

Microfoundations of the Rule of Law

Gillian K. Hadfield¹ and Barry R. Weingast²

¹Gould School of Law and Department of Economics, University of Southern California, Los Angeles, California 90089-0071; email: ghadfield@law.usc.edu

²Department of Political Science and Hoover Institution on War, Revolution and Peace, Stanford University, Stanford, California 94305; email: weingast@stanford.edu

Annu. Rev. Polit. Sci. 2014. 17:21–42

The *Annual Review of Political Science* is online at polisci.annualreviews.org

This article's doi:
10.1146/annurev-polisci-100711-135226

Copyright © 2014 by Annual Reviews.
All rights reserved

Keywords

legal order, institutions, economic development, democracy, coordination

Abstract

Many social scientists rely on the rule of law in their accounts of political or economic development. Many, however, simply equate law with a stable government capable of enforcing the rules generated by a political authority. As two decades of largely failed efforts to build the rule of law in poor and transition countries and continuing struggles to build international legal order demonstrate, we still do not understand how legal order is produced, especially in places where it does not already exist. We here canvas literature in the social sciences to identify the themes and gaps in the existing accounts. We conclude that this literature has failed to produce a microfoundational account of the phenomenon of legal order. We then discuss our recent effort to develop the missing microfoundations of legal order to provide a better framework for future work on the rule of law.

INTRODUCTION

The rule of law has long been thought central to a wide range of goals, such as creating a normatively attractive state; promoting justice, economic development, and democracy; and achieving international cooperation among nation-states. Indeed, many find this concept so appealing that they use this term to embrace all that is normatively attractive about society, such as human rights, democracy, and freedom (Carothers 2006, p. 3).

The intransigence of poverty throughout the developing world despite massive infusions of foreign aid over several decades, the surprising failures of efforts to transition former Soviet states to thriving market economies, the frequency of violent regime change, and the profound instability of constitutional reforms across the globe all speak to the difficulty in building locally effective legal institutions. The challenge also exists at the global level, where the limited efficacy of transnational law is evident.

Despite its centrality to many literatures, the concept of the rule of law is woefully undertheorized (McCubbins et al. 2010). Indeed, the great majority of academic and policy work takes the concept for granted, generally equating it with the institutions and practices in those (relatively few) parts of the world where the rule of law has been largely achieved.

Missing from the literature is a serious account of what, from a policy perspective, is the critical question: How is the rule of law established in an environment that currently lacks it? From a positive, predictive point of view, the minimal theory available suggests that to build rule of law, a developing country should reproduce the institutions that characterize legal order in stable regimes, such as advanced Western market democracies: written constitutions that restrict the power of the government; legislated rules of substantive and procedural law; protection of civil rights and due process; and adequately resourced, trained, and noncorrupt enforcement officials. The prospect of effective transnational law that transcends power politics in the absence of world government is largely dismissed.

In this review, we examine the literature in several fields that expressly or implicitly define law. We find that most literature falls into one of two, ultimately unhelpful, categories. The first category assumes that law is the product of governments with an effective monopoly on the exercise of legitimate force. These analyses typically do not account for why these institutions work in the developed world. The second category assumes that law is indistinguishable from other cultural order-producing processes, without a solid account of what culture is, how it is produced, or why it differs across time and place. The former category of works is unhelpful for rule-of-law efforts because it largely requires countries to be well governed already to achieve good governance, “hardly good policy advice” (Rodrik 2007, p. 980). The latter is equally unhelpful: “Promote respect for the rule of law” (Cao 2007, pp. 406–7) is also not good policy advice.

Both approaches, we suggest, are default positions, occasioned by the absence of a more careful theoretical account of how law functions to achieve legal order in a way that is responsive to policy goals. Although many in the behavioral social sciences talk about law, they do not provide models that account for the features that distinguish legal order from other types of social order.

At the same time, analysts who pay close attention to the distinctive features of law, such as legal philosophers, anthropologists, and sociologists, incorporate into their accounts of law a host of untheorized and often implicit assumptions about how people and institutions behave at the micro level. Across these literatures we see one of two assumptions: The rule of law is effective either because a governing entity exists capable of imposing penalties that deter undesired conduct, or because people naturally possess prosocial preferences—a taste for fairness or voluntary

compliance with rules designated legal. The former assumes away the central problem of building legal order in settings that lack such a governing authority. The latter assumes away the problem of explaining how such preferences emerge.

After concluding our review of the literature, we present our proposal for building the missing microfoundations. In a series of recent papers (Hadfield & Weingast 2012, 2013, 2014) we develop an account of law that does not presume the existence of a centralized authority capable of imposing sanctions for noncompliance and that does not presume individuals are predisposed to follow legal rules. We focus instead on the central problem of stabilizing effective decentralized collective punishment efforts—that is, social punishments such as withdrawals of cooperation or reputational penalties—among ordinary citizens. The challenge is both to incentivize and coordinate this enforcement behavior. In particular, enforcement behavior has to be coordinated in equilibrium by a shared evaluative scheme that determines what is punishable and what is not. An institution that is capable of articulating the content of the evaluative scheme gives such an equilibrium the power of law: the potential to change behavior on the basis of policy considerations.

Our model predicts that the equilibrium that implements the desired behavior can be achieved only if the institution displays certain attractive normative features often associated in the literature with the rule of law such as stability, openness, universality and clarity—what we call legal attributes.¹

Our approach emphasizes that the concept of the rule of law is part of an equilibrium. The rule of law does not reside in particular institutions, beliefs, or behaviors. It is a description of the nature of an equilibrium arising from the interaction of institutions, beliefs, and behaviors. We do not yet have an answer to the question of how to build legal order in places in which it does not currently exist. But our equilibrium account of the microfoundations of the rule of law provides a more promising basis on which to build an answer than we find in the existing literature.

THE MANY LITERATURES ON THE RULE OF LAW

Many social scientists take the phenomena of law, legal order, and the rule of law for granted. A range of literatures in the social sciences study issues related to these concepts, from high theory to applied policy. The literature is sufficiently vast that we have been forced to be selective in our coverage.²

A main lesson of the literatures we survey is that they presume the legal order as given. Doing so poses no problem if the question is how to design or predict the effect of a legal rule in a stable legal order. But this presumption presents a major difficulty for understanding the important questions of how legal order and the rule of law are secured in settings where they do not exist—and what makes law stable where it does exist. Our review focuses on identifying the taken-for-granted premises, gaps, and unanswered questions in the treatment of the concepts of law, legal order, and the rule of law.³ We first summarize the arguments in the various literatures; we then focus on what they miss about the foundations of the rule of law.

¹In this sense, our approach contributes to the new literature combining positive and normative theory (or NPPT)—that is, positive models about how normatively attractive goals are sustained.

²See also Haggard et al. (2008) for a survey of the literature on rule of law in the development context.

³These terms—law, legal order, and the rule of law—are frequently used interchangeably and without careful distinction; we will follow that practice in this survey (except when the literature itself distinguishes these terms). We propose a crisper definition in the following section.

Politics and Economics

The concept of the rule of law—as a system of previously enacted clear and general rules accompanied by abstract reasoning that constrains the discretion of a governing body—has been central to political theory since Aristotle’s *Politics* (1984, pp. 3–11). Locke [1690 (1980), p. 72, sect. 133], in his *Second Treatise of Government*, defined arbitrary power as “governing without settled standing laws.” Hayek [1944 (2007), p. 48] defined the rule of law as “government . . . bound by rules fixed and announced beforehand—rules which make it possible to foresee with fair certainty how the authority will use its coercive powers in given circumstances.”

Many political theorists focus on the normative question of how the laws that constrain good government—principally constitutional laws—should be designed and made effective. These theorists take for granted the existence of a government that wields coercive power over citizens—for it is this coercive power that is to be constrained. Smulovitz (2003, p. 168) captures this view: “The central problem with the ‘rule of law’ derives from the difficulties subjects have in making those who rule obey the law.”

A range of mainstream literatures in economics and politics study law, and each takes legal order for granted while focusing on other questions. Positive political theory of the law focuses on how law is generated in legislatures and enforced in courts (Epstein & Knight 1998, McCubbins & Rodriguez 2006, McNollgast 2007). It explains the functioning of established legal regimes overseen by stable governments but does not shed light on how such stable governments emerge, can be built, or can be sustained. Similarly, mainstream economic theory presumes the existence of stable governments that enforce laws (Dixit 2004). Standard microeconomics analyzing the price system or the design of principal-agent mechanisms, for example, takes for granted government enforcement of property rights and contracts. The same holds for the bulk of the literature in law and economics, which focuses on how to design legal rules to achieve efficiency but takes the legal order as given (e.g., Polinsky & Shavell 2007).

Theories of Governance, Institutions, and Organization

Not all literature in political science and economics takes stable, effective governance for granted. North, Coase, Williamson, and Ostrom study a diverse set of mechanisms by which political and economic behavior follows preestablished rules. These literatures start with the premise—shared by political theorists from Aristotle to Locke, Hobbes, Hume, and Smith—that humans have a shared interest in cooperation by establishing systems of rules to control behavior, foster cooperation, and provide a reliable framework for investment, trade, and cooperation. Using concepts of transaction costs and tools from game theory, this literature explores how people can stabilize rules and institutions that authorize some actions and prohibit others (North 1990).

