may well provide information that others will rely on to punish her, by physically restraining her or forcing her to convey assets.

As Robert Cover so elegantly puts it:

The context of a judicial utterance is institutional behavior in which others, occupying preexisting roles, can be expected to act, to implement, or otherwise to respond in a specified way to the judge's interpretation. Thus, the institutional context ties the language act of practical understanding to the physical acts of others in a predictable, though not logically necessary, way.³¹

Cover teaches us that the institutional understanding of a legal system, if the system aims to be effective, leads naturally to normative criteria.

The practice of interpretation requires an understanding of what others will do with such a judicial utterance and, in many instances, an adjustment to that understanding, regardless of how misguided one may think the likely institutional response will be.³²

That is the power of an institutions and information approach to understanding legal systems: the fact that information has both an author and one or more audiences provides criteria of effectiveness that refer only to the processing capacities of the institutions involved. So we can use the empirical realities of a society to understand the likely behavior of various groupings within it and then craft substantive and procedural rules, defining and guiding institutions, that respond to those understanding.

C.The Pieces

A description of a legal system sets out the conceptual side of an instance of cooperation in terms of discrete institutions and the informational connections between them. This suggests that there is law where we might intuitively only suspect there are norms. Indeed, the information-and-institution description of law reframes the burning question that has launched many a jurisprudential expedition: what properties distinguish laws from norms that are not law?

My answer is that there is no metaphysical difference between norms and laws as such. If one perceives one thing as a law and another as merely a norm, the real difference will ultimately be found in the distinction the observer makes between the cooperative communities that are their sources, one community containing the thing intuitively identified as a law and the other the thing identified as a norm. They are both publics, both with legal systems.

³¹ Cover, *supra* note XX at 1611.

³² *Id.* at 1612.

Our intuition may want to find some essential difference in the information itself, in relations among bits of information, or in some endogenous property of relative bindingness distinguishing the law from the norm. But we look in the wrong place. Without distinct concepts of the communities associated with the information perceived as constituting the norm and with that perceived as constituting the law, there could be no way to distinguish the two in any language concerning authority or obligation. Obligation itself, including the necessity of strict compliance and the acceptability of deviation, derives from one's understanding of what a public requires.

Not only is our attitude toward using the labels "law" and "norm" in fact dependent on our attitude toward the public whose conditions we are examining, but so too is our attitude toward true compliance or defection. Every public yields a distinct domain of normativity.³³ Each generates an obligating force like gravitation, posing to each participant the question whether and to what extent to join in its cooperative enterprise. Just as "mass" is the name we have to describe whatever it is that gives rise to an object's force of gravitation, so too "normativity" is the word we use to describe this obligating force. To violate a public's rule is to defect from its enterprise. And the morality of such defection is ultimately judged by the basic moral question of whether and to what extent cooperation within that public is good or bad. Thus law's normativity arises from the attitudes of participants toward the community's cooperation.

* * *

We have seen that publics and their corresponding legal systems can be identified with instances of cooperation and that legal systems work through institutions transferring information that is ultimately used to determine the application of coercive resources. Any group of people probably gives rise to many interacting publics. The normativity of each public's law arises from

³³ It would appear that this claim puts me in direct opposition to Scott Hershovitz, who suggests we should be skeptical that there is a "distinctively legal domain of normativity." Scott Hershovitz, *Then End of Jurisprudence*, 124 Yale L.J. 1160, 1186-92 (2015). But the very generality of my identification of public and legal systems, and the suggestion that they are one, is actually a ground for believing him that there is nothing particularly special, as a class, concerning traditionally identified legal systems. Thus, I ultimately agree with Hershovitz that a legal system does not create a distinctively legal set of reasons for complying. But that is because I think obligation-generation is a property of a public, a property of each group to which one belongs. They are *all* distinct domains of normativity. But our reflective attitude toward traditionally labeled legal regimes is not different in kind than our attitude toward compliance with other regimes, other publics to which we belong. As to all, the morality of defection from the conditions of cooperation follow from moral judgments concerning the cooperation itself. And so "we can represent law as continuous with the other normative practices." *Id.* at 1193.

the perceived morality of defection from the cooperation that defines the public in the first place.

But prior to any exercise of normative design, critique, or comparison is better understanding of these institutions and information, how they are identified by participants, and what their relation is to what those participants would call the law. Are they defined specifically by law itself? Wouldn't that be circular?

If we take a public, its institutions, its information transmissions, and its informational networks among institutions as fundamental objects, then, yes, we have the basis for a model of the public's law. We have the vinegar and clay to make our model volcano, and we have the time, extent, and variables to simulate hydraulic flow in an idealized aquifer. But that is not yet an argument that such a description of law implies anything concerning the nature of legal disagreement or, more broadly, what might control the origins, mutations, and deaths of patterns of legal practice. What else can we say about models of this sort?

I. A LEGAL SYSTEM IS A COOPERATIVE SYSTEM OF MODELING COOPERATION

A. Why Models?

I have argued thus far that law is the conceptual side of cooperation and that it *can* be modeled as a network of institutions and information among participants. I now wish to go further and to argue that not only can a legal system be modeled but that it can also be understood *as* an emergent property of acts of modeling by the participants in a cooperative enterprise.

In *Legality*, Scott Shapiro begins by discussing, just as Hart did, what a funny question it is: "What is law?"³⁴ No one asks what medicine is, they observe. Medical professionals just sort of get on with it and do not seem to be hampered by asking themselves what they are doing when they set a bone or resect a tumor. As a student of jurisprudence, I had taken as true this starting point for elaborating the concept of law, that our job was to understand law's distinction from these other fields. But I am now convinced that doing so is the beginning of an error. Distinguishing law from disciplines that seem unconcerned with their concepts puts us on a trajectory to define law's specialness. But law is not special. In fact, our thoughts about law are just instances of our thinking about all aspects of our experience.

³⁴ SCOTT J. SHAPIRO, *LEGALITY* 1 (2011); HART, *supra* note XX at 1.

After all, people do indeed ask “what is medicine” and “what is the body.” We in fact provide different answers in different situations to the question of what the human body is and unthinkingly shift between them. What medicine is and what a surgeon does, those things are functions of the particular way of thinking of the body that seems most responsive to whatever the problem at issue is.

We may not ask out loud what the human body is, but we do answer that question implicitly and repeatedly. Whatever its smallest parts, the body has a separate identity as a concept only because of our higher level descriptions of the patterns of matter that compose it and the consequences its existence can create. Depending on the question being asked, the human body can be described in terms of its whole form animated by human behaviors over time, by its major organs and their organization as they appear in an instant, by its tissues, as a pattern of molecules, as characteristic patterns of atoms and energy, as quarks. The term “body” is itself a conceptual object, hiding behind a single word immense complexity and containing within it ever more detailed conceptual objects that need be consulted only if the question of the moment goes that deeply.

So too everything! The world, to us, is not a thing, but our mental representations concerning idealized versions of things and abstract relations among things. A cathedral exists as a “cathedral” only in our minds. What we label “cathedral” is a particular set of ideas and stories about our relation to certain arrangements and evolutions of matter, not the arrangements themselves. We function by maintaining not just abstract tokens representing perceptions of things but mental models of our world.

In 1943, the psychologist Kenneth Craik advanced this idea in *The Nature of Explanation*:

By a model we thus mean any physical or chemical system which has a similar relation-structure to that of the process it imitates. . . . My hypothesis then is that thought models, or parallels, reality — that its essential feature is not ‘the mind,’ ‘the self,’ ‘sense-data,’ nor propositions but symbolism If the organism carries a ‘small-scale model’ of external reality and of its own possible actions within its head, it is able to try out various alternatives, conclude which is the best of them, . . . and in every way to react [better] to the emergencies which face it.³⁵

³⁵ KENNETH CRAIK, *THE NATURE OF EXPERIENCE* 53 (1943).

Craik “suggested that the mind builds small-scale models of the world, which it uses to anticipate events and to guide its decisions. Mental models are constructed as a result of perceiving the world, understanding descriptions, and imagining possibilities.”³⁶

Researchers Stefan Groesser and Martin Schaffernicht describe mental models as comprising logical assertions that are linked and then used with input data to reach conclusions.³⁷ They ultimately suggest a more complex understanding of mental models of dynamic systems, but, for now, the important point is that an internal representation of a system is “run” in the mind to make decisions and to understand complexity.

“A mental model is constructed in working memory and can then be run like a computer simulation allowing an individual to explore and test different possibilities mentally before acting. Working memory is the system responsible for selecting and manipulating information for the purpose of reasoning and learning. Changes made to a mental model in the simulation process represent what would happen if such changes took place in reality.”³⁸ In fact, cognitive scientists have suggested that the human conceptual system is more or less a simulating system.³⁹ Our thinking, under this view, is “a distributed neural mechanism that constructs an infinite set of specific simulations to represent a category, property, or relation dynamically. Thus, the simulator for chair can construct many simulations of different chairs, from different perspectives, used for different purposes, reflecting the agent's current goal and situation.”⁴⁰ Running the model on hypothetical data in fact simulates experience, engaging versions of our actual sensory experiences and triggering affective reactions.⁴¹

Of course, the models we maintain are flawed, may be inconsistent with one another, and exist at many scales:

³⁶ P. N. Johnson-Laird, *Causation, mental models, and the law*, 65 BROOK L REV 67 (1999). at 70.

³⁷ Stefan N. Groesser & Martin Schaffernicht, *Mental models of dynamic systems: taking stock and looking ahead*, 28 SYST. DYN. REV. 46–68 (2012). at 48.

³⁸ Natalie A. Jones et al., *Mental models: an interdisciplinary synthesis of theory and methods*, 16 ECOL. AND SOC. 46 (2011).

³⁹ See Barsalou.

⁴⁰ Lawrence W. Barsalou, *The Human Conceptual System*, in THE CAMBRIDGE HANDBOOK OF PSYCHOLINGUISTICS 239–258 (Michael Spivey, Ken McRae, & Marc Joanisse eds., 2012), <http://ebooks.cambridge.org/ref/id/CBO9781139029377A024>.

⁴¹ See, e.g., Lawrence W. Barsalou, *Situated Conceptualization: Theory and Applications*, in FOUNDATIONS OF EMBODIED COGNITION X, (2) (contrasting the “sandwich model,” which finds cognition as a modular process existing in the brain between perception and action, with “grounded cognition,” which views cognition as inseparable from sensory perceptions and physical action).

Peoples' ability to represent the world accurately, however, is always limited and unique to each individual. Mental models are therefore characterized as incomplete representations of reality. They are also regarded as inconsistent representations because they are context-dependant and may change according to the situation in which they are used. In essence, mental models have to be highly dynamical models to adapt to continually changing circumstances and to evolve over time through learning. Conceptualizing cognitive representations as dynamic, inaccurate models of complex systems acknowledges the limitations in peoples' ability to conceive such complex systems.⁴²

Further, people think in terms of analogies, meaning that mental models are "analogous representations" and not just convenient translations of abstract thought processes for purposes of communicating.⁴³

There is no reason to suspect that our understanding of law manifests and operates differently than does our understanding of anything else we experience. As Lynn Lopucki has written:

When law is applied, it is always through the agency of a human mind. That mind must absorb both the law and the situation to which it is to be applied, represent them internally, make the application, and report the results. It is mental representations—referred to in the cognitive psychology literature as "mental models"—not written law, by which lawyers and judges process cases. They can and sometimes do describe the law contained in their mental models in speech and in writing. The law in those models

⁴² Natalie A. Jones, Helen Ross, Timothy Lynam, Pascal Perez, and Anne Leitch, *Mental Models: An Interdisciplinary Synthesis of Theory and Methods*, 16 *ECOLOGY AND SOC'Y*, 46 (2011).

⁴³ *Id.* Sociologists have long observed that interaction, cooperation, and description are only possible on account of abstraction. See, e.g., Floyd N. House, *Social Relations and Social Interaction*, 31 *AM. J. SOC.* 617, 630 (1926) ("We are able to deal with this concrete reality, however, in a more or less sophisticated and purposive way, by categorizing it, that is by subjecting it to a procedure of conscious or unconscious abstraction. [T]he most natural kind of abstractions which we make from the reality of experience are probably those in which we reduce the reality to a substantive form . . ."). Cf. MAX WEBER, *ON THE METHODOLOGY OF THE SOCIAL SCIENCES* 89-94 (1949) ("In its conceptual purity, [the ideal type] cannot be found empirically anywhere in reality. It is a Utopia. Historical research faces the task of determining in each individual case, the extent to which this ideal-construct approximates to or diverges from reality. . . . [Ideal types] appear in full conceptual integrity either not at all or only in individual instances. Here as elsewhere every concept which is not purely classificatory diverges from reality. But the discursive nature of our knowledge, i.e., the fact that we comprehend reality only through a chain of intellectual modifications postulates such a conceptual short-hand.").

is remarkably simple, virtually black letter. That simplicity embarrasses the lawyers and judges. When pressed on a point, they are likely to scramble for a book or offer to prepare a memorandum.⁴⁴

It might only be a difference in rhetorical emphasis, but I focus on the language of models and their objects instead of the language of concepts. It is not so much that the notion of concept is too cramped. The opposite, its very generality pushes us perhaps to worry too much about legal participants' failure to share a single concept of law. The language of modeling is more constrained, more suggestive of the adaptability of a mindset to the particular problem in front of it. There is in my theory simply the perceived fact of cooperation, and the human perceivers build models of that cooperation, both as they perceive it and as they wish it to be. They judge the cooperation based on these models, and they negotiate and argue for modifications, rejections, and acceptance of models. Modeling, unlike inquiring into a concept, is obviously to simplify, to perceive, and to approximate.

One reason to proceed in this manner is that modeling law as the cooperation of modeling agents seems to fit what we observe about legal argumentation. It accounts, as may already be obvious but as we will see below, for basic, theoretical disagreement and yet is grounded in empirical fact.

B. Mental Models and Object-Orientation

Whatever the fundamental, ontological status of, say, a cathedral and whatever one might believe to be the nature of the physical reality of the universe, when it comes to our *cooperation* with respect to the cathedral, it certainly must be understood as consisting of our thoughts about it. We talk to one another concerning the models we maintain about the cathedral, models that must ignore and obscure the irrelevant and highlight the salient, irrelevance and salience dependent on the point of our cooperation at the moment. When we talk of doorways, pews, and altars rather than stone, wood, and metal, it is because we are able to cooperate by coordinating our models to solve the problems in front of us.

The more complex the system, the more obvious is our inevitable resort to what computer programmers call "object-oriented design."⁴⁵ One example

⁴⁴ Lynn M. LoPucki, *Legal Culture, Legal Strategy, and the Law in Lawyers' Heads*, 90 NW. U.L. REV. 1498, 1500 (1996).

⁴⁵ See, e.g., LAW IS CODE: A SOFTWARE ENGINEERING APPROACH TO ANALYZING THE UNITED STATES CODE, LAW IS CODE: A SOFTWARE ENGINEERING APPROACH TO ANALYZING THE UNITED STATES CODE 1–75 (2014). at 13 (describing object-oriented software design).

that leads to particularly quick understanding of the power of this modeling language is the simple clock.⁴⁶

A clock hides behind a simple face much complicated machinery. As an object, it exposes to the user an interface of very simple informational components. You can “ask” the watch what time it is and read the response by looking at the hands. To answer your question, the watch must engage in complex processing, but it hides all of that from the user. If someone invented a better way to produce answers to the “what time is it” question (a better internal mechanism), the internals could be replaced, but the user interface could remain exactly the same.

To solve practical problems in ways human beings can understand, series of complex events and long lists of granular instructions can be replaced by a relatively small network of message-passing objects, each object responsive to a small number of discrete queries. The immensity of the time-keeping problem can be hidden, conveying to the watch-wearer the singular piece of information that may interest her: the time.

Within the watch, we can find springs and gears and mechanisms, even as we could look yet more closely and describe more and more detailed material components. Perhaps the makers of one component have no idea how to manufacture another or even how the other components work. All that is necessary, though, for their participation in the cooperative enterprise of watch manufacture is to know the discrete details concerning how the parts relevant to their component will function when acted upon — acted upon in one of the discrete ways that each part is designed to act. Your mechanism, for example, must respond to the constant turning of a motor, and it must translate that energy into a heartbeat turning of a gear. How does it do that? The wearer need not know. The maker of the battery need not know. The maker of the glass that protects the face need not know. Nor do you need to know anything about their workings or purposes other than their interface with your component.

The important principle is this: We can make a watch together if we master the potentially complex construction and details of our *own* parts and design them to communicate simply with the parts made by others. And this we can do if we share a simple model of communicating parts.

