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The Evolutionary Game-Theoretic Foundations of Law

Robin Bradley Kar

Interdisciplinary work in the law often starts and stops with the social sciences. To produce a complete understanding of how law, evolutionary game-theoretic insights must, however, supplement these more standard social scientific methods. To illustrate, this article critically examines The Force of Law *by Frederick Schauer and* The Expressive Powers of Law *by Richard McAdams. Combining the methods of analytic jurisprudence and social psychology, Schauer clarifies the need for a philosophically respectable and empirically well-grounded account of the ubiquity of legal sanctions. Drawing primarily on economic and social psychological paradigms, McAdams highlights law's potential to alter human behavior through expressions that coordinate. Still, these contributions generate further puzzles about how law works, which can be addressed using evolutionary game-theoretic resources. Drawing on these resources, this article argues that legal sanctions are ubiquitous to law not only because they can motivate legal compliance, as Schauer suggests, but also because they provide the general evolutionary stability conditions for intrinsic legal motivation. In reaction to McAdams, this article argues that law's expressive powers can function to coordinate human behavior only because humans are naturally and culturally evolved to share a prior background agreement in forms of life. Evolutionary game-theoretic resources can thus be used to develop a unified framework from within which to understand some of the complex interrelationships between legal sanctions, intrinsic legal motivation, and law's coordinating power. Going forward, interdisciplinary studies of how law works should include greater syntheses of contemporary insights from evolutionary game theory.*

INTRODUCTION

Legal scholars are fortunate to work in a field that is connected by subject matter rather than methodology. Although knowledge is a seamless web, many contributions to knowledge arise from particular fields, with narrower methodological assumptions and patterns of attention. When studying the law, we can, however, draw on contemporary advances from many cognate fields. We can profit from diverse fields while remaining unconstrained by the methodological assumptions that constrain each. To do this well requires careful thought and reflection—

Robin Bradley Kar is a Professor of Law and Philosophy at the University of Illinois, Urbana-Champaign and may be contacted at rkr@illinois.edu. He received his BA from Harvard College, his JD from Yale Law School, and a PhD in moral and political philosophy and the philosophy of biology, from the University of Michigan. One of his lines of research uses interdisciplinary methods to examine the psychological attitudes that animate legal systems, and the ways that legal systems emerge and evolve.

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perhaps even a special caste of mind. But though the pitfalls be great, the opportunities for interdisciplinary illumination are even greater.

This symposium offers an unusually rich opportunity to synthesize interdisciplinary insights into how law works. The two books that serve as the focus of the symposium already draw on philosophical, economic, psychological, and game-theoretic approaches to address this question. Among the respondents are influential legal scholars who draw on the fields of analytic jurisprudence, law and economics, psychology, sociology, political theory, anthropology and rational choice, and game theory.

This article argues that evolutionary game theory should be added to the mix because it provides the resources needed for a more complete understanding of how law works. Evolutionary game theory uses standard game-theoretic models to describe social problems that recurred in a population's environment of evolutionary adaptation (see Maynard-Smith 1982). Payoffs are described in terms of contributions of choice to reproductive fitness, however, rather than preference satisfaction. Evolutionary game theorists then model the conditions under which certain behavioral strategies for resolving these social problems might become widespread in a population, and remain evolutionarily stable, through processes of natural or cultural selection. The behavioral strategies that emerge from these processes need not be reducible to forms of instrumental rationality. Evolutionary game theory can thus pose challenges to the rational choice assumptions of orthodox game theory. Elsewhere, I have, in fact, drawn on evolutionary game-theoretic resources to argue that humans have psychological attitudes that are specially adapted to allow groups to resolve social contract problems flexibly (Kar 2006).

To establish the importance of evolutionary game theory for legal studies, I discuss, first, Fredrick Schauer's (2015) *The Force of Law* and then, second, Richard McAdams's (2015) *The Expressive Powers of Law*. Without relying on evolutionary game theory, each book advances our understanding of how law works in critical ways. Schauer's work clarifies the need for a philosophically respectable account of the ubiquity of legal sanctions, as clarified below, whereas McAdams's work highlights law's potential to alter human behavior through expressions that coordinate. Still, these contributions generate further puzzles, which—I argue—are best resolved using evolutionary game-theoretic resources. Drawing on these resources, I offer a unified framework from within which to understand the complex interrelationships between legal sanctions, intrinsic legal motivation, and law's coordinating power. I also use these resources to highlight several underappreciated aspects of law's psychological underpinnings.