Importantly, this literature examines settings where centralized government control is missing or weak. Ostrom (1990) explores how communities facing the challenge of overuse of common resources organize effective resource management regimes without the need for overarching government enforcement. Williamson (1985), building on Coase (1937), argues that transactions must be designed to achieve credible commitments to honor agreements in circumstances lacking external enforcement of contracts. The literature on relational contracting following Telser (1980) has substantially deepened our understanding of securing compliance with a prearranged set of behavioral rules (e.g., MacLeod & Malcomson 1988, 1989; Klein 1996; Baker et al. 2002; Levin 2003).

These works advance our understanding of cooperation, especially in settings where government coercion is lacking, but they still equate law with state enforcement. Dixit (2004, p. 17) makes this framework explicit in his *Lawlessness and Economics*, defining the domain of self-enforcing

mechanisms to protect property rights or enforce contracts in a world where “government cannot or does not provide an adequate underpinning of law.” Ellickson’s (1991) influential work on social norms offers the dispute-resolution behavior among Shasta County ranchers as evidence for social cooperation in the absence of law. He, too, defines law as government enforcement of rules.

Some scholars address the problem of law more directly. Becker & Stigler (1974) investigate the problem of making official enforcement effective, given the potential for violators to bribe enforcers. Basu (2000) uses a game-theoretic analysis of self-enforcing mechanisms to theorize that law provides a focal point for coordinating the behavior of officials responsible for enforcement. So long as enforcers punish infractions set out by law, all agents in an economy have an incentive to follow the law. These frameworks also treat law as the product of a centralized enforcement apparatus.

Milgrom et al. (1990) and Greif (1989, 1993, 1994, 2006) pay close attention to the problem of inducing compliance with privately devised systems of rules, such as those generated by medieval merchant guilds and trading communities. Greif et al. (1994) examine how coalitions of merchants secure protection of person and property and contract enforcement from medieval rulers not subject to the rule of law. North & Weingast (1989) use the concept of credible commitments to consider how particular institutions, notably the establishment of parliamentary supremacy as a constitutional principle, can secure limited government.

Game-theoretic models of law suggest how law coordinates beliefs and strategies in repeated games with multiple equilibria. Weingast (1997) uses this framework to formalize the idea that constitutions are self-enforcing pacts among heterogeneous citizens and groups (Przeworski 1991, Ordeshook 1992, Calvert 1995, Weingast 1995). A newer literature has proposed a more general theory of law-as-focal-point, whereby the function of legal institutions is to announce an equilibrium in a coordination game among citizens [McAdams 2000, Myerson 2004; see also Sugden 1986 (2005)].

Theories of Legal Values and Preferences

Another group of scholars look beyond the rational-actor model, proposing that preferences and values support compliance with rules, norms, and law. This idea has a fine pedigree in political theory. Fleischacker (2004, p. 151) quotes Adam Smith’s *Theory of Moral Sentiments* [II.ii.1.10:82]: “‘Retaliation seems to be the great law which is dictated to us by Nature,’ and it is nature which implants in us the impulse to resent injury and to sympathize with the justified resentment of others.”

In more recent times, the experimental literature provides evidence that people in a wide variety of settings and cultures prefer fair solutions when presented with a challenge such as dividing a sum of money or contributing to a public good (Camerer 2003, Henrich et al. 2004). Such behavior may be explained by the presence of other-regarding or altruistic preferences. Alternatively, others explain this behavior by norms of reciprocity (Fehr & Gächter 2002, Fehr & Schmidt 2006). The reciprocity literature points to experimental evidence that people reward good behavior and punish bad even when it is costly to them (Fehr & Fischbacher 2004, Henrich et al. 2006). Evolutionary-game theorists suggest that heritable strategies of reciprocity (Bowles & Gintis 2004) and altruistic punishment, whether carried out alone (Boyd et al. 2003) or collectively (Boyd et al. 2010), can be evolutionarily stable. Cooter (1998) proposes that law can affect behavior by leveraging a preexisting preference for actions categorized as lawful. Basu (2000) distinguishes law from social norms by the presence of a preexisting norm that official actors should punish only behavior that is classified as illegal.

Various social psychological accounts of obeying the law involve people caring about fairness. Tyler (1990) and Tyler & Huo (2002) present evidence that people are more likely to comply with

legal rules if they believe those rules treat them fairly (see also Paternoster & Simpson 1996, Levi 1997, Gezelius 2002, Levi & Sacks 2009; Ryo 2006, 2013).

International Law and Relations

International law and relations scholarship has traditionally debated whether international law really counts as law. The naysayers assume that law consists of rules created by a government with coercive power to enforce the rules, implying that international law is not possible without overriding state sovereignty (e.g., Bolton 2000). Those who defend the legality of international law (or consider the question irrelevant) focus on alternative enforcement mechanisms such as tit-for-tat retaliation (D'Amato 1985, Keohane 1986), a propensity to comply with legitimate rules (Franck 1995, Koh 1997, Chayes & Chayes 1998), reputation (Guzman 2008), and outcasting (Hathaway & Shapiro 2011). Neorealists and neoliberals alike are skeptical, arguing that countries will comply with international law only if it serves domestic interests (Keohane 1997, Goldsmith & Posner 2005).

Constructivist strands in the literature see international legal rules as a distinctive subset of international norms that influence state behavior (e.g., Finnemore & Sikkink 1998, Abbott & Snidal 2000). Other constructivist accounts focus on the importance of legal rules and institutions in structuring epistemic communities and transnational networks of both public and private actions to support compliance with international regulatory regimes (e.g., Haas 1989, Braithwaite & Drahos 2000, Slaughter 2004). Efforts to integrate legal concepts more fully into international relations theory have begun but are still in the early stages (Keohane 1997, Finnemore & Toope 2001, Raustiala & Slaughter 2002).

Applied Theory: Institutional Templates

The question of how to create the rule of law in environments where it is lacking takes on immediate practical dimensions in the literature on policy and rule-of-law assistance (Carothers 2006, Haggard et al. 2008). Fueled by billions of dollars in international aid organized through institutions such as the International Monetary Fund, the World Bank, and the United Nations, this field of applied research has exploded since the early 1990s. The concept of rule of law in this literature is highly elastic (Kleinfeld 2006), and it is frequently a vehicle for a list of social desiderata, such as equality, respect for human rights, and limited government.

The World Bank (2003), for example, defines the rule of law according to the following criteria:

- The government itself is bound by the law.
- Every person in society is treated equally under the law.
- The human dignity of each individual is recognized and protected by law.
- Justice is accessible to all.

This definition focuses on how governments behave—how they exercise authority and how they administer laws. Other approaches focus on citizens' access to rules. The United Nations Commission on the Legal Empowerment of the Poor (2008), for example, defines law as “the platform on which rest the vital institutions of society” and which “allows people to interact with one another in an atmosphere that is certain and predictable” (U. N. Comm. Leg. Empower. Poor 2008, p. vi). The commission concludes, “at least four billion people are excluded from the rule of law” (U. N. Comm. Leg. Empower. Poor 2008, p. 21).

Numerous rule-of-law indices have emerged in the policy literature and are used by the international aid community to assess country performance. The World Bank's Doing Business

indicator, for example, surveys in-country lawyers to assess the ease and adequacy of enforcing contracts. The World Justice Project produces country rankings based on a rule-of-law index composed of various indicators, including “limited government powers; absence of corruption; order and security; fundamental rights; and open government” (Botero & Ponce, p. 1).

Regardless of the definition, in practice the field of rule-of-law assistance adopts an institutional approach, equating the rule of law with the introduction of specific institutions. Modern rule-of-law practitioners still define the rule of law as a state that contains these three primary institutions:

- laws themselves, which are publicly known and relatively settled;
- a judiciary schooled in legal reasoning, knowledgeable about the law, reasonably efficient, and independent of political manipulation and corruption; and
- a force able to enforce laws, execute judgments, and maintain public peace and safety—usually police, bailiffs, and other law enforcement bodies (Kleinfeld 2006, p. 47).

The institutional approach has solid academic credentials. In a pair of seminal papers, La Porta et al. (1997, 1998) study the relationship between the level of investor protection in a country and its legal origin among four legal families—English, French, German, and Scandinavian. They claim that common-law countries produced legal systems better able to support economic growth. This research has spawned a huge literature, both theoretical and empirical, on the relationship between legal institutions, the rule of law, and economic development [La Porta et al. (2008) and Xu (2011) provide surveys].

Acemoglu & Robinson (2012, p. 307) propose a political hypothesis about the institutional foundations for rule of law, namely, that it is a natural outgrowth of pluralism: “With many parties at the table sharing power, it was natural [after the Glorious Revolution in England] to have laws and constraints apply to all of them, lest one party start amassing too much power.” This account provides an explanation for why rule-of-law efforts have failed: There is insufficient political support (Carothers 2006). Other law and development theorists point to the importance of local conditions and bottom-up approaches to legal and institutional change (e.g., Berkowitz et al. 2003, Easterly 2006, Rodrik 2007, Trebilcock & Daniels 2008; see also Granovetter 1992).

Culture

In the quest to diagnose the failure of efforts to build effective legal regimes, rule-of-law practitioners have also turned to theories of culture and social norms. Carothers (2006, p. 20), for example, observes that law is not just about institutions; it “is also a normative system that resides in the minds of the citizens of a society.”

Some legal scholars studying postconflict societies have taken up the neocultural agenda, arguing that rule-of-law projects that focus on formal laws and institutions are bound to fail. “The rule of law is not something that exists ‘beyond culture’ and that can be somehow added to an existing culture by the simple expedient of creating formal structures and rewriting constitutions and statutes” (Brooks 2003, p. 2285). In this view, achieving rule of law requires a cultural transformation in which people come to believe in the rule of law (Brooks 2003, Stromseth et al. 2006, Cao 2007). Tamanaha (2011, p. 214) urges recognition that “the law is connected to every aspect of society,” distancing himself from grand rule-of-law-building efforts.