Conceiving of a system as composed of communicating objects makes possible the conduct of intensely intricate tasks by hiding substantial amounts of complexity. As Henry Smith and Thomas Merrill have observed in the

⁴⁶My initial education on object-oriented design was a much older version of these documents, Apple’s explanation of object-oriented programming and Objective C: https://developer.apple.com/library/ios/documentation/Cocoa/Conceptual/OOP_ObjC/Introduction/Introduction.html#apple_ref/doc/uid/TP40005149-CH1-SW2. I have borrowed the clock example from the explanation contained in these documents’ predecessor.

context of property law, bundling complexity inside discrete objects that expose only simple interfaces saves what would be high costs of interaction were our descriptions of things always in terms of basic components.⁴⁷ “Property” and “ownership” are such objects, hiding a great many details concerning how such statuses might be recognized and lost. The law endeavors, to the extent compatible with other commitments, to “objectize” these terms, to sweep vast clusters of event descriptions under these labels, so that in many disputes we can ask the simple question whether there is “property” and then do the things we have determined to do when there is or when there is not. We do not need long lists of rules specifying what is to be done when someone takes another’s car, house, food, furniture, paper, computer, etc. The notion of “theft” queries the “property” class of objects as a class,⁴⁸ not a “diamond necklace” object in particular.

C.Law as Object-Oriented Modeling

All of law works this way. We only work with abstract, object-oriented models of legal systems, but often our assumptions, the simplifications of complex physical phenomena to the deductive output of principles and ideas, go unstated. While the reduction of physical reality to potentially disparate models of reality is one source of talking past one another in law, it is nevertheless indispensable.

That the simplification of concerted activity is central to both law and computer science has not gone completely unnoticed by scholars, but neither has it been particularly central to legal theory. While some researchers, in various fields, have explored the connections between law and computer science,⁴⁹ only a few have remarked on that connection as more fundamental than mere analogy. Thomas Blackwell, for one, has noted the power of object-oriented design in computer programming to facilitate the cooperative

⁴⁷ See Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000); see also Thomas W. Merrill, *Property as Modularity*, 125 HARV. L. REV. 151 (2012); Henry E. Smith, *Property as the Law of Things*, 125 HARV. L. REV. 1691 (2012).

⁴⁸ Classes of objects are objects themselves.

⁴⁹ See supra note XX. See also Herbert Fiedler, *Functional Relations Between Legal Regulations and Software*, in COMPUTER SCIENCE AND LAW 144 (Bryan Niblett, ed.) (1980): “It can be hoped that legal theory in general is able to realize that there are important requirements for the law analogous to the objectives of programming methodology in its more modern forms. Such requirements are, e.g., understandability, modifiability, eventually even something like demonstrability of correctness of legal regulations with regard to definable tasks.”

creation of highly complex applications and argued that such a design paradigm should be applied to legislative drafting.⁵⁰ In the course of asking to what extent the practice of law is science, M.C. Roos notes the important roles of abstraction, systematization, and reflection that are key to the practice of both.⁵¹ What leads Roos to suggest law is a science is the development in law of an abstract system of objects and a theory that structurally relates objects to one another.⁵²

The author closest to the fuller approach I advocate here is Garrett Wilson, who wrote a truly remarkable, unpublished paper as a law student exploring the deep connection between law and computer code.⁵³

At a fundamental level, the evolution of the common law and the iterative improvement of computer software are based upon some of the same analytic philosophy concepts developed in the Twentieth Century relating to conceptions of reality, linguistics, and set theory. At their heart, both professions depend on model creation, model application, and model revising or refactoring While the three year training course that is law school tries to help law students develop an intuitive understanding of how law “works” and evolves, the software profession is currently ahead of the legal profession in creating procedures and frameworks for identifying

⁵⁰ Thomas F. Blackwell, *Finally Adding Method to Madness: Applying Principles of Object-Oriented Analysis and Design to Legislative Drafting*, 3 N.Y.U.J. LEGIS. & PUB. POL'Y 227, 268-87 (1999). Blackwell helpfully summarizes the object-oriented design pattern as, first, an analysis phase: “(1) identification of relevant concepts in the real world; (2) identification of attributes of those concepts; (3) identification of relationships between those concepts; and (4) reassembly of those concepts, attributes, and relationships into a conceptual model that accurately and unambiguously describes the problem domain. This conceptual model is then refined through successive iterations until it is complete.” Id. at 274. This is followed by the design phase, “[t]he heart of [which] is the creation of interaction diagrams, which illustrate how objects will communicate in order to fulfill the requirements.” Id. See also Li et al., *supra* note 3, 13-15 (noting that object-oriented methodologies in software achieve the goals of abstraction and modularity, goals that can and should be pursued in statutory analysis).

⁵¹ M.C. Roos, *Is Law Science?* 17 POTCH ELEKT REGS 1392, 1417-27 (2015).

⁵² Roos endeavors to characterize law as science by arguing for a conception of science that emphasizes its behavioral elements, rejecting notions that it is defined by its domain of objectivity, that it is identical with the generation of falsifiable statements, that it is puzzle-solving, or that it is whatever method engagement produces useful results. Id. at 1401-11. Rather it is the cognitive function of abstracting the world, systematizing it, and reflecting on the system that characterizes the scientific. Id. at 1414. “Abstraction also leads to creative cognitive functioning and the ability to cope with more complex tasks or situations.” Id. Roos goes on to explain the distinction between the unscientific entitary abstraction (the breaking of perception into abstract parts, like the parts of a cow) and the scientific modal abstraction (the sort that is concerned with the structured relations among objects). Id. at 1417-18.

⁵³ Garrett Wilson, *Refactoring the Law: Reformulating Legal Ontologies* (2006), at <http://www.garretwilson.com/essays/law/refactoringlaw.html>.

what makes conceptual models logically elegant; and when and how these models should be changed.⁵⁴

Wilson nicely suggests a symmetry between the evolution of law and the evolution of software. On the one hand, we observe law's evolution from a more procedural orientation (the legal world of writs and forms of action that specified more particular law to resolve particularized disputes, walling off areas of law that were conceptually similar) to class-orientation (the increased mapping of legal concepts to real-world categories and the abolition of fictions). On the other, we find software's evolution from procedural code (programs as series of instructions) to object-oriented code (programs that, among other things, model reality and contain hierarchies of communicating, detail-hiding objects).⁵⁵

Everything about the uncertainties and controversies in our practice of law becomes a little more obvious when we realize that each understanding we have of a legal system is a distinct model consisting of communicating, idealized objects. Such an understanding is a simplification and an abstraction in which the millions upon millions of real and potential human interactions are shepherded into a much smaller number of rules and institutions. We have courts, legislatures, agencies, international bodies, families, sports leagues, statutes, regulations, and decisions. We have ideas like causation, defense, lawsuit, property, jurisdiction, statute, and speech that, depending on the dispute, we either observe as being present or absent, thereafter connecting to other objects and arguments, or "unpack" and argue about their components (themselves objects subject to opening up). And from models that use these objects, we "do" the law. We force people into prison, force the payment of money and the delivery of services, and kick people out of clubs. We kill people. We stop government agents from spying or even require them to spy. We dissolve failed marriages and business partnerships.

At a very low level, but even here not so close to the metal that we can dispense with the label "model" and call it "reality," all of these activities are atoms and energy, as with the human body and the clock. What is the practice of law? Just like the the body itself or the working of the clock, the practice of law is just patterns of energy and atoms. That is certainly true. Law might be described completely by physics and mathematics. It certainly could be described more precisely in those terms. Clearly, though, we do not send our law students across the quad to the physics and math departments and call it a day. Not only do we not have the power to model legal systems at the level

⁵⁴ Id.

⁵⁵ Id.

of atoms, it seems the wrong level to conceive of our history of cooperation when trying to determine how that cooperation should proceed.⁵⁶

To describe the process of law, then, is not to describe reality. This is worth repeating, because it is core to my theory. To describe law is not to describe reality. *The law* of a place or *the* legal system is not a real, substantial thing. So when we speak of the law or the legal system as though it *is* a thing, what are doing?

Return for a moment to consider all of the vacant terrain we unthinkingly crossed in our earlier discussion of disputes and resolutions. What is a dispute? At a very broad level, it consists of certain features of the moments when the plans or desires of two humans conflict in such a way that those plans and desires cannot both be fully met and so cooperation is potentially obstructed. However satisfying or unsatisfying that description might seem, it positively bleeds imprecision. More precision, though, asks us to define our terms better. Ok, then, what is a human? Does this level of precision matter? Could it ever matter, in the sense that competing but reasonable understandings of the concept of a human could lead to different legal conclusions?

I will not continue down the road of elucidating the manifold concept of a human being. My purpose here is not to suggest that all descriptions of law that posit the existence of something called a human being are fatally flawed. I will take it as given, for example, that we can say without dispute in most cases what a human being is. I bring it up because it is useful, indeed critical, to ask why it is that I am almost always comfortable taking the concept of “human” and a host of other concepts for granted. And yet in a few cases, the apparently vacant terrain containing the more particular and competing conceptions of “human being” is revealed as vibrant and important. The concept of a human being is opened and disputes about its components are had.⁵⁷

If we inevitably traverse under-theorized terrain, perhaps legal understanding itself requires us to do so. When we take a concept like “human” for granted, declining to go further into its nature, we are using a model of the legal system that considers a human being to be a particular kind of physical entity that can receive informational inputs and produce behaviors, including informational outputs, in a restricted range (or that at least resembles such an entity in a way that leads us to treat it like one that can). While we might, in some cases, become interested in how exactly humans do that — how we

⁵⁶ See Jones et al., *supra* note X at . (“A mental model is a simplified representation of reality that allows people to interact with the world. Because of cognitive limitations, it is neither possible nor desirable to represent every detail that may be found in reality. Aspects that are represented are influenced by a person’s goals and motives for constructing the mental model as well as their background knowledge or existing knowledge structures”)

⁵⁷ See, e.g., Kirsten Rabe Smolensky, *Defining Life from the Perspective of Death: An Introduction to the Forced Symmetry Approach*, U. Chi. L. Forum 41, 51-62 (2006) (discussing difficult cases raising the question of the meaning of “human being”).

decide what to do based on stimuli — and in how to value their choices and what we call their well-being, we will rarely if ever find it useful to construct a model of legal systems that conceives of humans at the molecular level but no higher. Humans are, from our legal perspective, objects hiding complexity, the hands on the watch face that we know hides complex springs and gears.

D. Criteria for law.

We are now ready to define the phenomenon that is a legal system. It will necessarily be in terms of individual models and perceptions of the models of others. To repeat: All our conceptions of law are abstract, object-oriented, mental models of a social practice. These models consist of informational networks of connected objects. The “true” nature of these objects and their communications is only modeled, and we hold in our heads an abstract, simplified set of rules and tokens that represents the objects’ physical compositions and utterances. Indeed, any sufficiently complex process that we wish to understand and discuss must ultimately be reduced to a non-real, conceptual model of interacting objects. When a person calls a thing “law,” she is engaging in just such a process.

Importantly, none of us maintains a single such model. Our working conception of the legal system depends on the reason we are thinking about it. Sometimes, for example, when deciding how to answer a legal question, we might ask whether a “legislature” “passed” a “statute.” Whether we need to dwell on the nature of each of those terms depends on the question we are asking and the attitudes of the participants toward that question and those terms. Does it matter that the legislature is in fact an institution comprising individual people, people who also compose sub-institutions like committees and separate “chambers” of the legislature? Maybe, maybe not. Perhaps we agree on what these terms mean for this case, that we are satisfied looking only at the hands of the watch, and so we talk about law through the interface exposed by this very simple model. Perhaps, though, one of us will not accept this model as to this question. Our disagreement might concern what it means to “pass” a statute, and we must turn to a more complicated model, one containing springs and gears (but still not molecules), that accounts for principles of majoritarianism. We are “doing law” when we can agree to accept another’s use of a model to resolve such questions, even if the model leaves room for disagreement among us on the right outcome.

To develop criteria for law, we start with a single individual and measure his or her attitudes about an instance of cooperation. I claim that he or she maintains a model of the relevant portion of the legal system, one that con-

nects questions about the conditions of cooperation with information concerning those questions. A more precise language for describing such models in terms of institutions and rules will be taken up below. For now, let us focus on what we mean by a legal system among a group of people who maintain such models, however described.

A *locally preferred model* is a model of the legal system (concerning anticipated input data) that an individual would prefer to use to answer a question.

A *local actual model* is a model of the legal system that an individual uses to govern his or her own actions within the legal system. It may or may not be his or her locally preferred model.

A *locally identified model* is a model of the legal system (concerning anticipated input data) that the individual believes to be a local actual model of a cooperating participant. It is, of course, possible to make a mistake and to identify a model that another participant is not in fact using. E.g.: *Y* locally identifies a model used by *X* as: “*X* makes decisions according to the rules he interprets in the King James Bible.” But *X*’s actual model is: “I (*X*) make decisions that make me wealthier so long as they can be plausibly passed off as consistent with the King James Bible.”

Local acceptance occurs when an individual accepts a locally identified model, in the sense that the individual prefers continued cooperation in the face of behavior by another consistent with the locally identified model.

Mutual acceptance occurs among participants when they each locally accept a locally identified model with respect to every other participant. Mutual acceptance does not require a single understanding of law. It does not require agreement concerning what outputs to produce but, rather, can manifest agreement to disagree. Nor does mutual acceptance even require a coherent external description of the members’ agreements and disagreements concerning decisionmaking. For example, Participant One identifies model A as being used by Participant Two. Participant Two identifies model B as being used by Participant One. Model A and model B may be incompatible, in the sense that they lead to different decisions on many important questions, and, yet, it is possible that Participant One accepts Participant Two’s use of A and vice versa. That is mutual acceptance but not mutual acceptance of a single model.

A model is a *shared model* if every member maintains a local actual model identical to a single model he or she locally identifies as used by every other participant.

The participants might even be mistaken about the models each is using. Whether the legal system is *stable*, in the sense that the cooperation is likely to continue, could depend on the paucity of such mistakes, especially if decisions that will reveal the mistakes arise.

So long as there is an empirically, but vaguely, sufficient level of compliance among the populace, Hart identifies a legal system with *the fact* that there exists some shared model among officials and mutual acceptance, which can include agreements to disagree, of the more detailed models of a legal system within a group.⁵⁸ This fact is social, not logical or moral, in nature, in that it describes a contingent condition among a particular group of human beings. Having a shared model is accepting a potentially complex ultimate rule of recognition from the internal point of view: according to an attitude favoring continued cooperation consistent with the accepted model. The model is, consistent with Hart's understanding, a guide for conduct, and it provides grounds for criticizing behavior departing from it, flagging departure from the model as a departure from the cooperation more generally.⁵⁹ Thus the legal system gathers to itself the moral force of the underlying ties that bind the group whose cooperation is the law, however weak or strong that force might be. The law emanating from this group *does in fact* create a distinct regime of normativity from that of morality conceived generally, but, critically, that normativity is no more and no less than the obligations imposed by the cooperative enterprise itself.

For example, suppose participants share a single model that decisions of the group shall be those favored by a majority of the group, where each member's expressed preference shall be based on his or her assessment of what is best for the group as a whole.⁶⁰ While they maintain disparate models of greater detail for reaching decisions, having among them different reasons for concluding one or another result is "best," they each locally accept such models for determining what is best that they locally identify as used by others. For several decisions, this appears to work, and members in the minority accept results that go against their more detailed locally preferred models. Attempts to carry into effect decisions reached only by a minority or to block decisions reached by a majority could be criticized as "illegal," as clearly contrary to the shared model. Indeed, participants expect such efforts would be so criticized.

⁵⁸ See, e.g., HART at 116-17 (setting out as a criterion for a legal system that "its rules of recognition specifying the criteria of legal validity and its rules of change and adjudication must be effectively accepted as common public standards of official behaviour by its officials"). Of course, we might judge the set of accepted models on other grounds, including scientifically. If the accepted models all proceed from basic assumptions that the universe is fundamentally made of milk, ash, and fire, one can judge that these models are a poor fit to our lived reality, as revealed by science. But accuracy is not what we are observing when we identify, as opposed to judge, law.

⁵⁹ *Id.* at 117.

⁶⁰ Note the obvious lack of determinacy here. A more detailed model might specify how best interests are to be determined. The point here is that the group has mutually accepted a model in which people might differ on that.

But now suppose a new circumstance arises, perhaps a decision whether to construct a building. The building would disproportionately advantage one member of the group. This member announces he is voting for construction because he is the most important member of the group and that what is best for him is necessarily best for the group. The other members had accepted that members might disagree concerning what is best for the group, and they had mutually accepted a model of decisionmaking that would bind them to decisions contrary to their own views. But, reflecting on this new occurrence, each member reconsiders the minimal decisionmaking models he or she accepts and concludes that “an assessment of what is best for the group” implies an equality principle and that a model of reasons that takes no account of such a principle is unacceptable.

What the selfish member has done is not down to theoretical disagreement concerning the grounds of the group’s decisionmaking, which theoretical disagreement was contemplated and expected, indeed inevitable, upon the adoption of the original model. It is, rather, contrary to an acceptable understanding of the grounds of the group’s cooperation, the minimal shared model they believe they maintained. In light of this new experience, the members realize that the selfish member has violated a mutually accepted model of cooperation, because that model requires that no member’s interests be treated as any more important than those of any other member. While this principle would not rule out decisions that confer special advantages or disadvantages, such decisions may not be grounded in reasons that identify some members as inherently more important than others.

This may sound imprecise, and it is. The members are refining the terms of their cooperation but not doing the impossible: setting out for all time the structures of reasoning and processing they will find acceptable in the future. There is no ultimate when it comes to reasons for decisions. All attitudes of acceptance are attitudes and thus defeasible. That being so, the validity of the things accepted is defeasible.⁶¹ Acceptance of a model depends on the imagination one brings to its analysis. New uses of the model may reveal deficiencies of imagination and become cause for rejecting what was once accepted.