ON LAW AND LEGAL SANCTIONS: SCHAUER'S CONTRIBUTION AND PUZZLE

To understand how law works, it should help to know what law is. Analytic jurisprudence contains a rich debate over law's nature, and one might therefore think that this literature would prove critical for understanding how law works. The truth, however, is currently more complicated. Ever since H. L. A. Hart's

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famous critiques of Austin's sanction-based accounts of law (Hart [1961] 2004), most legal philosophers accept that there is no necessary relationship between law and legal sanctions. Because many philosophers construe their task as limited to exposing necessary features of law, contemporary legal philosophers have spent very little time accounting for the *non-necessary* relationship between law and legal sanctions.

In *The Force of Law*, Schauer argues that this lack of jurisprudential attention is a mistake. Strictly speaking, he does not disagree with Hart's philosophical criticisms of Austin. More specifically, Schauer accepts that sanctions are not logically, conceptually, or metaphysically necessary features of law. Schauer nevertheless believes that legal philosophers who focus on this fact miss a different point: sanctions are still a *ubiquitous*[1] feature of most existing legal systems. According to Schauer, "the role of force in law cannot simply be relegated to one side of the debates within philosophical jurisprudence" because the "topic of legal force has sociological, psychological, political and economic dimensions that go well beyond the conceptual and the philosophical" (2015, ix).

In my view, the most important contribution of *The Force of Law* is thus to clarify a puzzle about the relationship between sanctions and the law: *If sanctions are not necessary features of law, then why exactly are they so central to law in so many of its actual manifestations?* What we need is a philosophically respectable account of the relationship between law and legal sanctions—that is, one that is consistent with the following two philosophical observations. First, although legal obligations are backed by the coercive power of the state, legal obligations can exist even when one can predictably get away with a breach. Hence there is no *metaphysically* necessary connection between legal obligations and the likelihood of sanctions. Second, regardless of the metaphysical facts, one can consistently *say* both that one is under a legal obligation and that the obligation is likely to go unenforced. Hence, there is no *conceptually* or *logically* necessary connection between statements about legal obligations and statements about likely sanctions. Many contemporary legal philosophers accept these facts, but few have sought to supply a positive account of legal sanctions that is consistent with them.

This is a missed opportunity for interdisciplinary collaboration because conceptual clarity can help guide empirical inquiries into law's force. Let us therefore consider two competing explanations of the ubiquity of sanctions in the law. The first is purely motivational: it proposes that threats of sanctions are ubiquitous in the law because sanctions are needed to motivate legal compliance. As Schauer puts this hypothesis, "[l]ying behind the ubiquity of legal force is the assumption that without force, the law is often impotent" (2015, 5). The second explanation is evolutionary and structural: it suggests that threats of sanction are ubiquitous in the

1. The "ubiquity of legal force" should thus be understood to refer to the following combination of facts: first, many primary legal rules are directly backed by threats of coercion and, second, other, power-conferring legal rules still *interact* with primary legal rules, backed by threats of sanction, because power-conferring legal rules allow people to create, extinguish, or modify primarily legal rules. Hence, the fact that needs to be explained (i.e., the *ubiquity* of legal force) is perfectly consistent with the widespread existence of power-conferring legal rules.

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law because they provide the evolutionary stability conditions[2] for an emergent sense of legal obligation. On this second view, a shared sense of legal obligation animates large parts of the law but—for those who have it—legal sanctions are not always needed to motivate compliance.[3] Neither explanation claims a necessary connection between law and legal sanctions and both therefore meet the philosophical constraints under discussion.

In *The Force of Law*, Schauer argues for a motivational account of legal sanctions. Unlike some early economists, Schauer acknowledges the empirical evidence that many people comply with laws for reasons other than self-interest or to avoid the threat of sanctions. Still, Schauer argues that most of this empirical literature is insufficiently attentive to the distinction between complying with the law because of moral or other prosocial motives and obeying the law because one takes the law to have its own sanction- and morality-independent practical authority. Absent precision over this distinction, Schauer believes that the current empirical literature provides only "weak" (2015, 61) (I would say ambiguous) evidence for intrinsic legal motivation.

