

IS THERE A LAW INSTINCT?

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ABSTRACT

The widely held view is that legal systems develop in response to purposeful efforts to achieve economic, political, or social objectives. An alternative view is that reliance on legal systems to organize social activity is an integral part of human nature, just as language and morality now appear to be directly shaped by innate predispositions. This Article formalizes and presents evidence in support of the claim that humans innately turn to legal systems to organize social behavior.

TABLE OF CONTENTS

INTRODUCTION.....	270
I. THE LAW INSTINCT HYPOTHESIS.....	276
A. <i>On the Three Essential Features of a Legal System</i>	277
1. <i>Distinguishing Legal Systems from Other Types of Normative Behavior</i>	279
2. <i>Distinguishing the Law Instinct Hypothesis from Related Claims</i>	280
3. <i>The Normativity of Law</i>	281
4. <i>The Union of Primary Rules and Secondary Rules</i>	282
5. <i>The Social Nature of Law</i>	284
II. EVIDENCE OF A LAW INSTINCT	285
A. <i>Early and Predictable Individual Development</i>	286
1. <i>Children's Aptitude with the Moral/Conventional Distinction</i>	288
2. <i>Secondary Rules in Children's Games</i>	289

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B.	<i>Underlying Logic Inaccessible to Conscious Reflection (Dumbfounding)</i>	291
1.	<i>Law and Dumbfounding in Economic Experiments</i>	293
a.	<i>Economic Experiments as Nascent Legal Systems</i> ..	294
(1)	<i>Normative Behavior in Economic Experiments</i>	294
(2)	<i>Two-Tiered Rule Structures in Economic Experiments</i>	296
(a)	<i>The Effects of Communication in Economic Experiments</i>	297
(b)	<i>Framing Effects in Economic Experiments</i>	299
(3)	<i>A Shared Practice of Rule Following in Economic Experiments</i>	301
b.	<i>Dumbfounding in Economic Experiments</i>	302
2.	<i>Confusion about Law in Everyday Life</i>	304
C.	<i>Specialized Faculties</i>	305
1.	<i>The Neuroanatomy of Participation in a Legal System</i> ...	306
2.	<i>Genetics and Participation in a Legal System</i>	310
3.	<i>Specialized Cognitive Abilities</i>	311
D.	<i>Universality</i>	313
1.	<i>Anthropological Research</i>	314
2.	<i>The Historical Record</i>	317
3.	<i>Behavior in Psychology Experiments</i>	320
E.	<i>Viable Product of Evolutionary Processes</i>	321
1.	<i>Comparative Ethology</i>	322
2.	<i>Modeling the Evolution of a Law Instinct</i>	325
	CONCLUSIONS	327

INTRODUCTION

Almost all legal scholars assume that legal systems develop in response to purposeful efforts to achieve economic, political, or social objectives.¹

1. See, e.g., BRIAN Z. TAMANAHA, *LAW AS A MEANS TO AN END: THREAT TO THE RULE OF LAW* (2006) (describing the growing dominance of the view of law as an instrument developed to achieve certain objectives); see also Leslie Green, *Law as a Means* (Oxford Legal Studies Research Paper No. 8/2009, 2009), <http://ssrn.com/abstract=1351304> (arguing that the means by which law achieves various different ends is the distinguishing feature of law).

Evolutionary scientists,² jurisprudential scholars,³ and law and economics scholars⁴ either explicitly or implicitly presume that our reliance on legal systems is a matter of considered choice. For example, Owen Jones, a leading investigator of the relationship between evolutionary science and the law,⁵ often uses the metaphor of the law as a “lever” to communicate the idea that law is an instrument used to shift behavior away from innate tendencies.⁶ This Article considers the alternative view that the use of legal systems to organize social behavior is an integral part of human nature.

The view that legal systems are a product of instinct is consistent with a growing recognition among scholars that innate predispositions play a crucial role in shaping many aspects of human behavior.⁷ For example, research on human communication shows that humans possess a suite of innate capabilities that are essential to the acquisition and use of language.⁸ Steven Pinker introduces the idea of a “language instinct” to

2. See, e.g., MARC D. HAUSER, MORAL MINDS: HOW NATURE DESIGNED OUR UNIVERSAL SENSE OF RIGHT AND WRONG 200 (2006) (citing favorably anthropologist James Frazer’s statement that “law only forbids men to do what their instincts incline them to do; what nature itself prohibits and punishes, it would be superfluous for the law to prohibit and punish.” JAMES FRAZER, TOTEMISM AND EXOGAMY: A TREATISE ON CERTAIN EARLY FORMS OF SUPERSTITION AND SOCIETY (1910)).

3. See, e.g., JULES L. COLEMAN, THE PRACTICE OF PRINCIPLE: IN DEFENCE OF A PRAGMATIST APPROACH TO LEGAL THEORY 143 (2001) (“Law is a human artifact. It is designed by humans, presumably because it can serve a variety of our interests.”).

4. See, e.g., Paul H. Rubin, *Why is the Common Law Efficient?*, 6 J. LEGAL STUD. 51, 51 (1977) (“[Richard A.] Posner, in *Economic Analysis of Law* [(1972)], argues persuasively that the common law can be best understood as an attempt to achieve economic efficiency.”) (footnote omitted).

5. See Owen D. Jones, *Evolutionary Analysis in Law: An Introduction and Application to Child Abuse*, 75 N.C. L. REV. 1117 (1997); Owen D. Jones, *Proprioception, Non-Law, and Biolegal History: The Dunwoody Distinguished Lecture in Law*, 53 FLA. L. REV. 831 (2001) [hereinafter *Proprioception*]; Owen D. Jones, *Sex, Culture, and the Biology of Rape: Toward Explanation and Prevention*, 87 CAL. L. REV. 827 (1999); Owen D. Jones, *Time-Shifted Rationality and the Law of Law’s Leverage: Behavioral Economics Meets Behavioral Biology*, 95 NW. U. L. REV. 1141 (2001); Owen D. Jones & Sarah F. Brosnan, *Law, Biology, and Property: A New Theory of the Endowment Effect*, 49 WM. & MARY L. REV. 1935 (2008); Owen D. Jones & Timothy H. Goldsmith, *Law and Behavioral Biology*, 105 COLUM. L. REV. 405 (2005); Owen D. Jones & Daniel S. Strouse, *Introduction to the Symposium on Biology and Sexual Aggression*, 39 JURIMETRICS J. 113 (1999); Paul H. Robinson, Robert Kurzban & Owen D. Jones, *The Origins of Shared Intuitions of Justice*, 60 VAND. L. REV. 1633 (2007).

6. See, e.g., Jones & Goldsmith, *supra* note 5, at 415. But see Jones, *Proprioception*, *supra* note 5, at 859 (“[A]ny assumption that law reflects only social, political, religious, and economic developments is both overly narrow and archaic.”).

7. For an earlier recognition of the relationship between law and innate predispositions see Jim Chen, *Law as a Species of Language Acquisition*, 73 WASH. U. L.Q. 1263, 1278 (1995) (“For an intellectual community that prefers a sharp division between nature and culture and unflinchingly assigns law to the latter realm, linguistics casts a long, profoundly disturbing Darwinian shadow across the law.”) (footnote omitted).

8. See, e.g., Marc D. Hauser, Noam Chomsky & W. Tecumseh Fitch, *The Faculty of Language: What Is It, Who Has It, and How Did It Evolve?*, 298 SCI. 1569, 1577 (2002); Steven Pinker & Ray Jackendoff, *The Faculty of Language: What’s Special About It?*, 95 COGNITION 201, 204 (2005).

describe these various capabilities.⁹ Other species may possess innate abilities to learn vocalizations, but no other species exhibits the nuanced, flexible, and protean grammar present in all human languages.¹⁰

There is evidence that innate predispositions strongly influence human faculties other than language as well.¹¹ Attention has recently focused on the extent to which moral behavior may be influenced by predispositions developed over evolutionary time.¹² John Rawls speculates in *A Theory of Justice* that morality has a deep innate structure, much as language does,¹³ and researchers such as Joshua Greene and Marc Hauser provide evidence of the extent to which moral decision making is directly shaped by innate capabilities.¹⁴

Legal scholars have begun to explore how insight into the innate foundations of human behavior affects our understanding of what motivates formation of and participation in a legal system.¹⁵ Robin Kar utilizes evolutionary science research to support his claim that both legal systems and moral systems rely on humans' innate abilities to engage in obligatory behavior.¹⁶ Others have suggested that specific substantive

9. STEVEN PINKER, *THE LANGUAGE INSTINCT* 18 (1994).

10. See DEREK BICKERTON, *ADAM'S TONGUE: HOW HUMANS MADE LANGUAGE, HOW LANGUAGE MADE HUMANS* 76 (2009); W. Tecumseh Fitch, *The Evolution of Language: A Comparative Review*, 20 *BIOLOGY & PHIL.* 193, 206–07 (2005).

11. See, e.g., MARCEL DANESI, *THE PUZZLE INSTINCT: THE MEANING OF PUZZLES IN HUMAN LIFE* (2002) (discussing the innate foundations of “insight thinking”); STANISLAS DEHAENE, *THE NUMBER SENSE: HOW THE MIND CREATES MATHEMATICS* (1997) (discussing the innate foundations of quantitative analysis); DENIS DUTTON, *THE ART INSTINCT: BEAUTY, PLEASURE, AND HUMAN EVOLUTION* (2009) (discussing the innate foundations of aesthetic tastes); STEVEN MITHEN, *THE SINGING NEANDERTHALS: THE ORIGINS OF MUSIC, LANGUAGE, MIND AND BODY* (2006) (discussing the innate foundations of music); Natalie Angier, *Gut Instinct's Surprising Role in Math*, *N.Y. TIMES*, Sept. 16, 2008, at F1 (discussing the innate foundations of mathematical problem solving abilities).

12. See, e.g., MATT RIDLEY, *THE ORIGINS OF VIRTUE: HUMAN INSTINCTS AND THE EVOLUTION OF COOPERATION* (1996) (discussing the innate foundations of morality); Steven Pinker, *The Moral Instinct*, *N.Y. TIMES*, Jan. 13, 2008, § 6 (Magazine), at 32 (reviewing recent studies on the innate foundations of moral decision-making).

13. JOHN RAWLS, *A THEORY OF JUSTICE* 46–47 (1971). This version of the claim that moral behavior draws upon innate predispositions has come to be known as Rawls's linguistic analogy. See JOHN MIKHAIL, *ELEMENTS OF MORAL COGNITION: RAWLS' LINGUISTIC ANALOGY AND THE COGNITIVE SCIENCE OF MORAL AND LEGAL JUDGMENT* (forthcoming Feb. 2010).

14. See HAUSER, *supra* note 2, at xviii (“I argue that our moral faculty is equipped with a *universal moral grammar*, a toolkit for building specific moral systems.”) (emphasis in original); Joshua D. Greene et al., *The Neural Bases of Cognitive Conflict and Control in Moral Judgment*, 44 *NEURON* 389 (2004); Joshua Greene & Jonathan Haidt, *How (and Where) Does Moral Judgment Work?*, 6 *TRENDS COGNITIVE SCI.* 517 (2002); Joshua Greene, *Cognitive Neuroscience and the Structure of the Moral Mind*, in *THE INNATE MIND: STRUCTURE AND CONTENTS* 338, 338–52 (Peter Carruthers et al. eds., 2005).

15. See generally Jeffrey Rosen, *The Brain on the Stand*, *N.Y. TIMES*, Mar. 11, 2007, § 6 (Magazine), at 49 (reviewing the growing influence of neuroscience on legal scholarship).

16. Robin Bradley Kar, *The Deep Structure of Law and Morality*, 84 *TEX. L. REV.* 877, 878–79

areas of law, including criminal law¹⁷ and property law,¹⁸ are directly influenced by predispositions shaped by evolution.¹⁹ Some scholars argue that similarities between legal systems and the social behavior of other species show that participation in a legal system is more than simply a cultural phenomenon.²⁰

Is the basic structure of our legal systems shaped by innate predispositions similar to the way the flexible and protean structure of language is shaped by instinct? This fundamental question about the relationship between legal systems and innate predispositions remains unanswered and largely unexplored. This Article considers whether humans instinctively turn to a protean system of legal rules to organize social behavior, a claim that I call the “law instinct” hypothesis.

In considering whether humans possess a law instinct, Part I first identifies essential and distinctive attributes of a legal system. Largely following H.L.A. Hart’s work,²¹ this Article identifies three attributes as providing the necessary and sufficient conditions for the existence of a legal system. These three attributes are: (1) subjective acceptance that legal rules create legitimate obligations (the normativity of law); (2) the union of primary rules, which specify duties, with secondary rules, which dictate how to create, modify, and adjudicate the system’s primary rules (the two-tiered rule structure of law); and (3) a shared practice of abiding

(2006).

17. See, e.g., JAMES Q. WILSON, *THE MORAL SENSE* (1993), cited in RIDLEY, *supra* note 12, at 143; Stuart P. Green, *The Universal Grammar of Criminal Law*, 98 MICH. L. REV. 2104, 2112–13 (2000) (reviewing GEORGE P. FLETCHER, *BASIC CONCEPTS OF CRIMINAL LAW* (1998)); Robinson, Kurzban, & Jones, *supra* note 5, at 1646–54.

18. See Jeffrey Evans Stake, *The Property “Instinct,”* 359 PHIL. TRANSACTIONS ROYAL SOC’Y B: BIOLOGICAL SCI. 1763 (2004); see also HAUSER, *supra* note 2, at 369–72; Margaret Gruter, *Law in Sociobiological Perspective*, 5 FLA. ST. U. L. REV. 181, 196 (1977) [hereinafter *Sociobiological Perspective*] (“Is it possible that respect for possession in man also has a comparable genetic base?”) (footnote omitted); Jones & Brosnan, *supra* note 5.

19. Jones has also made a more general argument about the relationship between substantive areas of law and evolutionary science, namely that the topics that a legal system addresses are shaped by matters that are of human import, which matters are, in turn, presumably salient from an evolutionary perspective. For example, Jones, *Proprioception*, *supra* note 5, at 859 (“[T]he basic legal curriculum . . . is basic, in part, because of the way it maps onto the fundamental, evolved, human needs and desires. To put it bluntly, the main topics of law reflect the main features of the evolved human psychology.”); Jones & Goldsmith, *supra* note 5, at 466–75.

20. This claim is exemplified by the scholarship of Margaret Gruter. See, e.g., Margaret Gruter, *The Origins of Legal Behavior*, 2 J. SOC. & BIOLOGICAL STRUCTURES 43 (1979) [hereinafter *Origins*]; Margaret Gruter, *Sociobiological Perspective*, *supra* note 18, at 185–86 (“[H]uman legal behavior is helped or hindered by the biological program which man inherits . . .”).

21. H.L.A. HART, *THE CONCEPT OF LAW* (1994). Because the attributes I identify as essential features of a legal system are closely related to Hart’s jurisprudence, an alternative title for this Article might be “Is There a Hartian Law Instinct?”

by the rules of the legal system (the social nature of law). My claim is that each of these three features is essential to the existence of a legal system and directly draws upon innate predispositions for its expression.

Part II presents evidence that humans possess a law instinct. I present evidence as support for the law instinct hypothesis that is similar to the evidence presented by others in support of the moral-instinct and language-instinct hypotheses. This research highlights several indicia that, when combined, suggest that a behavior draws directly upon innate predispositions for its expression: (1) evidence that the behavior is expressed early and predictably in individual development, (2) evidence that the underlying logic of the behavior is inaccessible to conscious reflection (dumbfounding), (3) evidence of specialized capabilities that are particularly well-suited to carrying out the behavior, (4) evidence that the behavior occurs in all societies (universality), and (5) evidence that the behavior could be a product of evolutionary processes. Not only is each of these indicia present when people use language or make moral decisions, but also when people participate in a legal system.

As noted above, a first indication that a behavior draws upon innate predispositions for its expression is the early and predictable appearance of the behavior in individual development. In the context of language, for example, Noam Chomsky observes that it is “a system of remarkable complexity,” which “[a] normal child acquires . . . on relatively slight exposure and without specific training.”²² The ease with which children form and participate in legal systems is evident both in the psychology laboratory and on the playground. Psychology experiments reveal that young children recognize that the content of certain rules of behavior can be modified by an authority figure in a manner similar to the operation of the two-tiered rule structure of a legal system.²³ Likewise, many children’s games contain both primary rules, which dictate how a game is to be played, and secondary rules, which dictate how the game’s primary rules are to be established, modified, and adjudicated.²⁴

A second indication that a behavior is innate is that the behavior is based on a predictable and nuanced logic that is inaccessible to conscious reflection (dumbfounding). In the context of morality, for example, Jonathan Haidt shows that most people strongly disapprove of incestuous behavior but are incapable of providing a plausible explanation for their

22. NOAM CHOMSKY, REFLECTIONS ON LANGUAGE 4 (1975).

23. See *infra* Part II.A.1.

24. See *infra* Part II.A.2.

disapproval.²⁵ Haidt argues that such dumbfounding provides evidence that our morality is influenced by innate predispositions.²⁶ The logic underlying our participation in a legal system also appears to be inaccessible to our conscious reflection. Much of the behavior observed in psychology experiments resembles the type of behavior engaged when participating in a legal system; however, the participants in these experiments are generally incapable of explaining the subtle and complex rules guiding their behavior.²⁷ Subjects in these experiments appear to participate in a kind of nascent legal system and do so based on a logic that is inaccessible to conscious reflection.