The basic mechanic of cooperation, each participant’s accepting the locally identified models as they would apply to prevailing and anticipated circumstances, will appear more concrete once we develop a common language for describing such models and their constituent parts. But the legal system of a cooperative group can usually be identified as some model of the group’s

⁶¹ For an interesting, short review of defeasibility in law to which the theory advanced here is congenial, see Bartosz Brozek, *Law and Defeasibility*, 23 *REVUS* 165, 169 (2014) (“Defeasibility is a formal mechanism which may – but also may not – be used to model legal phenomena.”).

practice shared by its participants.⁶² It is necessarily indeterminate, because the model does not and cannot contain all the reasons that would be required to resolve all future cases. But it must contain, at least, an agreement potentially to disagree about such things, that being the essence of acceptance of an incomplete, locally identified model. Indeed, the evolution of the legal system will likely be toward the most detailed models shared by those participants with power under the rules contained in a more abstract, accepted model.

This short discussion of basic definitions may have obscured the fact that legal systems operate not within a singular group of individuals that reaches discrete decisions but among cooperating and conflicting subgroups, affiliated with one another at various levels of remove. A key observation, though, is that the global definitions we have described and the mechanisms of cooperation so far discussed are fractal. The global system is a union of communicating institutions. Each of those institutions can itself be viewed as a legal system. And these institutions are themselves unions of legal systems, all the way down to the warring components of a single individual's mind. Describing a model of a legal system, then, is to describe models of institutions and the communications between them. We can speak with more precision if we can describe a template for such legal models, which is precisely the role of the institutions and information theory to which I turn next.

Such a template will help to show, for example, how there can be a shared model of institutional functioning among participants in an institution but, perhaps, conflicting models (even at the most basic level) between participants in different institutions. Whether such local acceptance but global conflict results in a breakdown of the legal system depends on the extent to which institutional outputs are so unacceptable to members of the institutions that cooperation between institutions breaks down.

II.A GENERAL MODEL OF INFORMATION

To study law is, again, to study the conceptual side of cooperation among a group. Because all understandings of cooperation are models, it is useful to

⁶² An exception is mutual mistake where there is no acceptable common denominator. Hart would, again, not recognize such a mistaken cooperation as a legal system, there being no acceptance of a single rule of recognition from the internal point of view. The language of modeling permits us to understand the phenomenon of cooperation even without a unifying rule.

create a generic scheme for representing such models. Is there a blueprint of sorts that can be used to describe most or perhaps even all legal models, one that must obviously be flexible but also illuminating?

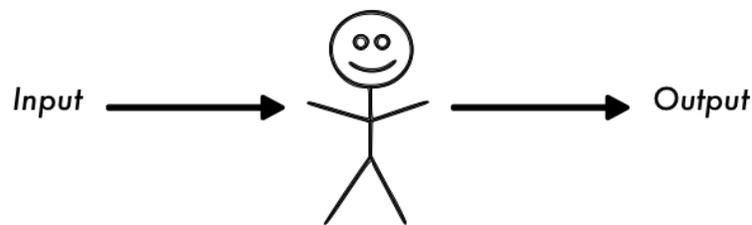
A. The General Model of Information Flow Through a Decisionmaking Entity

Laws sometimes attempt to avert harms or encourage benefits by attaching coercion to described instances of conduct and sometimes to the instrumentalities that enable conduct. In other instances, law regulates the information and otherwise influences beliefs that are prior to conduct.

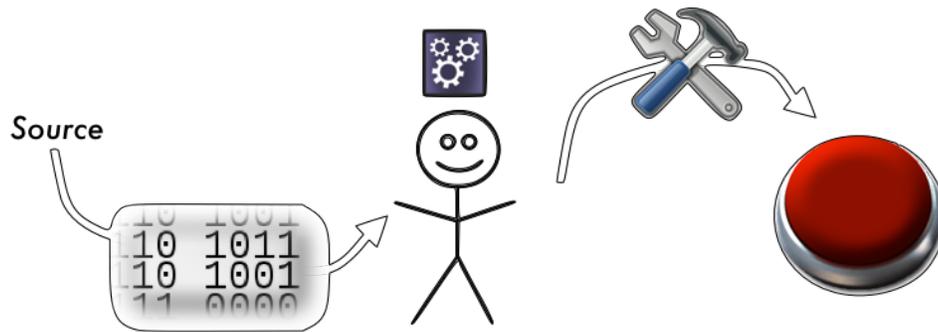
Indeed, the regulation and constitution of the legal system itself, which we might call (in Hart's language) the management of the system's secondary rules, is an instance of the latter sort of regulation. It is focused on influencing the production of the informational products that are secondary rules. A general understanding of information regulation will therefore help to describe a legal system's structure and tools.

I begin with a general model of causation by decisionmaking agents. The model charts information flow, from source to action, making it easier to understand the various methods of regulating human activity. It reveals the discrete steps in the chain of human causation, each of which is a potential regulatory target.

Decisionmaking agents receive information, process it, think about things, make decisions, and then engage in actions for which they have the necessary instrumentalities. Such actions might be further communication, or they might be non-communicative actions. Most basically we have:



Refining this, modeling more steps in the process, we fill in detail concerning how outputs are computed from inputs:



So the basic assumptions are as follows:

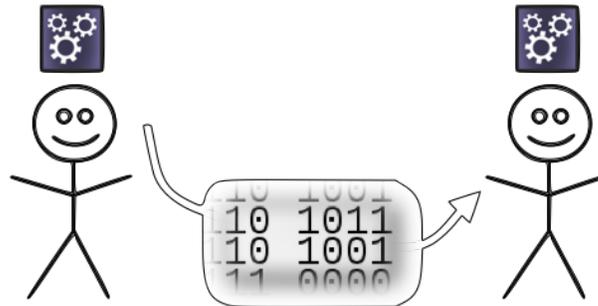
1. There is a physical source that produces data. This source could be a human acting intentionally or a non-intentional physical phenomenon.
2. The information produced by the source reaches the agent's senses.
3. The agent processes the information, transforming the data into mental representations that are integrated into the many trees of beliefs, reasons, and ideas the agent maintains.
4. Ideas may lead to actions if the instrumentalities necessary for such actions are available.
5. Actions cause effects.⁶³

We have a special case of this general pattern when the output (the effect) is the transfer of information to another entity. In such a case, the instrumentality is the means of information transmission, like a piece of paper and a pen or a messaging application and infrastructure, and the effect is the delivery of information. We have:

[Source] → Information → [Subject] → Processing into mental representation → [Idea in Subject] → Processing mental representation into information → Fixation of information into a medium (instrumentality of transmission) → [New Subject] → Processing into mental representation → [New Subject equipped with new mental representation]

Or for brevity's sake:

⁶³ The basic approach here is similar to that taken by Corey Yung in an insightful and illuminating article on information theory applied to constitutional interpretation. See Corey Rayburn Yung, *Constitutional Communication*, 96 BOS. UNIV. L. REV. 303, 311-14 (2016). The shortcomings he observes in the basic model of information leads him to integrate context and subtext, an account of which reveals relations among various of the dominant schools of constitutional interpretation. *Id.* at 332-39. I will adopt a similar complication of this basic model, observing that a decisionmaking institution must choose among relevant information sources and that the manner in which it does so is a cooperative behavior that is modeled by its participants – and, thus, part of the institution's internal law.



The more detailed model is useful because it reminds us of all the points at which we might endeavor to affect the process of understanding and transmission. Potential regulatory targets include:

- sources of information,
- the conveyed informational input (acted upon by disrupting or conveying other information, whether metadata or information otherwise supportive of or critical of the informational inputs),
- human (or entity-wide) processing of informational inputs (among other things filtering available inputs for relevance, combining inputs with beliefs, reasoning, weighing, and the construction of new ideas),
- the instrumentalities of action (acted upon perhaps by rules affecting the availability and uses of instrumentalities),
- the actions themselves (acted upon by rules directly requiring, permitting, prohibiting, encouraging, discouraging, or otherwise influencing “effects”).

This general description of information problems helps us to see the omnipresence of problems of information and resulting belief in any system of regulation.⁶⁴ For example, if the bad outcomes that concern us are inefficient contracts, the description encourages us to look along the chain of action, mindfully choosing whether to interrupt or redirect the information leading to the entering of such contracts, to supplement such information, to make it more difficult to complete such contracts, or simply not to enforce them.

In consumer contracts, we might worry that customers hold incorrect mental representations of a form contract’s terms. This may not lead to bad

⁶⁴ Knowledge as a regulatory target is unusual on account of its being, among other things, “sticky” (not practically capable of reallocation), non-rival, non-excludible. The regulation of knowledge is, for these and other reasons, an emerging, fascinating, and complex field that also subsumes some other, more longstanding understandings of regulation.

results,⁶⁵ but, if it does, we could aim at any of the regulatory targets along the chain of causation to try to change those results. For example, we could, ex post, invalidate contracts as to which it was proved the consumer entered mistakenly, attempting to “un-push” the button. Backing up, we arrive at the instrumentality of contracting’s effects, where we could require expensive procedures, from a physical signature to additional and progressively more expensive formalities, in order to make the completion of such contracts rarer. We could aim at ideation, and void classes of contracts as to which, statistically, consumer parties are shown to hold mistaken beliefs.⁶⁶ Moving further up the chain, we could aim directly at the information transmitted to the consumer. We could prohibit certain kinds of information, require others, or provide information indirectly.⁶⁷ That information could contain separate ideas (suggestions concerning alternative consumer options, for example, or safety information) or it could be metadata, information concerning the commercial information like: “This statement not evaluated by the FDA.” Finally, we could target information sources: banning them, subsidizing them, taxing them, or otherwise regulating them in ways that render less likely the harms we find at the end of the chain.

In sum, the model of information flow reveals a taxonomy of regulation: (working backwards) ex post punishment based on findings of harm, regulations of instrumentalities, regulations based on inferences concerning ideation, regulations affecting information transfers, or regulations of sources. Generally, principles of liberalism would tend to favor downstream causal regulation, beginning at the end of the chain and working backwards only as efficacy demands, so far as the costs of moving back each stage are not greater than the corresponding benefits.

I leave for another day the use of this model for general regulatory theory. But just picturing it helps to illuminate possible regulatory choices in problems ranging from market inefficiencies to gun violence to nuclear proliferation and other doomsday threats.⁶⁸ It may not engender new types of

⁶⁵See, e.g., Lucian A. Bebchuk & Richard A. Posner, *One-Sided Contracts in Competitive Consumer Markets*, 104 MICH. L. REV. 827, 828-31 (2006).

⁶⁶See, e.g., Gregory Klass, *Meaning, Purpose, and Cause in the Law of Deception*, 100 GEO. L.J. 449, 466-69 (2012) (distinguishing a category of “causal-predictive” regulations concerned with idea formation irrespective of the strict truth value of informational inputs).

⁶⁷Warning requirements and government speech are obvious and ubiquitous. For a discussion focused on governmental efforts to affect idea formation through information transmission, see, e.g., *RJ Reynolds Tobacco Co. v. Food and Drug Admin.*, 696 F. 3d 1205 (D.C. Cir. 2012) (striking down FDA’s tobacco labeling regulations that would have mandated warning labels containing emotionally laden images).

⁶⁸Looking at the chain is another way to appreciate just how lucky we are that detonating a nuclear weapon is extremely difficult. Proceeding along the chain of causation and beginning with sources, we find ample sources of information concerning nuclear weapon design (although we do try to target those and the information they could provide). The ability to

regulation, but it does reveal the choices that are always there and makes clearer why they sometimes seem feasible and sometimes do not.

B. Information and Jurisprudence

To understand a legal system is to understand the locally accepted models of its participants and actors. Those models concern reasons for collective decisions. But before we turn to understanding the nature of those reasons, let us apply the general causal model to legal decisions. A legal effect, like any other effect mediated by a decisionmaking entity, can be modeled by the causal flow model described above. Source, information, ideation, instrumentality, effect.

A legislature, for example, receives information through multiple channels, source after source, deliberates, and produces further information. That information is itself an input into the decisionmaking of other legal institutions. To have a model of a legal system is, partly, to have a model of the relevant institutions and how information flows among them.

Here is a possible model of the legal system in the society in which the emperor Rex makes every decision:

[Rex diagram.]

And here is what I call the “Schoolhouse Rock” model of the United States’ legal system.⁶⁹

[schoolhouse.]

This is not the only possible model. In fact, we may find it totally inadequate to answer pressing questions concerning the law. Is a statute valid if

comprehend this information is not ubiquitous but nonetheless widespread among sizable populations of scientists. In contrast, the instrumentalities to produce a nuclear weapon, including sophisticated centrifuges, are extremely expensive and apparently susceptible to monitoring and detection. Along the chain of causation, we here hit the soft regulatory target, blocking the undesirable effect by vigorously policing instrumentalities.

For some emerging biological dangers, like the use of CRISPR to engineer new pathogens, the cost gradient from source to ideation to effect is *scarily* low and ex post punishment probably insufficient. See generally Jordan Paradise, U.S. Regulatory Challenges for Gene Editing (2016) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2815519). With gun crimes, as with many crimes, there is not much hope of affecting the requisite criminal know-how. But the information intended to combat criminal desires and impulses is something in which we do indeed invest. What we normally conceive as criminal regulation, however, mostly concerns the last two steps: ex post regulation of effects (criminal law) and regulation of instrumentalities (registration requirements and weaponry prohibitions, for example). The debate concerning the proper allocation of law between these two latter possibilities, regulating guns themselves or exacting greater penalties for causing harms with guns, is one of the most divisive in contemporary politics.

⁶⁹ It is a depressing consequence of aging that “Schoolhouse Rock” must be cited, but see, e.g., <http://www.schoolhouserock.tv/ThreeRing.html>, if the Saturday-morning standby of the 1970s and 1980s does not immediately leap to mind.

the President signs a bill only passed by the House but not the Senate? What if the House and Senate pass slightly different versions of a bill? If I believe in the authority of “the Constitution,” there may be some questions upon which the set of information produced by House and the set of information produced by the Senate are both critical. In those cases, a locally acceptable model of the legal system will have to take account of both institutions. And so, such model will at least contain the following schematic:

[schoolhouse refined]

We could offer further refinements, adding administrative agencies, legislative committees, expert witnesses, juries, and more. There simply is no “true” model that is not all of reality itself. Rather, my attitude toward cooperation will follow from my acceptance or not of an idealized model, which takes account of a small set of institutions communicating in certain ways.⁷⁰

The important observation here is that legal institutions operate this way, that they receive input data, process it according to internal rules, and produce output data. The participants in this information network operate on the basis of models they maintain of this network, including models that inform their own processing.⁷¹

But we do not yet have enough content in these schematic models to understand the attitudes that people maintain about legal systems. These models contain only institutions and connecting pathways, like a diagram of a computer that contains only a schematic of chips and connections but no description of the logic of each processing unit. Such descriptions tell us only a little about how a system works. For more, we need to delve inside institutions and develop a language that describes models of their decisionmaking.

⁷⁰ More detailed and differently focused models will be deployed depending on the questions under consideration. Just as with the rest of our perceptible world, models come online to deal with the reality concerning us at the moment. See notes XX, *infra*, and accompanying text.

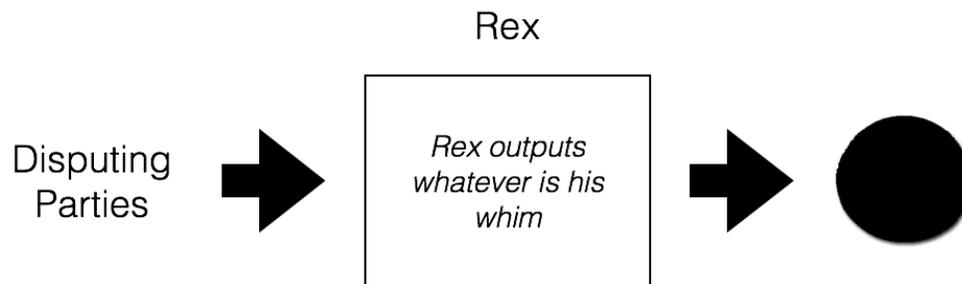
⁷¹ This “law as modeling of networks of decisionmaking institutions” theory has much in common with the fascinating psychological model of judging advanced by Dan Simon: “The theoretical core of the suggested model is as follows: legal questions are cognitively represented as connectionist networks, in which the relevant facts, concepts, principles and vying outcomes are all interconnected by means of inferences.” Dan Simon, *A Psychological Model of Judicial Decision Making*, 30 RUTGERS L.J. 1, 122 (1998). In future work, I will explore the connections with his ideas more fully.

III. REASON TREES, THE CENTRAL PROCESSING UNITS OF INSTITUTIONS

Any model of a legal system can be described in terms of a network of information-exchanging institutions. The general model of information transactions suggests how this might be made concrete. But we need an internal representation of institutional information processing to have a true model of social decisionmaking. As we will see, only by taking account of such reasoning can we even choose the institutions to include in our model.