Schauer is right to highlight this lack of conceptual clarity. He is nevertheless wrong, in my view, to propose that these facts support a motivational account of law's force. Schauer's central line of argument suggests that people often comply with the law because of motives that are not at all law related (i.e., for reasons that have nothing to do with either the threat of sanctions or intrinsic legal motivation). To the extent that this is true, however, legal sanctions are only needed to motivate moral outliers. Hence, the ubiquitous threat of legal force, as opposed to its periodic threat against moral outliers, emerges as an even deeper mystery. In most existing legal systems, it is *all* people, and not just moral outliers, who face the threat of legal sanctions. But on a motivational account of legal sanctions, this feature of law appears to be motivational overkill.

I would therefore distinguish two reasons why Schauer cannot consistently maintain that "[l]ying behind the ubiquity of legal force is the assumption that without force, the law is often impotent" (2015, 5). First, even if that assumption were true, it would not explain the *ubiquity* of legal force because—as Schauer acknowledges and for reasons just explained—legal compliance is often motivated by factors other than legal sanctions. Second, Schauer is insufficiently committed to the assumption needed for a purely motivational account of legal sanctions to work. When Schauer states his assumption, he says that without force, the law is "often" as opposed to "always" impotent because he actually accepts that there is *some* empirical evidence for intrinsic legal motivation.[4] All Schauer has shown is that it is still a live empirical question just how strong this motivation is.

Because I believe Schauer is right to demand a philosophically and empirically respectable account of the ubiquity of force in law, we need a nonmotivational

2. The "evolutionary stability conditions" for a psychological attitude are the conditions under which the attitude can remain widespread within a population over generations, despite the existence of alternatives that compete under the forces of natural and cultural selection.

3. But on this view, sanctions can also motivate.

4. Despite his primary argument, Schauer acknowledges that "attributing to law no or only a small [sanction-independent] effect seems equally unjustified" (2015, 72).

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alternative. In the remainder of this section, I use contemporary developments in evolutionary game theory to articulate an alternative. I begin with the observation that for most of human prehistory, humans lived primarily in small hunter-gatherer bands and faced recurrent problems of cooperation, typically referred to as "social contract problems." Social contract problems exist whenever everyone in a population could do better if all were to follow certain rules for the general regulation of conduct than if none were, but each could do better still if he or she could be the lone defector. Many rules that appear in both law and morality—such as rules prohibiting violence and requiring respect for contract and property—have these properties.

When social contract problems exist, everyone would do better if everyone followed the rules than if none did. If, however, everyone *else* follows the rules, each would do better still to defect because each would reap the benefits of others' cooperation without assuming any personal costs. And if everyone else defects, each would still do better to defect because each would receive no benefits from others' cooperation and rule following requires self-sacrifice. Social contract problems thus have the underlying game-theoretic structure of an *n*-person prisoners' dilemma, and the sole rational equilibrium is the suboptimal one where everyone defects and foregoes the benefits of cooperation.

For the evolutionary game theorist, these facts create a puzzle as to how intrinsic motives to follow rules that resolve social contract problems might arise and persist in nature. Standing alone, these motives should be less reproduction enhancing than motives to defect. Natural and cultural selection should therefore select against intrinsic motives to follow moral and legal rules that resolve social contract problems.

In "The Deep Structure of Law and Morality," I nevertheless model the conditions under which intrinsic motives to follow rules like these can evolve and remain evolutionarily stable. They can do this so long as they are *bound up with second-order attitudes that function to identify and exclude noncooperators from the benefits of these cooperative enterprises* (Kar 2006, 910–19). These second-order attitudes typically show up as shared perceptions that sanctions for breaches are warranted along with attitudes that tend probabilistically (but not necessarily) to motivate sanctioning behavior by some person or group. When these second-order attitudes are bound up with intrinsic motives to follow rules that resolve social contract problems, evolutionary forces can select *for* adaptive capacities that include intrinsic motives to follow these rules.