A third indication that a behavior is innate is the existence of specialized faculties that are especially well-suited to carrying out that particular behavior. At present, evidence linking specialized faculties to participation in a legal system is preliminary.²⁸ Research from three different disciplines—atomy, cognitive science, and genetics—can reveal the kinds of specialized faculties that suggest a behavior is innate. In anatomy, neural imaging technologies suggest a link between specific neural substrates and normative decision making generally,²⁹ but these findings do not yet illuminate neural underpinnings specific to law-like behavior.³⁰ More suggestive of specialized faculties particularly well-suited for participation in a legal system are findings from a series of cognitive science experiments involving the Wason selection task. These experiments show that people are more adept at applying logical rules when a problem is set in the context of a social rule.³¹ A cognitive ability attuned to social-rule calculations is precisely the type of specialized faculty that would facilitate participation in a legal system.

25. Jonathan Haidt, *The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment*, 108 PSYCHOL. REV. 814, 814 (2001).

26. See Haidt, *supra* note 25; Jonathan Haidt, *The New Synthesis in Moral Psychology*, 316 SCI. 998 (2007).

27. See *infra* Part II.B.1.

28. See *infra* Part II.C.

29. See, e.g., Joshua D. Greene et al., *An fMRI Investigation of Emotional Engagement in Moral Judgment*, 293 SCI. 2105 (2001) (exploring the neural substrates associated with hearing versions of the philosopher's trolley problem). My use of the term "normative decision making" includes both abiding by moral precepts and participating in a legal system. See *infra* Part I.A.

30. But see Joshua W. Buckholtz et al., *The Neural Correlates of Third-Party Punishment*, 60 NEURON 930 (2008) (arguing that by specifying the neural underpinnings of subjects' decisions to determine the appropriate punishment for crimes that vary in both perpetrator responsibility and in crime severity, they illuminate neural underpinnings of participation in a legal system).

31. See *infra* notes 200–03 and accompanying text.

The ubiquitous expression of a behavior is a fourth indicator that the behavior under study draws directly upon innate predispositions.³² Language, for example, is present in all human societies—even among children who are raised in the absence of an adult modeling language.³³ Both anthropological evidence and the historical record suggest that the defining features of a legal system are present in all human societies.

Evidence that a behavior could be a product of evolutionary processes is the fifth indicator that the behavior is innate.³⁴ In the case of moral behavior, researchers have developed a rich literature to address the paradoxical evolution of altruistic behavior through natural selection.³⁵ A law instinct is a plausible product of evolutionary processes, and this conclusion is supported by studies of animal behavior. While the social-rule systems observed in other species may lack the complexity and flexibility of human social-rule systems, the presence of precursor behaviors—particularly among nonhuman primates—suggests that the use of legal systems could be a product of human evolution.

If I am correct that we now have sufficient evidence to make a case for the existence of a law instinct, my analysis will not suddenly upend what we already know about legal systems, just as uncovering the innate roots of human language has not radically changed the rules of grammar. Rather, the law instinct hypothesis offers a new perspective on what kind of phenomenon law is. Recognizing that law is an integral part of human nature can guide an effort to uncover specific links between innate predispositions and participation in a legal system. Ultimately, this effort should lead to a more accurate picture of why law is present in human society and more discussions on how to use legal measures most effectively.

I. THE LAW INSTINCT HYPOTHESIS

There are obvious challenges to gathering evidence of a law instinct.³⁶ Many factors contribute to both the content and structure of legal systems.

32. *See infra* Part II.D.

33. *See infra* note 207 and accompanying text.

34. *See infra* Part II.E.

35. *See infra* notes 266–68 and accompanying text. The evolution of altruistic behavior is paradoxical because the naïve assumption would be that focusing exclusively on one's own well-being would be the best way to maximize the survival of one's genes.

36. It should be noted that even the use of the term “instinct” with respect to human social behavior is controversial because of the interdependence between innate capabilities and cultural practices in the ontogeny of such behavior. Some behavioral scientists would only use the term “instinct” to refer to behavior that does not significantly depend on environmental conditioning for its

Even if participation in a legal system is directly shaped by innate predispositions, legal systems are also a product of historical and cultural forces, just as human language is a product of both nurture and nature. Uncovering evidence that specifically addresses the law instinct hypothesis requires identifying those few behaviors that are uniquely engaged when participating in a legal system and also bear the distinctive indicia of behaviors directly shaped by innate predispositions.

Evaluating the law instinct, therefore, requires addressing two separate issues. First, it is necessary to be precise about what behaviors are engaged when participating in a legal system. Part I considers how to distinguish participation in a legal system from other social activities. Second, an exploration of whether the behaviors engaged when people participate in a legal system are directly shaped by innate predispositions is necessary. In Part II, I identify various indicia that suggest when a behavior is directly shaped by innate predispositions and review the extent to which these indicia are present when people participate in a legal system.

A. On the Three Essential Features of a Legal System

The goal of Part I is to identify essential features of participation in a legal system. There are innumerable claims about what constitutes participation in a legal system. I choose to turn to the work of H.L.A. Hart to guide my description of the fundamental attributes of a legal system and do so for several reasons. First, Hart's positivist orientation matches the objective here of describing, rather than evaluating, the behaviors and practices that are central to the existence of a legal system.³⁷ Second, Hart's analysis of the differences between legal systems and moral systems is helpful in distinguishing the law instinct hypothesis from the claim that humans possess a moral instinct.³⁸ Finally, Hart's jurisprudence

expression. See, e.g., ERNST MAYR, *THIS IS BIOLOGY: THE SCIENCE OF THE LIVING WORLD* 75 (1997) ("The brain also seems to contain areas that are suitable for 'open programs.' This information is *not rigidly programmed in the way that instincts are . . .*") (emphasis added).

I use the term "instinct" in a broader sense that includes predispositions that require significant environmental input to reach full expression. In using the term "instinct" in this broader sense, I am following Pinker's use of the term "instinct" to refer to a behavior that is produced by a complex interaction between genes and the environment. Pinker acknowledges, as do I, that this use of the term "instinct" in such a context is "admittedly quaint." PINKER, *supra* note 9, at 18.

37. HART, *supra* note 21, at 239 ("My aim in this book is to provide a theory of what law is which is both general and descriptive. It is *general* in the sense that it is not tied to any particular legal system or legal culture, but seeks to give an explanatory and clarifying account of law as a complex social and political institution with a rule-governed (and in that sense 'normative' aspect.')).

38. *Id.* at 185–212.

continues to provide a plausible description of the essential features of a legal system.³⁹

Three features that Hart identifies as essential aspects of a legal system are: (1) the subjective acceptance that legal rules create legitimate obligations (the normativity of law); (2) the union of primary rules, which specify duties, and secondary rules, which dictate how to create, modify, and adjudicate the system's primary rules (the two-tiered rule structure of law); and (3) a practice shared among at least some members of the group of following both the primary and secondary rules of the legal system (the social nature of law).⁴⁰ My claim is that a legal system can be characterized in terms of these three essential features: normativity, a two-tiered rule structure, and a shared practice of rule following.

These three defining features of a legal system play a central role in the construction of the law instinct hypothesis and, therefore, warrant further discussion. First, I consider how these three features can differentiate legal systems from other social practices. In particular, I show why neither social-norms systems nor moral systems (as I characterize these alternative normative systems) combine normativity and a two-tiered rule structure with a shared practice of rule following in the way that legal systems do.⁴¹ Second, I discuss how delineating differences between legal systems and other normative behavior in this manner, in turn, can assist in distinguishing the law instinct hypothesis from prior claims regarding the relationship between normative behavior and innate predispositions. Last, I discuss the normativity, two-tiered rule structure, and shared practice of rule following aspects of participation in a legal system in some detail—to do so, I draw upon Hart's discussion where helpful.

39. See, e.g., Robin Bradley Kar, *Hart's Response to Exclusive Legal Positivism*, 95 GEO. L.J. 393 (2007) (describing how Hart's concept of law could be extended to address ongoing disputes about the relationship between law and morality).

40. There are additional factors that Hart mentions as useful in distinguishing legal systems from other social practices. For example, Hart notes that legal systems are more likely to involve some form of "physical sanctions" than other systems of social control. HART, *supra* note 21, at 86. Hart also mentions that legal systems are distinctive because they are viewed as "necessary to the maintenance of social life . . ." *Id.* at 87. Further, Hart notes that "unity and continuity" are hallmarks of legal systems. *Id.* at 116. Describing a legal system only in terms of its normativity, two-tiered rule structure, and social nature does not, therefore, provide a precise recapitulation of Hart's analysis.

41. Throughout this Article, I use the term "social-norms system" to refer to a system of social rules that lack a robust set of secondary rules. Other scholars have not universally accepted this usage. For a discussion of how my usage differs from other uses of this term, see *infra* notes 42–44 and accompanying text.

1. Distinguishing Legal Systems from Other Types of Normative Behavior

The first step in distinguishing the law instinct hypothesis from other claims regarding the relationship between innate predispositions and human behavior is to compare legal systems with moral systems and social-norms systems.

Let me begin by defining what I mean when referring to a “moral behavior” or a “social-norms system” because disagreement is inevitable as to what types of behavior each of these terms refers to. I use the term “moral behavior” to refer only to normative behavior that is not dependent for its existence on either a robust system of secondary rules or a shared practice of rule following. In other words, as I use the term, moral behavior possesses only one of the three defining attributes of participation in a legal system, namely, the normative element.

I use the term “social-norms system,” in turn, to refer to a normative system in which there is a shared practice of rule following in addition to normativity, but in which there is not a robust system of secondary rules. Using the term “social-norms system” in this manner is comparable to Hart’s description of what constitutes a primitive legal system.⁴² My usage clearly differs from the use of the term “social norms” among many economists and legal scholars. These other scholars argue that social-norms systems differ from legal systems depending upon whether or not the system’s normative rules are enforced by state power.⁴³ Such scholars would characterize as a social-norms system any system of social rules that is not enforced by state power. In contrast, I characterize as a social-norms system a social rule system that does not have a robust set of secondary rules. I characterize as a legal system a social-rule system that contains a robust system of secondary rules, regardless of whether the system’s rules are enforced by a central government.⁴⁴

My usage of the terms “moral behavior” and “social-norms system” provides a simple way to identify both similarities and differences among

42. HART, *supra* note 21, at 91–92.

43. *See, e.g.*, ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 127 (1991); Richard H. McAdams, *The Origin, Development, and Regulation of Norms*, 96 MICH. L. REV. 338, 350 (1997); Mark D. West, *Legal Rules and Social Norms in Japan’s Secret World of Sumo*, 26 J. LEGAL STUD. 165, 167 (1997).

44. The appeal of using the term “social norms” to include any social rules system not enforced by a centralized state (as others do) is that such a usage comports with the modern usage of the term “law” to refer only to state-enforced rules; however, what is lost by describing as a social-norms system a social-rules system that also contains a robust set of secondary rules is the ability to distinguish between simpler and more complex systems of normative social rules.

moral systems, social-norms systems, and legal systems. While they all have a normative dimension, social-norms systems and legal systems also involve a shared practice of rule following, and the union of a robust system of primary rules and secondary rules is a unique feature of legal systems. Neither moral systems nor social-norms systems possess this protean combination of primary rules and secondary rules.

2. *Distinguishing the Law Instinct Hypothesis from Related Claims*

Based on this comparison of moral systems, social-norms systems, and legal systems, identifying what is novel about the law instinct hypothesis is straightforward. Previous claims about the relationship between innate predispositions and human behavior can be separated into two broad categories using the terminology I set out above: moral-instinct claims or social-norms-instinct claims. Most moral-instinct claims consider the innate foundations of normative behavior generally and do not distinguish among moral systems, social-norms systems, and legal systems. Such claims have been advanced by distinguished scholars⁴⁵ and continue to be an active area of research.⁴⁶ Some of those who advance moral-instinct claims argue that the content of all of our normative rules is established at a young age.⁴⁷ This presumption is not compatible with the law instinct hypothesis because the law instinct hypothesis requires that the content of at least some normative rules remain flexible.⁴⁸ However, moral-instinct claims and the law instinct hypothesis are not necessarily antithetical as it is plausible that moral and legal systems both have innate foundations.

A social-norms-instinct claim is closer to the law instinct hypothesis than a moral-instinct claim is, although there are still important differences between the two. A social-norms-instinct claim argues that both the normative and shared practice aspects of social-norms systems draw directly upon innate predispositions. One example of a social-norms-instinct hypothesis is provided by scholarship that focuses on similarities

45. See Owen D. Jones, *On the Nature of Norms: Biology, Morality, and the Disruption of Order*, 98 MICH. L. REV. 2072, 2076–77, 2077 n.9 (2000) (book review) (providing a list of scholars and their work).

46. HAUSER, *supra* note 2; Haidt, *The New Synthesis*, *supra* note 26.

47. See, e.g., Chandra Sekhar Sripada & Stephen Stich, *A Framework for the Psychology of Norms*, in THE INNATE MIND: CULTURE AND COGNITION 280, 284–85 (Peter Carruthers et al. eds., 2006).

48. This moral nativist perspective is most prominently associated with David Hume's A TREATISE OF HUMAN NATURE (1739). Modern examples of moral nativist approaches include ALLAN GIBBARD, WISE CHOICES, APT FEELINGS: A THEORY OF NORMATIVE JUDGMENT (1990); HAUSER, *supra* note 2; Haidt, *supra* note 25.

between human social rules and the social rule systems of other species. Legal scholar Margaret Gruter and ethologist Frans de Waal highlight many commonalities between the ways humans and other species use social rules to organize group behavior.⁴⁹ However, neither Gruter nor de Waal explore whether the structure of animals' social rules shares with human legal systems the protean union of primary rules and secondary rules, and so their claims are distinct from the law instinct hypothesis.

To better illuminate differences between a social-norms-instinct hypothesis and the law instinct hypothesis, a comparison of human language with the communication systems of nonhuman species is useful. Human language shares much with vocal communication in other species, but there are also significant, well-documented differences between the two.⁵⁰ Many of these differences arise from the unique structure of human language, in particular, the symbolic power of words and the breadth of expression provided by grammatical rules.⁵¹ Likewise, significant differences exist between the social practices of humans and the social systems observed in animals.⁵² My claim is that these differences are due, in large part, to the flexibility of content afforded by the two-tiered structure of the rules that compose human legal systems.

3. *The Normativity of Law*

I now discuss each of the three defining features of participation in a legal system in further detail and begin with a consideration of the normative dimension of participation in a legal system. I use the term “normativity” to refer to the way various rules are treated by at least some members of the community as creating legitimate obligations. Hart observes that the “most prominent general feature of law at all times and places is that its existence means that certain kinds of human conduct are no longer optional, but in *some* sense obligatory.”⁵³ Hart goes on to introduce the idea of the “internal point of view” to describe more precisely the normative dimension of compliance with a legal rule.⁵⁴ For

49. See, e.g., FRANS DE WAAL, CHIMPANZEE POLITICS: POWER AND SEX AMONG APES (1982) [hereinafter CHIMPANZEE POLITICS]; FRANS DE WAAL, GOOD NATURED: THE ORIGINS OF RIGHT AND WRONG IN HUMANS AND OTHER ANIMALS (1996) [hereinafter GOOD NATURED]; *Sociobiological Perspective*, *supra* note 18; Gruter, *Origins*, *supra* note 20.

50. See BICKERTON, *supra* note 10; PINKER, *supra* note 9, at 334–42; Fitch, *supra* note 10; Marc D. Hauser & Thomas Bever, *A Bilingualistic Agenda*, 322 SCI. 1057, 1057–58 (2008).

51. See, e.g., BICKERTON, *supra* note 10, at 226–38.

52. See *infra* note 245 and accompanying text.

53. See HART, *supra* note 21, at 6 (emphasis in original).

54. *Id.* at 89–90.

Hart, decisions made from an internal point of view are influenced by an individual's commitment to abide by certain rules rather than threats and rewards.⁵⁵ Hart illustrates the internal point of view by contrasting the obligatory nature of a legal system with the obligatory nature of commands made by someone holding a gun.⁵⁶ One obeys the gunman because of the external threat posed by the gun. At least some of the participants in a legal system are motivated by a choice to abide by the rules of the system for reasons other than compliance with external threats.

The normativity of law is useful in distinguishing participation in a legal system from participation in a system where people only comply with orders backed by threats. However, the normative nature of participation in a legal system does not distinguish participation in a legal system from other, related social practices. Actions guided by moral considerations or social norms are also likely to be normative. Therefore, determining that behavior is normative does not offer a way to distinguish among participating in a moral system, a social-norms system, and a legal system. The normative aspect of participation in a legal system is a necessary, but not sufficient, condition to identify participation in a legal system.

4. *The Union of Primary Rules and Secondary Rules*

Continuing to follow Hart, I assume that the union of two types of rules—primary rules and secondary rules—is also an essential feature of a legal system. Primary rules are rules that delineate when “human beings are required to do or abstain from certain actions, whether they wish to or not”⁵⁷ Primary rules include “restrictions on the free use of violence, theft, and deception”⁵⁸ and impose “various positive duties to perform services or make contributions to the common life.”⁵⁹

Secondary rules, in turn, allow for the creation, modification, and application of primary rules. Specifically, secondary rules “provide that human beings may by doing or saying certain things introduce new rules of the primary type, extinguish or modify old ones, or in various ways determine their incidence or control their operations.”⁶⁰

55. *Id.* at 90.

56. *Id.* at 19.

57. *Id.* at 81.

58. *Id.* at 91.

59. *Id.*

60. *Id.* at 81.