A. Modeling Reasoning

Let us take a simple model of the legal system of the tyrant Rex. Before him all disputes are brought, and by him all resolutions made according to his then-prevailing will.⁷² To understand the legal system of this public, we might model the institutions of the disputing parties, conveying information to the institution Rex, who then conveys information concerning resolutions to those who carry out his orders. In diagram form:



Note that this simple model answers some questions one might have concerning the law of Imperium Rexum. It may be the model I consult when asking myself who resolves disputes in the empire. When I think of what I should do when I have a disagreement with a fellow subject, I know that I must bring the dispute before Rex if I want a resolution that invokes the coercive tools of the empire itself. Other questions, though, are not answered by this model. What is Rex likely to do with my dispute? What should I argue to Rex? How should I express my argument?

To describe more fully the law of the state of Imperium Rexum, we must refine this model to describe its institutions' processing of informational inputs into informational outputs. The diagram above describes the flow of legally relevant information, but it does not explain other than superficially

⁷² Here, of course, I refer to the simple example of authority debated by Hart, Fuller, and others. See HART, *supra* note X at X; Lon L. Fuller, *THE MORALITY OF LAW* 33-41 (1969).

what the law of this jurisdiction *is*. Far from understanding the potential sources of theoretical disagreement within the empire or the moral principles to which it adheres, we do not know from this model what the outcome of any particular case is likely to be. Nor do we even know what information Rex will consult and to which he will apply the reasons he maintains for his dispositions. The model is a bit *too* normatively inert for most questions we might have.

Indeed, the sort of model we have given would not suffice to describe the most mechanical and predictable computer. It only connects inputs to outputs with a generic “processor,” without describing how that processor works. We have only a model of the system but no models of the institutions that compose it.

What we seek, then, is a description of the manner in which an institution connects inputs to outputs, which in the case of human beings consists of what we can simply define as “reasons.” To model cooperation is to generate a simulating mechanism to stand in for the decisionmaking agents with whom one is cooperating. One needs to model their reasoning. It is this capacity for intellectual empathy that makes legal systems possible.

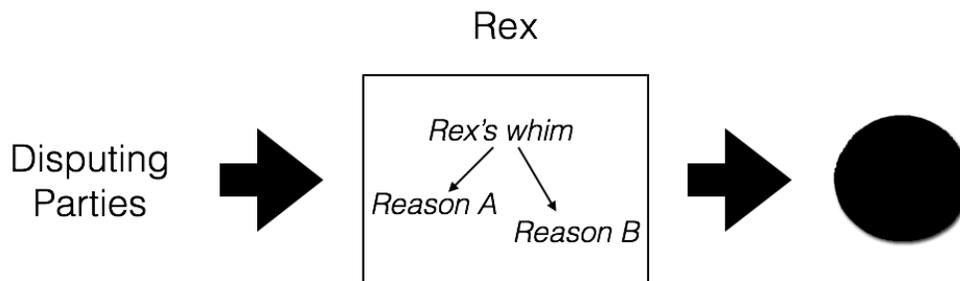
Let us call an *institution-information model of a legal system* a collection of institutions, a schematic of the informational connections between legal institutions, and, for each institution, a set of reasons that connect informational inputs to outputs. We say that a group’s legal system exists among a set of participants if each participant accepts an identified institution-information model of the group’s cooperation. This is a schematic of the social software on which the society runs.

These institutional reason sets are not necessarily disaggregated or integrated statements of logic. Nor must they necessarily cohere. For example, the logic of the Rex institution in the above model could be the following:

- Root 1: Rex’s currently prevailing desire controls his output.
 - Branch 1: Rex desires to rule for plaintiffs on days other than those with new moons.
 - Further: Rex is correct concerning the phase of the moon with a probability of eighty percent.
 - Branch 2: Rex desires to rule for defendants at all other times.
- Root 2: Rex rules for people with brown hair.

- Further: Rex notices hair color sixty percent of the time and is guided by moon phase forty percent of the time.

Note, too, that we could assemble Rex's reasons into hierarchical trees of reasons and that Rex might maintain incompatible trees. Rex's computational character can then be described, whether accurately or not, by a set of reason trees. Using the model, we examine an input, apply the set of reason trees, and draw conclusions concerning the outputs Rex will produce. And we can decide, if we identify this as Rex's model, whether to accept it.



This reason tree could also be considered the internally managed set of secondary rules that control Rex's informational output, which we could call the primary rules relative to Rex. Under this model, Hart's conception of law is a special case in which the legal system is described, conceptually, as a single institution. Its reason tree is the set of secondary rules, terminating in the embedding of the content of the ultimate rule of recognition in the following reason: "Legal actors must produce information consistent with the conventionally followed ultimate rule of recognition." Alternatively, we could describe Hart's concept of law as a fixed network of information-exchanging institutions that all contain the same DNA, the chain of rules terminating in the ultimate rule of recognition.

The information and institutions model generalizes Hart's model, because it understands legal systems as connected institutions that each maintain their own reason trees, and thus their own ultimate rules of recognition, the lowest level models at which there is mutual acceptance. This permits us to see more deeply the connection between formally separate legal systems, the influence of pluralism, the nature of constitutional crises, and the role of claims to authority. Institutions can be perceived and may possess a self-concept as connected to other institutions, authoritative over other institutions, or members of a "system" of legal institutions. These connections, though, are inferred from models of the institution's reasons, in particular the manner in which and whether it takes account of information generated by other institutions. So systematicity arises from the ground-up modeling of roles by

institutional participants, rather than flowing from a definition of law as necessarily implying a unifying, single rule of recognition on all the institutions in a presupposed system. We will examine this idea of “system perception” in more detail in the next section.⁷³

Let us now consider an example, the case of the United States, and draw up a model of its legal system. Many writers seem to assume that the ultimate rule of recognition in the United States is the Constitution and that, following Hart, the institutions and rules of validity can all be derived from that rule and later actions approved under it.⁷⁴ This seems incorrect under Hart’s theory. Rather, the ultimate rule must be prior to the document, which, after all, is only a datum. It must be something along the lines of: “The content of the Constitution is binding on all legal actors.”⁷⁵ That does indeed seem to be the social rule that is accepted as a matter of convention by courts, legislators, and executives. There is radical disagreement, however, among legal actors concerning the meaning of the Constitution. If the Constitution itself were the ultimate rule, then it would be impossible for people to disagree concerning its content and yet identify it as specifying a conventionally followed social rule through its content.⁷⁶ After all, without agreement, the content would not

⁷³ See Part X *infra*.

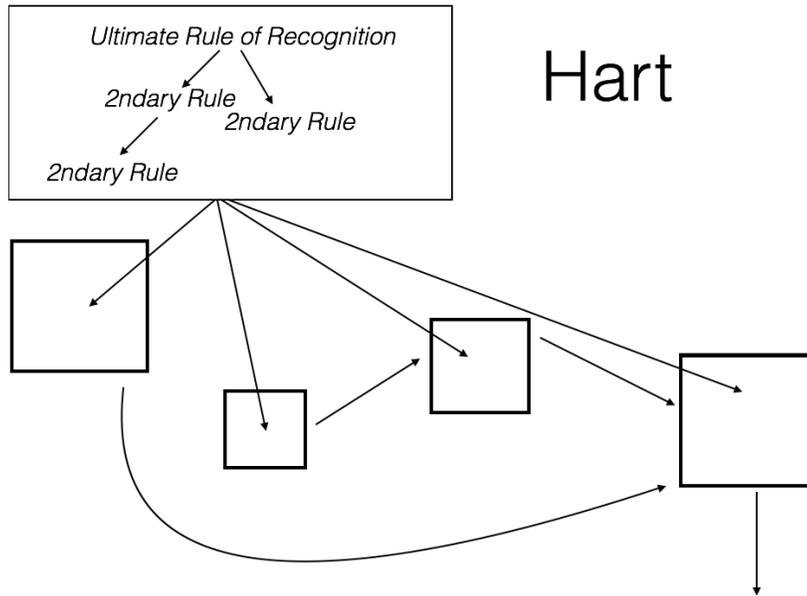
⁷⁴ See, e.g., Hart, *supra* note X at 202 (“[In the United States], there is no legally unlimited legislature, even in the widest interpretation of ‘legislature’; but the system of course contains an ultimate rule of recognition and, in the clauses of its constitution, a supreme criterion of validity.”). Stephen Carey has surveyed and added to much more sophisticated attempts to identify the rule of recognition in the United States, in ways that map the debates among exclusive and inclusive legal positivists. Stephen V. Carey, *What is the Rule of Recognition in the United States?*, 157 U. PA. L. REV. 1161, 1175-83 (2009) (analyzing Kent Greenawalt’s theory of a hierarchical rule, which contains content solely arising from the Constitution and content defining basic authority of the states not arising from the Constitution, and Kenneth Himma’s theory of the rule as identifying validity with the interpretations of the Constitution by the Supreme Court it deems “morally best”). Carey proposes a more complex and inclusive positivist version of the rule that derives from the strengths of earlier efforts. *Id.* at 1192-94. A more careful dive into these debates and their fit with the modeling theory will have to be left to future work. But some initial sketching of the more general fit of the theory with the various brands and branches of positivism and interpretivism will be taken up in Part XX *infra*.

⁷⁵ Perhaps the Supremacy Clause states the ultimate rule, self-referentially declaring the document containing it to be the supreme law. See U.S. Const. art. VI. I would still argue that the ultimate rule is the fact that the clause is followed. That is, the ultimate ground for criticizing an official for departing from the content of the Constitution, is that he or she has violated an obligation to be bound by the content of the Constitution, not that he or she violated the Constitution.

⁷⁶ This is the essence of Dworkin’s criticism of Hart’s positivism, that it cannot account for theoretical disagreement about the identification of law. As my theory shows, this criticism fails because it does not account for the fact that agreements to cooperate do not necessarily entail agreements to agree on output. Agreements to cooperate are captured by acceptance of higher-level models (say that the Constitution controls and its meaning is determined by the majority vote of the Supreme Court) and are possible even in the face of strong disagreement concerning the proper form of lower-level models (that, for example, the Constitution’s meaning is governed by the reasons of another institution, say the Framers as they gave those

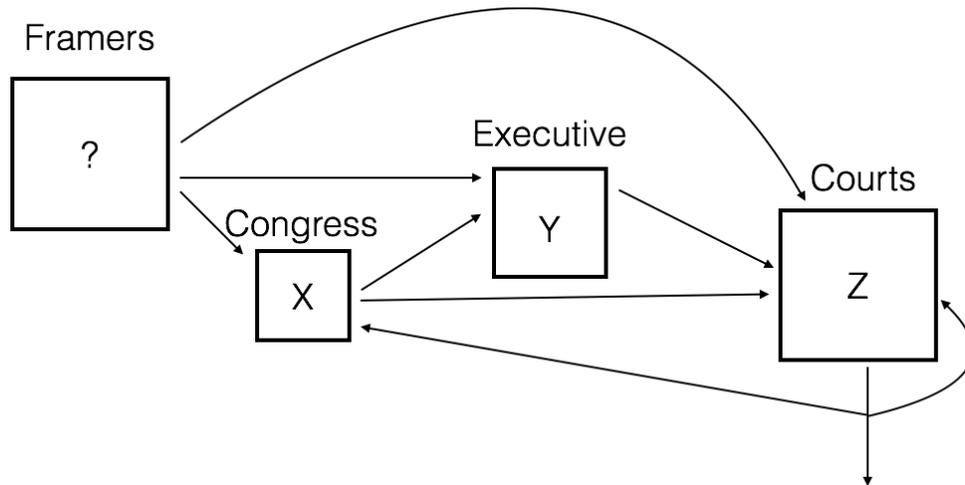
be conventionally followed. The modeling theory helps us to see that cooperation can exist based on the contingent social fact of acceptance of models of cooperation, even without specifying an ultimate rule in minute detail or even a rule that is coherent in all its possible applications. That there are serious objections to an ultimate rule does not negate the fact that participants have mutually accepted it at a high level, with those objections perhaps one day disrupting the cooperation if the right input data reveals problems.

So Hart's model is the following:



The institutions and information approach is a bit different. Perhaps the following would be apt:

reasons to their principals, which reasons can be uncovered by references to contemporaneous dictionaries and the texts they wrote).



Right away, without thinking more about what it means to assert such a model, we see that this approach allows us to take account of warring secondary rules and dynamically to model at least some theoretical disputes over time. The Supreme Court and the Congress could be operating under separate reason trees that take different views of the meanings and authoritativeness of congressional data or even the relevance of various other institutions.

We also see that an institution's reasons (or secondary rules) could follow entirely from the commands of other institutions, be influenced by other institution's data, or be independent. There may be some institutions whose processing is so constrained by the output of other institutions that we feel they are unnecessary even to consider in a model of the legal system. Returning to the example of jailers, we may find institutions that issue commands (at least those commands we are interested in modeling) that are completely determined by the output of courts. If this is so, then we can understand the legal processes that include them without modeling them as independent institutions and sources of information.

But this observation also points the way to a difficulty and an opportunity. It is true that we do not normally account for the independent decisions of jailers in our mental models of legal systems. Are such decisions completely constrained? An entire genre of legal scholarship is driven by what we might call the identification of the missing institution. The basic claim of such an effort is that an important class of questions about the legal system cannot be answered without including the missing institution into the model. Indeed, the "Schoolhouse Rock" model does not include administrative agencies. While we might be able to answer some legal questions without such

institutions, other questions will be unanswerable without taking account of them.⁷⁷

And so we are reminded that all our models are approximations of an ongoing social practice. Like all models, they are attempts to capture important features of some reality in order to answer particular questions. Does this fact, that any legal system model we generate is not entirely descriptive of “the real” legal system, mean that the information and institutions theory of legal systems fails? No, it means only that instances of modeling are incomplete. But such models are, I claim, integral to a correct understanding of the social practice that is law. My thesis is that we generate models of cooperation on demand, at different scales, and from different perspectives.

Some of the long-burning questions of jurisprudence are answered by what we have observed so far. For example, the connection between law and morality, the non-distinction between legal and non-legal cooperative systems, and the possibility of theoretical disagreement even if law can be identified as arising from social facts alone. We will take an initial but more systematic look at those questions in Part X, but it will help if we first examine more closely two principles that have a common basis.

First, we must understand that reason trees have an internal structure, that theoretical disagreement concerning proper legal output can occur at different *levels* of secondary rules, and that all reason trees ultimately rely on a primitive assumption or assumptions (while also silently omitting an unimaginable number of other assumptions implicit in the semi-logical glue between assertions). Second, we need to appreciate that legal practice consists not in executing a particular model of law but the cooperation of individuals under individualized models of law, where an empirically sufficient subset of participants accepts a common model, despite disagreeing on elaborations of that model. Law is thus something that can be perceived externally, observing

⁷⁷ The modeling framework introduced here implies a categorization of legal scholarship that I leave for future work. In addition to identifying a missing institution (Nestor M. Davidson and Ethan J. Leib, *Regleprudence—at OIRA and Beyond*, 103 GEO. L.J. 259, 274-94 (2015) (pointing out the importance of including the Office of Information and Regulatory Affairs in any model of administrative action), one can critique the informational connections between them (Aaron-Andrew P. Bruhl, *Hierarchy And Heterogeneity: How To Read A Statute In A Lower Court*, 97 CORNELL L. REV. 433 (2012) (suggesting that the reason structure of statutory interpretation should be different between lower courts and the Supreme Court and thus that different courts should examine different sorts of information when answering ostensibly the same question), argue for alternative intra-institutional reason trees (the most common form of scholarship), examine legal output to reconstruct reason trees (to argue, for example, they differ from their characterization in opinions or that they fail to yield to the reasons of other institutions, as in the classic critique in Roscoe Pound, *Law in Books and Law in Action*, 44 AM. L. REV. 76 (1910)), and illuminate disputes among legal actors by showing the difference in their implicit models.

that others are cooperating, and accepted internally, accepting locally identified models. And so now I turn to a consideration of the internal perspective, a model of rules as institutional actors construct them.

B.A Model of Rules in an Institutional Setting

The secondary rules that govern institutional action come in qualitatively different categories and can be ordered in ascending levels of generality. A newly minted first-year law student often feels as though he or she has embarked on a colossal endeavor to build the *right* model of “the law” that contains all of the rules in their proper place. But a critical leap is made when the student begins to perceive both the absence of the list and still some order in the sea of possible justifications for decisions – (a) that some sorts of reasons go together and (b) that some reasons lead the decisionmaker to invoke, take account of, or ignore the reasons of other institutions. They begin to perceive the cooperative web of law in its truer complexity and that disagreement can arise without wrongness.

I will discuss these levels in order, but, to summarize, there are four: (1) dispute resolution, (2) reason choice, (3) institution choice, and (4) institutional theory.⁷⁸ For each level, there is possible disagreement over the choice of resolving reasons and over the application of the chosen reasons. Viewed within a single level, such disagreement can therefore appear either theoretical, being a dispute over grounds, or practical, concerning a potentially falsifiable application of agreed-upon reasons.