The challenge of teasing out from other systems of norms what counts as law, if anything, animates much of legal anthropology and sociology. Pioneering legal anthropologist Malinowski [1926 (2013), p. 96] defines “the rules of law [as those norms of behavior that] stand out from the rest in that they are felt and regarded as the obligations of one person and the rightful claims

of another. They are sanctioned not by a mere psychological motive, but by a definite social machinery of binding force.”

To many legal anthropologists and sociologists this definition insufficiently distinguishes legal obligations from other social norms. Hoebel [1954 (2006), p. 28] focuses on the enforcement mechanism to distinguish legal rules from other social norms: “A social norm is legal if its neglect or infraction is met, in threat or in fact, by the application of physical force by an individual possessing the socially recognized privilege of so acting” (see also Bohannan 1965). Pospisil (1958) defined law in terms of the presence of four criteria: an entity with authority to create rules, the intention to apply rules universally, the idea that rules are obligatory, and the presence of sanctions; this approach implies multiple legal orders progressing from units such as the family up to the state. Moore (1978) proposes to reserve the term law for those rules enforced by government but emphasizes the presence of multiple overlapping social fields of rule-making and enforcement.

The Concept of Law

We leave for last the most sustained efforts to unpack the meaning of law. Whereas other literatures need a concept of law in order to organize their main object of study, the literatures in sociological and analytical jurisprudence analyze the “necessary and universal” features common to “all the intuitively clear instances of . . . legal systems” (Raz 2009, p. 104). Here we find the most careful attention to the question, What is law?

Weber [1947 (1964), p. 127], like his fellow sociologists, defines law as a form of legitimate social order distinguishable from conventions, which are enforced by general social disapproval; law is enforced “by physical or psychic sanctions aimed to compel conformity or to punish disobedience, and applied by a group of men especially empowered to carry out this function.” On this definition, any association with a rule-bound official enforcement apparatus such as a family or religious organization can produce legal order [Weber 1947 (1964), p. 129]. Weber [1956 (1978), p. 666] views modern law as the culmination of an evolutionary process by which the multiple legal orders established in organizations are fused into “the *one* compulsory association of the state, now claiming to be the sole source of all ‘legitimate’ law.” He also makes the behavioral claim that the willingness to submit to any order is a function of the perceived legitimacy of authority. Legal order is perceived as legitimate, he says, “because it has been established in a manner which is recognized to be *legal*”; that is, in conformity with “rules which are formally correct and have been imposed by accepted procedure” [Weber 1947 (1964), pp. 130–31].

Hart [1961 (2012), p. xv], credited as “one of the most influential works in modern legal philosophy,” shares this basic sociological notion that “law is a social construction.” More than Weber, Hart abstracts from the behavioral premises that underpin law in order to define the concept of law. A social order based on law, Hart [1961 (2012)] says, consists of a set of primary rules that establish conforming conduct and a set of secondary rules that determine the means by which primary rules are created, changed, and enforced. Because all social order is organized on the basis of primary rules, Hart, like Weber, focuses on the rules governing the authority that creates and enforces law as law’s distinguishing mark. Ultimately law is a social construction because we cannot be more general about the source of the secondary rules that distinguish social order from legal order.

Hart’s version of legal positivism involves the idea that what counts as law is ultimately a matter of social fact and does not depend on extralegal moral principles (Dworkin 1978, 1986) or pre-suppositions (Kelsen 1941). This approach dominates modern legal philosophy. Legal positivism separates normative questions—What is the moral obligation to obey the law, and what should the law be?—from positive, descriptive ones—Does it make sense to describe this system here as a legal one?

Raz (2009) articulates this methodological strategy in an influential essay on the rule of law. Building on Hart, Raz starts with a minimalist conception: Law is an institutionalized normative system; minimally it consists of norm-applying institutions—courts are an example.⁴ Through the application of norms, legal institutions guide individual behavior to follow the patterns set out in norms. Law is therefore an instrument of social organization that guides behavior.

To serve as an instrument of social organization, law must be conducted in such a manner as to allow people to conform their conduct to it. Thus law is distinguished by certain minimal attributes: The norms it applies must be minimally clear and publicized; they must be in some measure prospective and stable; the norm-applying institution must make reasonably consistent decisions based on an application of the relevant norms and not extraneous considerations; there must be some general norms that guide the behavior of the norm-applying institution. For Raz (2009, p. 214) these are attributes of a formal conception of the rule of law. If a legal system is to be recognizable as a guide to behavior, then it must implement the rule of law to some degree.

Fuller (1964) proposes the most widely discussed list of criteria that can be used to identify a legal system. He says that law is “the enterprise of subjecting human conduct to the governance of rules”; the converse of law is the governance of arbitrary power (Fuller 1964, p. 106). For Fuller, law displays eight identifying features: generality, stability, prospectivity, promulgation, clarity, noncontradiction, congruence (between rules as announced and rules as applied), and possibility (meaning rules do not call for infeasible actions). Fuller (1964, pp. 41–44) characterizes adherence to these principles as the “inner morality” of law, but he does not mean by this that law necessarily implements particular normative values. He means that the eight legal attributes represent principles that the officials of a legal system should observe to achieve the goal of governance through rules. He does, however, claim that the obligations of publicity, clarity, coherence, prospectivity, etc. are incompatible with some of the worst governmental abuses of power and that the enterprise of governing with rules inherently institutionalizes human dignity, by showing respect for individuals as responsible self-determining agents.

Raz (2009), like many of his fellow legal philosophers, is dismissive of these further claims and so insists on distinguishing between the formal concept of law, necessary to identify a class of things that are properly called legal systems, and the normative ideal of the rule of law. Some legal philosophers, however, have pressed for a more substantive understanding of what we mean by both the rule of law and the concept of law. Waldron (2008, 2011), for example, argues that the criteria for the rule of law should include procedural attributes, such as the right to a hearing before an impartial tribunal, the right to present evidence and make legal arguments, and the right to a reasoned explanation for a decision. These, he says, are necessary to implement respect for human dignity understood as an entitlement to be treated as an “active intelligence,” the notion that Fuller also claims is inherent in the idea of governance through rules, that is, the concept of law (Waldron 2011, p. 23).

Although most legal philosophical literature on the concept of law and the rule of law focuses on the characteristics of the relationship between an individual and a legal institution, Raz (2009) also offers a set of attributes that distinguish legal and other institutionalized normative systems. Raz (2009, pp. 116–18) characterizes legal systems by three features: They are comprehensive and “claim authority to regulate any type of behavior”; they claim to be supreme, to possess “authority to regulate. . . other institutionalized systems”; and they are open systems that give binding force

⁴Institutions for norm enforcement, Raz (2009) says, are not essential; it is only essential that there be norms to determine what constitutes an authorized exercise of force, whether by official agencies or individuals.

to norms that do not originate with the system itself, such as by enforcing contracts, the rules of organizations, or the laws of other jurisdictions.

Legal philosophical accounts do not clearly commit to an answer of whether law requires external enforcement. Raz (2009, p. 107) suggests that “all legal systems . . . ultimately rely on force to ensure compliance with the law,” but he emphasizes that law does not require centralized enforcement. Legal philosophical accounts focus on the moral question of the nature of the obligation for voluntary compliance with the law. Raz (2009, pp. 28–29) opines, “A common factor in all kinds of effective authority is that they involve a belief by some that the person concerned has legitimate authority.” But there is no behavioral account of why people are willing to obey legal rules. There is only an intuition that there is some inherent value associated with the concept of legality, such that people are oriented to behave differently if they recognize a rule as legal as opposed to being another type of norm. Some legal philosophers have begun to take up game-theoretic behavioral tools (Postema 1982, Finnis 1989), focusing on moral questions: Does coordination in the interests of the common good, or the fact that secondary rules are a social convention [Hart 1961 (2012)], generate an obligation to obey the law?

Implications

Each of these literatures grapples with an important aspect of law. Taken as a whole, they have recurrent themes. The idea of coordination appears in many approaches. So, too, does an important role for shared beliefs. A centralized coercive apparatus is either taken for granted or framed as a necessary element. Several literatures, in their different ways, raise the question of what causes people to be willing to shift the conditioning of their behavior from one source of rules to another. We also see recurrent suggestions of a fundamental social category that is recognized as the legal. For example, many theorists invoke the concept of legitimacy and the idea that people behave differently when a norm is labeled law compared with when it is considered a norm, although these scholars do not explain why or what produces “legal” as a socially recognized category that is implemented by individual behavior. Finally, several literatures either assume or investigate the existence of a taste for justice and fairness.

Missing from the multiple literatures that struggle with the concepts of law and the rule of law is a coherent attempt to create a satisfying account of the microfoundations of the behaviors that generate and implement distinctively legal order.

The literature in politics and economics on institutions and credible commitments significantly advances the tools available for analyzing law and its stability, for example, but it does not apply these tools to these questions. The legal origins literature suggests that common law outperforms civil law, but it does not identify the particular institutions that generate the independent judicial behavior they believe generates value (Hadfield 2008). We agree with Acemoglu & Robinson (2012) that groups can resist and sabotage efforts to establish legal constraints on behavior. But the converse—that if the rule of law receives political support, it can be established easily enough—does not hold.