Hart identifies three types of secondary rules. First is the “rule of recognition,” which resolves uncertainty as to what counts as law by specifying the features that provide “a conclusive affirmative indication that it is a rule of the group”⁶¹ The second type of secondary rule Hart identifies is “rules of change,”⁶² which establish how the primary rules of a legal system can be created and modified. They include both rules governing legislative activity and “rules which confer on individuals power to vary their initial positions,” such as the rules of contract law.⁶³ The third type of secondary rules is the “rules of adjudication,” which identify “the individuals who are to adjudicate,” describe “the procedure to be followed,” and, more generally, “confer judicial powers.”⁶⁴

Hart’s taxonomy of primary rules and secondary rules illuminates a distinctive attribute of legal systems. Legal systems can be highly flexible with respect to the *content* of acceptable behavior. Hart observes that “rules of the second type provide for operations which lead not merely to physical movement or change, but to the creation or variation of duties or obligations.”⁶⁵ Just as language provides a nuanced and flexible system by which humans communicate, legal systems provide a nuanced and flexible system with which they organize social behavior.

As noted above, the presence of secondary rules in a legal system and the flexibility that they provide distinguishes legal systems from both moral and social-norms systems.⁶⁶ Moral systems and social-norms systems have a normative dimension, as do legal systems. However, moral systems and social-norms systems do not possess a robust system of secondary rules. Thus, moral and social-norms systems do not provide the flexibility with respect to the content of normative rules that legal systems provide.

Hart argues in *The Concept of Law* that the “union of primary rules of obligation with such secondary rules” is crucial to understanding what is distinctive about a legal system.⁶⁷ I agree with Hart’s claim that the union of these two types of rules is a unique and distinctive attribute of legal

61. *Id.* at 94.

62. *Id.* at 95.

63. *Id.* at 95–96.

64. *Id.* at 97. According to Hart’s account, in most societies these rules of adjudication also include rules that provide for the “centralization of social pressure” and “partially prohibit[] the use of physical punishments or violent self help by private individuals.” *Id.* at 95.

65. *Id.* at 81. Hart nicely observes elsewhere that: “[w]ith the addition to the system of secondary rules, the range of what is said and done from the internal point of view is much extended and diversified.” *Id.* at 98.

66. *See supra* Part I.A.1.

67. HART, *supra* note 21, at 94.

systems. Throughout this Article, I refer to the union of primary rules and secondary rules as the two-tiered rule structure of a legal system. Much of the support for the law instinct hypothesis focuses on uncovering the innate foundations of a robust system of secondary rules—including rules of recognition, change, and adjudication—because these secondary rules are crucial in distinguishing legal systems from other normative practices.

5. *The Social Nature of Law*

A third essential feature of a legal system is a shared practice of rule following. If someone entirely independently of others follows a course of action guided by normative considerations, no matter how complex or flexible those normative considerations are, this individual is not participating in a legal system. There must be a shared practice for a legal system to exist; law is a social activity.

Hart makes several helpful observations regarding the social nature of participation in a legal system. Hart recognizes that compliance by all the members of a group is too high a standard to set as the minimum social practice necessary to constitute a legal system.⁶⁸ To what extent, then, does there need to be a shared practice of rule following for a legal system to exist and sustain itself? Hart offers two different answers to this question, depending on whether the legal system is in a primitive community or part of a modern state.

For Hart, the legal system of a primitive community likely contains only a limited set of secondary rules.⁶⁹ In such a legal system, the appropriate test to determine if a practice of rule following is sufficiently widespread to constitute a legal system is “whether or not, as a matter of fact, a given mode of behavior [r] was generally accepted as a standard”⁷⁰

The shared practices necessary to constitute what Hart describes as a modern or mature legal system are more complicated.⁷¹ In a mature legal system, according to Hart’s account, the shared practices of two different groups need to be considered to confirm that a legal system exists—ordinary citizens and officials. The first type of shared practice necessary to form a mature legal system is the same as that is necessary to sustain a primitive legal system, namely, a generally accepted practice of following

68. *Id.* at 23–24.

69. *Id.* at 91–92.

70. *Id.* at 109.

71. *Id.*

the system's primary rules by ordinary citizens. The second type of shared practice necessary for a mature legal system to exist involves the practices of those who are the officials of the legal system. These officials must have a shared practice of abiding by the system's secondary rules.⁷² For example, members of a judiciary must generally accept certain rules as guiding their official duties, although ordinary citizens may not even be aware that these particular secondary rules exist.

This discussion of the social practice necessary to constitute a legal system completes the review of the three essential features of a legal system. Each of these features is incorporated into the law instinct hypothesis. If humans possess a law instinct, then the normativity, the two-tiered rule structure, and the social nature of a legal system should each be shown to draw directly upon innate predispositions for its expression. Moreover, the claim that each of the essential aspects of participation in a legal system is based on instinct is—to the best of my knowledge—a novel claim and distinct from earlier hypotheses regarding the relationships between innate predispositions and human behavior.

II. EVIDENCE OF A LAW INSTINCT

Above, I introduced the law instinct hypothesis. I now present evidence that humans actually do possess a law instinct. This evidence is presented by showing the extent to which many of the behaviors engaged when people participate in a legal system bear the indicia of behaviors produced by innate predispositions.

The discussion in Part I highlights those behaviors that are essential to and distinctive of participation in a legal system. To determine if these behaviors draw directly upon innate predispositions, I first turn to research on the innate foundations of language and morality to identify indicia that a behavior is instinctive. Based on a review of research into the innate foundations of language and morality, I identify five indicia that a behavior is innate: (1) evidence that the behavior occurs early and predictably in individual development, (2) evidence that the underlying logic of the behavior is inaccessible to conscious reflection (dumbfounding), (3) evidence of the presence of specialized capabilities that are particularly well-suited to carrying out the behavior, (4) evidence that the behavior occurs in all societies (universality), and (5) evidence

72. *Id.* at 117 (“The assertion that a legal system exists is therefore a Janus-faced statement looking both towards obedience by ordinary citizens and to the acceptance by officials of secondary rules as critical common standards of official behavior[.]r.”).

that the behavior could be a product of evolutionary processes. Below, I discuss each of these indicia of the innate foundations of a given behavior and the extent to which they are present when people participate in a legal system.

A. Early and Predictable Individual Development

The early and predictable expression of a behavior in individual development provides support for a claim that the behavior draws upon innate predispositions for its expression. One example is evidence that almost all individuals achieve developmental milestones at approximately the same age.⁷³ If such a pattern of early and predictable development is observed in every culture, then it is unlikely that the behavior under study arises solely from the transmission of cultural practices. A finding that this early and predictable individual development appears despite a paucity of stimuli provides yet further evidence of the influence of innate predispositions.

Evidence of early and predictable individual development is crucial in suggesting that innate predispositions shape human language and human morality. In the case of language, for example, young children are precociously facile at learning the complex grammatical rules of language.⁷⁴ A particularly striking example of the facility with which children can create a grammatically rich language is provided by the research of Derek Bickerton.⁷⁵ Bickerton studies the language of children in worker camps in Hawaii. These camps were created by bringing together workers from a variety of cultures, and, as a result, there was not a common language shared among the adult workers.⁷⁶ Bickerton finds at these worker camps that “the children injected grammatical complexity where none existed before, resulting in a brand-new, richly expressive language.”⁷⁷ In these Hawaiian worker camps, children developed a grammatically complex language even in the absence of a specific adult model.

An equally striking example of the ability of children to create a grammatically complex language, even in the absence of an adult model

73. Jerome Kagan, *Do Infants Think?*, in BASIC AND CONTEMPORARY ISSUES IN DEVELOPMENTAL PSYCHOLOGY 88 (Paul Henry Mussen et al. eds., 1975).

74. CHOMSKY, *supra* note 22, at 4.

75. DEREK BICKERTON, *BASTARD TONGUES: A TRAILBLAZING LINGUIST FINDS CLUES TO OUR COMMON HUMANITY IN THE WORLD'S LOWLIEST LANGUAGES* (2008).

76. *Id.* at 78.

77. PINKER, *supra* note 9, at 33; BICKERTON, *supra* note 75, at 101–08, 106–07.

language, comes from research on the communication systems developed by deaf children in Nicaragua starting in the late 1970s. When the Sandinistas took control of the country, deaf children in Nicaragua were moved to shared living quarters for the first time.⁷⁸ Despite having never been taught a formal language, these and successive generations of deaf children in Nicaragua gradually developed a unique and grammatically robust sign language with which to communicate.⁷⁹

There is also evidence of early and predictable moral behavior, which suggests that humans possess a moral instinct. Children as young as three or four years old have strongly held views about what types of behavior are fair and unfair, appropriate and inappropriate.⁸⁰ Moreover, the content of children's "moral" intuitions appears to be quite similar, regardless of cultural upbringing.⁸¹ For advocates of the existence of both a language instinct and a moral instinct, the early and predictable expression of grammatical fluency and moral intuitions, respectively, provide evidence of the influence of innate predispositions.

Likewise, two areas of research in developmental psychology suggest that behaviors associated with creating and sustaining legal systems appear early and predictably in individual development. First, many of the studies of normative behavior in children, which provide evidence of a moral instinct, also provide evidence of behavior suggestive of a law instinct. Children have been shown to be precociously facile at distinguishing between rules that have the attributes of moral systems (moral rules) and rules that have the attributes of legal systems (conventional rules).⁸²

Second, research on how children play games suggests that reliance on legal systems occurs early and predictably in development. When children play games, they frequently use flexible, two-tiered systems of rules to organize their play in much the same way that people rely on a flexible system of social rules to organize their behavior in legal systems. These two areas of study, developmental psychology and the study of children's play, and their relevance to the law instinct hypothesis are considered more fully below.

78. PINKER, *supra* note 9, at 36.

79. See Ann Senghas et al., *Children Creating Core Properties of Language: Evidence from an Emerging Sign Language in Nicaragua*, 305 SCI. 1779, 1779–80 (2004).

80. See, e.g., ELLIOT TURIEL, *THE DEVELOPMENT OF SOCIAL KNOWLEDGE: MORALITY AND CONVENTION* 40–49 (1983).

81. See, e.g., *id.* at 48.

82. See *infra* Part II.A.1.

1. *Children's Aptitude with the Moral/Conventional Distinction*

Children are surprisingly adept at distinguishing among different types of normative rules. Elliott Turiel and subsequent researchers show that young children treat some rules that guide behavior as subject to modification by an authority figure, whereas other rules that guide behavior are treated as inviolate.⁸³ For example, children, even at a young age, will accept that a rule prohibiting speaking in a class out of turn may be modified by an authority figure, but will not accept that a rule prohibiting one student from hitting another student can be changed in the same manner.⁸⁴ Psychologists conclude from these findings that children innately recognize two types of normative rules: conventional rules and moral rules.⁸⁵

There are important implications for both a moral instinct and a law instinct hypothesis if the ability to distinguish between moral rules and conventional rules is innate. The predisposition among children to treat certain normative rules as fixed suggests that there may be some normative precepts that are recognized instinctively or permanently fixed early in development. A second implication is that children instinctively recognize a system of normative rules in which the content of normative rules can be systematically modified. The facile recognition of conventional rules by young children uncovered in the experiments of Turiel and others also suggests that participation in a legal system draws directly upon innate predispositions.

To explain more precisely why findings such as those of Turiel and others provide evidence of a law instinct, a review of some of the specific rules that Turiel identifies as conventional rules is helpful. As mentioned above, one example of a rule that Turiel describes as a conventional rule is the prohibition against speaking in a class out of turn. The content of such a rule is similar to the type of rule Hart would characterize as a primary legal rule because it imposes a restriction on a particular type of behavior.

83. See, e.g., HAUSER, *supra* note 2, at 5; SHAUN NICHOLS, SENTIMENTAL RULES: ON THE NATURAL FOUNDATIONS OF MORAL JUDGMENT 6 (2004); TURIEL, *supra* note 80; Kar, *supra* note 16, at 888; Shaun Nichols & Trisha Folds-Bennett, *Are Children Moral Objectivists? Children's Judgments About Moral and Response-Dependent Properties*, 90 COGNITION B23 (2003); Robinson, Kurzban, & Jones, *supra* note 5, at 1667–69; Elliot Turiel, *The Development of Morality*, in THE HANDBOOK OF CHILD PSYCHOLOGY 903–07 (William Damon et al. eds., 1998) [hereinafter *The Development of Morality*]; Elliot Turiel et al., *Morality: Its Structure, Functions, and Vagaries*, in THE EMERGENCE OF MORALITY IN YOUNG CHILDREN 155, 168–82 (Jerome Kagan & Sharon Lamb eds., 1987).

84. See Turiel, *The Development of Morality*, *supra* note 83, at 907.

85. See sources cited *supra* note 83.

But notice that the way the content of this rule may be modified, in this case by the pronouncement of an authorized adult, is similar to the type of rule Hart would characterize as a secondary legal rule. The rules that Turiel describes as conventional rules reveal the effects of both primary rules and secondary rules. Turiel's distinction between moral rules and conventional rules is, in many respects, comparable to the distinction between normative rules that constitute a moral system and normative rules that constitute a legal system.⁸⁶

Finding a fixed set of "moral" rules, even among young children, links developmental psychology and the moral-instinct claim. The significance of uncovering conventional rules in these same experiments has been largely ignored in the discussion about the innate foundations of normative behavior generally, but evidence of the early and predictable reliance on a conventional rule system to guide children's behavior directly supports the law instinct hypothesis.⁸⁷

2. *Secondary Rules in Children's Games*

How children play games provides another prism through which many aspects of human society can be better understood.⁸⁸ One scholar of play, Gordon Burghardt, speculates that research on play "may help explain aggression, war, morality, sex (including gender differences, courtship, sex roles), drug use and risky thrill-seeking behavior, educational endeavors, cultural achievements, creativity in virtually all realms, economic development, social class differences, and even the rise and fall

86. Several philosophers also suggest a parallel between Turiel's conventional rules and legal rules. See Allan Gibbard, *Moral Feelings and Moral Concepts* 7 (Mar. 30, 2006) (unpublished manuscript, on file with author) ("The distinction Turiel finds isn't between morality and non-moral convention, but between what is and what isn't contingent on authority."); Kar, *supra* note 16, at 888 ("Turiel calls this the 'moral-conventional' distinction, and these attitudes are likely important to the distinctions we later draw between moral and legal obligations.") (footnote omitted).

87. There are two caveats that should be recognized in inferring the universality of legal systems from experiments showing that children worldwide are facile at making this moral/conventional distinction. First, these experiments suggest that the distinction between moral rules and conventional rules results from differences in the type of violation the rule regulates. For example, a rule that involves physically harming another will be treated as an inviolate rule. However, the content of legal rules need not differ from moral rules. Many offenses, such as murder, are both immoral and illegal. Second, the specific secondary rule one can infer from Turiel's experiments that "a teacher's statement may modify this rule" is quite simple compared to the more sophisticated secondary rules required to support a mature legal system.

88. See, e.g., JOHAN HUIZINGA, *HOMO LUDENS: A STUDY OF THE PLAY ELEMENT IN CULTURE* 23 (Harper & Row 1970) (1955) ("Now in myth and ritual the great instinctive forces of civilized life have their origin: law and order, commerce and profit, craft and art, poetry, wisdom, and science. All are rooted in the primeval soil of play.").

of civilizations.”⁸⁹ The genesis of legal systems is yet another arena in which how we play as children can shed light upon how we live as adults.

The normative, or rule-based, nature of game play is evident to anyone who has observed children’s play. There are clear dictates in any game as to what one should and should not do, and playing a game requires the children treat the game’s rules as creating legitimate obligations. The complexity of the rules governing children’s play is, however, easy to underestimate. In addition to a normative dimension, the rules engaged in children’s play frequently contain both of the other two features central to the existence of a legal system: the union of primary rules and secondary rules, and a shared practice of rule following. In children’s games, there are robust systems of both rules about how to play the game (primary rules) and about how to create, modify, and adjudicate the rules of the game (secondary rules). In addition, any group game will quickly collapse if there is not a shared practice of rule following.

Jean Piaget, who gained fame for his research on the ontogeny of cognitive development, also studied the rules of children’s games. Piaget discusses the similarities between children’s games and legal systems in one of his first books, *The Moral Judgment of the Child*.⁹⁰ In this book, Piaget discusses the rules regulating the game of marbles as played by children in Switzerland in the 1920s, explaining: “The game of marbles, for instance, as played by boys, contains an extremely complex system of rules, that is to say, a code of laws, *a jurisprudence of its own*.”⁹¹ Piaget describes how the rules of any given game of marbles are subject to modification based on a second set of rules, which are usually agreed upon in advance, much as secondary rules in a legal system are used to modify primary rules.⁹² The rules of marbles as described by Piaget contain a two-tiered rule structure just as mature legal systems do.⁹³

As with legal systems, children’s games also depend upon a shared practice of rule following for their existence. In both legal systems and game play, maintaining a shared practice of rule following is a cognitively

89. GORDON M. BURGHARDT, *THE GENESIS OF ANIMAL PLAY: TESTING THE LIMITS* 383 (2005).

90. JEAN PIAGET, *THE MORAL JUDGMENT OF THE CHILD* (Marjorie Gabain trans., Free Press 1965) (1932).

91. *Id.* at 13 (emphasis added).

92. *Id.* at 17 (“Children . . . generally agree before or during the game to choose a given usage to the exclusion of others.”). A similar type of two-tiered system of rules is reported in numerous children’s games in the United States and New Zealand. See generally BRIAN SUTTON-SMITH, *THE FOLKGAMES OF CHILDREN* (1972).