I use the term *obligata* to refer to any psychological attitudes that are evolutionarily adapted to resolve social contract problems (2006, 878–79). I call these attitudes obligata because they breathe life into the human sense of moral and legal obligation. Obligata also include a portfolio of psychological elements, which must work together—much like the obligato accompaniments of a larger musical performance—if obligata are to serve their adaptive function. Obligata motivate a complex and highly structured form of human social life and interaction—many other elements of which I detail elsewhere (see 919–41). On this view, threats of legal sanction are ubiquitous to law *not* because they are generally needed to motivate compliance but because they provide the *evolutionary stability conditions* for an

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emergent sense of intrinsic legal motivation. This intrinsic sense helps humans resolve certain large-scale cooperative problems through law.

This account offers a better explanation of the ubiquity of legal sanctions than motivational accounts for two reasons. First, as Schauer agrees, people often comply with the law because of reasons other than the threat of sanctions. Second, as Schauer also agrees, there is some evidence of intrinsic legal motivation. Threats of sanction are often unnecessary to motivate legal compliance but they provide the general evolutionary stability conditions for intrinsic legal motivation.

Schauer might nevertheless object that the present account, much like the empirical literature he criticizes, is insufficiently attentive to distinctions between intrinsic moral and legal motivation. That is not the case. Obligata are defined functionally, which means that they can be multiply instantiated even if moral and legal obligata function in many similar ways in practical reason. Elsewhere, I have argued that law and morality are, in fact, best understood as engaging distinct senses of obligation, which are better or worse suited to resolving different classes of social contract problems (Kar 2012). More specifically, what many people refer to as a sense of moral or informal obligation appears to be specially adapted to resolve the problems of cooperation that arose most often in our early environment of evolutionary adaptation, where human social life was largely limited to small, hunter-gatherer bands. Hence, people naturally coordinate their moral views through face-to-face discussion with perceived members of their in-group (see, e.g., Haidt 2001).[5] The sense of legal obligation that animates modern legal systems appears, by contrast, to have emerged only much later in human prehistory, after the rise of agriculture. Agriculture allowed for much larger population densities and presented some human populations with much larger-scale social contract problems, over which they could no longer coordinate through face-to-face discussion alone. Legal systems began to emerge from customary morality as distinctive forms of social organization in these circumstances. I have thus argued that modern legal systems depend on the intergenerational transmission of a distinctive portfolio of psychological attitudes, which include intrinsic legal motivation and are culturally adapted to allow people to resolve these larger-scale classes of social contract problems (see Kar 2012, 89–92).

ON LEGAL EXPRESSION AND LAW'S POWER TO COORDINATE: MCADAMS'S CONTRIBUTION AND PUZZLE

Let us now turn to Richard McAdams's *The Expressive Powers of Law*. In this book, McAdams argues that law can influence human behavior not only by threatening sanctions and engaging a sense of legitimacy (or what I refer to as *intrinsic legal motivation*) but also through expressions that help people coordinate. No account of law would be complete without some attention to this important, and often underappreciated, function of law. So far, I have, however, spoken only about the relationship between legal sanctions and intrinsic legal motivation. This section

5. This informal sense of obligation is still at work in modern social life, as is clear from work like Ellickson (1994).

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thus describes McAdams's contributions, but argues that they generate further puzzles that are best resolved with evolutionary game-theoretic resources.

McAdams's central contribution is to focus attention on what he calls law's "expressive power." McAdams uses this term in an appropriately narrow and technical sense, which he introduces using orthodox rational choice assumptions (2015, 7) and a stock example of a game of "pure coordination" (22–27). This is the game where the members of a group must decide to follow one of two possible driving rules: either everyone must drive on the right or on the left. In this game, everyone has self-interested reasons to follow the same rule as everyone else so as to avoid collisions. Unlike in a social contract problem, no one has self-interested reasons to defect.

One might therefore assume that this problem would be easier to solve than a social contract problem. Strictly speaking, however, no group of persons can solve this problem with just rationality, common knowledge of the relevant payoff matrices, and common knowledge of one another's rationality. These facts underdetermine a unique solution because there are two rules that would work equally well. In these circumstances, everyone has self-interested reasons to follow the same rule as everyone else, but no one has any rational, empirical, or logical basis to conclude that all others will settle on any particular rule.