Taken as a whole the institutional literatures continue to work with a highly abstract notion of law. At the extreme, they simply assume that a government that establishes a set of institutions characteristic of existing stable legal regimes—legal codes, well-trained judiciaries, enforcement agencies—will thereby institute the rule of law. But these accounts fail to explain why these institutions in many developing countries are hopelessly corrupt and ineffectual.

Outside of legal philosophy, scholars and practitioners tend to give little attention to the concept of rule or to the idea that law is characterized by distinctive attributes. Little in the political science and economics literature distinguishes legal decision making from the other modes of decision

making, such as we find in markets or legislatures. The judicial politics literature (Lax 2012), for example, largely treats a judicial decision as a fundamentally political decision. Friedman (2006) and Tiller & Cross (2006) note that much of this literature has no role for distinctive features of law, such as doctrine or precedent.

Similarly, in the economics literature, judicial decisions are analyzed as economic choices designed to select an outcome deemed optimal (e.g., Gennaioli & Shleifer 2007). Nowhere do we see the recognition that if judges really did make decisions in the same way as politicians or economic actors, then they would fail—as Fuller (1964) argues—to implement a recognizable legal regime.

The literatures that pay close attention to the processes and attributes that distinguish law, though, are replete with untheorized assumptions about how humans behave and how institutions function. Weber [1956 (1978)] and Raz (2009), for example, do not analyze the behaviors that cause a legal system to achieve supremacy over other normative systems, although they both identify this as a distinctive feature of law. Similarly, thick descriptive accounts of legal behavior in multiple settings focus on conduct and beliefs at the social level but do not provide an account of how individual behavior and beliefs produce aggregate outcomes.

As successful as these literatures are for the questions they pose, they provide inadequate guidance about how the preconditions in their models—stable government, effective legal power, an orientation to abide by legitimate authority, etc.—come into existence and are sustained. We therefore remain without the microfoundations explaining the rule of law.

A MICROFOUNDATIONAL ACCOUNT OF LAW

In recent papers we have begun building a framework for analyzing legal order. Our approach promises to allow investigation of many of the key themes and questions in the existing literature based on a new account of the microfoundations of legal order.

We begin by divorcing the analysis of law and legal order from the question of how to control the power of government.⁵ Although a major aim of our project is, ultimately, an account of government and the exercise of coercion, it is a mistake to presuppose that government is an essential feature of law and legal order. As we discuss in Hadfield & Weingast (2013), we can identify legal order in many settings without the presence of a centralized coercive force; indeed, the organized state with a monopoly over the legitimate exercise of force is a relatively recent phenomenon. Legal order obtained to a significant degree in ancient Athens, for example, but no specialized enforcement agency existed. Many other examples exist, including medieval Iceland, California during the gold rush prior to the establishment of state government, and merchants in medieval Europe (Hadfield & Weingast 2013). Clearly the state transforms the nature of legal order, but it is not necessary.

Legal anthropologists, sociologists, and rule-of-law practitioners emphasize the weakness of framing the phenomenon of law as a phenomenon of government and its control. These literatures, together with the experience of failed rule-of-law projects, demonstrate the importance of understanding the relationship between behavior organized by legal institutions and behavior organized by other normative systems—what some literatures call culture. As we argue below, we eschew using culture as an explanatory term. Legal order is a type of social order, and our starting point should be the commonalities and distinctive features of behavioral patterns organized around different normative institutions.

⁵We take a first step on this topic in Hadfield & Weingast (2014).

The idea that government coercion is necessary for law leads to two other mistakes: (a) the belief that legal order can be achieved by tightening up government coercion; and (b) attributing failures of legal order to failures of coercive institutions, the power of the judiciary, or the enforcement agency in particular. The failures of rule-of-law projects, which have focused on the power of the judiciary and enforcement agencies above all else, attest to the error of this way of thinking.

If law is not government enforcement of rules, as so many literatures suppose, what is it? We propose a definition that starts with the premise that legal order is a type of normative social order (Hadfield & Weingast 2012). A normative social order is an equilibrium characterized by conduct in a relevant community that is systematically patterned on community-based normative evaluations of behavior. The concept of social norms can be understood in this way: Social norms are community-based evaluations of behavior; they designate some behaviors as good or warranting approval, others as bad or warranting disapproval. The evaluations are not personal in the sense that they reside only in the private assessments of particular individuals. They are social in the sense that any representative member of the community is expected to share the evaluation.

Building the microfoundations of law requires addressing three important questions about a normative social order. First, what is the scope of the relevant community for any particular behavior? Second, what is the source of the evaluations within that community? Third, what is the mechanism through which community-based evaluations influence individual behavioral choices?

Our framework focuses on the answer to the second question as the marker that distinguishes legal order from other normative social orders. A legal order is a normative social order in which evaluations of behavior are articulated by an identifiable entity that possesses legal attributes. Drawing on a concept from computer science,⁶ we call such an entity—which could be a person or an organization—a classification institution. In our model, the classification institution produces normative labels for circumstances such as lawful/unlawful, constitutional/unconstitutional, punishable/not punishable. We explain the idea of legal attributes below.

Our definition makes a fundamental shift in using the terms law and rule of law rather than those generally employed in the literature. We do not propose that law or the rule of law resides in or is equivalent to the following: the institutions typically associated with law, such as the judiciary; the beliefs and behaviors of those subject to the law, that is, citizens and businesses; or the institutions entrusted with implementing it, such as the government. Instead we say legal order is a type of equilibrium, as we defined it above.

This definition contemplates a wide range of communities that can be organized on the basis of a legal order. It therefore tracks Weber (1956 [1978]) and other sociologists and is consistent with examples we discuss in Hadfield & Weingast (2013). Among medieval merchants, for example, the relevant community is the members of a particular guild or the participants in a trade fair. But we reject the ideas that law requires that the scope of law be comprehensive and, as Raz (2009) and Weber both suggest, that legal order must be inherently supreme within an established territory. An important question we seek to answer is, What is the process by which a legal order comes to supremacy?

We also do not limit the nature of the enforcement mechanisms. Because we define a legal order as an equilibrium without reference to how the equilibrium is enforced, a wide range of different enforcement mechanisms that support the legal order are consistent with our approach.

⁶In machine learning, a subfield of artificial intelligence, a classifier is a function that maps data into a predefined set of categories or labels. A spam filter, for example, uses a classifier to assign one of two labels—spam or not spam—to incoming e-mails.

Examples include decentralized collective punishment mechanisms that support any normative social order such as social disapproval, withdrawal of cooperation or trade, and unilateral or collective retaliation, as well as organized and official force. No official, coercive enforcement apparatus need exist. The development of an exclusive official enforcement apparatus may contribute to the stability and efficacy of legal order. But it may also undermine stability. We suggest in Hadfield & Weingast (2012), for example, that the support and cooperation of ordinary citizens is critical for legal order and that the rule of law is unlikely to be feasible if enforced exclusively by a state agency with a monopoly on the exercise of force. To allow for these possibilities, it is critical to be able to compare legal orders in terms of their enforcement techniques.

A Model of the Microfoundations of Law

The analysis in Hadfield & Weingast (2012) proceeds as follows. We assume a simple world of three agents whom we call two buyers and a seller. We could instead interpret the model to apply to any setting in which there are individuals—citizens, for example—who would like to prevent behavior engaged in by another individual, such as a sovereign (see Hadfield & Weingast 2014).

For concreteness we suppose that each buyer has the opportunity to enter into a contractual relationship with the seller each period in a repeated game. We also suppose that in each period in which the seller is in a contract with a buyer, the seller has an opportunity to take an action that benefits the seller but that could be costly to the buyer. Some of these costly actions will be considered by the buyer to be in breach of contract. We make the key assumption, however, that what counts as breach for an individual buyer is a product of the buyer's personal evaluation scheme—what we call each buyer's idiosyncratic logic. We assume the buyer's personal evaluation scheme is completely private—neither the other buyer nor the seller can observe it. This assumption captures the presence of diversity in a community in which reasonable individuals can disagree about what constitutes good or bad behavior, such as what constitutes a valid contract and whether the seller was obliged to perform some action. We argue that a key role for law is to manage the diversity of views in a community about what constitutes good and bad behavior.

Each buyer would like to induce the seller to honor the contract rather than to breach it. We assume that, acting individually, however, the buyer does not possess the capacity to deter breach. The only action available to the buyer to punish the seller is a decision not to enter into a contract in the following period, but a one-buyer, one-period boycott is insufficient to deter breach. We assume that a decentralized collective punishment—specifically a two-buyer, one-period boycott—is sufficient to deter breach.

This setting generates a coordination problem. The buyers, whom we assume do not have any express means of communicating and coordinating (capturing the more general setting with more agents), need some mechanism for deciding individually when bad behavior has occurred and hence when to boycott the seller. We assume they observe all actions taken by the seller; but each needs to know how to classify actions taken by the seller.

We consider the introduction of an institution that classifies conduct as good or bad in order to coordinate the buyers' responses to seller behavior. We ask in particular what attributes the classification institution must possess in order to coordinate an equilibrium in which the seller was deterred from at least some behavior considered breach by a buyer. Intuitively, the classification institution must be a public institution in the sense that all agents can access the institution's classifications of the actions that count as breach and those that do not. More than this, it must be common knowledge that all agents consult the same classification institution to determine breach (see

Chwe 2001). We call the classification scheme produced by the classification institution a common logic.