93. See also Melanie Killen & Elliot Turiel, *Conflict Resolution in Preschool Social Interactions*, 2 *EARLY EDUC. & DEV.* 240 (1991) (describing in detail another aspect of secondary rules, rules of adjudication, when children play games, even if game play is unsupervised).

challenging task. Anthony Pellegrini in his analysis of children's recess play observes that to play together children "must learn to monitor the interaction for ambiguities and breakdowns of agreement and to compromise their views and wishes to the larger goal of interacting with a peer."⁹⁴ Despite these challenges, children frequently play games and manage the complex social coordination tasks involved, even without adult supervision, further linking children's game play to the innate foundations of legal systems.

Finally, there is evidence that children's game play is a human universal. Anthropologist Donald Brown undertook a systematic study of the behaviors, beliefs, and practices present in all human societies.⁹⁵ Among the behaviors that Brown identifies as a human universal is children's game play.⁹⁶ Gordon Burghardt similarly reports: "Play, sports, games, amusements, and recreation have been important components of human behavior in all known cultures throughout history."⁹⁷ Children worldwide create and play complex, rule-based games with ease.

Children's games may not match the permanence and import of legal systems, and there are limitations on extrapolating from children's behavior to adult behavior,⁹⁸ but the rule systems of children's games do have much in common with fully-fledged legal systems. The ubiquity and precocious facility with which children create, follow, and enforce rules of games suggests an early and predictable ability to participate in a complex and flexible social rule system.

Evidence gathered from both the laboratory and the playground suggests that children are innately predisposed to participate in a normative system that appears to be an early expression of a legal system.

B. Underlying Logic Inaccessible to Conscious Reflection (Dumbfounding)

A second indication of the innate foundations of both language and morality is that people behave in a predictable and nuanced manner based upon a logic that is inaccessible to conscious reflection; in other words,

94. ANTHONY D. PELLEGRINI, RECESS: ITS ROLE IN EDUCATION AND DEVELOPMENT 38 (2005).

95. DONALD BROWN, HUMAN UNIVERSALS (1991).

96. *Id.* at 140.

97. BURGHARDT, *supra* note 89, at 24 (citation omitted). *See also* PELLEGRINI, *supra* note 94, at 95 ("Fully developed pretend play, including role play, seems universal in human societies, as witnessed in anthropological accounts.").

98. Not all of the differences between moral systems and legal systems can be discerned by observing the behavior of children. *See supra* note 87.

dumbfounding.⁹⁹ Presumably, innate behaviors are less likely than other behaviors to be the product of conscious reflection.¹⁰⁰ Moreover, while there may be other reasons why a behavior might be produced without conscious awareness—presumably if a behavior is not innate—once the behavior is brought to conscious awareness, the underlying logic of the behavior could be more easily explained than the logic underlying an innate behavior.¹⁰¹ When dumbfounded, people are incapable of providing a plausible explanation for their unconscious behavior, even when provided the opportunity to do so.

Dumbfounding is especially revealing when we observe people behaving in ways that can be easily explained by reference to evolutionarily salient considerations. For example, the majority of subjects adversely respond to a hypothetical scenario involving an incestuous relationship; however, they are unable to provide a coherent explanation for this predictable response.¹⁰² The adverse reaction to an incest scenario can be logically explained as a product of natural selection because of the potential harm from incestuous mating.¹⁰³ Thus, dumbfounding in this context is especially probative of the influence of innate predispositions.

There is ample evidence of dumbfounding both in our use of language and in our moral decision making. In the context of language, few people can accurately explain the subtle grammatical details that a native speaker abides by without conscious reflection.¹⁰⁴ The logic underlying moral decision making is also often inaccessible to conscious reflection.¹⁰⁵ One well-known example of dumbfounding in moral decision making is provided by people's sensitivity to context in the so-called "trolley problem." Most people treat the hypothetical choice to throw a switch to save many lives at the cost of one life as different from the hypothetical

99. See Haidt, *supra* note 25, at 817, 818.

100. This claim is based on the assumption that less conscious reflection is necessary to carry out an innate behavior.

101. The basis for this hypothesis is that an individual is more likely to be familiar with the habitual reason that a behavior is carried out without conscious reflection if the behavior developed as a product of previous behavior (e.g., "I have driven on this road for twenty years") rather than as a product of innate predispositions. *But see, e.g.,* Antoine Bechara et al., *Insensitivity to Future Consequences Following Damage to Human Prefrontal Cortex*, 50 *COGNITION* 7 (1994) (showing that normal subjects correctly adjust the choices they make in a card game without being aware that they are altering their strategy to maximize returns).

102. Haidt, *supra* note 25, at 814.

103. See Arthur P. Wolf, *Westermarck Redivivus*, 22 *ANN. REV. ANTHROPOLOGY* 157, 165–67 (1993).

104. See PINKER, *supra* note 9, at 18, 195.

105. See Haidt, *supra* note 25.

choice to push someone off a bridge to achieve the same outcome.¹⁰⁶ It proves to be virtually impossible for subjects to justify why they distinguish between these two quite similar scenarios.¹⁰⁷

Experimental and anecdotal evidence suggest that the complex logic underlying participation in a legal system is similarly inaccessible to conscious reflection, as detailed below. This evidence of dumbfounding supports the claim that behaviors associated with participation in a legal system draw directly upon innate predispositions for their expression.

1. Law and Dumbfounding in Economic Experiments

Relatively few psychology experiments explicitly evaluate the effects of legal measures on behavior,¹⁰⁸ and none of these experiments evaluate whether dumbfounding occurs when subjects respond to the legal measures being studied. Therefore, there is not a direct way at this time to use published experimental work to evaluate the extent to which dumbfounding occurs when people participate in a legal system.

However, many psychology experiments do offer an indirect method to explore the connection between dumbfounding and participation in a legal system. An indirect inference of this relationship can be drawn because psychology experiments often create what might best be described as nascent legal systems. Participants in psychology experiments exhibit each of three behaviors necessary and sufficient for the existence of a legal system.

Once we recognize that nascent legal systems are often created in psychology experiments, these experiments can provide insight into how and why people form and participate in a legal system. This insight is especially important given the extent to which inferences are frequently drawn, perhaps mistakenly, about the various ways in which psychology

106. See HAUSER, *supra* note 2, at 127–28.

107. HAUSER, *supra* note 2, at 113–17.

108. But see Michael D. Guttentag et al., *Brandeis' Policeman: Results from a Laboratory Experiment on How to Prevent Corporate Fraud*, 5 J. EMPIRICAL LEGAL STUD. 239 (2008) (measuring the effects of disclosure rules on subjects' behavior); Richard H. McAdams & Janice Nadler, *Testing the Focal Point Theory of Legal Compliance: The Effect of Third-Party Expression in an Experimental Hawk/Dove Game*, 2 J. EMPIRICAL LEGAL STUD. 87 (2005) (measuring the extent to which messages from different types of sources—a random spinner, a leader selected at random, and a leader selected by playing a trivia game—affect subjects' behavior); Robert J. Oxoby & John Spraggon, *Mine and Yours: Property Rights in Dictator Games*, 65 J. ECON. BEHAV. & ORG. 703 (2008) (measuring the effects of altering the way in which subjects in an experiment earn access to resources); Iris Bohnet & Robert D. Cooter, *Expressive Law: Framing or Equilibrium Selection* (Berkeley Program in Law & Econ., Working Paper No. 31, 2001) (measuring the effect of labeling an outcome as a penalty rather than using more neutral language to describe the same outcome).

experiments provide evidence of a moral instinct.¹⁰⁹ I begin by considering, in some detail, the evidence that psychology experiments often create nascent legal systems.

a. Economic Experiments as Nascent Legal Systems

The first step in using psychology experiments to examine dumbfounding with respect to law is to understand how these experiments can create nascent legal systems. The crucial insight is that participants in psychology experiments often engage in the three behaviors that provide the necessary and sufficient conditions for the existence of a legal system: normativity, a two-tiered rule structure, and a shared practice of rule following.

To narrow the scope of discussion, I consider only those psychology experiments in which subjects' compensation is dependent on what occurs within the experiment ("economic experiments").¹¹⁰ In economic experiments, participants' rewards to oneself and others are simple and explicit, making it easy to observe when participants are displaying normative behavior.¹¹¹ In many economic experiments, participants appear to rely on a two-tiered system of rules to guide their normative behavior and to observe a shared practice of rule following when doing so. The discussion below highlights the law-like behavior in many of these experiments.

(1) *Normative Behavior in Economic Experiments*

Participants in economic experiments behave in ways that appear to be strongly influenced by a willingness to abide by a set of principles, regardless of payoffs. For example, subjects in economic experiments consistently choose to act in ways that are against their own economic self-interest.¹¹² Using Hart's terminology, this behavior appears to be motivated by normativity.¹¹³

109. See, e.g., *infra* note 184 and accompanying text.

110. See generally COLIN F. CAMERER, BEHAVIORAL GAME THEORY: EXPERIMENTS IN STRATEGIC INTERACTION (2003) (reviewing how economic experiments are carried out and summarizing findings from various types of economic experiments).

111. In experiments without a simple and transparent payoff structure, it may be more difficult to disentangle behavior that is ultimately self-interested from behavior that is unambiguously other-regarding.

112. See, e.g., Ernst Fehr & Urs Fischbacher, *The Nature of Human Altruism*, 425 NATURE 785, 785–86 (2003).

113. See *supra* Part I.A.3.

Experiments in which participants play what is known as an “ultimatum” game provide an illustrative example of how economic experiments can reveal decisions influenced by normative considerations. In an ultimatum game, there are two players, each of whom makes one decision. Player A (the proposer) makes the first decision of how to allocate a fixed amount of money between himself and Player B (the responder). Player B makes the second decision in either accepting or rejecting the allocation proposed by Player A. If Player B rejects the allocation proposed by Player A, then both players receive nothing.¹¹⁴

According to traditional self-interest assumptions, Player A should allocate virtually all of the pot to himself, and Player B should accept this proposal as preferable to receiving no funds at all. However, this is not what is usually observed. In practice, Player As will typically divide the pot evenly between the two players, and most Players Bs will reject proposals that provide Player B less than twenty-five percent of the initial pot.¹¹⁵ It appears that normative considerations are guiding what is observed in practice.

Experiments based on variations of the ultimatum game confirm the importance of normative considerations in determining how subjects behave in economic experiments.¹¹⁶ For example, experiments have been

114. To illustrate the ultimatum game, assume that Player A is initially provided a “pot” of ten dollars. Player A now decides how much of that ten dollars each of the two players is to receive. Player A might decide to divide the pot evenly and allocate five dollars to each player. Player B could accept this proposal, in which case each player would receive five dollars, or Player B could reject this proposal, in which case both players would receive nothing.

115. See, e.g., Martin A. Nowak et al., *Fairness Versus Reason in the Ultimatum Game*, 289 SCI. 1773, 1773 (2000) (“In a large number of human studies, however, conducted with different incentives in different countries, the majority of proposers offer 40 to 50% of the total sum, and about half of all responders reject offers below 30%.”) (citation omitted).

116. Normative considerations appear to influence behavior in an ultimatum game because participants are making choices that cannot be easily explained in terms of their desire to maximize their own welfare.

There are, however, limitations to interpreting behavior observed in ultimatum games as providing evidence of normativity. Players may be acting in a way that they believe is ultimately in their own self-interest. For example, if Player A in an ultimatum game anticipates (correctly) that Player B is likely to reject a proposal that Player B deems to be “unfair,” then it would make sense for Player A to allocate more than a minimal payout to Player B, based solely on self-interested considerations. In this situation, if Player A fails to make a “minimally fair” allocation, Player A would end up with nothing as a result of Player B’s rejection of the offer.

Conversely, Player B may reject a Player A proposal in an ultimatum game in an effort to encourage more generous proposals in the future or as retribution for a proposal that Player B feels is inadequate. Maintaining player anonymity and eliminating the possibility of repeated play between the same players can minimize these potentially confounding motivations, but additional evidence that normative considerations play a role in participants’ choices in the ultimatum game comes from experiments based on the dictator and third-party punishment games, as discussed more fully in the text that follows.

run in which subjects play what is known as a “dictator” game.¹¹⁷ In a dictator game, there is only one move. Player A decides how to divide the pot between Player A and Player B. The average proposal made by Player A to Player B in the dictator game is less than that made by the average Player A in the ultimatum game;¹¹⁸ however, the mean proposal made by Player A in the dictator game remains well above zero.¹¹⁹ The behavior observed in both the ultimatum and dictator games provides evidence suggesting the influence of normative considerations.

The third-party punishment game is another game that economic experimenters have used to study normative behavior. In a third-party punishment game, there are three players. The roles of Players A and B are the same as in the ultimatum game, but now we introduce Player C who observes the choices made by Players A and B. Player C is given an opportunity to reduce the payout to Player A at a personal cost to Player C.¹²⁰ In experiments based on the third-party punishment game, the subject given the role of Player C consistently chooses to reduce the payout to a Player A who is deemed to have made an unfair proposal.¹²¹ This expenditure of personal resources to punish perceived violations confirms that subjects in economic experiments are willing to impose a penalty on someone who is deemed to have acted inappropriately, even when doing so imposes a personal cost. Furthermore, this behavior is still observed even when the subject paying that additional cost has not been personally harmed by the other participant’s action.

Based on findings from the economic experiments reviewed above, it is now accepted that normative considerations affect the behavior of subjects in economic experiments.¹²²

(2) *Two-Tiered Rule Structures in Economic Experiments*

The behavior of participants in psychology experiments also appears to rely on a two-tiered rule structure to determine what normative rules to apply in a given context. Recall Hart’s observation that an essential and

117. See CAMERER, *supra* note 110, at 49–56.

118. Fehr & Fischbacher, *supra* note 112, at 786.

119. Robert Forsythe et al., *Fairness in Simple Bargaining Experiments*, 6 GAMES & ECON. BEHAV. 347, 362 (1994).

120. See, e.g., Ernst Fehr & Urs Fischbacher, *Third-Party Punishment and Social Norms*, 25 EVOLUTION & HUM. BEHAV. 63, 66 (2004).

121. Fehr & Fischbacher, *supra* note 112, at 786 (reporting that “55% of the third parties punish the allocator for transfers below 50[%], and the lower the transfer, the higher the punishment”).

122. See, e.g., *id.* at 790.

distinctive feature of legal systems is the union of rules that specify duties (primary rules) and rules that guide the creation, modification, and application of these primary rules (secondary rules).¹²³ Both primary rules and secondary rules appear to influence behavior in economic experiments. The discussion above reviewed how behavior observed in the ultimatum game, the dictator game, and the third-party punishment game reveals the effects of *primary* normative rules.¹²⁴

Evidence of the effects of *secondary* rules on behavior is provided by economic experiments that show that changes in the amount of communication allowed among subjects in the experimental context affect the extent to which subjects engage in normative behavior. This sensitivity to allowing communication among subjects and to the framing of the experiment reveals a shared understanding among subjects about how to determine what normative rules to apply in a given situation. Details of the effects of allowing communication and framing among subjects in economic experiments and the connection to secondary legal rules is described more fully below.

(a) *The Effects of Communication in Economic Experiments*

Findings from economic experiments on the effects on behavior of permitting communication suggest that the influence in economic experiments of certain normative rules are comparable to the secondary rules of a legal system. Allowing communication among study participants consistently increases contributions to others in economic experiments. This is one of the main findings of a survey of economic experiments involving public goods games carried out over a thirty-year period.¹²⁵ Similarly, David Sally compiled findings from over 100 economic experiments and reports that allowing subjects to communicate increases cooperation at a statistically significant level.¹²⁶

One can expect an increase in altruistic behavior as a result of allowing communication among subjects in certain circumstances because communication can help facilitate coordination.¹²⁷ However, the effects of

123. See *supra* Part I.A.4.

124. See *supra* Part II.B.1.a.1.

125. John O. Ledyard, *Public Goods: A Survey of Experimental Research*, in THE HANDBOOK OF EXPERIMENTAL ECONOMICS 111, 156–58 (John H. Kagel & Alvin E. Roth eds., 1995).

126. David Sally, *Conversation and Cooperation in Social Dilemmas: A Meta-Analysis of Experiments from 1958 to 1992*, 7 RATIONALITY & SOC'Y 58, 61 (1995).

127. See generally THOMAS C. SCHELLING, THE STRATEGY OF CONFLICT (1960) (describing various ways to coordinate behavior and introducing the concept of a focal point).

communication observed in economic experiments go well beyond the facilitation of coordination. In many experiments, for example, communication consists of nothing more than what economists call “cheap talk,” which occurs when there is no way to make one’s communications credible.¹²⁸ Yet even when talk is cheap and the behavior under study does not involve coordination, allowing communication consistently increases the willingness of subjects to act in an altruistic manner.¹²⁹ The best explanation of these communication effects is that study participants have a shared understanding of how to use communication to create normative obligations.¹³⁰ These communication effects, therefore, provide evidence of a shared understanding as to what counts as a legitimate secondary rule within an economic experiment.

An economic experiment carried out by Jean-Robert Tyran and Lars P. Feld nicely illustrates how allowing communication in an economic experiment can reveal the influence of commonly accepted secondary rules.¹³¹ Tyran and Feld study the effect of requiring participants in an economic experiment to collectively ratify the rules that will govern subsequent behavior in the experiment. In one treatment, subjects get to decide whether they want to enact a mild set of sanctions to encourage cooperation. In another treatment, the same mild set of sanctions is imposed upon the group exogenously by the experimenter. Tyran and Feld compare how subjects behave under each treatment and find that when participants elect to “enact” sanctions, far more contributions are made to the public good.¹³²

The Tyran and Feld experiment shows how a particular practice, in this case the choice by the group to adopt a set of mild sanctions, will be

128. Joseph Farrell, *Cheap Talk and Coordination*, in THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 224 (Peter Newman ed., 1998).