McAdams argues, persuasively, that problems of coordination abound in the law—in part because cooperation often involves coordination, for reasons I explain below. When people face problems of coordination, legal expression can, moreover, "influence behavior by creating a coordinating focal point" (2015, 57). The law might, for example, simply state: "Everyone must drive on the right." This statement might cause this rule to appear psychologically salient, or to stick out as being a unique solution in a conspicuous respect. If everyone reacts to this legal expression in the same way, and everyone expects all others to do the same, then legal expression can help a group settle on a mutually concordant system of expectations that all will be inclined to follow this unique rule. The law can thereby influence people's behavior without threatening sanctions or engaging intrinsic legal motivation.

The law can, in other words, help people *coordinate* rather than *cooperate*. It is, however, important to recognize the true depth of the underlying problem and what is needed for legal expression to work. Standing alone, the legal statement—"Everyone must drive on the right"—is, after all, just a piece of linguistic behavior, which is logically consistent with a great many courses of conduct. Linguistic expressions are not self-interpreting. Hence, there is no guarantee that everyone will interpret them in the same way. Let us therefore stipulate, further, that everyone who has thus far sought to follow this rule has driven on what we intuitively refer to as the "right" side of the road. This combination of language and precedent is still logically, empirically, and rationally consistent with an indefinite set of future courses of conduct—for example, with the rule that we intuitively state as "everyone must drive on the right side until today and then switch," the rule that we intuitively state as "everyone must drive on the right until today and then begin switching every Tuesday," and so on.[6] So how can any combination of legal expression and precedent guarantee coordination?

6. For similar arguments, see Quine (1960) and Wittgenstein (1953, §§ 185–241).

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In developing his expressive account of law, McAdams relies heavily on David Lewis's *Convention*. In this work, Lewis correctly observes that problems of coordination can be resolved through language, precedent or salience ([1969] 2002, 33–36, 52). In some passages, however, Lewis seems to recognize the problem currently under discussion because he suggests that language and precedent *ultimately depend* on a prior shared sense of salience to work.[7] It is only *because* we share a sense of salience that many logically possible rules appear ruled in out by language and precedent.

Law's expressive powers thus depend on a background of psychological agreement—not just over propositions, expressible in language, but rather in what Ludwig Wittgenstein would call "forms of life."[8] If we share a form of life, we can sometimes project the coordinated illusion that a unique course of conduct conforms to the law. That illusion can become a self-fulfilling prophecy, which produces coordinated human behavior.

It is at this point that evolutionary game theory can prove especially useful for understanding how law works. Evolutionary game theory can be used to explain why the shared psychological attitudes needed for law to coordinate human behavior might reach equilibrium within a population. When coordination has adaptive value, natural and cultural evolution should select *for* the required agreement in forms of life.

In addition, the psychological attitudes needed to resolve large-scale social contracts through law must be capable of resolving mixed problems of cooperation and coordination. I say this for several reasons, all of which are reflected in some way in McAdams's work. First, social contract problems typically underdetermine their own solutions. For example, the well-known tragedy of the commons presents a social contract problem that one can solve with a rule that either creates private property or prohibits overgrazing. If a private property rule is used, the rule might allow exceptions for easements, zoning restrictions, some tax and transfer for redistributive purposes, or other items; or it might not. Because different resolutions to social contract problems often benefit different people disproportionately, there is also a competitive dimension to the question of which rules will prevail (2015, 40). Hence, the adapted psychological attitudes that allow people to resolve social contract problems must not only motivate them to comply with rules that that require some self-sacrifice but also help them *coordinate on particular rules*.

Second, this need for coordination is especially great, on the current view, because the evolutionary stability conditions for an intrinsic sense of legal motivation include second-order attitudes that function to identify and exclude noncooperators from the benefits of these cooperative enterprises. These second-order attitudes typically motivate actions that would otherwise be ruled out by the social

7. See, for example, Lewis ([1969] 2002, 37–38): "In fact, there are always innumerable alternative analogies [to past precedent]. Were it not that we happen to uniformly notice some analogies and ignore others—those we call 'natural' or 'artificial,' respectively—precedents would always be completely ambiguous and worthless." See also Ch. III.1, which explains why explicit linguistic agreement typically requires a prior tacit and often inexpressible agreement to work.

8. Wittgenstein (1953, § 241) says that: "It is what human beings *say* that is true or false, and they *agree* in the language that they use. That is not agreement in opinions but in form of life."