What is more, categorizing the reasoning structure this way exposes the senses in which an institution’s decisionmaking can be viewed as primitive or systematized. Hart’s distinction – between sophisticated legal systems and what he called primitive legal systems, those lacking secondary rules of recognition, change, and adjudication – is both too broad and not broad enough.⁷⁹ All legal systems are ultimately primitive, but they can be so at different levels and on different questions. To see the sense in which that is so, let us first examine the sorts of decisions and disagreements reached at each level of institutional reasoning. So imagine an institution that believes it is tasked with reaching a decision. Its participants, each possessing a model of the institution and accepting some identified models of other participants, now work together to do so. Our analysis will build the following chart.

⁷⁸ In an earlier version of this schema, I described these levels somewhat differently and was focused a bit more on pedagogy than on theory. See Christian Turner, *Leveling Up*, at <http://www.hydratext.com/blog/2014/7/25/leveling-up>. The simplified version is a useful framework around which I organized a course in Legislation and Regulation for first-year students.

⁷⁹ Hart, *supra* note X at 91-94.

<i>Level</i>	<i>Reason (Theoretical)</i>	<i>Application (Empirical)</i>
1: Dispute Resolution	Justification (theoretical at the level of fact)	Decision
2: Reason choice	Reason for choice of justification (theoretical at the level of policy)	Justification identification
3: Institution choice	Reason for institutional assignment (theoretical at the level of organization)	Institutional assignment
4: Institutional theory	Theory of institutional assignment (theoretical at the level of cooperation)	Reason for assignment

1. Level One: Deploying Reasons

At level one, the legal analyst examines the informational inputs concerning the decision to be made and makes a decision applying some reason. Put slightly differently, the level-one practitioner is able to seize upon reasons to resolve a case.

For example, suppose a person demands payment from a business owner after being struck by a barrel that somehow fell out of the business's second-story window.⁸⁰ The level-one practitioner, hearing these facts and various but contradictory sets of reasons for resolution urged by the two sides, concludes the plaintiff should win. Perhaps he or she decides (1) that negligent conduct that somehow directly (meaning, as far as the practitioner can tell, not too indirectly) injures someone creates a duty of compensation and (2) that negligence should be found even when there is no direct information concerning the negligent actions themselves if the consequence of the unobserved actions can hardly be imagined to occur without negligence.

Armed with these reasons, the practitioner then decides that barrels do not fall out of second-story windows without someone's gross inattention and that there was no explanation from the business owner that would suggest otherwise. This being so, the injury directly resulted from the negligence of the business owner. The level-one practitioner then concludes that the legal system should order the business owner to compensate the victim.

Note that there *is* an argument here concerning how the reason chosen processes input data into output data. Without that, our practitioner would be an actor, not a decisionmaker. Our goal in understanding legal systems is to

⁸⁰ The example I use here, obviously, is a familiar tort case. *Byrne v. Boadle*, 159 Eng. Rep. 299 (1863). Its decision more or less mirrors the level-one analysis given here and is thus primitive when viewed from level two.

understand decisionmaking pursuant to cooperation, not unreflective action that cannot be modeled. There is no argument, however, supporting the practitioner's particular choice of reason. Much lay argument concerning law operates at level one. A proponent of a result will cite a reason but not reasons for choosing that reason.

Another level-one practitioner might disagree with the result in the barrel case, not with the reasons given but with how the reasons apply to the input data. Barrels fall out of windows for reasons beyond the practical control of any human, perhaps she believes. Agreeing on a conception of negligence and on its manner of proof, our lawyers disagree concerning how they apply here. This is level-one application disagreement, applying the same software to the same input data and yet arrive at different outputs.

Suppose, however, that another level-one practitioner responds that negligence must always be proved and never only inferred and that the plaintiff should lose for that reason, whatever the empirical reality of barrels and windows. This level-one disagreement is theoretical, as it involves disagreement concerning the grounds for the level-one decision. Our dispute now concerns the theory of the decision.⁸¹ If the argument does not somehow rise above the conclusory citation of disparate reasons and reasoned application to the facts, then here at level one we will remain.

2. Level Two

If practitioners' arguments for their preferred reasons for an outcome are only conclusory — *A* argues for outcome *X* because *R*; *B* argues for outcome *Y* because *S* — then we have not yet reached a level two argument. We do not have an argument at the level of reasons, a level-two argument, but only a disagreement that appears primitive to those seeking to understand the dispute better. A legal system that settles on *A*'s side has made a choice concerning the reason for decision, but its choice is primitive from the vantage point of level two, there being no reason supporting its choice among competing reasons that could be used to resolve the case.⁸²

Case after case may be considered in more or less this level-one way, though. The rule here is "this." A finder of apparently lost property should be

⁸¹ This distinction between disagreement at the level of theory and at the level of application, which we shall see replicated at each level of analysis, is similar to and indeed inspired by Dworkin's distinction between propositions of law and grounds of law. See, e.g., DWORKIN, *supra* note X at 4-6; see also Scott J. Shapiro, *The "Hart-Dworkin" Debate: A Short Guide for the Perplexed*, in RONALD DWORKIN 40-41 (Arthur Ripstein ed.) (2007) (giving a crisp and lucid summary of Dworkin's attack on positivism from theoretical disagreement).

⁸² A system that is primitive at level one is one that acts without reason and is therefore not a decisionmaking entity at all. It acts but does not decide.

declared its owner as against all the world except the true owner who lost it.⁸³ What about this other situation? Well there it ought to be “that.” A finder of mislaid property does not prevail against the owner of the premises on which the property was found.⁸⁴

At some point, practitioners are bound to ask themselves what *sorts* of reasons should be used to resolve cases. What reason, for example, do we have to arrive at a different rule for cases of lost property than we do for those of mislaid property. Strong-willed jurists may demand of each other more than ephemeral attachments to reasons to resolve particular cases. They will seek to understand better the set of reasons to be deployed. And perhaps they will argue among themselves about what constitutes a good reason and what sort of reason is not so good. They will then develop commitments to reasons for choosing among level-one reasons.

Having reasons for selecting the reason to apply to reach a decision is the domain of level two. Our argument at this level can be, as with the first level, theoretical or only about application. Here, though, our theoretical argument concerns what theory we should use to evaluate possible level-one reasons, and our applicative argument concerns the application of a given theory to select a level-one reason.

At this level, instead of seemingly plucking reasons from the ether and forming opinions about case outcomes, we are interested in the more general calculus of reasons that we will use to resolve cases. Is a concern with economic efficiency compatible with a belief that law should advance a particular conception of virtue ethics? Are there domains in which the two are compatible but other domains in which we must choose, somehow, which theory to bring to bear, and with it a concomitant cascade of reasons we will use at level one to decide cases. When we argue among ourselves about such things, we are engaged in theoretical, level-two argument.

In the barrel case, should it matter what the social utility of the business’s product is and how liability might interfere with its mission? What if the business’s products are extremely useful to some portion of the population but others think the business evil? (Maybe it is building weapons that some believe critical for national defense and not immoral for that reason but that others believe is inherently immoral because of the particular way it maims.) Should the degree of societal support for the business matter? Is there too steep a price in departing from the uniform view of the cases in

⁸³ See, e.g., *Armory v. Delamirie*, 1 Strange 505; 93 E.R. 664 (Court of King’s Bench 1722) (deciding just such a case using this level-one reason).

⁸⁴ See, e.g., *McAvoy v. Medina*, 93 Mass. (11 Allen) 548 (1866) (deciding that mislaid property should be treated differently than lost property in this respect but also moving into level two by citing precedent as a reason to choose that rule).

situations that can be abstractly framed as “injuries proximately caused by negligence,” or would it be sound to carve out a social necessity defense?

Here, at level two, we study the law not by cataloging its “rules” in situation after situation, the list of reasons mapped to factual patterns, but by more directly studying the reasons that seem to count and understanding why those that do not do not. Our investigation will cover different approaches that contain within them sets of reasons: economic efficiency, distributive justice, the problems of natural monopoly and collective action, the problem of informational asymmetries and more general imbalances in market power. At level two, our sophistication is such that we can even bring understanding to areas of the law we have not yet formally studied, because our theoretical commitments can generate level-one rules on demand. We can begin to predict the kinds of arguments that will be made on each side without having to read them first. This, obviously, is a critical skill for an advocate.

If the institution in fact argues at level two, it maintains a mechanism for legal change that is within the law of the institution, rather than an avulsion by fiat. It provides a means, in fact the only means, to predict what the law will be in new cases. The level-one reason, or rule, that will resolve a new type of case will be derived from level-two theoretical commitments. This is indeed how our courts work and why knowledge solely of the so-called “black letter law,” the list of level-one reasons, is so infirm.

Theory is the most important part of the dogma of the law, as the architect is the most important man who takes part in the building of a house. The most important improvements of the last twenty-five years are improvements in theory. It is not to be feared as unpractical, for, to the competent, it simply means going to the bottom of the subject.⁸⁵

At level two, our theoretical arguments concern how we should decide what reason to use to resolve cases. If we agree on that, then we might still disagree what that agreed-upon commitment implies. For example, we might all be thoroughgoing normative law and economists, committed to designing law to satisfy exogenous preferences and to the general validity of the rational actor model. Yet, we might still disagree on how to apply that level-two reason to arrive at a level-one reason (or rule) that can resolve a case challenging, say, a rent control ordinance on due process grounds. Our level two disagreement, just like that at level one, can be at the level of theory or application.

⁸⁵Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 HARV. L. REV. 1457 (1897).

3. Level Three

Despite our new-found confidence in understanding the different levels at which we can argue, we occasionally run into cases where the theory for resorting to the particular reasons to decide cases are of a type unlike the others. These are cases in which, whatever the rationales could be for reaching any given level-two conclusion, there is a reason not to do so: that this decisionmaker, this institution, is somehow the wrong one for the task of reason-choosing in this case. Like a child first realizing that other people also have thoughts and feelings and exist within a larger community of thinking and feeling beings, at level three the institution recognizes its place within a system and asks which institution's level-two reasoning should be consulted to arrive at a rule for decision.

And so, perhaps, in our barrel case, our tribunal has never before found negligence and ordered compensation when the specific actions constituting negligence have not been described. We might believe that whether to recognize and rely on reasons that would accomplish that task should be left not to the tribunal itself but to another institution, perhaps the legislature. That is our level-three conclusion, which will lead us to channel the level-two reasoning of the legislature, not our own.

Why? What is our level-three theory, or reason for reaching that level-three conclusion? Maybe we believe that allowing courts to find negligence without forming judgments about exactly what happened will lead to decisions to create categories of industrial output that are always subject to compensation obligations when they cause injury, without regard to the internal considerations of cost and benefit that a plaintiff would otherwise have some responsibility to ferret out. Judges, acting case by case, might not appreciate the effects of those categorizations, making it too easy to bring lawsuits that have a chance of winning, and creating far too much social cost. Maybe broad-based hearings, across multiple industrial sectors, would be wise, and maybe the information thus adduced would counsel a more targeted solution to the problem of accidents that happen as a result of complex industrial processes. (Not that I necessarily find any of this compelling. We are talking about a kind of argument here.)

This is a level-three argument for our conclusion that the legislature's theory of presumed negligence should control, and, by making it, we engage a more expansive model of the legal landscape that includes other institutions and their reason trees. The simple model that has information concerning a dispute flowing into the legal system and back out again after decision (Dispute → Legal System → Resolution) is too simple to describe the sorts of considerations we think appropriate in cases like this one. A legal system is not just one decisionmaker, but many, with information flowing among them. And level-three legal reasoning concerns not just sifting through the reasons

that will lead ultimately to case outcomes but *to giving a reason to assign that level-two task to a particular institution within the legal system*. This is a question for the legislature. This one is for the courts. This is for an administrative agency. Those are conclusions about institutional assignment, and once we begin to speak in terms of why we might wish to make such assignments, we command a much more sophisticated understanding of legal systems. Now the decisionmaker considers whether it must apply its own reasons (in which case level two would suffice) or whether it must defer or completely yield to the reasons chosen by others. The decisionmakers must now identify, judge, and accept or reject models of the legal system that include institutions beyond their own, together with the informational content and models of reasons flowing within and from those other institutions. It is a level-three theory that gives literal shape to the institutions-and-information models of legal systems we have identified.

If we each agree on the reason that should govern an institutional choice, competency or precedent on decisional hierarchy, say, but disagree on the output of that reason, then, as at lower levels, we have applicative disagreement. What if we disagree about the reasons that should govern the choice of institution whose level two reasoning should apply? Here, we arrive again at a theoretical dispute.

We have arrived also at a new ground from which lower level disputes appear primitive. From here, level-two theoretical disputes are primitive, possessing no ground of correctness. The level-three theorist sees that ultimately “ungroundable” level-two argument is inevitable. The choice of what to do and why is, ultimately, political in this sense. It is a matter of choice. But this level-three theorist approves or disapproves the legal decision based on the identity of the institution assigned the ultimately political task of level-two argumentation.

Debates over the proper interpretive theory for statutes, constitutions, contracts, and other documents can be understood, and I believe are best understood, as disagreements about the proper level-three theory. They concern distinctive models of the relevant portion of the legal system and of institutional reason trees. A theory deriving meaning from original intent, for example, is a model that recovers reasons for decisions from the reasons of the promulgating institution at the time of promulgation. A more general deference model might yield to the reasons of that promulgating institution but as it is now constituted. An original public meaning originalist finds authority in the reasons the document’s original audience, a new box in our legal model, would identify in that document. Textualism is a method that might be intended to approximate, in a “least error” or second-best sense, those

likely reasons.⁸⁶ All of these involve some channeling, some effort at the adoption of the level-two reasoning of another institution, whether past or present. Obviously, the institution could also use documents or other output from within its own system of level-two reasons, generating rules of a decision from that combination, yielding a form, but not the only form, of living constitutionalism, for example. Indeed, the choice even *whether* to be bound, in whatever sense one might believe “bindingness” implies a particular use of information, by the U.S. Constitution is a level-three choice.

In all this, as with the other levels, the legality of a participant’s resort to a particular theory is identical with, and nothing more than, the group’s acceptance or not of the model she has chosen. Whether the system tolerates disparate interpretive theories is a matter of the acceptance of those theories, despite disagreement. It is possible to imagine a supreme group of judges, some of whom make arguments that cite reasons arising from a constitution and some of whom cite only “common sense,” publishing opinions and otherwise getting on with their business despite their disagreements. They have mutually accepted identified models with which they disagree. But one can also imagine an end to such cooperation – and the beginning of civil conflict – when a member of a group, a group that minimally accepts level-three reasons that identify a particular constitutional source, rejects that source and refuses to go along. The others decry the participant’s actions as illegitimate and illegal. Perhaps he or she is then removed by the legal decision of this or another institution. The point is that cooperation-disrupting disagreement can occur at this level or any other. Cooperation implies mutual acceptance of identified models. An interpretative commitment is just a model containing level-three reasons. And so the permissible bounds of interpretation are no more and no less than the set of tolerable models.

⁸⁶ I leave for future work more precise and comprehensive translation of the various modes of originalism and of other interpretive theories into the models of legal systems as I set them out here. The most careful mapping and argument concerning originalism is probably Lawrence Solum’s *Semantic Originalism*. Illinois Public Law Research Paper No. 07-24 (Nov. 22, 2008), <http://ssrn.com/abstract1/41120244>. In short, Solum lays out various claims concerning the possibility and desirability of channeling original meanings to decide contemporary questions. His Fixation and Clause Meaning Theses are arguments at level three. They are intended to identify the reasons one can recover from a communication and thus speak to the possibility of a legal system model through which a court can recover the reason trees of historical institutions. *Id.* at 2-5. The arguments for Fidelity Thesis, that we should in fact, choose historical institutions (promulgators, audience, or combination) at level three, is a level-four argument, the sort described next. *Id.* at 151-157 (in which Solum “survey[s] the reasons that judges, officials, and citizens might have for adopting the attitudes and duties implied by fidelity”). Solum details overlapping theories for preferring originalist reasons for using the originalist model. More general understanding of interpretive theories as equivalent to models, again, has much in common with Corey Yung’s intriguing work. Corey Rayburn Yung, *supra* note XX.

4. Level Four

Once we have come this far, it is obvious there is yet at least one more level to attain. After all, once we say that we should ask what reason we have to assign a decision to a particular institution, it is plain that we could have reasons for choosing among competing such reasons. And so level four is attained upon recognizing that much of the work in law, and much dispute that seems bound up with substance, arises from disputes concerning the proper reasons to use when deciding on institutional assignment. Why should this institution rather than that make the irreducibly political choice our cooperation requires? Should we channel the institution most competent in this field, most representative, best resourced, most accountable in the short term, most accountable in the long term, most likely to account fully for costs and benefits, or even just on account of its authorship of information we otherwise deem relevant? Each is a possible level-three reason. We have come to level four when we argue over and decide among such reasons.

For example, people disagree how courts should treat statutes, constitutions, contracts and other putatively authoritative documents (whether to confine their attention to portions of the text, whether to look at any of a number of dictionaries, whether to consult legislative metadata concerning the document, whether to infer purposes and to aid those purposes, etc.). These disputes are, at bottom, disputes about what courts *are* and what legislatures and other lawmakers *are* within the legal system. Those constitutive questions can be identified with the reasons an advocate has for believing particular sets of reasons should govern decision of the “who” question.