129. See Gary Charness, *Self-Serving Cheap Talk: A Test of Aumann’s Conjecture*, 33 GAMES & ECON. BEHAV. 177 (2000) (finding nonbinding messages increase efficient outcomes even in situations where interests conflict completely); Jean-Robert Tyran & Lars P. Feld, *Achieving Compliance When Legal Sanctions Are Non-Deterrent*, 108 SCANDINAVIAN J. ECON. 135 (2006) (finding an effect on behavior depending upon whether a rule is exogenously imposed or endogenously enacted, despite the fact that there are no other changes in the amount of communication allowed or in the ability of participants in the experiment to impose sanctions).

130. Another explanation of the effect of communication in these noncoordination settings is that communication triggers psychological affinities. See, e.g., Elizabeth Hoffman et al., *Social Distance and Other-Regarding Behavior in Dictator Games*, 86 AM. ECON. REV. 653, 653, 658 (1996) (claiming to have found evidence that the degree of the subjects’ “social distance from the experimenter” has an effect on the level of altruism in dictator games, which could also explain effects of allowing communication among participants in economic experiments, but in the Tyran and Feld study the effects of affinity are controlled for).

131. Tyran & Feld, *supra* note 129.

132. *Id.* at 151.

consistently treated by study participants as creating a legitimate obligation. More generally, the Tyran and Feld finding suggests that one of the ways permitting communication can alter normative behavior is by providing members of a group an opportunity to behave in a manner that they accept as a legitimate means to establish normative rules.

(b) *Framing Effects in Economic Experiments*

If subjects in economic experiments are relying on a fixed set of normative rules to guide their decision making, then we would not expect their normative behavior to be highly contingent on the experimental setting. However, framing effects, or small changes in experimental context, often produce significant changes in subject behavior. For example, experimenters observe that small changes in wording significantly affect the willingness of subjects to act in a generous manner. The most parsimonious explanation of these framing effects is that subjects in economic experiments are influenced by secondary rules, which determine what primary normative rules to apply in a given setting.

Framing effects are one of the most widely observed phenomena in economic experiments. Sally, based on his review of economic experiments, identifies the wording of instructions as one of the two most important factors in explaining variations in the level of normative behavior observed.¹³³ An example of an economic experiment showing the extent to which small changes in context dramatically affect the level of normative behavior observed is an experiment carried out by Richard Cookson based on a public goods game.¹³⁴ A public goods game is a multi-player version of the prisoner's dilemma game in which it is rational for the individual to be selfish, but in which all players are better off if everyone contributes to the public good.¹³⁵ In one treatment, Cookson describes a contribution to the public good as a decision to put funds into a common pool.¹³⁶ In another treatment, a contribution to the public good is described as a decision to give and keep one's funds.¹³⁷ Cookson finds that

133. Sally, *supra* note 126, at 78 (as discussed above, *supra* note 126 and accompanying text, Sally also finds a substantial effect from allowing communication between participants). *See, e.g.*, Ledyard, *supra* note 125; Jennifer Arlen, Comment, *The Future of Behavioral Economics Analysis of Law*, 51 VAND. L. REV. 1765, 1786 (1998).

134. R. Cookson, *Framing Effects in Public Goods Experiments*, 3 EXPERIMENTAL ECON. 55 (2000).

135. *See* LEDYARD, *supra* note 125, at 112.

136. Cookson, *supra* note 134, at 61, 73, 75.

137. *Id.*

describing a contribution to the public good in terms of giving or keeping results in substantially greater contributions.¹³⁸ The sensitivity of participants to this subtle change is problematic for an explanation of behavior based on a simple choice to follow a cogent fixed set of normative rules because it is unclear why such rules should be sensitive to minor wording changes. The existence of a second set of rules, which determine when normative rules apply and which Cookson's framing manipulation engages, provides a better explanation for this sensitivity.¹³⁹

A few economic experiments are cognizant of the potential parallels between participation in a legal system and behavior in an economic experiment and have analyzed the effects of manipulations that are specifically designed to mimic legal rules.¹⁴⁰ For example, Robert Oxoby and John Spraggon study the effects of altering the way in which participants determine property rights in a dictator game.¹⁴¹ The Oxoby and Spraggon experiment begins with participants taking an aptitude test. The subjects then participate in a dictator game in which performance on the aptitude test affects how much money is placed in the pot to be allocated between the two players. If the performance on the aptitude test of the player *making* the allocation (Player A) determines the size of the pot, the typical allocation to the other player (Player B) is zero.¹⁴² However, if Player B's performance determines the amount in the pot, the typical allocation Player A makes to Player B is around fifty percent of the pot.¹⁴³ In the Oxoby and Spraggon experiment the structure of how an initial allocation is made—comparable in some respects to a legal property rule—has a significant influence on the extent to which subjects choose to act in a generous manner.¹⁴⁴

Sensitivity to framing effects exhibited by subjects in economic experiments is best explained as the product of a shared understanding of the secondary rules used to determine what primary rules to apply in a given context.¹⁴⁵

138. *Id.* at 65–66.

139. This explanation does not entirely solve the problem because the issue of why these secondary rules are sensitive to subtle wording changes is not considered. *See infra* note 145.

140. *See supra* note 108.

141. Oxoby & Spraggon, *supra* note 108.

142. *Id.* at 704, 706.

143. *Id.* at 704, 707–08.

144. The recognition of a property right, *per se*, is not necessarily evidence of a two-tiered legal system, but what is suggestive of secondary rules in this experiment is the apparent consensus about how property rights can be created—e.g., by having your performance on a quiz determine initial allocations.

145. A plausible explanation for the effects of these framing manipulations on normative behavior

The effects on behavior of allowing communication and of changing context in economic experiments discussed above have been observed on many occasions. However, scholars continue to exclusively interpret the behavior of subjects in economic experiments as providing evidence of moral behavior.¹⁴⁶ Those who interpret economic experiments in this manner usually assume that *moral* behavior is the only possible explanation for the *normative* behavior exhibited when subjects choose to benefit or punish others at their personal expense. However, normative behavior can also provide evidence of participation in a legal system or a social-norms systems.¹⁴⁷ In fact, the ways in which subjects' normative behavior varies depending on whether communication between subjects is allowed and on the way an experiment is framed suggest the influence of a normative system that is flexible with respect to content, such as a legal system.

(3) *A Shared Practice of Rule Following in Economic Experiments*

Law is a social phenomenon. In addition to normativity and a two-tiered rule structure, there must also be a shared practice of rule following for a legal system to exist.¹⁴⁸ The third and final issue in considering whether an economic experiment creates a nascent legal system is a determination of whether a shared practice of following the same normative rules exists among the subjects in an experiment.¹⁴⁹

The fact that experiments can be repeated in a controlled environment makes it a simple matter to address the issue of whether experiments simulate the social nature of a legal system. For the most part, only patterns of behavior that recur at a statistically significant level will be reported as a finding from an experiment. A statistically significant effect in an experiment that involves multiple subjects almost by definition

is that they are the product of primary normative rules, which are highly sensitive to subtle changes in context. Such a possibility is explored in Cass R. Sunstein, *Moral Heuristics*, 28 BEHAV. & BRAIN SCIS. 531 (2005). A discussion of why I find efforts to explain framing effects solely in terms of a nuanced set of primary rules less appealing is beyond the scope of this Article.

146. See, e.g., HAUSER, *supra* note 2, at 75–82.

147. See *supra* Part I.A.1.

148. See *supra* Part I.A.5.

149. There is a related question that I do not address. That question is whether the existence of a shared practice of rule following is part of what contributes to the obligatory nature of a legal system. There is disagreement among jurisprudential scholars as to whether such a motivation is a defining attribute of legal systems. See, e.g., Julie Dickson, *Is the Rule of Recognition Really a Conventional Rule?*, 27 OXFORD J. LEGAL STUD. 373 (2007) (claiming that Hart did not intend to argue that a normative obligation based on the shared practice of rule following is a necessary condition for the existence of a legal system).

provides evidence of a shared practice of rule following among the experiment participants. It is this evidence of a shared practice of rule following that provides the basis for claims that economic experiments reveal universal moral behavior.¹⁵⁰ This same pattern of a shared practice of rule following suggests that these experiments may recreate the social nature of a legal system.

b. *Dumbfounding in Economic Experiments*

Each of the three essential features of participation in a legal system—normativity, a two-tiered rule structure, and a shared practice of rule following—is present when people participate in economic experiments. For this reason, economic experiments offer an important venue in which to study the salient features of participation in a legal system. The issue I address here is how economic experiments provide insight into the extent to which dumbfounding (inaccessibility to conscious reflection of the logic underlying a behavior) is associated with behaviors engaged when participating in a legal system.¹⁵¹

The extent to which there is dumbfounding associated with participation in a legal system can be inferred from a number of economic experiments that suggest a high degree of dumbfounding in these experiments generally. The best evidence of dumbfounding in economic experiments comes from studies of the effects of stimuli that are relevant from an evolutionary perspective, but are otherwise meaningless. As noted above, sensitivity to evolutionarily salient, but otherwise meaningless, stimuli is highly suggestive of an innate reaction.¹⁵²

One example of such an effect in an economic experiment is the sensitivity of subjects to images that vaguely resemble human eyes.¹⁵³

150. See, e.g., HAUSER, *supra* note 2, at 77–79.

151. Below, I suggest how evidence from economic experiments might help to identify neural substrates (see *infra* notes 179–84 and accompanying text) and genetic foundations (see *infra* note 196 and accompanying text) of participation in a legal system. I also use evidence from economic experiments to support the claim that participation in legal systems is a human universal (see *infra* notes 242–44 and accompanying text).

152. See *supra* Part II.B.

153. See, e.g., Melissa Bateson et al., *Cues of Being Watched Enhance Cooperation in a Real-World Setting*, 2 *BIOLOGY LETTERS* 412 (2006) (finding an image of a pair of eyes increased contributions to collect money for drinks in a university coffee room); Kevin J. Haley & Daniel M.T. Fessler, *Nobody's Watching? Subtle Cues Affect Generosity in an Anonymous Economic Game*, 26 *EVOLUTION & HUM. BEHAV.* 245 (2005) (finding a computer displaying eyespots substantially increased contributions in a dictator game); Robert Kurzban, *The Social Psychophysics of Cooperation: Nonverbal Communication in a Public Goods Game*, 25 *J. NONVERBAL BEHAV.* 241

Terence Burnham and Brian Hare, for example, study behavior in a public goods game in which half of the subjects work in front of a computer displaying the image of a robot.¹⁵⁴ Subjects who are exposed to the robot image make more generous contributions than do subjects who did not have the image of a robot on their screen.¹⁵⁵ Burnham and Hare conclude that the robot's appearance (most likely its human-like eyes) triggers an evolutionarily salient stimulus.¹⁵⁶ Burnham and Hare's experiment shows how a manipulation in an economic experiment can affect behavior in ways that an evolutionary scientist, but neither the subjects themselves nor an economist, could explain.¹⁵⁷

There is even some evidence of dumbfounding in those economic experiments that more directly replicate salient aspects of participation in a legal system. I noted earlier how changes in the context of an economic experiment can mimic the ways the secondary rules of a legal system can alter the content of normative rules.¹⁵⁸ Dumbfounding almost certainly occurs with respect to the effects of many of these changes in framing on normative behavior. For example, the Cookson study cited above found significant changes in the expression of normative behavior resulting from slight changes in the wording of instructions.¹⁵⁹ It seems unlikely that a subject in the Cookson experiment could explain such a pronounced sensitivity to slight modifications in the wording of instructions. Even after considered reflection, it is unclear why describing a choice as a contribution into a common pool versus a decision to give and keep one's funds should lead to such significantly different levels of contribution.

Another of Cookson's findings further supports the presence of dumbfounding with respect to framing effects. Cookson reports that delaying the restart of a public goods game by as little as thirty seconds significantly increases cooperation.¹⁶⁰ It is implausible that subjects can explain why they alter their behavior because of the introduction of a

(2001) (asking subjects to engage in mutual eye gaze led to an increase in contributions in economic experiments).

154. Terence Burnham & Brian Hare, *Engineering Human Cooperation: Does Involuntary Neural Activation Increase Public Goods Contributions?*, 18 HUMAN NATURE 88 (2007).

155. *Id.* at 98–99.

156. *Id.* at 99–100. There is evidence that many species have evolved sensitivity to being in the line of sight of a conspecific. *See, e.g.*, Joanna M. Dally, Nathan J. Emery & Nicola S. Clayton, *Food-Caching Western Scrub-Jays Keep Track of Who Was Watching When*, 312 SCIENCE 1662 (2006) (describing how one bird species keeps track of other conspecifics observed caching earlier).

157. Burnham & Hare, *supra* note 154, at 88–91.

158. *See supra* Part II.B.1.a.2.

159. *See supra* notes 137–38 and accompanying text.

160. Cookson, *supra* note 134, at 62–65.

slight delay between rounds. The law-like behavior Cookson observes appears to be produced by a logic that is inaccessible to conscious reflection.

The effects of framing and allowing communication are part of the evidence that economic experiments create nascent legal systems. It seems unlikely that subjects in these experiments could explain the underlying logic that leads to their sensitivity to these changes. Some aspects of the nascent legal system created within the confines of an economic experiment, therefore, appear to be associated with dumbfounding—one indicia of a behavior that draws directly upon innate predispositions for its expression.

2. *Confusion about Law in Everyday Life*

There is also evidence that dumbfounding occurs when people participate in a legal system in the ordinary course of their lives. People tend to be quite facile at and have strong intuitions about participation in a legal system, even though such participation engages a complex and nuanced suite of behaviors.¹⁶¹ At the same time, few people are capable of explaining in a coherent manner the logic underlying the basis for their participation in a legal system.

Difficulty in explaining the logic underlying participation in a legal system is evident not only among ordinary citizens, but also among those who are active participants in the legal system. Hart observes what a conversation with most lawyers reveals: “even skilled lawyers felt that, though they know the law, there is much about law and its relations to other things that they cannot explain and do not fully understand.”¹⁶²

The basic logic underlying participation in a legal system is even a matter of dispute among jurisprudential scholars. Scott Shapiro nicely observes, “the philosophical project of jurisprudence begins with the observation that the law’s claim to legal authority is actually a deeply paradoxical assertion.”¹⁶³ Basic questions of jurisprudence have proven to

161. See, e.g., Paul H. Robinson & Robert Kurzban, *Concordance and Conflict in Intuitions of Justice*, 91 MINN. L. REV. 1829 (2007) (providing statistical evidence of shared intuitions about appropriate punishment levels).

162. HART, *supra* note 21, at 13. See also *id.* at 2 (“To this unending theoretical debate in books [about what law is] we find a strange contrast in the ability of most men to cite, with ease and confidence, examples of law if they are asked to do so.”).

163. Scott J. Shapiro, *On Hart’s Way Out*, in READINGS IN THE PHILOSOPHY OF LAW 125 (Jules L. Coleman ed., 1999).

be much more difficult to resolve than might be expected given the widespread reliance on legal systems to order social behavior.

The difficulty both practitioners and philosophers face in explaining the nature of participation in a legal system provides anecdotal evidence that dumbfounding occurs when people participate in a legal system. This anecdotal evidence of dumbfounding compliments the evidence of dumbfounding from economic experiments discussed above—that participation in a legal system is carried on without an ability to explain the system’s underlying logic.

C. Specialized Faculties

Evidence of abilities that are especially well-tailored to carry out a particular behavior is a third indicator that the behavior under study is innate. Research from three different disciplines can provide evidence of specialized faculties that are well-tailored to carry out a particular behavior: (1) anatomy, (2) genetics, and (3) cognitive science. First, research in anatomy can provide evidence of specialized faculties from which it can be inferred that an ability is innate. Such anatomical evidence of instinctive behavior is often straightforward. For example, much of a bird’s ability to learn to sing is subserved by a dedicated neuroanatomy, directly linking birdsong and innate predispositions.¹⁶⁴ Second, links between particular genes and a given behavior can provide evidence that a behavior draws upon innate predispositions. For example, there is now evidence that one particular gene can trigger dramatic differences in the social practices of related species of voles.¹⁶⁵ Finally, evidence of cognitive abilities that are particularly attuned to supporting specific behaviors may suggest that the behavior so supported is a product of evolution. For example, the notable ease with which children learn complex rules of grammar is part of the evidence of an innate human language faculty.¹⁶⁶

Findings from anatomy (primarily neuroanatomy), genetics, and cognitive science support the claim that humans have specialized faculties that are particularly well-suited to carrying out behaviors engaged when participating in a legal system, as discussed more fully below.