Under what conditions will both buyers be willing to boycott for one period when the seller takes an action classified as breach under the common logic, given their diversity of opinions? First, we observe that the common logic is unlikely to be identical with either buyer's idiosyncratic logic. Second, intuitively, it must be that the common logic reaches the same classifications as an individual buyer's idiosyncratic logic sufficiently often that each buyer prefers the equilibrium in which actions classified as breach are deterred to one without deterrence.⁷ Boycotting is costly to the buyer. The cost is worth it if it helps to secure a result the buyer prefers to the alternative. We call the equilibrium with deterrence according to the common logic a legal order and the equilibrium without deterrence disorder.

This is our first implication: Buyers are unlikely to prefer just any legal order over disorder. Whether they do depends on whether the announced common logic deters the things they care about sufficiently often to warrant their participation by punishing bad conduct even if they are not the victim. This problem is therefore not a pure coordination game as we see in the existing literature (Postema 1982, Basu 2000, McAdams 2000, Myerson 2004). The candidate common logic must be incentive compatible for the participants to follow. We say that the idiosyncratic logic and common logic are sufficiently convergent for an agent if this incentive compatibility constraint is met.

Our second implication stems from closer scrutiny of the incentive-compatibility constraint. Incentive compatibility is required for every agent who is essential to the enforcement mechanism. In our model, if either buyer is unwilling to participate in coordinated boycotts, then the classification institution fails to establish legal order; the seller is not deterred; and the equilibrium is disorder. So neither buyer's interests can be ignored.

We call this universality, and it is the first legal attribute that our model suggests must be implemented by the classification institution to achieve legal order. Achieving universality requires eliminating systems of privilege that differentiate among people, because such systems are unlikely to induce all players to support the candidate common logic.⁸

Implications of the Model

The above considerations relate to the substance of the common logic. The remainder of the legal attributes we identify relate to the formal characteristics of the classification system. The classification institution's role is to coordinate boycotting behavior and to ensure that the common logic satisfies the incentive-compatibility constraints. Assume that the substance of the common logic is incentive compatible in the sense that both buyers prefer a coordination equilibrium based on the common logic to the alternative disordered equilibrium. Incentive compatibility still requires that all three agents believe that coordination will be achieved. Neither buyer will boycott unless she expects the other buyer to boycott in a given period. Both buyers want to be sure that the seller believes that coordination will be achieved in future periods, because that is the horizon over which the benefits of coordination are enjoyed to compensate for the costs incurred in any period in which a boycott has to be carried out.

⁷In our model the lack of deterrence is the only other possible equilibrium; we do not here consider alternative classification institutions.

⁸We emphasize that universality is qualified in the sense that the common logic must be capable of protecting the interests of not all agents but rather only those who are essential to making enforcement effective. See Hadfield & Weingast (2012, p. 25) for a discussion.

Achieving this coordination—both as a practical matter to effectuate a two-buyer boycott and as a matter of shared beliefs about how all agents will behave—requires, we argue, that the classification institution have the following attributes, which we call legal attributes:

- publicity,
- clarity, noncontradiction, uniqueness: authoritative stewardship,
- stability,
- prospectivity and congruence,
- generality,
- impersonal, neutral, and independent reasoning, and
- public reasoning and open process.

Our list of attributes in many ways tracks those developed by legal philosophers such as Fuller, Raz, and Waldron. We think a critical lesson from these careful jurisprudential efforts to distinguish legal order from other normative social orders is the idea that legal institutions differ from other dispute-resolving or norm-giving social institutions. Unlike the philosophical literature, however, our list is not based on an intuitive assessment or on a priori normative commitments such as equality between persons or fairness. Instead, we derive the legal attributes from the characteristics we argue are necessary for a classification institution to be capable of establishing an equilibrium legal order in which behavior is patterned on the classifications emanating from the institution.

Our claim is that these attributes support the stability of an equilibrium with legal order. To understand why, imagine the reasoning of an individual buyer who has observed seller behavior in one period and is wondering whether to boycott in the next period. First the buyer needs to figure out what the common logic classification of the behavior is. We have already noted that this requires that the classifications be public. Publicness requires making available all materials and logic used by the classification institution's common logic to arrive at classifications, such as statements of principle or collections of exemplar classifications. To arrive at a binary classification—breach or not—and to feel confident that the other buyer will reach the same classification—that is, to achieve common knowledge classifications—requires that the common logic classify conduct in a way that is relatively clear and noncontradictory and that results in unique classifications. To achieve clarity, noncontradiction, and uniqueness requires that the common logic be under what we call authoritative stewardship.⁹ By this we mean that there is a common-knowledge mechanism for definitively resolving any ambiguity or inconsistencies in classifications. A variety of different institutions can serve in this role, for example, a court or a designated legal authority, such as the Law Speaker in medieval Iceland (Hadfield & Weingast 2013).

The buyer must also be confident that classifications will remain stable over a sufficiently long period, a necessary condition for the buyer to be better off when participating today in a costly boycott.

A potential source of unreliability arises in these calculations. The idiosyncrasy of the evaluation schemes of both buyers implies that a third-party classification institution will not be able to anticipate all the specific circumstances under which a buyer might privately judge conduct to be breach; the institution will not therefore be able to publish *ex ante* statements that address all of the possibilities the buyers care about. The inevitable incompleteness of law is a fact that has been recognized since at least Aristotle (1984, pp. 3–11).

The buyer who evaluates the value of future deterrence, therefore, needs to predict the classification of novel sets of circumstances—which perhaps can only be anticipated by the buyer—by

⁹To clarify the relationship of an authoritative steward and the classification institution: We use the latter to describe function. Authoritative stewardship is a characteristic that a given classification institution may or may not have.

reasoning from the common materials currently available. For this to be accomplished, these materials must be general or generalizable, allowing someone to reason from either abstract language or the treatment of specific circumstances to the likely classification of new circumstances. Furthermore, making reasonably reliable predictions requires the buyer to have confidence that the classifications realized in the future will also be the product of reasoning from the currently available materials. This implies both that the common logic is prospective and that classifications that emerge are congruent with preexisting materials. Moreover, the common logic must also be based on impersonal reasoning, meaning that the operation of the logic on a set of facts is invariant to the identity of the person or entity engaged in the operation. The buyer needs to have confidence that the authoritative steward is independent and neutral, not influenced in ambiguity resolution by interests other than the project of maintaining a clear, coherent, and stable system of reasoning. Impersonal reasoning therefore reduces uncertainty by removing extraneous (and often hard to anticipate) factors from the buyer's prediction process.

The buyer must also have confidence that, in the event of a truly novel case, he or she will have an opportunity to present (*a*) evidence about circumstances about which he or she possesses private information and (*b*) reasons the common logic should be applied to reach a particular classification. These procedures give the buyer an opportunity to seek a classification that matches the predictions the buyer made. This analysis therefore implies the ongoing classification process must have two further characteristics: the existence of an open process—open to the evidence and arguments of the buyer; and a public reasoning process—so that both buyers can incorporate into their predictive materials any new information that emerges from the process of resolving ambiguity.

In summary, our model implies that the classification institution cannot devise *ex ante* a complete set of laws, including contingencies and exceptions. Incomplete information and the inability to specify all the relevant contingencies mean that the process must be designed to solicit and absorb information from those who have a stake in the system, producing new rules as new information and circumstances arise. In this sense, the model closely tracks Fuller's idea of law respecting the dignity and "active intelligence" (Waldron 2011) of participants in the legal system and Hayek's (1960) "adaptive efficiency."

We noted above that the legal attributes promote the capacity for a buyer contemplating a boycott to make reasonably reliable predictions about how future circumstances will be classified. We emphasize now that whereas clearly there is some scope for uncertainty in a legal order, it cannot be large. This is not a consequence of any assumptions about risk aversion on the part of the buyer. Rather, it is a product of the requirement of common knowledge. It is insufficient for the buyer to predict classifications. The buyer also has to have confidence that the other buyer and the seller (who must know the actions deemed as breach before making choices) make the same predictions, and that they each expect the buyer to make these predictions, and so on. The degree of noise that the system can accommodate is thus much smaller than that based only on an individual agent's tolerance for uncertainty.

Our approach, we suggest, provides the microfoundations of legal order. It addresses many of the questions raised in the existing literature and reflects many of the insights of that literature. It studies the legal attributes that distinguish legal order from other normative social orders while dealing explicitly with the behavioral mechanisms at work in a wide variety of social settings. It creates a central place for an often-overlooked factor in standard analysis, namely common-knowledge belief systems. Lack of attention to this important factor in securing legal order, we believe, accounts for much of the misplaced confidence in the idea that simply creating a set of laws and establishing public enforcement institutions can induce legal order. It is insufficient to establish the formal institutions of law and a legal code. The code must also satisfy the incentive-compatibility constraint, and this requires common knowledge. We provide a way of analyzing

the role of common-knowledge belief systems, however, without falling back on vague claims about culture or the need to educate people to hold different beliefs. Like many in the existing literature, we believe law fundamentally coordinates behavior and beliefs; but we go more deeply by identifying a critical role for incentive compatibility.

Finally, by denying the equation of law with government or an official enforcement apparatus, we create a framework in which the impact of changing the nature of enforcement can be evaluated. An important implication of our framework is that the nature and efficacy of enforcement can depend on the size and scope of the community of people who perceive themselves as benefitting from a particular legal order, and on the potential for individuals to observe and punish violations. An enforcement mechanism might become more stable and effective if the scope of the community and relevant behaviors is expanded. We see this idea, for example, in Acemoglu & Robinson's (2012) analysis of the role of the Glorious Revolution in securing a more stable legal order by protecting the interests of a wide array of groups. Our framework is also consistent with Weingast's (1997) analysis of the need for a constitution to secure the interests of the groups necessary for effective retaliation against a transgressing rule.