Justice Scalia believed that conservation of systemic, democratic legitimacy is an overriding desideratum in developing theories of assignment and that unelected judges achieve legitimacy only by channeling the policies (the level-two decisions) of representative bodies and not by choosing their own.⁸⁷ This is because legitimacy arises primarily from more or less direct and immediate accountability to the people. Those who disagree with him have different level-four theories of assignment. They may believe, for example, that legitimacy is important, but it is (a) achieved in part by pragmatic decisionmaking and not only by deferring to popularly elected institutions or perhaps (b) actually diminished by clothing decisions in illusory certainty and,

⁸⁷ While his jurisprudence is replete with level-three conclusions and level-two arguments derived from textualist interpretations, Justice Scalia’s fullest level-four argument for public-meaning originalism and, by extension, textualism can probably be found in his academic work. See Antonin Scalia, *Common-Law Courts in a Civil-Law System: The Role of United States Federal Courts in Interpreting the Constitution and Laws*, in *A MATTER OF INTERPRETATION: FEDERAL COURTS AND THE LAW* 3, 9-25 (Amy Gutmann ed., 1997) (arguing for textualism from a principle of democratic accountability).

instead, advanced by candor concerning the uncertainty of, say, constitutional or statutory meaning.⁸⁸

If there is no mutually agreed-upon model of level-four reasoning within the institution, then the theoretical disagreement at level four is primitive. The cooperation continued between Justices Scalia and Breyer on account of acceptance of one another's models rather than agreement.

If one member cites reason R for choosing institution X's level-two work and another cites reason S for choosing institution Y's, we again have a primitive argument, viewed from level four, as we did with unresolved theoretical arguments at lower levels. Our own constitutional law is primitive in the sense that judges have discretion over theory choice at level four that is canalized only to the extent their stated theories are accepted by others and that their down-level conclusions fall within acceptable boundaries. Because the Constitution does not include provisions dictating how it should be interpreted, it is plainly open to theoretical argument concerning the right informational model to use to decide questions arising under it.⁸⁹ Judges will find

⁸⁸ Both of these critiques appear in Richard Posner's review of a later textualist manifesto. Richard Posner, *The Incoherence of Antonin Scalia*, THE NEW REPUBLIC (Aug. 24, 2012), at <https://newrepublic.com/article/106441/scalia-garner-reading-the-law-textual-originalism> (reviewing Antonin Scalia and Bryan Garner, *READING LAW: THE INTERPRETATION OF LEGAL TEXTS* (2012)).

⁸⁹ See William Baude, *Is Originalism Our Law?*, 115 COLUM. L. REV. 2349, 2351-53, 2403-07 (2015) (arguing that originalism, and thus the model of the legal system to which it corresponds, is correct using a level-four theoretical argument concerning conventional interpretive practice but acknowledging other arguments that would support other models); Cass R. Sunstein, *There Is Nothing that Interpretation Just Is*, 30 CONST. COMMENT. 193, (2015) ("If the founding document set out the rules for its own interpretation, judges would be bound by those rules (though any such rules would themselves need to be construed). But the Constitution sets out no such rules. For this reason, any approach to the document must be defended by reference to some account that is supplied by the interpreter."); Phillip C. Bobbitt, *The Age of Consent*, 123 YALE L.J. 2334, 2372 (2014) ("[T]here is no hierarchy of modal forms but rather than this being a cause for despair, it opens up a space in constitutional decisionmaking for the role of the individual conscience.").

Consider Baude's hard, level-four case that would arise if an originalist approach, on account of the level-two reasoning of the institution that would be channeled as originally authoritative, is as irrational as if "all judges [were] openly decid[ing] cases on the basis of astrology." Baude, *supra* at 2349. Would the conventional, positivistic duty Baude identifies to be originalist yield to broader commitments to minimal reason in that extreme case? The realistic theory of modeling advanced here helps us to see how that might be so. Originalism implies a model that can be accepted and argued for at various levels, where acceptance almost certainly arises from a constant simulation of potential cases and subsequent affective and logical reaction by those considering such acceptance. Irrationalism as deep as astrology would certainly cause a mainly rational participant to decide that his or her level-four theory must be more complicated than "originalism" and must include limits – that originalism was a means to a broader end and that those means only go as far as the ends are advanced. This only shows the difference in aim that Baude and I have. I seek an explanation of the phenomenon of legal systems and as systematic a way to understand them as reality allows. Baude makes a normative, level-four argument for a particular model, but he acknowledges that other models are possible. Sunstein and Bobbitt address themselves to the fact that our constitutional law is

no further uncontroversial “secondary rules of recognition, change, and adjudication” that will identify the correctness of their level-four theories or indicate the legitimacy of a change to them or application of them.

There are obviously many potential elements of a level four theory. The point is that once we begin to discuss at this level, we can sometimes become clearer about what our actual disagreement concerns, where the irreducible and ultimately political judgment about control must lie. Level four is the most abstract of these and thus often resisted. That is as it should be. We should only embrace abstraction when it makes our jobs easier and certainly, unless for sport, never when it makes our jobs harder. My point in this work is partly to reveal how abstraction is the process that makes legal systems even possible in a practical sense.

C. The Monopoly Example

Returning to our Monopoly players,⁹⁰ we can now see their dispute as an evolving state of the players’ modeling their cooperation and judging those models. They may begin by mutually accepting a locally identified model of nothing more than themselves, as a group, maintaining a level two rule that disputes will be resolved by the reasons contained in the rulebook that defines their game. Immediately upon encountering an unfamiliar rule, the auction rule in our example, our gamers diverge. Their disagreement concerns whether to hold an auction. But, in fact, it goes to how that question should be answered. One player revises his model, because he does not accept the reason prescribed in the rulebook. They have a very practical disagreement at level one, because they favor different decisional outcomes. But there is theoretical disagreement at level one: they do not agree whether the auction rule should determine the result. One says an auction should be held because the auction rule is part of the game. Another says no auction should be held because the auction rule is not a part of the game.

Moving to level two, knowing that our players have selected different reasons at level one, we might wonder whether they have done so based on differing theories or on differing applications of the same theory. Here, their difference is theoretical: One cites the instruction book as authoritative, and another cites the customary manner in which “people” play the game. Those theories might be further justified by appeals to cheap coordination, to continuity of a local gaming social practice, or any other such grounds. Whatever the bottom of the position of each gamer, there is theoretical disagreement

primitive at level four, meaning that a model of the legal system that animates a particular interpretive approach may be adopted and accepted but will never be provably correct.

⁹⁰ Part I(C), *supra*.

among them at level two. They do not agree on the grounds for determining whether the auction rule is a part of the game.

If one player believes that the group should yield to the choice of rule of the host and another believes that they should yield to the inferred intentions of the game's creators, then there is theoretical disagreement at level three. At this level, they have in mind not just different rules but different cooperative structures. For one, there is just the group of friends with an authoritative host. For another, there is another box containing the game's creators and reasons exist to defer to their rules. If all the friends ultimately believe that "group fun" should drive their choices concerning how to interpret the rules of their game, then they agree theoretically at level four but have an applicative disagreement. That is because they do not agree what a commitment to fun implies their choice of authoritative institution should be.

However deeply we reach into their modeling minds, we recognize, intuitively, that their cooperation will be, at some point, primitive. That it will be a matter of will, rather than logic. The normativity of the conditions of their game quite clearly does not arise somehow from the rules themselves. Nor does it spring from the concept of a "game." Their obligations to following the rules are no more and no less than their obligations to continue their cooperation. And that is, more or less, derivative of their felt obligations to one another, modified by the acceptability of defecting or the importance of collaborating in this instance of cooperation within their broader social project together.

D. Deference and Scrutiny

Finally, a brief word is warranted here about how level-three rules, rules choosing institutional decisionmakers, manifest in our legal system. I will identify various types of such rules under the general headings of *scrutiny* and *deference*, the former being a mode of input analysis that applies to that input level-two reasoning. The latter is a mode of analysis that may go only so far as verifying that a level-two decision was made by another institution or checking its level-two reasoning for plausibility. While the "tiers" of ordinary constitutional scrutiny are the most obvious example, my point is that *every* decision concerning the inputs received from other institutions makes a scrutiny or deference determination based on stated or unstated level-four convictions. And so doctrines of contract, arbitration, deference in administrative law, preemption, federalism, and Equal Protection scrutiny all appear substantively different, and indeed they are. They represent different aspects of the more general problem of reaching a level-two conclusion (a potentially

controversial political judgment) using information generated by other institutions.⁹¹

I leave for future work more careful mapping of these trans-substantive concepts as they appear in the law. For now, just a hint concerning the types of such scrutiny and deference rules:

- *Authority recognition rules*. These are rules of deference justified by a conclusion that the transmitting institution has systemic authority to control the outcome of the decision. Examples include the recognition of the authority of another legal system to resolve the dispute and the recognition by a lower court that a higher court's judgment on a particular question controls.
- *Rules of weight*. These are rules that recognize that the conclusions of a transmitting institution are owed weight. But unlike authority recognition rules, these rules of deference require an analysis of that institution's level-two reasons and not just the fact that such reasons were used. Whether, for example, one believes that rules of authority recognition or deference should be used to examine the output of the framers of a constitution goes a long way toward determining whether one is an originalist or living constitutionalist.
- *Rules of consultation*. These require an institution to check for reasoning conducted by another institution. Consulting such other reasoning might then cause the deciding institution to reach a different conclusion than it otherwise might have, but because it decides for itself such conclusion is better.

⁹¹ Compare the following, for example: *Stolt-Nielsen SA v. Animalfeeds Int'l*, 548 F.3d 85 (2d Cir. 2008) (discussing the extreme deference given an arbitral judgment when it is alleged to have disregarded the controlling law and citing as reason the fulfillment of the parties' intention to resolve their disputes "straightaway," a level-four conclusion); *Harrington v. Richter*, 526 U.S. 86, 131 S. Ct. 770, (2011) (citing Congress's reasons to require federal courts to defer in habeas to the judgments of state courts, which reasons include state sovereignty, efficiency, and repose); *Coniston Corp. v. Village of Hoffman Estates*, 844 F.2d 461 (7th Cir. 1988) (granting extreme deference to the judgments of a local government in the face of substantive due process allegation for reasons including a preference for reposing local political questions in local governments, federalism, and the accountability created by local elections); and, of course, *Chevron U.S.A. v. Natural Resources Defense Council*, 467 U.S. 837 (1984) (deferring to federal agencies' level-two judgments concerning the meaning of ambiguous provisions in statutes they are charged with administering: "Courts must, in some cases, reconcile competing political interests, but not on the basis of the judges' personal policy preferences. In contrast, an agency to which Congress has delegated policymaking responsibilities may, within the limits of that delegation, properly rely upon the incumbent administration's views of wise policy to inform its judgments. While agencies are not directly accountable to the people, the Chief Executive is, and it is entirely appropriate for this political branch of the Government to make such policy choices....")

- *Rules of prohibition.* These are rules that forbid reliance on or even consultation of particular outputs of particular institutions. An example is a rule that prevents a jury from receiving certain evidence.⁹²

Each type of rule is made operational through various mechanisms that involve processing information from the sending institution to measure coherence, to compare to empirical findings, to ensure against the use of prohibited reasons, or according to some other purpose that will control how information is translated into a reason tree. As institutional participants model their own institution in ever greater detail, they arrive at ever more particular mechanisms to realize the rules used to integrate the information of other institutions into their decisions.

A key assumption of my theory is that these rules are maintained by institutions themselves. Indeed, every institution manages its own secondary rules. To say that an institution is governed by another is really to claim that the institution maintains the relevant authority recognition rules under which it defers to the judgments of an institution it believes should govern. The institutional participants perceive, accept, and operationalize a model of law under which they channel the reasons they interpret from the output of those they recognize as authoritative.

IV. ANSWERING THE BIG QUESTIONS AND ASKING NEW ONES

A.A Summary Overview

A model of a legal system is a set of information-exchanging institutions, each with one or more sets of reason trees. A reason tree, again, is a tree of secondary rules for the production of informational output given informational input. A participant *A* believes participant *B* has acted legitimately, when *A* perceives *B*'s actions to be consistent with a locally accepted model of the institution corresponding to their cooperative enterprise. That is, *A* accepts *B*'s judgment if it accords with a model of the institution that *A* accepts, even if *A* prefers another model of the institution that would reject *B*'s particular judgment. *A* accepts the model *A* has identified.

Importantly, *A*'s judgment concerning the legitimacy of *B*'s model depends on its fit with a model *A* accepts *under the set of actual and imagined resolutions*. *A* may later find reason to reject the model he or she had accepted

⁹² E.g., Fed. R. Evid. 403 ("The court may exclude relevant evidence if its probative value is substantially outweighed by a danger of . . . unfair prejudice.").

in cooperation with *B* if facts arise, or are imagined as a realistic possibility, that call for an unacceptable judgment under that model. In such a case, the set of models acceptable to *A* changes, and, in order to cooperate, *A* and *B* must identify another model of institutional behavior that they both accept.

For example, *A* and *B*, Supreme Court justices, may each accept the model of their institution that identifies the controlling role of the Constitution, a set of acceptable (even if not preferred) interpretive methods to extract meaning from the Constitution, and, most basically, the principle of majoritarianism to identify the Court's institutional output, i.e., the majority opinion. Because they each accept this model, *A* and *B* cooperate despite theoretical disagreement at various levels arising from interpretive differences in any number of cases.

The fact of model acceptance is just that, a fact. It could be otherwise, and it does not follow from any other rule. But it is a social fact that does not preclude radical and theoretical disagreement about what the institution's output *ought* to be or even what more specific models *ought* to be used. Our discussion of reason trees illustrated the tiered complexity of models and the qualitatively different ways in which agreement can be reached and disagreement had. The acceptance of a basic model, the fact equivalent to the fact of cooperation, represents agreement only about the validity of the output, not its correctness.

Such a basic model, if it is shared, is equivalent to Hart's rule of recognition – but at a local level, the level of the institution itself. A legal system, as a union of institutions, is a product of local existence criteria. An individual accepts a legal system, if he or she observes its functioning as consistent with a model of institutions and information that he or she accepts (for reasons ranging from enthusiastic agreement to fear-drenched coercion). A legal system exists if sufficient people accept models they believe describe the operation of institutions that cooperation continues.

B. The Traditional Questions of Jurisprudence

How does the theory of law as mental modeling comprehend the traditional, big questions of jurisprudence? While analysis of the theory's place within the field as to each of these questions would constitute a full work on its own, it may help to highlight the theory's more obvious answers.⁹³

⁹³ The outline here has been heavily influenced, as has been much of my thought concerning positivism and its challengers, by Scott Shapiro. The nature of these basic questions about legal systems is well-covered in the opening chapters of his book. SCOTT SHAPIRO, *LEGALITY* 1-50 (2011).

- *Identity*: According to what reasons is something called a law while another thing is not? What identifies something as law?
- *Possibility*: How is it possible to recognize something as a law without acknowledging something else as law that sanctions that recognition? If law is necessary to identify something as a law, we would seem to be either in an infinite regression of identity questions or unable to identify anything at all as law.
- *Normativity*: What are the criteria (a) for declaring a law good or bad and (b) for concluding that it ought to be obeyed?
- *Morality*: Is there an irreducibly moral component in the task of identifying something as law?

We might add one more to this list:

- *Interpretation*: If a datum is identified as “law,” how should it be used by an institution that concludes the datum is relevant to a decision it undertakes?

The traditional approaches to jurisprudence have amounted to statements about what the essence of law is and arguments applying that essence to answer these basic questions.⁹⁴ To speak very generally, these descriptions have amounted to pictures of law as:

1. the commands, backed by threats, of a sovereign that is habitually obeyed,
2. the predictions concerning how courts will resolve disputes in future, hypothetical cases,
3. a cascade of rules proceeding ultimately from a rule of recognition that is obeyed and faithfully applied by an influential subgroup as a matter of social practice,
4. rules that all comply with some basic norm,
5. those rules that are part of a system that meets certain moral requirements that are authoritative on grounds outside the control of any humans,

⁹⁴ See Brian Tamanaha, *Necessary and Universal Truths About Law?*, 1-2 (June 2016) (collecting essentialist statements of the jurisprudential aim, including, for example: Joseph Raz, *BETWEEN AUTHORITY AND INTERPRETATION* 24-25 (2009); Jules Coleman, *Incorporationism, Conventionality, and the Practical Difference Thesis*, 4 *LEGAL THEORY* 381, 393 n.4 (2009); Julie Dickson, *EVALUATION AND LEGAL THEORY* 18 (2001)).

6. those rules that are part of a system that meets certain moral requirements that themselves can be discovered through a process of reasoning from axiomatic but human-derived conceptions of the good,
7. those rules that are recognized by both the legal system and morality,
8. the product of enactments by various institutions, which enactments meet certain requirements of fit with what has come before within the same system and that do so in a way that can be acceptably judged as consistent with the system's political morality,
9. the elaborations by various officers that are consistent with a pre-existing social plan intended to resolve future problems and also consistent with the idea of social planning,
10. and the commands of those with sufficient power to compel the actions of others, where those commands might appear to be justified by principle but ultimately reflect the personal interests of the powerful (so that all law is no more than the technique by which the powerful hold on to power).