164. See, e.g., Fernando Nottebohm, *The Neural Basis of Birdsong*, 3 PLOS BIOLOGY 759 (2005).

165. See *infra* note 195 and accompanying text.

166. CHOMSKY, *supra* note 74, at 4.

1. The Neuroanatomy of Participation in a Legal System

The existence of specialized anatomical features often suggests that a behavior is innate. These types of specialized anatomical features can be uncovered by studying both gross anatomy and neuroanatomy. Anatomical evidence of specialized faculties that subservise human language and moral decision making is illustrative. In the context of language, humans appear to have several gross anatomical features (such as a descended larynx) that are particularly well-designed for the production of complex vocalizations.¹⁶⁷ There is also neuroanatomical evidence that language has “an identifiable seat in the brain[.]”¹⁶⁸ For example, postmortem investigations of the brains of individuals who have language deficits (a method of investigating the brain’s functional anatomy known as the lesion method) show that injuries to an area of the brain called Broca’s area are associated with slow, labored, and ungrammatical speech,¹⁶⁹ whereas injuries to an area of the brain called Wernicke’s area are associated with the production of nonsensical, but grammatically correct phrases.¹⁷⁰

Neuroanatomical evidence generated using the lesion method also suggests a link between specific areas of the brain and normative behavior.¹⁷¹ The case history of Phineas Gage provides a well-known example of the relationship between damage to the prefrontal cortex and social behavior.¹⁷² Gage was a railroad foreman in the United States in the 1800s when an accident sent an iron rod through part of his skull and brain.¹⁷³ The injury caused Gage to act in a carefree and socially reckless manner that was in marked contrast to his behavior prior to the injury. Twenty years after the accident, John Harlow hypothesized that Gage’s

167. MICHAEL S. GAZZANIGA, *HUMAN: THE SCIENCE BEHIND WHAT MAKES US UNIQUE* 44–45 (2008). *But see* Hauser, Chomsky & Fitch, *supra* note 8, at 1574 (observing that other species have descended larynxes).

168. PINKER, *supra* note 9, at 45; Nina F. Dronkers et al., *Language and the Aphasias*, in *PRINCIPLES OF NEURAL SCIENCE* 1174–75 (Eric R. Kandel et al. eds., 4th ed. 2000).

169. Dronkers et al., *supra* note 168, at 1175–79.

170. *Id.* at 1179–80.

171. *See, e.g.*, Steven W. Anderson et al., *Impairment of Social and Moral Behavior Related to Early Damage in Human Prefrontal Cortex*, 2 *NATURE NEUROSCIENCE* 1032 (1999); Michael Koenigs et al., *Damage to the Prefrontal Cortex Increases Utilitarian Moral Judgments*, 446 *NATURE* 908 (2007).

172. Eric R. Kandel, *Integration of Sensory and Motor Function: The Association Areas of the Cerebral Cortex and the Cognitive Capabilities of the Brain*, in *PRINCIPLES OF NEURAL SCIENCE*, *supra* note 168, at 352–53; Hanna Damasio et al., *The Return of Phineas Gage: Clues About the Brain from the Skull of a Famous Patient*, 264 *SCI.* 1102 (1994).

173. Damasio et al., *supra* note 172, at 1102.

change in behavior was the result of an injury to the frontal region of his brain caused by the iron rod accident.¹⁷⁴

New technologies have enhanced our ability to identify the neuroanatomical underpinnings of human behavior. One important technological innovation in neuroanatomy involves the use of functional magnetic resonance imaging (fMRI) techniques. fMRI techniques use an imaging machine to identify areas of the brain where there are heightened levels of brain activity when subjects are engaged in a particular task.¹⁷⁵ fMRI techniques can generate more precise information about the relationship between neuroanatomy and behavior than the lesion method and enable the study of the neural underpinnings of nonaberrant behavior. As a result, fMRI techniques have rapidly advanced our understanding of the neuroanatomy of ordinary normative decision making.¹⁷⁶

While there is, as of yet, no direct evidence of either gross or neuroanatomical features associated specifically with participation in a legal system, evidence of an association between heightened brain activity in specific neuroanatomical regions and the tasks engaged when participating in a legal system can be inferred from two related areas of research. The first area of research is the study of the neuroanatomy of human social behavior generally. The second area is the study of the neuroanatomy of decision making in economic experiments. If I am correct that economic experiments often create nascent legal systems,¹⁷⁷ then the neuroanatomy of decision making within economic experiments may help to illuminate the neuroanatomy associated with participation in a legal system.

Our understanding of the neural underpinnings of human social behavior is developing rapidly. Among the many activities involving social cognition that now appear to be subserved by specific neural substrates are: the ability to evaluate the motivation of others, the ability to reason about the mental states of others, and the ability to experience emotional empathy.¹⁷⁸ These elements of social cognition are capabilities

174. *Id.*

175. Brain areas that play a role in performing a particular task require additional oxygen, and an increase in oxygen consumption temporarily increases magnetic levels in the affected area. fMRI machines can detect this increase in magnetic activity. Clifford B. Saper et al., *Integration of Sensory and Motor Function*, in PRINCIPLES OF NEURAL SCIENCE, *supra* note 168, at 370–71.

176. *See, e.g.*, Greene, *supra* note 14, at 344–50; Dean Mobbs et al., *Law, Responsibility, and the Brain*, 5 PLOS BIOLOGY 693 (2007) (reviewing the various brain regions identified as involved in normative decision-making).

177. *See supra* Part II.B.1.a.

178. *See, e.g.*, Ralph Adolphs, *Cognitive Neuroscience of Human Social Behaviour*, 4 NATURE REVIEWS NEUROSCIENCE 165 (2003); Ralph Adolphs, *How Do We Know the Minds of Others? Domain-*

that not only appear to have a predefined locus in the brain, but also are crucial to our ability to participate in a legal system. The existence of a specialized neuroanatomy for dealing with social behavior is consistent with the claim that reliance on a legal system to order social behavior draws directly upon innate foundations.

Researchers are also applying brain imaging and related techniques to study the neural substrates of decision making in economic experiments.¹⁷⁹ Findings from one study of the neural substrates of subjects' decision making in an ultimatum game are illustrative. Sanfey et al. compare fMRI images of subjects playing one of two scenarios in an ultimatum game.¹⁸⁰ In both scenarios, the participant plays the role of Player B (the responder) and receives two offers—one in which the pot is split evenly and another in which Player A proposes keeping most of the pot.¹⁸¹ Depending on the scenario, Player A is either a computer or a person the subject had met earlier. Player B is shown whether the other player is the computer or the person.¹⁸² Sanfey et al. find heightened activity in brain areas associated with emotion when subjects receive a low offer from another person rather than from a computer.¹⁸³ This result suggests that there is a predictable link between a rule violation by another person and heightened activity in a specific area of the brain.

Findings such as those reported by Sanfey et al. are typically interpreted as providing evidence of the neuroanatomy of *moral* decision making. This interpretation of the neuroanatomy of decision making in economic experiments follows from the assumption that normative decision making in economic experiments is produced by moral considerations. As an example, Sanfey et al. interpret a decision by Player B in an ultimatum game to reject offers deemed to be unfair as evidence of

Specificity, Simulation, and Enactive Social Cognition, 1079 BRAIN RES. 25 (2006); Chris D. Frith & Uta Frith, *Implicit and Explicit Processes in Social Cognition*, 60 NEURON 503 (2008); Matthew D. Lieberman, *Social Cognitive Neuroscience: A Review of Core Processes*, 58 ANN. REV. PSYCHOL. 259 (2007); Rebecca Saxe, *Uniquely Human Social Cognition*, 16 CURRENT OPINION NEUROBIOLOGY 235 (2006).

179. See, e.g., Dominique J.-F. de Quervain et al., *The Neural Basis of Altruistic Punishment*, 305 SCI. 1254 (2004); Daria Knoch et al., *Diminishing Reciprocal Fairness by Disrupting the Right Prefrontal Cortex*, 314 SCI. 829 (2006); Alan G. Sanfey, *Social Decision-Making: Insights from Game Theory and Neuroscience*, 318 SCI. 598 (2007); Manfred Spitzer et al., *The Neural Signature of Social Norm Compliance*, 56 NEURON 185 (2007).

180. Alan G. Sanfey et al., *The Neural Basis of Economic Decision-Making in the Ultimatum Game*, 300 SCI. 1755 (2003).

181. *Id.* at 1756.

182. *Id.*

183. *Id.* at 1756–78.

moral behavior.¹⁸⁴ However, the choice to reject an offer in an ultimatum game is contingent on framing and communication in ways that are consistent with participation in a legal system. More generally, decision making in an economic experiment may resemble legal decision making as much as, if not more than, it resembles moral decision making.¹⁸⁵ As a result, the findings of Sanfey et al., among other studies, may illuminate the neuroanatomy of participation in a legal system.

One notable exception to the claim that the neuroanatomy of participation in an experiment only provides evidence of the neural substrates of moral behavior is a study by Joshua Buckholtz and colleagues.¹⁸⁶ Buckholtz et al. claim to have identified some of the neural substrates specifically engaged when participating in a legal system. Their work presents evidence of the neural substrates activated when subjects attempt to determine the appropriate punishment for crimes that vary both in terms of perpetrator responsibility and crime severity.¹⁸⁷ Buckholtz et al. argue that studying these types of punishment determinations provides evidence of the neural substrates associated with legal decision making because “the distinctive core and distinguishing feature of legal decision-making is the computation and implementation of a punishment that is appropriate both to the relative moral blameworthiness of an accused criminal offender, and to the relative severity of that criminal offense.”¹⁸⁸ In contrast to this view, I argue that the distinctive feature of legal systems is the presence of both primary and secondary normative rules¹⁸⁹ and, therefore, do not agree with the Buckholtz et al. conclusion that evidence of neural substrates associated with punishment decisions is specifically evidence of the neural underpinnings of participation in a legal system.

Ultimately, it should become feasible to carry out experiments to determine whether different neural substrates are engaged specifically when people participate in a legal system. One such experiment could use fMRI techniques to study the neural substrates of the framing and communication effects in economic experiments that most closely mimic the effects of the secondary rules of a legal system. For now, a link between neuroanatomy and law-like behavior can only be indirectly inferred from research showing that many tasks related to social behavior

184. *Id.*

185. *See supra* Part II.B.1.a.

186. Buckholtz et al., *supra* note 30.

187. *Id.* at 934–35.

188. *Id.* at 931 (citations omitted), 935–36.

189. *See supra* Part I.A.

generally and decision making in economic experiments in particular do engage specific neural substrates.

2. *Genetics and Participation in a Legal System*

A second source of information about a link between specialized faculties and the expression of a given behavior is genetic research. If the expression of a specific behavior is directly tied to a particular gene or group of genes, this provides evidence that there is an innate component of the behavior.

The systematic study of the genetic underpinnings of human behavior is a relatively new and complex area of research.¹⁹⁰ To date, there is limited evidence of genetic links to human language or moral behavior. Preliminary evidence suggests a few relationships between particular genes and the human language faculty. For example, the FOXP2 gene appears to be important in producing grammatically correct human language.¹⁹¹ An unusual allele¹⁹² of the FOXP2 gene is present among members of a family in which about half of the members of the family have difficulty using grammatically correct language.¹⁹³

Research into the links between genes and human moral behavior is even more preliminary, with evidence coming primarily from research on the influence of specific genes on the social behavior of other species.¹⁹⁴ For example, differences between the monogamous behavior of the prairie vole as compared with the polygamous behavior of the meadow vole now appear to be caused by differences in a single vasopressin receptor gene.¹⁹⁵

Evidence linking specific genes to behaviors associated with participation in a legal system is, at best, preliminary. A link between genes and law-like behavior can be inferred from evidence suggesting that people's genetic makeup affects how they behave in economic experiments. Experimenters in the United States and Switzerland find that

190. See generally Steven Pinker, *My Genome, My Self*, N.Y. TIMES, Jan. 11, 2009, § 6 (Magazine), at 24 (providing a review of the current state of knowledge about links between genes and human behavior).

191. Faraneh Vargha-Khadem et al., *FOXP2 and the Neuroanatomy of Speech and Language*, 6 NATURE REV. NEUROSCIENCE 131 (2005).

192. An allele is the particular version of a gene that an individual possesses. JOHN ALCOCK, *ANIMAL BEHAVIOR: AN EVOLUTIONARY APPROACH* 86 (5th ed. 1993).

193. Vargha-Khadem et al., *supra* note 191, at 131.

194. See, e.g., Gene E. Robinson et al., *Genes and Social Behavior*, 322 SCI. 896 (2008) (reviewing the current state of research on the relationship between genes and social behavior generally).

195. Miranda M. Lim et al., *Enhanced Partner Preference in a Promiscuous Species by Manipulating the Expression of a Single Gene*, 429 NATURE 754, 754 (2004).

identical twins, siblings who share all the same genes, are more likely to engage in similar levels of trusting behavior in a simple trust game than fraternal twins who do not share all of the same genes.¹⁹⁶

Although experiments specifically considering the effects of genetics on behaviors engaged when participating in a legal system have yet to be published, such findings would suggest a genetic basis for participation in a legal system, further supporting the law instinct hypothesis.

3. *Specialized Cognitive Abilities*

A third source of information about specialized faculties associated with participation in a legal system is research on our cognitive abilities. Over the past thirty years, evolutionary scientists have challenged the notion that the brain is a general purpose cognition machine and, instead, have hypothesized that the human mind consists of a combination of specialized cognitive modules.¹⁹⁷ These researchers hypothesize that the behaviors that specialized cognitive faculties are shown to support are likely to be a product of evolutionary processes.¹⁹⁸

Two cognitive tasks that humans are especially adept at are particularly well-suited for participation in a legal system: (1) detecting the violation of a logical rule when the rule is set in the context of a social contract, and (2) recognizing when people are surreptitiously acting in a selfish manner.

196. David Cesarini et al., *Heritability of Cooperative Behavior in the Trust Game*, 105 PROC. NAT'L ACAD. SCI. 3721, 3723 (2008); see also David Cesarini et al., *Genetic Variation in Financial Decision Making*, J. FIN. (forthcoming 2010), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1484923 (providing evidence of a similar genetic influence on how willing individuals are to accept risk in their investment portfolios).

197. See, e.g., Leda Cosmides & John Tooby, *Cognitive Adaptations for Social Exchange*, in THE ADAPTED MIND: EVOLUTIONARY PSYCHOLOGY AND THE GENERATION OF CULTURE 163 (Jerome H. Barkow, Leda Cosmides & John Tooby eds., 1992).

198. See, e.g., John Tooby & Leda Cosmides, *Evolutionary Psychology and the Generation of Culture, Part 1: Theoretical Considerations*, 10 ETHOLOGY & SOCIOBIOLOGY 29, 31 (1989). There are, however, many limitations on drawing a conclusion about the innate foundations of a particular behavior based solely on evidence of a specialized cognitive module. For one, the reason for the evolution of a particular cognitive faculty will always be open to multiple interpretations. This difficulty is evident in an ongoing debate between Chomsky, Fitch, and Hauser (CFH), on the one hand, and Jackendoff and Pinker (J&P), on the other, about what specialized cognitive abilities have evolved to support the human language faculty. CFH argue that there is evidence of only one specialized cognitive ability that developed in association with the evolution of human language (the ability to carry out recursive analysis). See W. Tecumseh Fitch, Marc D. Hauser & Noam Chomsky, *The Evolution of the Language Faculty: Clarifications and Implications*, 97 COGNITION 179 (2005); Hauser, Chomsky & Fitch, *supra* note 8. J&P, in contrast, argue that several different specialized capabilities reveal the innate roots of human language. See Ray Jackendoff & Steven Pinker, *The Nature of the Language Faculty and its Implications for Evolution of Language (Reply to Fitch, Hauser, and Chomsky)*, 97 COGNITION 211 (2005); Pinker & Jackendoff, *supra* note 8.

A specialized competence to carry out both of these tasks would greatly facilitate participation in a legal system.¹⁹⁹

Experiments studying how subjects perform on what is known as the Wason selection task show that most people are better able to detect the violation of a logical rule when the rule is set in the context of a social contract. In the Wason selection task, subjects are asked to solve the same logic problem in two different scenarios.²⁰⁰ In the first scenario, no social context is provided. The researchers ask subjects what additional information will help them determine if a rule in the form of *If X then Y* is correct. Specifically, subjects are shown the following four cards: *X*, *not X*, *Y*, and *not Y*, and asked to pick the card they would need to turn over in order to help determine if the statement *If X then Y* is correct. The correct choice is to turn over the card that shows *not Y* to see if *X* is on the other side since the only condition that will disprove the hypothesis *If X then Y* is a card that shows *X and not Y*. When the task is presented in this abstract context, less than twenty-five percent of the subjects select the correct card.²⁰¹ In the second scenario, the same logical statement is set in a social context. For example, subjects are asked how to determine if a rule prohibiting underage drinking is being enforced. About seventy-five percent of the subjects correctly recognize that they will need to determine the age of someone who is observed drinking to determine if the rule is being violated.²⁰² Leda Cosmides and John Tooby conclude from this research that “human reasoning is well designed for detecting violations of conditional rules when these can be interpreted as cheating on a social contract.”²⁰³ An ability to detect rule violations that works most accurately in the social contract context would enhance participation in a legal system.

Another series of experiments shows that people are surprisingly adept at detecting when someone has violated a social rule even when there is no opportunity to directly observe the other person’s actions. Sven Vanneste and colleagues report that subjects in one experiment are able to detect if another person has violated a social rule simply by looking at a picture of that person’s face.²⁰⁴ In their experiment, Vanneste et al. present subjects

199. It is fair to note, however, that these capabilities would also facilitate participation in a moral system and a social-norms system.

200. Leda Cosmides, *The Logic of Social Exchange: Has Natural Selection Shaped How Humans Reason? Studies with the Wason Selection Task*, 31 *COGNITION* 187, 191–92 (1989).

201. *Id.* at 192.

202. *Id.*

203. Cosmides & Tooby, *supra* note 197, at 205.

204. Sven Vanneste et al., *Attention Bias Toward Noncooperative People. A Dot Probe*

with pictures taken of the faces of people who participated in an earlier experiment. Vanneste et al. find that subjects in the second experiment stare for a longer period of time at the pictures of those who had not cooperated in the earlier experiments and conclude “that an automatic, preconscious focus of attention underlies our ability to identify noncooperative players in social exchange situations.”²⁰⁵ As Hauser observes, “it appears that our ability to detect cheaters who violate social norms is one of nature’s gifts.”²⁰⁶ I would add that an innate ability to detect cheaters would be an especially useful capability when participating in a legal system. If people have an innate ability to detect cheaters, then the cost of maintaining a stable system of social rules, such as a legal system, would likely be lower.