A framework that allows us to assess the impact of changing enforcement mechanisms also allows us to evaluate the critical question of what happens when government enforcement is introduced. This approach has theoretical benefits, but it also has practical merit: We suspect that a major reason rule-of-law projects have failed is that they have not paid close attention to the fact that all societies have preexisting normative social orders and many have preexisting legal orders in place. The project of rule of law, then, is not to introduce law but to modify the operation of existing normative social orders—by expanding the scope of a relevant community or behaviors or changing the classification institution. Moreover, this is not just a matter of building institutions; it requires the achievement of a shift in common-knowledge systems of beliefs.

CONCLUSIONS

We have criticized the political science and economics literatures on law for either taking law for granted, assuming that law rests exclusively on government enforcement, or, when expressly focusing on legal institutions, failing to provide an account of what is distinctive about law as a system of rule-based governance. We made the converse critique of the legal philosophy literature. Theorists here provide the valuable understanding of the distinctive attributes of governance through law, the attributes that set law apart from other normative systems that generate order, but we bemoan their invocation of questionable or casual behavioral assumptions about how individuals and institutions operate and hence their causal inferences. We also critiqued cultural theories for the absence of microanalytic accounts of the ways in which systems of law depend on, interact with, or are indistinguishable from culture—systems of beliefs and norms—more generally. And we raised several problems with the applied world of rule-of-law assistance, including its tendency to use the concept as a cover for projects to achieve particular political goals or establish specific institutions.

None of these approaches provides the microfoundations of the rule of law necessary to understand how it emerges and why some countries sustain it but others do not. Our approach does not resolve these questions, but it takes an important step toward these microfoundations. We take our cue from existing models of law as the solution to a coordination problem (e.g., Weingast 1997, McAdams 2000, Myerson 2004). These models fail, however, to explain the distinctive features of law and are compatible with a variety of non-rule-of-law mechanisms, such as a consistent dictatorship.

The model reveals a set of conditions necessary for different agents to effectively coordinate decentralized collective punishment—the only means of achieving legal order in the absence of

effective government—under the auspices of a common classification institution. These conditions include the following: First, the classification system must make those who are essential to effective decentralized punishment better off than the alternatives. Hence, the substantive content of law must fit local circumstances and take into account individual values and alternatives to legal order. Second, the classification institution must be characterized structurally by legal attributes. This follows because the legal attributes allow participants to achieve confidence that their costly participation in punishment efforts will pay off for them by sustaining a stable equilibrium with legal order that makes them better off than alternatives. Legal attributes support common knowledge, coordination, and incentive compatibility—all of which are necessary to achieve a stable equilibrium characterized by legal order.

Our review emphasizes that each approach in the literature captures an important aspect of law. The challenge is to put the pieces together to build a solid microfoundational account that supports much more productive efforts to understand how law has been and can be built in environments that lack it. Our approach makes the critical shift in the focus from institutions, beliefs, and behaviors per se to the critical question of how these elements interact to produce an equilibrium that is characterized by legal order, meaning that behavior is channeled by legal institutions into desired patterns.

We also recognize that our work provides only a framework for the next set of questions. Our model does not assume the existence of government. This starting point allows us to isolate a critical role for the participation of ordinary individuals in securing legal order—in a way that does not involve the vague appeals to culture or respect for rule of law that we find in the existing literature. This exercise also demonstrates that legal order can exist independent of a government, as the cases of medieval Iceland and the California gold rush demonstrate. These cases meet the conditions of our definition of legal order.

Clearly we need more developed models to study government enforcement of legal rules. We believe, however, that it is critical not to simply substitute centralized for decentralized enforcement but rather to explore how the introduction of government coercion modifies and complements decentralized enforcement efforts. As we have noted in our earlier papers, we believe that a legal order cannot be stabilized by centralized government coercion alone; robust legal orders depend on widespread support in the form of social sanctions and routine voluntary compliance. Indeed, our model shows that the normatively attractive features of the rule of law—generality, stability, impersonal application, publicity—are attributes needed to support decentralized enforcement efforts. A centralized government authority that truly can enforce whatever content is poured into the law could, on this account, dispense with these attributes. This account suggests that efforts to build the rule of law need to pay more attention to the role of legal institutions in coordinating and incentivizing the participation of ordinary citizens in social enforcement efforts.

Our results also show that sustaining a formal legal order may not be possible in every setting, and investigation of this possibility is another direction for future research. No incentive-compatible common logic may exist if, for example, the agents' idiosyncratic logics are sufficiently diverse; the classification institution is erratic, either due to noise or to the failure to implement the legal attributes, e.g., due to bribing or the expectation of bribing; or transactions are sufficiently complex that legal authorities find it difficult to accurately and consistently classify them. Similarly, attempting to implement a seemingly well-designed rule-of-law system may fail because the uniqueness-of-authority condition may fail. If people are uncertain about whether others will follow the new system or hold to the old system of norms, then the incentive-compatibility condition fails.

Another line of future inquiry also begins with this observation, that efforts to build the rule of law do not start with a blank slate. Rather these efforts attempt to introduce new rules, practices,

and institutions into settings with well-established normative social orders. In one sense this is a good thing—some enforcement mechanisms capable of bringing conduct into line with desired behavior are already in place.

Nonetheless, our approach shows that existing normative social orders pose a big challenge for introducing the rule of law. In our terms, this form of order means that a coordination equilibrium already exists, albeit one that provides fewer aggregate benefits than a rule-of-law coordination equilibrium. Introducing the rule of law into an existing society therefore requires the transition from one coordination equilibrium to another. To the extent the existing system provides some benefits, people may resist changing, especially if they are uncertain about either the behavior of others or whether the new system will work as promised. This uncertainty reduces the benefits of behaving according to the new rules and therefore reduces the likelihood that the transition to the new rule of coordination equilibrium will succeed. The great question, then, is how the mechanisms we have identified can be recruited to support alternative sources of norms and thus establish legal order.

DISCLOSURE STATEMENT

The authors are not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this review.

ACKNOWLEDGMENTS

The authors thank Gary Cox, Margaret Levi, and Wayne Sandholtz for helpful comments.

LITERATURE CITED

- Abbott KW, Snidal D. 2000. Hard and soft law in international governance. *Int. Organ.* 54(3):421–56
- Acemoglu D, Robinson J. 2012. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown
- Aristotle. 1984. *The Politics*, transl. C Lord. Chicago: Univ. Chicago Press
- Baker G, Gibbons R, Murphy K. 2002. Relational contracts and the theory of the firm. *Q. J. Econ.* 117:39–83
- Basu K. 2000. *Prelude to Political Economy: A Study of the Social and Political Foundations of Economics*. New York: Oxford Univ. Press
- Becker G, Stigler G. 1974. Law enforcement, malfeasance, and compensation of enforcers. *J. Leg. Stud.* 3(1):1–18
- Berkowitz D, Pistor K, Richard J-F. 2003. The transplant effect. *Am. J. Comp. Law* 51:163–203
- Bohannan P. 1965. The differing realms of law. *Am. Anthropol.* 67:33–42
- Bolton J. 2000. Is there really “law” in international affairs? *Transnatl. Law Contemp. Probl.* 10(1):1–48
- Botero JC, Ponce A. 2010. *Measuring the rule of law*. World Justice Proj. Work. Pap. Ser., WPS No. 001, World Justice Proj.
- Bowles S, Gintis H. 2004. Strong reciprocity. *Theor. Popul. Biol.* 65:17–28
- Boyd R, Gintis H, Bowles S. 2010. Coordinated punishment of defectors sustains cooperation and can proliferate when rare. *Science* 328:617–20
- Boyd R, Gintis H, Bowles S, Richerson P. 2003. The evolution of altruistic punishment. *Proc. Natl. Acad. Sci. USA* 100(6):3531–35
- Braithwaite J, Drahos P. 2000. *Global Business Regulation*. Cambridge, UK: Cambridge Univ. Press
- Brooks R. 2003. The new imperialism: violence, norms, and the “rule of law.” *Mich. L. Rev.* 1010(7):2275–340
- Calvert R. 1995. Rational actors, equilibrium, and social institutions. In *Explaining Social Institutions*, ed. J Knight, I Sened, pp. 57–93. Ann Arbor, MI: Univ. Mich. Press
- Cao L. 2007. Culture change. *Va. J. Int. Law* 47:357–412