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contract. If the members of a group were to have conflicting views on what is legally obligatory and no way to coordinate, then even those with cooperative motives would act in ways that others deem a breach of legal obligation. These perceived breaches would tend to produce reactions by others, which would be perceived as breaches by the first—thereby generating escalating cycles of conflict, not cooperation.

Third, as McAdams rightly argues, legal sanctions *themselves* require the resolution of a problem of coordination. McAdams makes this point when he argues that legal sanctions can reliably motivate people only if the law can produce coordinated expectations of how others will behave in reaction to breaches (2015, 57–63). In fact, however, legal sanctioning requires not only coordination but also cooperation: threats of sanction are typically a public good, which involve some commitment to costly action. The fact that social contract problems can only be resolved with the aid of sanctions that create new social contract problems might be thought to create an infinite regress. This regress can, however, be forestalled in an evolutionarily stable way with psychological mechanisms that operate recursively (i.e., at any level of a cooperative enterprise) as *generalized* cheat detection mechanisms. There is now some evidence for these mechanisms (Cosmides and Tooby 2008).

For these three reasons, any adapted psychological capacities that motivate people to follow legal rules that resolve social contract problems must be bound up with certain other mechanisms that are capable of producing sufficient coordination over legal content and the reactions to breaches. We see these predicted coordination mechanisms in a number of phenomena characteristic of law: for example, in shared attitudes of deference to judicial pronouncements in concrete disputes (or what Hart calls "rules of adjudication"); in shared attitudes among legal officials over the grounds for legal content (or what Hart calls "rules of recognition"); and in shared attitudes over how legal content can be changed through legislation or other voluntary human acts (or what Hart calls "rules of change") (Hart [1961] 2004, 94–97). I thus believe that most of McAdams's most important points about law's expressive power can be incorporated into the current evolutionary game-theoretic account of legal obligation.

McAdams might object, however, that the law sometimes functions to resolve problems of pure coordination and not just social contract problems that have a dimension of coordination. The example of the legal rule that requires people to drive on the right side of the road appears as plausible an example as any. McAdams's discussion of this rule nevertheless raises a puzzle. If legal expression can fully solve this problem, without the need of any sanctions or intrinsic legal motivation, then why do we in fact find a legal obligation backed by the threat of sanction? I view this as a further dimension of the puzzle concerning the *ubiquity* of legal sanctions, as highlighted in Schauer's work.

My suggestion for resolving this problem should thus come as no surprise. I agree that legal sanctions are rarely needed to motivate people to drive on the right side of the road. I nevertheless note that real people sometimes have divergent preferences for different driving rules.[9] Real people also have self-interested motives to

9. McAdams (2015, 25–36) agrees.

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breach driving rules on occasion—as, for example, when it appears personally advantageous to drive momentarily on the left side of the street to pass another vehicle, even at some risk to others' safety or ease of passage. In the real world, choosing driving rules is thus a mixed problem of cooperation and coordination—as McAdams (2015, 25–36) elsewhere acknowledges himself. Problems like these can be solved with a sense of legal obligation, in my view, but legal sanctions provide the evolutionary stability conditions for this shared sense. It is ultimately *this fact* that explains why legal sanctions attach to the legal obligation to drive on the right side of the road.

We have thus come full circle. I have now used insights from evolutionary game theory to produce an account of the psychological underpinnings of law that synthesizes what I take to be the best insights from Schauer's and McAdams's work. This account clarifies how legal sanctions relate to intrinsic legal motivation; how legal expression can work in tandem with sanctions and intrinsic legal motivation to produce coordination; and how human populations can evolve to share the psychological background needed for all these elements to work together to sustain large-scale forms of human cooperation through law.

CONCLUSION

For the above reasons, I believe that evolutionary game theory must supplement legal philosophy, psychology, and economics if we seek to produce a complete understanding of how law works. Although the legal academy values interdisciplinary work, this work typically draws primarily on the social sciences. Some legal scholars even abjure evolutionary paradigms, but I believe this attitude creates an arbitrary rift in what should be a more seamless web of self-knowledge. Humans are—after all—still evolved creatures, with numerous adapted capacities. We have the adapted capacity for culture, but this just means that natural and cultural evolution can work together to shape some aspects of human social behavior.

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