The existence of specialized faculties that support a particular behavior, such as participation in a legal system, can provide evidence that the behavior is innate. Research in neuroanatomy, genetics, and cognitive science each provide some evidence that participation in a legal system does, in fact, rely upon specialized faculties.

D. Universality

The ubiquitous expression of a behavior is another indication that the behavior directly draws upon innate predispositions. Language again provides a useful analogue. Pinker observes, “[t]he *universality* of complex language is a discovery that fills linguists with awe, and is the first reason to suspect that language is not just any cultural invention but the product of a special human instinct.”²⁰⁷ If there is a law instinct, then it is reasonable to expect that legal systems will be present in all human societies, just as language is.

An important caveat is that the universality of a particular behavior is not, on its own, proof that a behavior is innate. As Daniel Dennet observes, “[i]f a trick is that good, then it will be routinely rediscovered by every culture, without need of either genetic descent or cultural transmission”²⁰⁸ Legal systems might be ubiquitous and not in any

Classification Study in Cheating Detection, 28 *EVOLUTION & HUM. BEHAV.* 272, 274–76 (2007).

205. *Id.* at 272. In a related study, Jan Verplaetse and colleagues found that subjects could tell from a photograph taken at the time of an earlier decision which individuals had acted in an uncooperative manner. Jan Verplaetse et al., *You Can Judge a Book by Its Cover: The Sequel: A Kernel of Truth in Predictive Cheating Detection*, 28 *EVOLUTION & HUM. BEHAV.* 260 (2007).

206. HAUSER, *supra* note 2, at 282.

207. PINKER, *supra* note 9, at 26 (emphasis added).

208. DANIEL C. DENNETT, *DARWIN’S DANGEROUS IDEA: EVOLUTION AND THE MEANINGS OF*

way innate.²⁰⁹ The discussion below showing that legal systems are, in fact, present in all human societies is, therefore, best understood as satisfying a necessary, but not sufficient, condition for proving the existence of a law instinct.

1. Anthropological Research

A survey of anthropological research (including studies of the social systems of hunter-gatherer societies, the unwritten social rules among gypsy communities, and the practices of the ranchers of Shasta County) suggests that legal systems are ubiquitous. That said, the anthropological evidence of adherence to normative rules and a shared practice of rule following is more complete than the evidence of a robust system of secondary legal rules. With respect to the evidence of secondary rules in the anthropological record, there is, in turn, more evidence of rules of recognition and of adjudication than there is evidence of rules of change. However, limited evidence in the anthropological record of secondary rules generally, and of rules of change in particular, may simply be the result of little direct research on this topic.

Studies of hunter-gatherer societies offer one way to observe what the social practices among prehistoric humans might have been. Such research, as exemplified by the study of the !Kung hunter gatherers, reveals not only a shared system of normative rules, but also a general agreement on what counts as law (rules of recognition) and on how disputes are to be resolved (rules of adjudication). Polly Wiessner reports that among the !Kung there are numerous generally accepted principles with regard to individual's rights, as well as a clearly defined system for adjudicating and enforcing rule violations.²¹⁰ Melvin Konner notes that a large amount of time and effort is spent by the !Kung in trying to determine when and how rules should be applied to resolve specific disputes. Konner writes that "[i]f what lawyers and judges do is work, then when the !Kung sit up all night at a meeting discussing a hotly contested divorce, that is also work."²¹¹ Together, Wiessner and Konner's research

LIFE 487 (1995). Pinker similarly observes: "Not everything that is universal is innate." PINKER, *supra* note 9, at 31.

209. In addition to the possibility that legal systems are "routinely rediscovered," it is also possible that legal systems are a highly successful cultural adaptation, or "meme," to use a term introduced by Richard Dawkins. RICHARD DAWKINS, *THE SELFISH GENE* 206 (1976).

210. Polly Wiessner, *Norm Enforcement among the Ju/'hoansi Bushmen: A Case of Strong Reciprocity?*, 16 *HUM. NATURE* 115, 115-43 (2005).

211. MELVIN KONNER, *THE TANGLED WING: BIOLOGICAL CONSTRAINTS ON THE HUMAN SPIRIT*

shows that essential aspects of a legal system are present among the !Kung—one of the few hunter-gatherer societies to be carefully studied over many decades.

Walter Weyrauch studies modern social groups that rely on orally transmitted social rules to coordinate their behavior.²¹² Based on his research, Weyrauch concludes that “[u]nwritten law is layered, just as written law, and can be found any place where a group gathers to pursue common objectives. The layers may extend from unwritten constitutional principles to lesser laws dealing with ordinary social discourse.”²¹³ For example, Weyrauch reports on a formal system of adjudication (the *kris*),²¹⁴ as well as sophisticated rules of evidence,²¹⁵ among gypsies. Just as our language faculty does not rely on the written word for its viability and complexity, Weyrauch’s research similarly suggests that legal systems do not depend on written law for their viability and complexity.

Much of the research developed by social-norms scholars also supports the claim that legal systems are ubiquitous, if legal systems are defined in terms of normativity, a two-tiered rule structure, and a shared practice of rule following.²¹⁶ For example, in an analysis of the rules that guide interactions among ranchers in Shasta County, California, Robert Ellickson describes a system of social rules that contains each of the three features that provide the necessary and sufficient conditions for the existence of a legal system. Ellickson in *Order Without Law: How Neighbors Settle Disputes*²¹⁷ describes a social rules system among the ranchers of Shasta County that: (1) creates obligations that are treated as legitimate, (2) includes both primary rules and secondary rules, and (3) includes a shared practice of rule following. Two of the chapters in Ellickson’s book specifically describe a robust suite of procedural, constitutive, and “controller-selecting” norms, which are functionally equivalent to the types of secondary rules described by Hart in *The*

371 (1982).

212. See, e.g., Walter O. Weyrauch, *Unwritten Constitutions, Unwritten Law*, 56 WASH. & LEE L. REV. 1211 (1999) (discussing unwritten legal systems among an experimental group on the Berkeley campus, the population on the British island of Tristan da Cunha, and the Romani people (gypsies)); Walter Otto Weyrauch & Maureen Anne Bell, *Autonomous Lawmaking: The Case of the “Gypsies,”* 103 YALE L.J. 323 (1993); see also A.L. Epstein, *Dispute Settlement Among the Tolai*, 41 OCEANIA 157 (1971) (describing evidence of a robust pre-modern system of dispute resolution in New Guinea).

213. Weyrauch, *supra* note 212, at 1212–13.

214. Weyrauch & Bell, *supra* note 212, at 351, 354–58.

215. *Id.* at 389–90.

216. See *supra* notes 42–44 and accompanying text.

217. ELLICKSON, *supra* note 43.

Concept of Law.²¹⁸ Ellickson does not characterize the social rules systems of the Shasta County ranchers as a legal system,²¹⁹ since his definition of what constitutes a legal system includes a requirement of state involvement, which my usage of the term “legal system” does not.²²⁰

Three earlier efforts to determine whether legal systems are present in all societies merit discussion when considering anthropological evidence of the ubiquity of legal systems. There is first anthropologist Don Brown’s effort to determine what aspects of human behavior are present in all societies. In his book *Human Universals*,²²¹ Brown identifies laws involving rights and obligations and rules of membership as present in all societies.²²² Brown’s compilation does not include material that addresses the issue of whether a robust system of secondary rules is also a human universal, but Brown’s findings do support the conclusion that the normativity and shared practice of legal systems are a human universal.

A second noteworthy foray into the anthropology of legal systems is the discussion of the anthropology of law offered by Hart in *The Concept of Law*.²²³ Hart measures his concept of law against the anthropological record and concludes that there are many societies in which a robust system of secondary rules does not exist. Hart writes:

It is, of course, possible to imagine a society without a legislature, courts or officials of any kind. Indeed, there are many studies of primitive communities which not only claim that this possibility is realized but depict in detail the life of a society where the only means of social control is that general attitude of the group.²²⁴

If Hart’s statement is correct, then legal systems as Hart and I define them would not be a human universal. However, Hart does not provide citations to the “many studies” upon which he relies, and my review of the anthropological record above reaches the opposite conclusion.

Finally, the topic of the universality of law has been a subject of discussion among anthropologists for many years.²²⁵ There is continuing

218. *Id.* at 230–64. *See also* HART, *supra* note 21.

219. ELLICKSON, *supra* note 43, at 141 (“As suggested already, many of the Shasta County findings cannot be squared with legal centralism.”).

220. *See supra* Part I.A.1.

221. BROWN, *supra* note 95.

222. *Id.* at 138.

223. HART, *supra* note 21.

224. *Id.* at 89.

225. *See, e.g.*, Laura Nader, *The Anthropological Study of Law*, 67 AM. ANTHROPOLOGIST 3, 4–13 (1965).

disagreement among anthropologists as to whether legal systems are present in all societies, but this is largely a disagreement about what constitutes a legal system. If legal systems are defined as only existing when there is a central government, then obviously not all societies have a legal system.²²⁶

However, many anthropologists do not consider state-controlled rule enforcement a precondition for the existence of a legal system, and these anthropologists generally reach the same conclusion about the ubiquity of legal systems in human society that I reach here. Sally Engle Merry, for example, based on a review of the anthropology of law research carried out during the beginning and middle of the twentieth century, concludes:

Anthropological research from the 1920s to the 1950s demonstrated that law was a fundamental part of the normative system of any society and served to maintain its social order. Systems of rules were organically connected to distinctive social structures. Nonstate mechanisms such as informal moots and councils, reciprocity, ostracism, gossip, witchcraft accusations, and other forms of subtle social pressure produced social order.²²⁷

Merry's conclusion about the ubiquity of legal systems implicitly rejects the notion that centralized government is a necessary prerequisite for a legal system.

This review of anthropological evidence, discussing hunter-gatherers and various modern societies that do not rely on written laws, supports the claim that legal systems are a human universal.

2. *The Historical Record*

While the review of anthropological research above covers a broader range of human society than does the historical record, a review of the historical record also supports the claim that legal systems are a human universal. Every society for which there is a written record appears to have had a social rule system with each of the three attributes I identify above as providing the necessary and sufficient conditions for the existence of a legal system: normativity, a two-tiered rule structure, and a shared practice

226. See, e.g., A.R. RADCLIFFE-BROWN, *STRUCTURE AND FUNCTION IN PRIMITIVE SOCIETY: ESSAYS AND ADDRESSES* 217–19 (1952).

227. Sally Engle Merry, *Law, Culture, and Cultural Appropriation*, 10 *YALE J.L. & HUMAN.* 575, 576 (1998) (footnotes omitted).

of rule following.²²⁸ A brief survey of the historical records of societies as diverse as those of ancient Mesopotamia, ancient Athens, early Arabia, and Jewish merchants during the Middle Ages, supports this conclusion.

Rules governing social behavior consistently appear among the oldest writings we have. For example, among the inscriptions that have survived from ancient Babylon are the 282 provisions of the Code of Hammurabi, dating back to 1750 BC.²²⁹ The Code of Hammurabi reviews legal precedents and sets out recommendations for how to adjudicate future disputes.²³⁰ While the Code of Hammurabi does not reveal a legal system in ancient Babylon that is especially flexible, the very existence and memorializing of these provisions does show that in ancient Babylon both a rule of recognition and a system of adjudication were well developed. Russ Versteeg observes, “[w]hen one reads Hammurabi’s Laws for the first time, it is striking to notice how contemporary many of the provisions seem.”²³¹ One can reasonably infer from the Code of Hammurabi that each of the three defining features of a legal system was present in ancient Babylon.

The Code of Hammurabi is, moreover, typical of the discovery of the remnants of a legal system among ancient writings. Earlier examples of a written record of law include the Laws of Ur-Nammu (c. 2100 BC), the Laws of Lipit-Ishtar (c. 1930 BC), and the Laws of Eshnunna (c. 1970 BC).²³² Based on these examples, one of the first uses of writing appears to memorialize what will count as an enforceable normative rule within a social group and how such rules are to be modified and adjudicated.²³³

The written record of the legal system of ancient Athens is more complete than that of ancient Babylon. Among the primary sources of law in ancient Athens are written records of approximately 100 oral arguments, and much of the literature and philosophical writing from this period includes reference to the legal system.²³⁴ From this written record, it is clear that in many respects the Athenian legal system is markedly

228. See *supra* Part I.A.

229. See, e.g., RUSS VERSTEEG, LAW IN THE ANCIENT WORLD 12–17 (2002).

230. *Id.* at 15–17.

231. *Id.* at 15.

232. *Id.* at 7–12.

233. See also Robert C. Ellickson & Charles DiA. Thorland, *Ancient Land Law: Mesopotamia, Egypt, Israel*, 71 CHI.-KENT L. REV. 321 (1995) (reviewing evidence of robust systems of property law in ancient legal systems).

234. ADRIAAN LANNI, LAW AND JUSTICE IN THE COURTS OF CLASSICAL ATHENS 5–6 (2006); Adriaan Lanni, *Social Norms in the Courts of Ancient Athens*, 1 J. LEGAL ANALYSIS 691 (2009) [hereinafter *Social Norms*].

different from modern Western legal systems. For example, “Athenian courts enforced extra-statutory norms that were completely unrelated to the legal issue in dispute.”²³⁵ Despite these differences, the Athenian legal system unambiguously contained the three features I identify as essential to the existence of a legal system: normativity, a two-tiered rule structure, and a shared practice of rule following. The Athenian law was deemed to create legitimate obligations by the city’s citizens and officials, the system contained both primary rules and secondary rules, and there was a shared practice of rule following. As but one straightforward example of a secondary rule determining what will count as law in ancient Athens (the rule of recognition), “Athenian laws were inscribed on stone *stelai* in various public areas of Athens.”²³⁶

I began this discussion of legal systems in the historical record with a review of the legal systems of ancient Babylon and ancient Athens because of their antiquity. However, these Babylonian and Athenian legal systems are precursors of many modern legal systems and were embedded in societies in which there was a central government. Therefore, these examples alone do not provide a fair test of the claim that legal systems are ubiquitous in the historical record.

There are two other examples of a system of social rules that possess each of the three essential features of a legal system, both somewhat outside of the western legal tradition and absent a central government. For example, in Islamic culture, even prior to the widespread adoption of the Koran, the *wasta* system of dispute resolution was well-established.²³⁷ Similarly, research carried out by Avner Greif on medieval traders describes a vibrant and complex system of social rules among medieval Jewish merchants, despite the absence of a central government to maintain the system.²³⁸ Where there is a written record, there is evidence of a legal system.

235. Lanni, *Social Norms*, *supra* note 234, at 692 n.2.

236. *Id.* at 698. For examples of rules of adjudication, see also Anastassios D. Karayiannis & Aristides N. Hatzis, *Morality, Social Norms and Rule of Law as Transaction Cost-Saving Devices: The Case of Ancient Athens* 3 (July 19, 2007), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1000749 (“Athenians developed a highly sophisticated legal framework for the protection of private property, the enforcement of contracts and the efficient resolution of disputes (they even introduced alternative dispute resolution mechanisms such as arbitration).”).

237. See, e.g., Aseel Al-Ramahi, *Wasta in Jordan: A Distinct Feature of (and Benefit for) Middle Eastern Society*, 22 *ARAB L.Q.* 35, 45–49 (2008).

238. See, e.g., Avner Greif, *Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders*, 49 *J. ECON. HIST.* 857 (1989).

This overlap between the historical record and the essential attributes of a legal system is expected. I primarily follow Hart's jurisprudence in describing what constitutes a legal system, and one of Hart's goals is to identify those attributes that have been present in all known legal systems.²³⁹ What I add is that the evidence based on an updated survey of the historical record continues to suggest that Hartian legal systems are a human universal among societies for which a written record exists.

3. *Behavior in Psychology Experiments*

Evidence of the universality of legal systems can also be extrapolated from various psychology experiments discussed above to show that participation in a legal system is expressed early and predictably in individual development and is based on a logic that is inaccessible to conscious reflection.²⁴⁰ If legal systems are a human universal, then one would expect to see the same law-like patterns of behavior emerge in these experiments, regardless of the culture in which they are carried out. Behaviors indicative of a law instinct do consistently reappear in these experiments.

Economic experiments, which I argued above replicate many of the salient features of participation in a legal system,²⁴¹ have generated findings of similar behavior in a multitude of different cultures. Experiments involving the ultimatum game have been carried out throughout the world, including among hunter-gatherers and in places where the stakes involved represent a significant amount of personal wealth.²⁴² Recall that the person who is assigned the role of Player A (the proposer) in an ultimatum game will typically divide the pot evenly between the two players, and the typical Player B (the responder) will reject proposals that provide Player B less than twenty-five percent of the initial pot. This pattern of Player A making a "fair" proposal and Player B

239. HART, *supra* note 21, at 237.

240. *See supra* Parts II.A and II.B, respectively.

241. *See supra* Part II.B.1.a.