- Camerer C. 2003. *Behavioral Game Theory*. Princeton, NJ: Princeton Univ. Press
- Carothers T. 2006. *Promoting the Rule of Law Abroad: In Search of Knowledge*. Washington, DC: Carnegie Endow. Int. Peace
- Chayes A, Chayes AH. 1998. *The New Sovereignty: Compliance with International Regulatory Agreements*. Cambridge, MA: Harvard Univ. Press
- Chwe M. 2001. *Rational Ritual: Culture, Coordination, and Common Knowledge*. Princeton, NJ: Princeton Univ. Press
- Coase R. 1937. The nature of the firm. *Economica* 4:386–405
- Cooter R. 1998. Expressive law and economics. *J. Leg. Stud.* 27:585–608
- D’Amato A. 1985. Is international law really “law”? *Northwest. Univ. Law Rev.* 79(5–6):1293–314
- Dixit A. 2004. *Lawlessness and Economics: Alternative Modes of Governance*. Princeton, NJ: Princeton Univ. Press
- Dworkin R. 1978. *Taking Rights Seriously*. Cambridge, MA: Harvard Univ. Press
- Dworkin R. 1986. *Law’s Empire*. Cambridge, MA: Belknap
- Easterly W. 2006. *The White Man’s Burden: Why the West’s Efforts to Aid the Rest Have Done So Much Ill and So Little Good*. New York: Penguin
- Ellickson R. 1991. *Order Without Law: How Neighbors Settle Disputes*. Cambridge, MA: Harvard Univ. Press
- Epstein L, Knight J. 1998. *The Choices Justices Make*. Washington, DC: CQ
- Fehr E, Fischbacher U. 2004. Social norms and human cooperation. *Trends Cogn. Sci.* 8(4):185–90
- Fehr E, Gächter S. 2002. Altruistic punishment in humans. *Nature* 415:137–40
- Fehr E, Schmidt K. 2006. The economics of fairness, reciprocity and altruism: experimental evidence and new theories. In *Handbook of the Economics of Giving, Altruism and Reciprocity: Foundations*, ed. S Kolm, J Ythier, pp. 615–94. Amsterdam, Neth.: Elsevier
- Finnemore M, Sikkink K. 1998. International norm dynamics and political change. *Int. Organ.* 52(4):887–917
- Finnemore M, Toope S. 2001. Alternatives to “Legalization”: richer views of law and politics. *Int. Organ.* 55(3):743–58
- Finnis J. 1989. Law as co-ordination. *Ratio Juris* 2:97–104
- Fleischacker S. 2004. *On Adam Smith’s Wealth of Nations: A Philosophical Companion*. Princeton, NJ: Princeton Univ. Press
- Franck TM. 1995. *Fairness in International Law and Institutions*. Oxford, UK: Clarendon
- Friedman B. 2006. Taking law seriously. *Perspect. Polit.* 4:261–76
- Fuller L. 1964. *The Morality of Law*. New Haven, CT: Yale Univ. Press
- Gennaioli N, Shleifer A. 2007. The evolution of common law. *J. Polit. Econ.* 115:43–68
- Gezelius S. 2002. Do norms count? State regulation and compliance in a Norwegian fishing community. *Acta Soc.* 45:305–14
- Goldsmith J, Posner E. 2005. *The Limits of International Law*. Oxford, UK: Oxford Univ. Press
- Granovetter M. 1992. Economic institutions as social constructions: a framework for analysis. *Acta Soc.* 35(1):3–11
- Greif A. 1989. Reputation and coalitions in medieval trade: evidence on the Maghribi traders. *J. Econ. Hist.* 49:857–82
- Greif A. 1993. Contract enforceability and economic institutions in early trade: the Maghribi traders’ coalition. *Am. Econ. Rev.* 83:525–48
- Greif A. 1994. On the political foundations of the late medieval commercial revolution: Genoa during the twelfth and thirteenth centuries. *J. Econ. Hist.* 54(2):271–87
- Greif A. 2006. *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade*. Cambridge, UK: Cambridge Univ. Press
- Greif A, Milgrom P, Weingast B. 1994. Coordination, commitment, and enforcement: the case of the merchant guild. *J. Polit. Econ.* 102:745–76
- Guzman A. 2008. *How International Law Works: A Rational Choice Theory*. Oxford, UK: Oxford Univ. Press
- Haas PM. 1989. Do regimes matter? Epistemic communities and Mediterranean pollution control. *Int. Organ.* 42(3):377–403
- Hadfield GK. 2008. The levers of legal design: institutional determinants of the quality of law. *J. Comp. Econ.* 36:43–73

- Hadfield GK, Weingast BR. 2012. What is law? A coordination model of the characteristics of legal order. *J. Leg. Anal.* 4(2):471–514
- Hadfield G, Weingast BR. 2014. Constitutions as coordinating devices. In *Institutions, Property Rights, and Economic Growth: The Legacy of Douglass North*, ed. S Galiani, I Sened. Cambridge, UK: Cambridge Univ. Press
- Hadfield G, Weingast BR. 2013. Law without the state: legal attributes and the coordination of decentralized collective punishment. *J. Law Courts* 1(1):3–34
- Haggard S, MacIntyre A, Tiede L. 2008. The rule of law and economic development. *Annu. Rev. Polit. Sci.* 11:205–34
- Hart HLA. 1961 (2012). *The Concept of Law*. Oxford, UK: Oxford Univ. Press. 3rd ed.
- Hathaway O, Shapiro S. 2011. Outcasting: enforcement in domestic and international law. *Yale Law J.* 121(2):252–349
- Hayek F. 1944 (2007). *The Road to Serfdom*. Chicago: Univ. Chicago Press
- Hayek F. 1960. *The Constitution of Liberty*. Chicago: Univ. Chicago Press
- Henrich J, Boyd R, Bowles S, Camerer C, Fehr E, Gintis H. 2004. *Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*. Oxford, UK: Oxford Univ. Press
- Henrich J, McElreath R, Barr A, Ensminger J, Barrett C, et al. 2006. Costly punishment across human societies. *Science* 312:1767–70
- Hoebel E. 1954 (2006). *The Law of Primitive Man: A Study in Comparative Legal Dynamics*. Cambridge, MA: Harvard Univ. Press. 2nd ed.
- Kelsen H. 1941. The pure theory of law and analytical jurisprudence. *Harvard Law Rev.* 55(1):44–70
- Keohane R. 1986. Reciprocity in international relations. *Int. Organ.* 40(1):1–27
- Keohane R. 1997. International relations and international law: two optics. *Harvard Int. Law Rev.* 38(2):487–502
- Klein B. 1996. Why hold-ups occur: the self-enforcing range of contractual relations. *Econ. Inq.* 34(3):444–63
- Kleinfeld R. 2006. Competing definitions of the rule of law. In *Promoting the Rule of Law Abroad: In Search of Knowledge*, ed. T Carothers, pp. 31–74. Washington, DC: Carnegie Endow. Int. Peace
- Koh HH. 1997. Why do nations obey international law? *Yale Law J.* 106(8):2599–659
- La Porta R, Lopez-de-Silanes F, Shleifer A. 2008. The economic consequences of legal origins. *J. Econ. Lit.* 46(2):285–332
- La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny J. 1997. Legal determinants of external finance. *J. Financ.* 52:1131–50
- La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny J. 1998. Law and finance. *J. Polit. Econ.* 106:1113–55
- Lax J. 2012. The new judicial politics of legal doctrine. *Annu. Rev. Polit. Sci.* 14:131–57
- Levi M. 1997. *Consent, Dissent, and Patriotism*. New York: Cambridge Univ. Press
- Levi M, Sacks A. 2009. Legitimizing beliefs: concepts and measures. *Regul. Gov.* 3:311–33
- Levin J. 2003. Relational incentive contracts. *Am. Econ. Rev.* 93(3):835–57
- Locke J. 1690 (1980). *Second Treatise on Government*. Indianapolis, IN: Hackett
- MacLeod W, Malcomson J. 1988. Reputation and hierarchy in dynamic models of employment. *J. Polit. Econ.* 96(4):832–54
- MacLeod W, Malcomson J. 1989. Implicit contracts, incentive compatibility, and involuntary unemployment. *Econometrica* 57(2):447–80
- Malinowski B. 1926 (2013). *Crime and Custom in Savage Society*. New Brunswick, NJ: Transaction
- McAdams R. 2000. A focal point theory of expressive law. *Va. Law Rev.* 86:1649–729
- McCubbins M, Rodriguez D. 2006. The judiciary and the role of law. In *Handbook of Political Economy*, ed. B Weingast, D Wittman. New York: Oxford Univ. Press
- McCubbins M, Rodriguez D, Weingast B. 2010. The rule of law unplugged. *Emory Law J.* 59(6):1455–94
- McNollgast. 2007. The political economy of law. See Polinsky & Shavel 2007, pp. 1651–1738
- Milgrom P, North D, Weingast B. 1990. The role of institutions in the revival of trade: the medieval law merchant, private judges, and the Champagne fairs. *Econ. Polit.* 2:1–23
- Moore S. 1978. *Law as Process: An Anthropological Approach*. Oxford, UK: James Currey. 2nd ed.
- Myerson R. 2004. Justice, institutions, and multiple equilibria. *Chicago J. Int. Law* 5:91–107