What these understandings have in common is their striving to understand our social practice of lawmaking and dispute resolution as an integrated system. What are we doing when we do law? According to each of these conceptions, we act in systematic ways captured by the descriptions and criteria the model asserts. In sorting non-legal human interactions from legal ones, each of these theories has been designed to answer at least some of the basic questions. And each has been attacked for failing in ways large and small to do so.

My approach is different. I deny that there is a single model or concept of the law and instead assert that to do law is precisely to engage cooperatively in acts of modeling. Legal participants invoke models to make sense of and to reach judgments concerning their shared social enterprise, just as they do with other social and physical phenomena. Because of the complexity of the task, there is no single model that all participants in a legal system use in all instances. And because they have not reached agreement as to all actions that should be taken, they even disagree about whether particular models are valid, while ultimately accepting decisions at least consistent with acceptable models of greater generality.

"The Law" is therefore an illusion. There is only the participation in that portion of our perceived reality that we conceive, through mental modeling, as the practice of law. There is no Cathedral; there are only views of it. In this

sense, law arises from the act of perceiving, rather than being a thing awaiting perception.

In this work, I have introduced a particular language, one of institutions connected by informational pathways, that describes generically the models people maintain about law. With that language, we can describe legal disagreements and legal practice in new and more insightful terms. It helps us to see how legal practice is the continual fashioning, querying, adopting, rejecting, accepting, and refashioning of information-institution models.

1. Identity: According to what reasons is something called a law while another thing is not? What identifies something as law?

In one sense, in which we assume a legal system and ask how to identify its laws, our answer follows immediately from the modeling point of view. The legal system is perceived by an individual as an identified model of institutions and their reason trees. An external identification, or a perception, of law is one's observation of a group that appears to be cooperating and maintaining mutual acceptance of models of their cooperation. A law within that legal system is shorthand for a particular datum or set of data identified as authoritative by an institution within one's model of the legal system. The modeling understanding looks directly at structured thinking as it exists in the brain. It does not posit a concept defined by essential properties.⁹⁵

Law as the actual human understanding of the conditions of cooperation, as the mutual efforts to know other minds, might be considered a sort of concept. Perhaps it could even be critiqued on the grounds Brian Tamanaha criticizes most analytical jurisprudence. He points to theorists' tendency to bootstrap concepts using pre-theoretical assumptions concerning what counts as

⁹⁵ See note X, *infra*, and accompanying text. Compare my approach with an essentialist approach, one which seeks to establish necessary properties to count as a legal system. Let L be the set of sets of properties corresponding to all instances we would like to call law. Let C be the intersection of all sets in L . C is the set of those properties present in every legal system. Let P be the power set of C . Any member of P is a subset of properties present in all legal systems. Let Q be the subset of P so that no member of Q is a subset of a any member of the set of all social institutions that is not in L . The claim that there is an *a posteriori* concept of law is the claim that Q is not empty – that there is a set of properties common to all legal systems that is possessed by no social institution that is not a legal system. The universalist claim, that all legal systems are defined by some essence is that Q has a single member. Note that L and U (the set of sets of properties corresponding to social institutions) quite obviously depend on our observations and imaginations. There is no evidence that it is possible to identify a singleton Q no matter the U . In contrast, my theory is to identify a single property, called human cooperation, and then to recognize a legal system with every instance of that property. The content of the legal system depends on the states of mind of the participants in that cooperation. My only pre-theoretical claim is that human cooperation can be identified by humans.

law. As he puts it, “This method is circular: their assumptions about what is the paradigm of law determines the resulting theory of what law is, which is then applied to dictate what does and does not qualify as law for all places and times.”⁹⁶

I do indeed rely on a pre-theoretical claim, that human beings recognize cooperation and decide whether to cooperate. Importantly, though, everything I argue is potentially as falsifiable as any other claim about human behavior. It is falsifiable not in the weak and circular sense that we can compare the description here to historical systems that are somehow (how?) recognized as legal systems that should be captured by the description but in the much stronger sense that investigations of cognition can support, alter, or disprove the manner in which I argue is law perceived and judged. Whether one agrees that the cooperative systems described as they are by this theory should define law as a concept is a far less interesting question to me. I turn to the concern that law and other cooperative systems may be distinguished by their normativity below.

Another sense of the identity question, though, is how we can predict the contents of what a cooperative group will call its “law.” Our Monopoly players and the residents of a town within the jurisdiction of the town council are similarly situated from the point of view of the modeling theory. We have two cooperative groups, the laws of which are identified by the models its participants maintain. But, one might argue, there is something that causes ordinary people to call the latter system a system of laws and the former system a cooperative game with rules.

This criticism does not express skepticism of the underlying modeling mechanism that in fact explains so much concerning legal practice. Rather, it urges better appreciation of the heterogeneity of attitudes a participant may have toward the variety of cooperative forms with which she has experience. Compared to a game among friends, a town’s legal system may be more formal, more remote from the individual, less susceptible to change, or any number of other differences concerning content. But Brian Tamanaha has it exactly right: The only way to know whether a group of people considers a legal system in the model-theoretical sense to be a legal system in a cultural-linguistic sense similar to our own conventional notion is to ask or to study them.⁹⁷ In other words, “law” can be distinguished from other forms of cooperation only by convention, only by how groups themselves in fact do distinguish such forms. If a particular cooperation is not viewed by its participants as “law” in the sense we usually use the term, it has nothing to do with

⁹⁶ See Tamanaha, *supra* note X at 21-22.

⁹⁷ *Id.* at 24-26 (noting that understanding a group’s law as whatever the group conventionally identifies and treats as “law” is “not itself a concept of law but a conventionalist criterion for the identification of law”); see also note X, *supra*.

the cooperation's modeled structure and everything to do with attitudes toward the cooperation itself. And those attitudes need not be homogeneous among participants. A member of the mafia may prioritize mob rules ahead of, and even feel them to be more authoritative and binding, than the law of the state or town in which the mobster lives.

2. Possibility: How is it possible to recognize something as a law without acknowledging something else as law that sanctions that recognition?

The modeling theory, like Hart's theory, finds in acceptance the ultimate criterion of law. In particular, an individual accepts as law, from the internal point of view, those outputs consistent with a model of the legal system she accepts. Externally, we can describe the legal system of a cooperating group as its mutually accepted models. In degenerate cases, we can observe that there is fundamental disagreement, no minimal mutual acceptance, but that cooperation is proceeding on account of mistakes concerning locally identified models.

3. Normativity: What are the criteria (a) for declaring a law good or bad and (b) for concluding that it ought to be obeyed?

A law is "bad" but obligatory, from an individual's point of view, if it is consistent with a locally accepted model but inconsistent with a locally preferred model. A law is not obligatory when it is inconsistent with an individual's locally accepted models. Law's normativity arises from the acceptance of cooperation and is nothing more than the "should" induced by the cooperating group.

Even if an individual concludes that a law is immoral (which is essentially to conclude that it is inconsistent with another model of human cooperation she maintains, that two cooperative regimes conflict), she might conclude that practical considerations require compliance. That fact, that compliance is justified by practicality, means that the individual accepts a model of the legal system with which the law complies. She may not prefer it, but she accepts it.

Consider the famous gunman scenario.⁹⁸ An assailant holds up a victim: "Your money or your life." That action, the gun, and the language bind the two participants together in an instance of human cooperation, even though it could hardly be further from a voluntary union. Even here there is law, and the gunman is making it. The victim accepts a locally identified model, the

⁹⁸ See HART, *supra* note X at 19-24.

one in which the gunman may decide to kill him unless he complies with the gunman's orders. The statement, "Your money or your life," is consistent with the locally identified model of the legal system. And in fact the victim complies with the request precisely because it is consistent with the accepted model. The reasons he had for accepting this model are the reasons for acting in accordance with the law that emerges from it.

Now, the victim's acceptance of the model was, as are all attitudes of acceptance toward any legal regime, contingent on anticipated input data and based on an understanding of the relations among them. If the gunman orders something the victim believes would be worse than death, the victim may not cooperate. So too if the victim discovered the gun was fake or if the victim suddenly spied approaching police officers, these would affect the reasons the victim had for accepting the identified model of the assailant-victim legal system. The victim might now not accept an order of the gunman, because he has rejected the model of the system in which the gunman's orders are authoritative.

The gunman example illustrates my agreement with Scott Hershovitz that there is not a distinct "legal" domain of normativity. The victim in the above example of course does not have a special "gunman-victim *law* reason" to comply with the gunman's orders. Like Hershovitz, I believe that our reasons for following what we identify as law are not distinct from other reasons we have to cooperate. As he puts it: "Our social practices don't give rise to new kinds of normativity; rather they warrant new normative judgments of the old familiar kind. This is true even when the social practice in question involves positing rules."⁹⁹

Under the modeling understanding, our judgments concerning the ought-inducing effect of rules is completely parasitic on our attitudes toward the cooperation from which the rule structure is inseparable. Our Monopoly players' obligations not to cheat or disrupt are just those they have decided they owe one another in their cooperative enterprise, the ones owed with respect to that cooperation situated among other instances of cooperation among them. Their attitudes would surely be different had they come together not as friends but as competitors in a high-stakes monopoly tournament.¹⁰⁰

Different instances of cooperation and their corresponding legal systems give rise to different model domains and yield different rules. One's reasons

⁹⁹ Hershovitz, *supra* note X at 1197.

¹⁰⁰ Hershovitz makes precisely this point using the example of competitive rather than friendly games of chess: "I said before that the FIDE rules improve play of the game, but that will only be true when the point of playing is to match wits in the fashion that the rules facilitate. If the point is simply to have fun, then appeals to the FIDE rules will almost certainly get in the way." *Id.* at 1183. The FIDE rules are "normative" only to the extent cooperating in the competition is normatively desirable, in which case the normative tug of the FIDE rules is of the more usual kind, urging us to cooperate when we have agreed to cooperate and wish to continue.

for following those rules coincide with the felt obligation to the other participants in that cooperation. This is why punishing rule violation is, essentially, a criticism of defection from the cooperation. It is not surprising that groups often try to assert that the reason for following their rules is deeply moral, basically to stretch the articulated purpose of the cooperative enterprise. If they succeed, they can claim that the reason to cooperate with them is the same as the reason to be “good” more generally. With that framing, violation / defection can be criticized as defection from a more global system.

Similarly, civil disobedience is defection from a group intended to highlight the severed connection between legal rules of a system and rules of some other system (religious or moral), both of which make claims on the group’s members, for the purpose of bringing the legal rules into alignment with those of the others.¹⁰¹

4. Morality: Is there an irreducibly moral component in the task of identifying something as law?

No, not in the sense that there are criteria that sort non-law-cooperation and law-cooperation. The deeper question is whether there is something about the entities that compose the legal system that inevitably, as an empirical matter, causes the use of one class of models to succeed and another class to fail. Must any successful legal system be consistent with models that have a common set of roots we could conventionally identify as “morality”?

Lon Fuller’s story of the chaos of Imperium Rexum should prompt us to consider reasons that a fundamentally unfair manner of dealing out coercion will not be stable.¹⁰² Again, I do not think that instability or a lack of longevity negates the fact of the cooperative process while it exists. Unstable cooperation is still cooperation while it lasts. It is also obviously possible to accept a model of cooperation over which one has no control and into the finer details of which one has virtually no insight. The reasons for doing so almost certainly do not run deeply, and so such acceptance is likely to be thin.

¹⁰¹ See Martin Luther King, Jr., *Letter from a Birmingham Jail* (Apr. 16, 1963), reprinted in 26 U.C. DAVIS L. REV. 835, 841-42 (1993) (“I submit that an individual who breaks a law that conscience tells him is unjust, and who willingly accepts the penalty of imprisonment in order to arouse the conscience of the community over its injustice, is in reality expressing the highest respect for law. . . . [W]e who engage in nonviolent direct action are not the creators of tension. We merely bring to the surface the hidden tension that is already alive. We bring it out in the open, where it can be seen and dealt with. Like a boil that can never be cured so long as it is covered up but must be opened with all its ugliness to the natural medicines of air and light, injustice must be exposed, with all the tension its exposure creates, to the light of human conscience and the air of national opinion before it can be cured.”).

¹⁰² See FULLER, *supra* note X, at 33-41.

It is worth noting, though, that Fuller's eight routes to the failure of a legal system all describe types of rulemaking that would be nearly impossible for a participant in the system to model.¹⁰³ For Fuller, there is no law without a moral obligation of obedience, which obligation attaches only if the eight failures are negated and law attains, thusly, what he calls an "inner morality."¹⁰⁴ We might understand Fuller's principles of inner morality not as criteria for something ultimate, the view that invites appeal to more traditional understanding of natural law, but as the minimal conditions under which modeling in rule-understanding detail will become possible. If an individual cannot model the legal system at a level of generality that at least reaches statements of the rules that will apply to adjudicate behaviors within her realms of possibility, then she cannot locally accept such a model. And her cooperation, if it exists at all, will necessarily be at a level above the level of practical rules. In an act of ego death, she will accept a purely authoritarian model: that Rex decides based on reasons known only to him. Her acceptance will be only of the fact of Rex's authority. She may "remain[] faithful to him throughout his long an inept reign. [But she will not be] faithful to his law, for he never made any."¹⁰⁵ Indeed, she will not perceive any.

Again, whether she ought to comply with Rex's rule, whether we should call Rex's system a "legal system," these are matters of judgment and convention. The modeling theory makes it possible to distinguish from the model of an ordinary legal system an information-and-institutions model that consists of no reason trees that go deeper than authority submission. The mechanisms are the same. The labeling need not be.

What about the constraints of substantive morality? My model presupposes that law can be identified with institutional output and that characteristic of accepting that output as law is the acceptance of a model of law that includes that institution and a reason tree within it that is consistent with its output. Moral principles important to the group may not be announced by any particular institution. An individual may only observe lots of behavior consistent with them (though they may hear people talk about them, perhaps even articulating the rules that would form within a reason tree of someone acting consistently with them). Observing lots of consistent behavior is to observe convergent habits. This may, externally, allow us to predict what others are likely to do in the future and perhaps even modulate our own behavior to match the group's. But further, it may be possible to infer reason trees (to

¹⁰³ These routes are, roughly: secret or unpublicized rules, obscure and impossible to understand rules, retroactive rules, contradictory rules, rules that are physically impossible to comply with, rules that rapidly change, and a strong divergence between rules as adopted and as applied. *Id.*

¹⁰⁴ See, e.g., Lon. L. Fuller, *Positivism and Fidelity to Law – A Reply to Professor Hart*, 71 HARV. L. REV. 630, 644-46 (1958).

¹⁰⁵ *Id.* at 41.

identify models) and thus to infer part of the group's code. Not acting consistently with such reasons could then create in other participants grounds for criticism, and, further, there may be institutions that use that moral principle in their reason trees and thus take legal actions (produce outputs) based on the individual's deviation. Knowing this, an individual identifies models of institutions within the group as containing these moral reasons, even if those reasons are nowhere stated.

The upshot of this complex process is that an outside observer, taking account of the multiplicity of legal relationships within the group, might have a hard time identifying the social facts behind later treatment of defectors from moral rules that have not been expressed. But in fact these outcomes may be an emergent property of a group whose members have internally identified and accepted models that are consistent with the moral principle they have seen followed by others and assume others have adopted.

5. Interpretation: If a datum is identified as "law," how should it be used by an institution that concludes the datum is relevant?

An institution interprets law when it identifies the reasoning of another institution and uses it to connect an input question to institutional output. When we say that an institution interprets a particular legal datum, we mean that it identifies a model of the legal system and a set of reasons arising from an institution within that model, where the model chosen and the institution privileged within the model is justified by level four reasons. Generically, an interpretation looks like the following:

[source institution] → [output] → [interpreting institution] → [extraction of deciding institution's reasons] → [incorporation into interpreting institution's reason tree] → [use dispute input data and newly reformed reason tree to decide].

This general understanding of an interpretation takes many different forms. We see that a common law judge faced with the input data of disputing parties will attempt, following a level-three rule perceived at a level of complexity sufficient for the task, to identify and to interpret "controlling precedent." The source institution here, of course, would be prior courts.

Importantly, though, "interpretation" need not co-locate the data source and reason source.¹⁰⁶ That is, the effort need not be to recover those of the source's reason trees that led to the dissemination of the information under

¹⁰⁶ This way of speaking is about the problem is more or less compatible with Corey Yung's "complete constitutional communication model," which account for pretext, subtext, and later precedent. Yung, *supra* note X at 332. Mine is a more institution-based approach, associating each source of data with a modeled institution.

consideration (an original intention endeavor). Let us consider this possibility more carefully in the context of statutory interpretation.