242. *See, e.g.*, Lisa A. Cameron, *Raising the Stakes in the Ultimatum Game: Experimental Evidence from Indonesia*, 37 *ECON. INQUIRY* 47 (1999); Joseph Henrich, *Does Culture Matter in Economic Behavior? Ultimatum Game Bargaining among the Machiguenga of the Peruvian Amazon*, 90 *AM. ECON. REV.* 973 (2000); Joseph Henrich et al., *Costly Punishment Across Human Societies*, 312 *SCI.* 1767 (2006); Alvin E. Roth et al., *Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study*, 81 *AM. ECON. REV.* 1068 (1991); Robert Slonim & Alvin E. Roth, *Learning in High Stakes Ultimatum Games: An Experiment in the Slovak Republic*, 66 *ECONOMETRICA* 569 (1998).

rejecting an “unfair” proposal occurs in all of the many cultures in which these experiments have been undertaken.²⁴³

There are, however, several limitations to making too strong an inference about the universality of participation in legal systems based on existing experimental work. Many of the experiments most revealing of law-like behavior have been run in only a limited number of cultural settings. Experiments involving the ultimatum game, which have been run in the largest number of different cultures, provide evidence of the effects of normative considerations, but do not help in distinguishing between behaviors that are the product of a fixed system of normative rules (akin to a moral system) and behaviors that are the product of a system in which the content of normative rules is more malleable (akin to a legal system).²⁴⁴

It would be illuminating to carry out in numerous societies those experiments that specifically provide evidence of law-like behavior—such as economic experiments that measure the effects of framing and allowing communication. If the effects of these framing and communication manipulations are similar in all societies, then this finding would provide more direct experimental evidence that participation in a legal system is a human universal.

If a behavior is innate, then one would expect to observe that behavior in all societies. Anthropological research, the historical record, and experimental psychology findings all suggest that legal systems are a human universal. This ubiquity of legal systems in human society is consistent with the law instinct hypothesis.

E. Viable Product of Evolutionary Processes

The final issue to be considered in evaluating a claim that a particular behavior is instinctive is the issue of evolutionary viability. Evolutionary viability addresses whether it is plausible that a behavior was produced by evolutionary processes given what is known about how evolution works.

243. See, e.g., Nowak et al., *supra* note 115, at 1173.

244. Even within the context of experiments involving the ultimatum game, a fair degree of intercultural variability does emerge. See, e.g., Benedikt Herrmann et al., *Antisocial Punishment Across Societies*, 319 *SCI.* 1362 (2008). One might infer from this intercultural variability that these experiments reveal the effects of a more flexible normative rules system (akin to a legal system) than the effects of other types of normative systems. However, an alternative explanation for the intercultural variability observed is that differences in normative behavior arise from differences in, for example, rearing practices. Such differences among cultures in normative behavior would be consistent with some models of how the specific content of normative precepts is established early in development and need not be evidence of the universality of legal systems.

Arguments in support of the evolutionary viability of a behavior tend to take one of two forms. First, evolutionary viability claims are supported by presenting evidence of similar behavior in other species. Presumably, a behavior that evolved in another species could also evolve in humans. Second, arguments are offered that describe a specific dynamic or process by which evolutionary forces can lead to the proliferation of the behavior. Such processes are often described using formal mathematical models.

I offer both a review of similar behavior in other species and a consideration of the dynamics by which a law instinct could evolve to support the claim that a law instinct could be a product of evolutionary processes.

1. Comparative Ethology

The study of the behavior of other species provides an avenue by which to test a claim that a particular human behavior is the product of natural selection. There are two ways in which ethology, the scientific study of animal behavior, is relevant to the claim that participation in a legal system draws directly upon innate foundations. First, if other species use legal systems to organize their social behavior, then this would confirm that evolution can produce a law instinct. Second, ethology might uncover a sufficiently large number of precursor or “proto” behaviors to make a claim of the development through natural selection of a law instinct more plausible.

I am not aware of evidence of legal systems among other species, if one presumes, as I do, that a robust system of both primary rules and secondary rules is an essential feature of legal systems.²⁴⁵ However, the absence of a full-fledged legal system in other species is not especially problematic for my claim that a law instinct is evolutionarily viable. As the brain size of social animals increases, the complexity of their social-rule systems increases as well.²⁴⁶ For example, a comparative study of four species of hyenas shows that there is a positive correlation between the

245. Other scholars, most notably Gruter, survey the ethological evidence and reach a different conclusion. Gruter observes, for example: “Precursors of legal behavior in non-human primates suggest that some elements of a sense of justice are transmitted genetically, i.e. legal behavior may be an innate biological mechanism, vital for survival.” Gruter, *Origins*, *supra* note 20, at 43. However, on my reading, Gruter’s suggestion that legal systems exist in other species depends upon her assumption that there are only two essential features to legal systems: normativity and a shared practice of rule following.

246. See, e.g., Natalie Angier, *Political Animals (Yes, Animals)*, N.Y. TIMES, Jan. 22, 2008, at F1.

complexity of the hyena species' social system and the size of the hyena species' prefrontal cortex.²⁴⁷

Utilizing a more complex system of social rules than those of other species would seem to be the type of task for which the large human brain is well-suited. Moreover, human cognition appears to be superior to that of other primates, especially when it comes to carrying out tasks that involve social cognition. Esther Herrmann and colleagues compare the cognitive abilities of human infants with those of infants of other primates and find minimal differences between the performance of human infants and chimpanzee infants on most cognitive tasks.²⁴⁸ However, human infants significantly outperform other primates when the task involves acquiring social knowledge.²⁴⁹ Legal systems, particularly their two-tiered rule structure, may be uniquely human, but our brains are also comparatively larger and our cognitive abilities particularly well-attuned to carrying out social calculations.

A second way in which ethology research can support the evolutionary viability of a law instinct is by revealing evidence of the presence in other species of behaviors that could be precursors to a law instinct. Evidence of precursor behaviors to participation in a legal system would suggest that the behavioral building blocks of a law instinct might have been present early in human evolution.²⁵⁰ Evolution often works by assembling preexisting parts through a process known as "exaptation."²⁵¹ Exaptation almost certainly played a role in the development of the human language faculty. Pinker and Ray Jackendoff observe, "language is unlikely to be just a straightforward exaptation of a single pre-existing recursive system such as visual cognition, motor control, or social relationships. Rather, it appears to be a kind of interface or connective tissue among partly pre-existing recursive systems, mapping among them in an evolutionarily novel manner."²⁵²

247. Carl Zimmer, *Sociable, and Smart: In Spotted Hyenas, Clues to Why the Human Brain Grew So Large and Complex*, N.Y. TIMES, Mar. 4, 2008, at D1.

248. Esther Herrmann et al., *Humans Have Evolved Specialized Skills of Social Cognition: The Cultural Intelligence Hypothesis*, 317 SCI. 1360 (2007). *But see* Frans B.M. de Waal et al., Letter to the Editor, *Comparing Social Skills of Children and Apes*, 319 SCI. 569 (2008) (raising the possibility that Herrmann et al.'s use of human social cues to test social skills handicapped ape performance specifically in the social domain).

249. Herrmann et al., *supra* note 248, at 1362.

250. Robinson, Kurzban, and Jones use the apt term "proto-legal systems" to describe behaviors in the animal kingdom that could be precursors to human legal systems. Robinson, Kurzban, & Jones, *supra* note 5, at 1644–45 (citing OSTRACISM: A SOCIAL AND BIOLOGICAL PHENOMENON (Margaret Gruter & Roger D. Masters eds., 1986)).

251. Pinker & Jackendoff, *supra* note 8, at 230–31.

252. *Id.* at 231.

There is much evidence in other species of the types of precursor behaviors to legal systems that would facilitate the evolution of a law instinct. For one, there is evidence that animals use normative rules to guide their behavior. Sarah Brosnan and de Waal find that capuchin monkeys refuse to carry out tasks in exchange for food if the allocation of food rewards appears to the monkeys to be done in an unfair manner.²⁵³ While the behavior of capuchin monkeys observed by Brosnan and de Waal may be more comparable to moral behavior than legal behavior, evidence of any form of normative behavior is relevant to the evolutionary viability of a law instinct in the same way that animal communication provides one clue that human language is innate.

There are also examples in animal behavior of a second aspect of participation in a legal system—the shared practice of rule following. Systems of social rules play a central role in coordinating behavior among many social species. Dominance hierarchies, for example, are widespread among social species, and hierarchies are essentially an implementation of a system of social rules.²⁵⁴ The tasks associated with creating and maintaining these hierarchies are often quite complex, and so the ability of social animals to abide by social rules likely provides fertile ground for developing the aptitudes necessary to participate in a legal system.

There is even evidence of rudimentary systems of secondary rules in the social-rule systems of some species. For example, there are hints of a system of adjudication among chimpanzees. In *Chimpanzee Politics*, de Waal describes an incident in which a dispute between two chimpanzees was resolved by deferring to an impartial third individual.²⁵⁵ De Waal also reports on a study of dispute resolution among golden monkeys that “found that male golden monkeys actively promote peaceful coexistence among their females, intervening in virtually every female altercation.”²⁵⁶

Ethological research supports the evolutionary viability of a law instinct by showing that social-rule systems, sometimes quite complex, are widely observed in other species.

253. Sarah F. Brosnan & Frans B.M. de Waal, *Monkeys Reject Unequal Pay*, 425 NATURE 297, 297 (2003).

254. HAUSER, *supra* note 2, at 373–74.

255. DE WAAL, CHIMPANZEE POLITICS, *supra* note 49, at 124.

256. DE WAAL, GOOD NATURED, *supra* note 49, at 31.

2. *Modeling the Evolution of a Law Instinct*

Speculating how a behavior might have evolved when arguing that a behavior is innate is also customary. Such an explanation usually starts with the decision to focus on a particular evolutionary process.²⁵⁷ My focus will be on how natural selection could have led to the evolution of a law instinct.

Natural selection occurs when random variations in traits are differentially reproduced in subsequent generations.²⁵⁸ Charles Darwin famously described how the process of natural selection can lead to the development, without any planning or aforethought, of complex traits that are tailored to take advantage of specific opportunities in the environment.²⁵⁹ Richard Dawkins aptly analogizes the process by which natural selection can create order out of disorder to the work of a blind watchmaker.²⁶⁰ One notable requirement for the validity of a claim that a behavior is the product of natural selection is that the hypothesized path of evolutionary development must be evolutionarily viable at each step along the way.²⁶¹

In the context of human evolution, one can be precise about the mechanisms by which natural selection typically operates. Human traits are primarily passed on to subsequent generations by means of genetic transmission (genes are the units of DNA which code for the production of a particular protein).²⁶² Therefore, natural selection in humans occurs primarily through competition among genes. Again, Dawkins offers an apt term, “the selfish gene,” to summarize the gene-based nature of most human natural selection.²⁶³ An explanation of the evolution of human behavior by natural selection should show how a gene or combination of genes that lead to the expression of the behavior could be reproductively successful over the course of evolutionary time.

An evolutionary viability argument in the context of a language instinct is relatively straightforward: a more flexible and nuanced communication

257. Evolutionary processes by which a particular trait can develop include natural selection, sexual selection, and genetic drift. Jones & Brosnan, *supra* note 5, at 1956.

258. JOHN TYLER BONNER, *THE EVOLUTION OF COMPLEXITY BY MEANS OF NATURAL SELECTION* 3–4 (1988).

259. CHARLES DARWIN, *ON THE ORIGIN OF SPECIES BY MEANS OF NATURAL SELECTION* (1859).

260. RICHARD DAWKINS, *THE BLIND WATCHMAKER* 4–5 (1986).

261. See Steven Pinker & Paul Bloom, *Natural Language and Natural Selection*, in *THE ADAPTED MIND*, *supra* note 197, at 451, 475–76.

262. BRUCE ALBERTS ET AL., *MOLECULAR BIOLOGY OF THE CELL* 98 (3d ed. 1994); T. Conrad Gilliam et al., *Genes and Behavior*, in *PRINCIPLES OF NEURAL SCIENCE*, *supra* note 168, at 36–40.

263. DAWKINS, *supra* note 209.

faculty would likely benefit those who were able to use such a system to communicate.²⁶⁴ The evolutionary viability argument with respect to the claim that humans possess a moral instinct is more complex and refined. Explanations of the evolution of moral behavior address how genes that lead to this behavior could also be selected for, even when those who behave in a “moral” manner may be personally disadvantaged by doing so. Numerous explanations of the evolution of seemingly selfless behavior have been offered, including explanations based on the benefits of favoring one’s kin,²⁶⁵ of sustaining both direct²⁶⁶ and indirect²⁶⁷ reciprocity, and the effects of group selection.²⁶⁸

An explanation of the evolutionary viability of a law instinct would parallel the explanations given for the evolution of both a language faculty and a moral instinct.²⁶⁹ Just as language provides a nuanced and flexible system by which to communicate, legal systems provide a nuanced and flexible system with which to organize social behavior. Just as the perspective of the selfish gene can explain a willingness to abide by moral commitments, so too can it explain the willingness to abide by legal commitments.

There are, however, several challenges to developing a more precise specification of the mechanism by which a law instinct might have evolved. A formal model of the adaptive utility of a behavior requires first assuming that certain rules are in place to organize behavior, but law solves precisely these kinds of organizational problems by providing a framework in which such rules can be applied.²⁷⁰ Flexible behaviors—such as law and language—also address a variety of different problems, which means that any single explanation is unlikely to be adequate.²⁷¹

264. See BICKERTON, *supra* note 10, at 158–68; Peter F. MacNeilage & Barbara L. Davis, *The Evolution of Language* in THE HANDBOOK OF EVOLUTIONARY PSYCHOLOGY 698, 705–07 (David M. Buss ed., 2005); Pinker & Bloom, *supra* note 261, at 460.

265. W. D. Hamilton, *The Genetical Evolution of Social Behaviour II*, 7 J. THEORETICAL BIOLOGY 17, 19–21 (1964).

266. Robert L. Trivers, *The Evolution of Reciprocal Altruism*, 46 Q. REV. BIOLOGY 35 (1971).

267. Martin A. Nowak & Karl Sigmund, *Evolution of Indirect Reciprocity*, 437 NATURE 1291 (2005).

268. Robert Boyd et al., *The Evolution of Altruistic Punishment*, 100 PROC. NAT’L ACAD. SCIS. 3531 (2003).

269. Providing a detailed model of the evolutionary viability of a law instinct is beyond the scope of this Article.

270. See ELINOR OSTROM ET AL., RULES, GAMES, AND COMMON-POOL RESOURCES 26 (1994) (“Closely related to the lack of attention to the distinction between physical and biological constraints and the humanly designed rules of the game is how rules get enforced. An underlying assumption of modern game theory is that the rules of the game are unambiguously enforced by some agency external to the game.”).

271. See COLEMAN, *supra* note 3, at 93 (“Law can have any number of legitimate purposes, not all

Finally, different models will be difficult to compare because social behavior only leaves indirect evidence of its presence in the archeological record.²⁷²

It seems fair to conclude that a model explaining the evolutionary viability of a law instinct is as plausible as the models that are generally accepted as providing an evolutionarily viable model of the evolution of a language instinct or a moral instinct.

Both ethological research into related behavior in other species and a consideration of the modeling through natural selection of a law instinct support the claim that a law instinct could have been produced by evolutionary processes.

CONCLUSIONS

This Article explores the possibility that a reliance on legal systems to organize social activity is an integral part of human nature. This possibility, which I call the law instinct hypothesis, offers an alternative to a purely instrumental view of law.

The evaluation of the law instinct hypothesis presented here begins by distinguishing legal systems from other social practices. I make such distinctions largely following the jurisprudence of H.L.A. Hart. Particularly significant is Hart's identification of the crucial role of the union of primary rules and secondary rules in a legal system. The joining of primary rules with secondary rules in a legal system explains how legal systems have a degree of flexibility with respect to the content of normative rules that is qualitatively different from the social rule systems of other species. The secondary rules in a legal system are, in this respect, analogous to the rules of grammar in human language, which allow for a more flexible communication system than do the communication systems of other species. My claim is that a law instinct, much like a language instinct, is a unique and distinctive feature of innate human behavior.

There is much evidence that humans actually do possess a law instinct. Studies of the ways in which children behave in the laboratory and on the

of which can be usefully modeled game-theoretically.”); Fitch, Hauser & Chomsky, *supra* note 198, at 189 (“In conclusion, seeking a single adaptive function for ‘language’, treated as a monolithic whole, is more likely to produce confusion and misunderstanding than insight. Treating any complex biological character as if it had a single function is likely to be unproductive at best, if not meaningless.”).

272. See Fitch, Hauser, & Chomsky, *supra* note 198, at 185 (“It is an unfortunate fact that the two main sources of data to address such historical issues, namely paleontological and comparative, are simply unavailable for behavioral traits unique to one species.”).

playground, psychology experiments in which adults make decisions with real economic consequences, and the application of new technologies to uncover the neuroanatomy of human social behavior all suggest that humans have an innate predisposition to rely on legal systems to organize their social behavior. Evidence from the historical and anthropological records and a consideration of the evolutionary viability of a law instinct are consistent with the law instinct hypothesis.

A logical next question concerns the implications if humans possess a law instinct. What happened after researchers began to expose the innate foundations of language is instructive in suggesting what the ultimate significance of the claims in this Article might be. When a universal grammar underlying all human languages was uncovered, the rules of grammar were not suddenly upended. Instead, the possibility that language was a product of innate predispositions changed our perspective on language and launched a multidisciplinary exploration of the innate foundations of human language, an effort which continues to improve our understanding of language as a complex natural phenomenon to this day.

The implications from the law instinct hypothesis are similar. The possibility of a law instinct does not suddenly alter what we already know about the content and application of law. Instead, the argument that we possess a law instinct can initiate an effort to uncover links between innate predispositions and participation in a legal system and establish the path by which future research can advance our understanding of how and why we innately turn to legal systems as a way to order our lives. Such a research effort might uncover direct links between innate predispositions and specific aspects of participation in a legal system that have important policy ramifications. This Article shows why such links are likely to exist and how to uncover them, but careful work still remains to be done.