- North D. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge, UK: Cambridge Univ. Press
- North D, Weingast B. 1989. Constitutions and commitment: the evolution of institutions governing public choice in seventeenth-century England. *J. Econ. Hist.* 49(4):803–32
- Ordeshook P. 1992. Constitutional stability. *Const. Polit. Econ.* 3(2):137–75
- Ostrom E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, UK: Cambridge Univ. Press
- Paternoster R, Simpson S. 1996. Sanction threat and appeals to morality: testing a rational choice model of corporate crime. *Law Soc. Rev.* 30:549–83
- Polinsky M, Shavell S. 2007. *Handbook of Law and Economics*. Amsterdam, Neth.: Elsevier
- Pospil L. 1958. *Kapauku Papuans and Their Law*. New Haven, CT: Yale Univ. Press
- Postema G. 1982. Coordination and convention at the foundation of law. *J. Leg. Stud.* 11:165–203
- Przeworski A. 1991. *Democracy and the Market*. New York: Cambridge Univ. Press
- Raustiala K, Slaughter A-M. 2002. International law, international relations and compliance. In *Handbook of International Relations*, ed. W Carlsnaes, T Risse, BA Simmons. London, UK: Sage
- Raz J. 2009. *The Authority of Law: Essays on Law and Morality*. Oxford, UK: Oxford Univ. Press. 2nd ed.
- Rodrik D. 2007. *One Economics, Many Recipes: Globalization, Institutions, and Economic Growth*. Princeton, NJ: Princeton Univ. Press
- Ryo E. 2006. Through the back door: applying theories of legal compliance to illegal immigration during the Chinese exclusion era. *Law Soc. Inq.* 31:109–46
- Ryo E. 2013. Deciding to cross: norms and economics of unauthorized migration. *Am. Soc. Rev.* 78(4):574–603
- Slaughter A-M. 2004. *A New World Order*. Princeton, NJ: Princeton Univ. Press
- Smulovitz C. 2003. How can the rule of law? Cost imposition through decentralized mechanisms. In *Democracy and the Rule of Law*, ed. J Maravall, A Przeworski. Cambridge, UK: Cambridge Univ. Press
- Stromseth J, Wippman D, Brooks R. 2006. *Can Might Make Rights?: Building the Rule of Law After Military Interventions*. Cambridge, UK: Cambridge Univ. Press
- Sugden R. 1986 (2005). *The Economics of Rights, Cooperation and Welfare*. New York: Palgrave Macmillan. 2nd ed.
- Tamanaha B. 2011. The primacy of society and the failures of law and development. *Cornell Int. Law J.* 44:209–47
- Telser L. 1980. A theory of self-enforcing agreements. *J. Bus.* 53(1):27–44
- Tiller E, Cross F. 2006. What is legal doctrine? *Northwest. Univ. Law Rev.* 100(1):517–34
- Trebilcock M, Daniels R. 2008. *Rule of Law Reform and Development: Charting the Fragile Path of Progress*. Northampton, MA: Edward Elgar
- Tyler T. 1990. *Why People Obey the Law: Procedural Justice, Legitimacy and Compliance*. New Haven, CT: Yale Univ. Press
- Tyler T, Huo Y. 2002. *Trust in the Law: Encouraging Public Cooperation with the Police and Courts*. New York: Russell Sage
- U. N. Comm. Leg. Empower. Poor. 2008. *Making the Law Work for Everyone, Vol. 1: Report of the Commission on Legal Empowerment of the Poor*. New York: United Nations
- Waldron J. 2008. The concept and the rule of law. *Ga. Law Rev.* 43:1–61
- Waldron J. 2011. The rule of law and the importance of procedure. In *Getting to the Rule of Law (NOMOS)*, ed. JE Fleming, pp. 3–31. New York: NYU Press
- Weber M. 1947 (1964). *The Theory of Social and Economic Organization*. New York: Free
- Weber M. 1956 (1978). *Economy and Society*, Vol. 2, transl. G Roth, C Wittch. Berkeley: Univ. Calif. Press
- Weingast B. 1995. The economic role of political institutions: market-preserving federalism and economic development. *J. Law Econ. Organ.* 11:1–31
- Weingast B. 1997. The political foundations of democracy and the rule of law. *Am. Polit. Sci. Rev.* 91(2):245–63
- Williamson O. 1985. *The Economic Institutions of Capitalism*. New York: Free
- World Bank. 2003. *Legal and Judicial Reform: Strategic Directions*. Washington, DC: World Bank
- Xu G. 2011. The role of law in economic growth: a literature review. *J. Econ. Surv.* 25(5):833–71



Contents

Agent-Based Models <i>Scott de Marchi and Scott E. Page</i>	1
Microfoundations of the Rule of Law <i>Gillian K. Hadfield and Barry R. Weingast</i>	21
Immigration into Europe: Economic Discrimination, Violence, and Public Policy <i>Rafaela M. Dancygier and David D. Laitin</i>	43
Does Transparency Improve Governance? <i>Stephen Kosack and Archon Fung</i>	65
Why We Kill: The Political Science of Political Violence against Civilians <i>Benjamin A. Valentino</i>	89
State and Local Government Finance: The New Fiscal Ice Age <i>D. Roderick Kiewiet and Mathew D. McCubbins</i>	105
Improving Governance from the Outside In <i>Stephen D. Krasner and Jeremy M. Weinstein</i>	123
Military Rule <i>Barbara Geddes, Erica Frantz, and Joseph G. Wright</i>	147
Advancing the Empirical Research on Lobbying <i>John M. de Figueiredo and Brian Kelleher Richter</i>	163
Is There an Islamist Political Advantage? <i>Melani Cammett and Pauline Jones Luong</i>	187
Measuring Policy Positions in Political Space <i>Michael Laver</i>	207
Public Attitudes Toward Immigration <i>Jens Hainmueller and Daniel J. Hopkins</i>	225
Inequality and Institutions: The Case of Economic Coordination <i>Pablo Beramendi and David Rueda</i>	251

Tribal-State Relations in the Anglosphere <i>Laura E. Evans</i>	273
Reading, Writing, and the Regrettable Status of Education Research in Comparative Politics <i>Thomas Gift and Erik Wibbels</i>	291
Democratic Authoritarianism: Origins and Effects <i>Dawn Brancati</i>	313
When and Why Minority Legislators Matter <i>John D. Griffin</i>	327
State Transformations in OECD Countries <i>Philipp Genschel and Bernhard Zangl</i>	337
Field Experimental Work on Political Institutions <i>Christian R. Grose</i>	355
Reputation and Status as Motives for War <i>Allan Dafoe, Jonathan Renshon, and Paul Huth</i>	371
The Political Economy of Development in China and Vietnam <i>Edmund Malesky and Jonathan London</i>	395
Context, Electoral Rules, and Party Systems <i>Karen E. Ferree, G. Bingham Powell, and Ethan Scheiner</i>	421
Boundaries of American Identity: Evolving Understandings of “Us” <i>Deborah J. Schildkraut</i>	441
Institutional Dynamics and American Political Development <i>Adam Sheingate</i>	461
Political Effects of International Migration <i>Devesh Kapur</i>	479

Indexes

Cumulative Index of Contributing Authors, Volumes 13–17	503
Cumulative Index of Article Titles, Volumes 13–17	505

Errata

An online log of corrections to *Annual Review of Political Science* articles may be found at <http://www.annualreviews.org/errata/polisci>



ANNUAL REVIEWS

It's about time. Your time. It's time well spent.

New From Annual Reviews:

Annual Review of Statistics and Its Application

Volume 1 • Online January 2014 • <http://statistics.annualreviews.org>

Editor: **Stephen E. Fienberg**, *Carnegie Mellon University*

Associate Editors: **Nancy Reid**, *University of Toronto*

Stephen M. Stigler, *University of Chicago*

The *Annual Review of Statistics and Its Application* aims to inform statisticians and quantitative methodologists, as well as all scientists and users of statistics about major methodological advances and the computational tools that allow for their implementation. It will include developments in the field of statistics, including theoretical statistical underpinnings of new methodology, as well as developments in specific application domains such as biostatistics and bioinformatics, economics, machine learning, psychology, sociology, and aspects of the physical sciences.

Complimentary online access to the first volume will be available until January 2015.

TABLE OF CONTENTS:

- *What Is Statistics?* Stephen E. Fienberg
- *A Systematic Statistical Approach to Evaluating Evidence from Observational Studies*, David Madigan, Paul E. Stang, Jesse A. Berlin, Martijn Schuemie, J. Marc Overhage, Marc A. Suchard, Bill Dumouchel, Abraham G. Hartzema, Patrick B. Ryan
- *The Role of Statistics in the Discovery of a Higgs Boson*, David A. van Dyk
- *Brain Imaging Analysis*, F. DuBois Bowman
- *Statistics and Climate*, Peter Guttorp
- *Climate Simulators and Climate Projections*, Jonathan Rougier, Michael Goldstein
- *Probabilistic Forecasting*, Tilmann Gneiting, Matthias Katzfuss
- *Bayesian Computational Tools*, Christian P. Robert
- *Bayesian Computation Via Markov Chain Monte Carlo*, Radu V. Craiu, Jeffrey S. Rosenthal
- *Build, Compute, Critique, Repeat: Data Analysis with Latent Variable Models*, David M. Blei
- *Structured Regularizers for High-Dimensional Problems: Statistical and Computational Issues*, Martin J. Wainwright
- *High-Dimensional Statistics with a View Toward Applications in Biology*, Peter Bühlmann, Markus Kalisch, Lukas Meier
- *Next-Generation Statistical Genetics: Modeling, Penalization, and Optimization in High-Dimensional Data*, Kenneth Lange, Jeanette C. Papp, Janet S. Sinsheimer, Eric M. Sobel
- *Breaking Bad: Two Decades of Life-Course Data Analysis in Criminology, Developmental Psychology, and Beyond*, Elena A. Erosheva, Ross L. Matsueda, Donatello Telesca
- *Event History Analysis*, Niels Keiding
- *Statistical Evaluation of Forensic DNA Profile Evidence*, Christopher D. Steele, David J. Balding
- *Using League Table Rankings in Public Policy Formation: Statistical Issues*, Harvey Goldstein
- *Statistical Ecology*, Ruth King
- *Estimating the Number of Species in Microbial Diversity Studies*, John Bunge, Amy Willis, Fiona Walsh
- *Dynamic Treatment Regimes*, Bibhas Chakraborty, Susan A. Murphy
- *Statistics and Related Topics in Single-Molecule Biophysics*, Hong Qian, S.C. Kou
- *Statistics and Quantitative Risk Management for Banking and Insurance*, Paul Embrechts, Marius Hofert

Access this and all other Annual Reviews journals via your institution at www.annualreviews.org.

ANNUAL REVIEWS | Connect With Our Experts

Tel: 800.523.8635 (US/CAN) | Tel: 650.493.4400 | Fax: 650.424.0910 | Email: service@annualreviews.org