Ultimately, again, a judge applying a statute is concerned with the level-two reasons he or she should use to decide the case. If a statute applies, then we already have a model of the legal system in which the statute is a relevant datum. The critical point is that the statute itself is not a reason tree, but, if it is relevant, it must be translated into one. Ultimately, the question is how we should convert textual data into reasons for decisions. We have multiple options, and, critically, they are distinguished by the model of the legal system the deciding institution applies. Perhaps the statute is a datum that chiefly functions to aid the court in identifying the set of data it needs to reconstruct the reason tree of the institution that created the datum. For example:

Perhaps one's level-four reasons for recognizing the salience of this datum and its author point to the datum-creator's authority running only so far as to control the sets of data it conveys to a truly authoritative institution, i.e., the one identified by the level-four theory as possessing the reason trees we seek to recover. That is, suppose our theory is that while the legislating body has the authority to choose the data to transmit, the meaning of those data and the reasons we are trying to recover are determined by the audience for the data, not its source.

Under this theory, it is the job of the interpreting institution to recover the reasons as they would be found by that authoritative institution, the audience, given the datum-creator's act of creation. If the authoritative institution is a broad subset of the public as it existed and processed information at the instant of the creation, then this model is an abstract public-meaning originalism. Already, we have a far more complex information-and-institutions model of the system than the simple sender to receiver model.

Recognizing, though, that we lack access to information concerning the audience's reasons, we might further refine our model, assuming that it was equivalent to a generic audience that processed information in predictable ways. Perhaps its processing can be sufficiently approximated by assuming it would translate words into reasons by passing the text through contemporary dictionaries and resolving ambiguities according to a set of fixed rules. This is originalist-oriented textualism, justified by the same level-four theory that led to public-meaning originalism. The basic move is to replace the inef-fable but actual reason trees of the mass public with the interpretive equivalent of the rational actor model. That is, we replace impossibly complex collections of trees with a simple and linear program of text-to-reason mapping.¹⁰⁷

¹⁰⁷ If we are fully invested in the authority of "the People" and are using approximation tools to realize it, then we are also trying to recover that institution's level-four conclusions: its

Canons are therefore models of institutional reasoning meant reasonably to approximate human interpretation, the rational interpreter model. One hope of those who embrace this theory is that by producing information that it will use such canons and dictionaries, the deciding institution conveys its own mapping strategy to the data-producing institution and the public that holds that institution accountable. And so even if the model it announces is false for existing data, in that it identifies with those existing data reasons that no modeled institution actually had, the canons-and-dictionary choice might dynamically grant the theorized authority to those institutions.¹⁰⁸

The attraction of the textualist model, as animated by a reasonable and publicly-interested level-four theory, is obvious, but I think mistaken in many contexts.¹⁰⁹ It is more than just analogous to the rational actor model of neo-classical economics. It purports to move us uncontroversially from generally accepted theories of the good to purely logical conclusions using an apparently neutral model of human reasoning that connects input conditions to output conditions. It possessed many of the same failings, however. But further elaboration of interpretation under the modeling understanding will have to await future work.

All this suggests that an interpretation of a datum is a function of (a) a model of the legal system, (b) a choice of time at which the model is queried, (c) a level three choice concerning the institution whose reason resulting from the datum will be adopted, and (d) a model of that institution's reasons given the datum, meaning, in particular, a posited function that would map the datum to a reason that can then be adopted as the interpreting institution's own or can, at least, alter the interpreting institution's reasons. Interpretative disagreement within a legal system is not a single disagreement over a uni-dimensional array of methods but a multi-dimensional one, involving time, institutional choice, and approximation.

V.CHARTING A FUTURE FOR JURISPRUDENCE

Progress in jurisprudence depends on letting go of the desire to set out criteria for identifying "law" that, as a practical matter, just reproduce our intuitions about what constitute "law things" and "non-law things." Instead, we have in

views concerning what information sources and motivations are relevant to examine to interpret the information for which it is the audience.

¹⁰⁸ Revision of implied rights of action cases.

¹⁰⁹ My critique here is internal to the method. Other grounds for debate include choice of relevant institutions and, for each institution, the time at which the institution's reasons should be queried (either through texts or other evidence).

front of us a continuum of social kinds, but with markedly similar mechanics of cooperation. They are often called by different names, and they exert different normative tugs on account of the participant's attitude toward the underlying cooperation.¹¹⁰ But once we appreciate that law is indeed occurring within the cooperative enterprise of a homeowners' association or a family or internationally, that we need not strive to characterize law in such a contorted way that it exists at the courthouse but not within the home, the structure of legal systems and their relations to one another become easier to understand and to analyze.

We have here identified law with simultaneous individual attitudes toward group activities. And where cooperation is perceived, so must be law. This was so because cooperation implies the acceptance of implicit conditions, and the acceptance of implicit conditions implies the acceptance of models of rules. So where we see coordinated behavior and where we can associate that behavior with implicit conditions, we have glimpsed a legal system.

Such legal systems are not restricted to our intuitive, archetypal examples. In addition to the many cooperative systems, like families and private organizations, that many have tried to argue do not practice law,¹¹¹ there are even systems occurring among non-human animals that can be identified from the external point of view as legal systems on account of what we infer concerning the participants' internal points of view:

Recent theory and experimental studies suggest that hidden threats may play a similarly important role [as they do in human legal systems] in shaping the social behaviour of animals. In particular, threats to terminate a potentially profitable interaction may limit the level of selfishness in cooperative groups.¹¹²

Biologists grasp immediately the background "exit threat" that inevitably permeates cooperation. They see it more generally in nature than do we lawyers. But, importantly, this background threat can only work if the cooperating animals are able to process the threat in the environment. Such processing need not be isomorphic to human cognition, but the models of cooperation must exist somewhere in the hardware of the organism.

Researchers have posited several requirements for hidden threats (potential sanctions) to be effective in fostering rule compliance among other animals. Most interesting, for this project, is the requirement that both those

¹¹⁰ See Tamanaha, *supra* note X; Amie Thomasson.

¹¹¹ See, e.g., Shapiro, *supra* note X at X.

¹¹² M A Cant, *The role of threats in animal cooperation*, 278 PROCEEDINGS OF THE ROYAL SOCIETY B: BIOLOGICAL SCIENCES 170–178 (2010). at 170 (emphasis added).

in a position to deliver on a threat and other members of the cooperating community all have information concerning the nature of the threat and the values to community members of exit.¹¹³

Reflecting on the generality of the experience of cooperation, one may naturally begin to wonder about the outer limits of law. If using the term this way sweeps in too much of our experience of the universe, I would be open to the charge that I have charted nothing useful here, nothing distinctive about what is really going on when a court hands down a decision or a legislature passes a statute. But I think the move toward this theory's particular brand of generalization and demarcation is critical precisely because it shows just how much of our experience with the law that we label as such, the law we say we have, is a product of mental categorization consistent with a narrative about authority and constraint that could be otherwise. Our perceptions are perceptions. They gain power when they are shared.

But what makes mine the right or at least a useful perspective? Ultimately, even if we are able to generalize beyond our own species, we are trying to get to know the practices of human beings better. "What is a human being? Legal theorists, perforce, must answer this question: jurisprudence, after all, is about human beings."¹¹⁴ The simple answer to that question, however, is that we do not yet know. While a descriptive theory of law grounded in posited individualized models of institutions, information, and rules helps to explain divergent legal opinions and practices, there is more research to do in order to define better what those understandings are and how they are reached.

As a matter of legal theory, I have suggested a language for the mental models we construct of legal practice. And I identify criteria, based on individual judgments concerning such models, for identifying a legal system and for distinguishing a system's laws from things that are not its laws. I believe this understanding of law as modeling is "correct" at the very least in the sense that it usefully explains our intuitions of legal phenomena and that it explains both legal agreement and theoretical disagreement. Following the lead of Brian Leiter, who borrows from the literature on theory choice in the sciences, we could identify three desiderata: simplicity, comprehensiveness, and conservatism. Succinctly: theories that explain more phenomena, more simply, and with minimal damage to other "well-confirmed theories" are preferable.¹¹⁵ The modeling theory excels in each respect, (a) giving a standardized account of ordinary intuitions concerning how institutions are constituted and connected and (b) adding a theory of agreement and acceptance to

¹¹³Id. at 174-75.

¹¹⁴Robin West, *Jurisprudence and Gender*, 55 U. CHI. L. REV. 1, 1 (1988).

¹¹⁵Brian Leiter, *Explaining Theoretical Disagreement*, 76 U. CHI. L. REV. 1215, 1239 (2009).

explain longstanding jurisprudential puzzles. And it does all this while illuminating why other approaches have explanatory power and theoretical attraction. Despite the length of this exposition and the unfamiliarity of some of the descriptions, at its core, the theory gives a simple account of the law in our heads.

I would like to go further, however, and hypothesize that any human perception of law is *in fact* and physiologically a model of law's practice such that our judgments about law are *in fact* embodied simulations using that model. Put differently, we understand and evaluate legal rules and institutions by mental simulation using the models we identify. For this reason, our attitudes toward law are subject to, among other things, input conditions. Our simulations of a legal system are primed by prevailing and imagined facts, and our judgments are shaped by emotional attitudes caused by the totality of these embodied simulations, which include imagining the participations of particular actors.

There is evidence and theory to suggest that our conceptual systems function in precisely this way: by modeling, simulation, and reaction to simulation.

Rather than being a single abstracted representation for a category, a concept is a skill for constructing idiosyncratic representations tailored to the current needs of situated action. Actually, Barsalou, et al. advocate discarding the use of concept altogether and replacing it with accounts of the specific mechanisms that represent categories. In this spirit, Barsalou proposes the construct of a simulator as a distributed neural mechanism that constructs an infinite set of specific simulations to represent a category, property, or relation dynamically. Thus, the simulator for chair can construct many simulations of different chairs, from different perspectives, used for different purposes, reflecting the agent's current goal and situation.¹¹⁶

What about abstract concepts? Laws are not, after all, chairs. And “the law,” even less so. Some researchers have suggested that “abstract concepts are grounded metaphorically in concrete concepts,” but others have “propose[d] that abstract concepts are grounded in situated simulations, just like concrete concepts, but focus on different situational content.”¹¹⁷

¹¹⁶ Lawrence W Barsalou, *The Human Conceptual System*, in THE CAMBRIDGE HANDBOOK OF PSYCHOLINGUISTICS 239–258 (Michael Spivey, Ken McRae, & Marc Joanisse eds., 2012), <http://ebooks.cambridge.org/ref/id/CBO9781139029377A024>. This is why I hesitate to use the word “concept” to describe the model of law I suggest here.

¹¹⁷ *Id.*

[T]heories of grounded cognition suggest that individual abstract concepts are represented by distributed neural patterns that reflect their unique content, which is often more situationally complex and temporally extended than that of concrete concepts. According to this view, abstract concepts are represented by situated conceptualizations that develop as the abstract concept is used to capture elements of a dynamic situation. For example, situated conceptualizations for the abstract concept “convince” develop to represent events in which one agent is interacting with another person in an effort to change their mental state. Any number of situated conceptualizations may develop to represent convince in different contexts (e.g., to convince one’s spouse to rub one’s feet, to convince another of one’s political views). Thus the lexical representation for “convince” is associated with much non-linguistic semantic content that supports meaningful understanding of the concept, including the intentions, beliefs, internal states, affect, and actions of self and others that unfold in a spatiotemporal context. Consistent with this approach, neuroimaging evidence suggests that abstract social concepts (e.g., personality traits) are grounded in non-linguistic brain areas that process social and affective content relevant to social perception and interaction (e.g., medial prefrontal cortex, superior temporal sulcus, temporal poles). It remains unclear, however, if various other kinds of abstract concepts are analogously represented by distributed, non-linguistic content that is specific and relevant to their meanings.¹¹⁸

Some researchers have suggested, however, that while legal terms, in particular, may be acquired and conveyed using “perceptual metaphors,” they are maintained in the mind as “essentially nonperceptual” concepts.¹¹⁹ There is, obviously, much more work to do to understand the basic science of our internal experiences of law.

¹¹⁸ Christine D Wilson-Mendenhall, W K Simmons & A Martin, *Contextual processing of abstract concepts reveals neural representations of nonlinguistic semantic content*, JOURNAL OF COGNITIVE ... (2013) (citations omitted).

¹¹⁹ Piotr Winkielman et al., *Embodiment of cognition and emotion*, in APA HANDBOOK OF PERSONALITY AND SOCIAL PSYCHOLOGY, VOLUME 1: ATTITUDES AND SOCIAL COGNITION 151–175 (2014). They continue: “One hypothesis initially offered by Piaget (1965) and then developed by Jean Mandler (2008) is that perceptual simulation may be prevalent in the early stages of development, when abstract reasoning is underdeveloped, and that embodied processing may be progressively replaced by more abstract, domain-general reasoning. The same logic may also apply to adult cognition. Thus, novel concepts are initially grounded in an embodied metaphor. However, if a metaphor is reused often enough, and the results of its use can be represented well by a semantic network, then semantic processing will be an efficient shortcut, eliminating the need for simulation.” *Id.*

If the embodied simulation hypothesis is true of our understandings of law, then judgments about law are probably made using simulations under models of the sort I have described. Even bare questions about whether the law should be *x*, without regard to any apparent institution, could be answered using a simulation process. If someone asks whether some activity should be illegal, perhaps many resort to a simple model and run input data through it, maybe even subconsciously, using stereotypical actors, stereotype depending on the one doing the simulating: Prosecution → Judge/Jury → Outcome.

Consider, for example, the once-fiery controversy over the eminent domain case *Kelo v. City of New London*.¹²⁰ If the model is general and the question broad – whether the government should be able to take residential property from people like Suzette Kelo and give it to large corporations – the simulations are likely to tilt toward Kelo, as simulations using like actors will emotionally favor the apparently powerless homeowner, and issues of compensation and public need will likely be obscured. Another model, which reveals the level-three question at issue in the case – what role should federal courts play in policing the decisionmaking of state legislatures and state judges when those institutions themselves police local decisionmaking – will much more likely tilt against Kelo, as simulations under rules favoring Kelo lead to difficult results in conceptually nearby cases involving federal courts' control of local activities.

But perhaps, as some suggest, legal and other abstract concepts are non-perceptual representations in the brain. If, though, such researchers are also correct that legal concepts “may [nonetheless] often be learned, and later explained to others, using perceptual metaphors,”¹²¹ then models that can run conscious and sub-conscious simulations may be how we communicate with and understand one another, even if our mental representations of the objects of law are abstract.

If simulation, which increasingly appears to be an important if not exclusive manner of cognition, *and* abstract, amodal reasoning occur, it bears investigating whether one source of legal disagreement arises from these different forms of thinking. While both forms might use mental models of the type I describe in this Article, one form could run embodied simulations using the model, generating affective judgments, and the other could reason symbolically, semantically, linguistically, or otherwise logically with them. Perhaps one point of legal struggle is between those two modes of cognition. A legal participant using the latter—unsimulated, amodal reasoning—derides the use of the former—embodied simulation—as unduly motivated, while the former derides the latter as irrationally formal and ungrounded in reality.

¹²⁰ 545 U.S. 469 (2005).

¹²¹ Winkielman, *supra* note X at 155.

VI. CONCLUSION

Roscoe Pound famously distinguished between the law in the books and the law in action.¹²² The former is the collection of writings of legislatures and courts, somehow ordered by the writings themselves. This law as the rule book. The latter point of view recognizes that law is active, that it is the actual experience of authority that the criminal defendant undergoes,¹²³ the unfolding deployment of reasons to justify orders. And while the writings of institutions past will be cited as composing those reasons, it is plain that the doing of law is underdetermined by them.

But neither is law to be found in some fanciful objective description of behavior. The law is not equivalent to a documentary film. It is more than the fact of action, just as it is more than books. There is the law in the books, the law in action, and the law in the head. The last of these, as we have seen, is where the consciousness of human beings and the inevitable conditions people impose on their mutual cooperations transforms underdetermined, contradictory, and vague writing or utterance into the fact of action.¹²⁴ The real law arises from the ever-changing potential of a congregation of minds. And for jurisprudence to advance, it must turn to asking and answering questions about how minds understand legal actions, form legal reasons, and transform those reasons into new actions.

- Do jurors and judges use similar types of models to resolve factual conflicts or to understand legal rules?
- Are opinions about legal rules formed by simulating applications of the law and responding to the results affectively?
- If so, are such simulations run with particular actors in institutional roles and particular actors as victims, defendants, and plaintiffs?
- Do these answers depend on experience, so that a more purely conceptual brand of processing lies behind some instances of judging?

It may be that since at least the time of Holmes the lawyer of the future has been the lawyer of statistics and economics,¹²⁵ but the student of law has always been no more and no less than a student of us. That fact remains. Brain

¹²² Roscoe Pound, *Law in Books and Law in Action*, 44 AM. L. REV. 12 (1910).

¹²³ *Id.* at 16-19.

¹²⁴ See note X, *supra*, and accompanying text, quoting and discussing Robert Cover's theory of interpretation as bonded word and deed.

¹²⁵ Holes, *supra* note X at X.

activation studies are a next step to helping us understand how minds reach decisions through simplification of their physical and social worlds.

Perhaps a common language and set of starting points, as I have laid out here, will help to identify disagreements for what they often are: different understandings of how things are supposed to work. We perceive law differently, between one another and within ourselves from moment to moment. And yet we continue to cooperate. In seeking to understand this cooperation, we err when we attempt to capture its essence in an abstract rule that, as a matter of logic, circularly defines what it defines. In the end, we must never forget that it is a dynamic interaction of minds we are expounding.