Systems Approach to Law

Lynn M. LoPucki
THE SYSTEMS APPROACH TO LAW

Lynn M. LoPucki†

INTRODUCTION .................................................. 480

I. WHAT IS SYSTEMS ANALYSIS? .............................. 482

II. LAW-RELATED SYSTEMS ................................... 488

III. SYSTEMS ANALYSIS AS METHODOLOGY ............ 497
   A. Step One: Identify the System To Be Analyzed ...... 497
   B. Step Two: Attribute Goals to the System .......... 502
   C. Step Three: Determine the Structure and Function of the System ...................................... 503
   D. Step Four: Describe or Depict the Relationships Among System Components .................. 505
   E. Step Five: Identify Inconsistencies Between Goals and Functions .................................... 506

IV. CURRENT APPLICATION OF SYSTEMS ANALYSIS IN THE COURTS ........................................ 509

V. SOME EXAMPLES OF SYSTEMS PROJECTS .................. 512
   A. Formulating Proposals for Reform: The Controversy over Place of Filing ...................... 512
   B. Replacing Legal Systems with Physical Systems: The Case of Payment Systems ............. 513
   C. Comparing Legal Systems: The Case of United States and Canadian Bankruptcy Reorganization . 514
   D. Evaluating the Work of the Supreme Court .... 516

CONCLUSION ...................................................... 521

† A. Robert Noll Professor of Law, Cornell Law School. I benefitted greatly from comments received in a Cornell Law School Faculty Workshop. I thank David Binder, Frances Foster, Mark Grady, Kathryn Heidt, Jim Henderson, Dan Keating, Ronald Mann, Curtis Milhaupt, Rick Sander, Gary Schwartz, George Triantis, Elizabeth Warren, and Walter Weyrauch for comments on earlier drafts. 479
CORNELL LAW REVIEW

Legal scholarship has moved toward substitution of the world of concepts for the actual world in which the justice function must be performed. Intellectual models are created and manipulated in exquisite detail. Often, however, little interest is displayed in demonstrating that the model assumed bears any relation to social and political reality.¹

INTRODUCTION

The principal functions of legal scholarship are to describe institutions, to explain their existence, and to recommend changes.² The first of these, sometimes referred to disparagingly as "mere" description, is in disrepute.³ As a consequence, the other two—the analytical functions—tend to dominate.

The analytical functions usually involve the application of some method to a substantive area of law or to a particular problem. Typically, the method limits the researcher's attention to a few aspects of reality and requires the researcher to represent them abstractly. The economist, for example, works in a world of organizations and exchanges. To the game theorist, the universe consists of players, choices, and payoffs. The sociologist sees only social groups and the norms they generate. To the linguist or discourse analyst, there are only texts, meanings, and interpretations.

Restricting one's attention to particular aspects of reality reduces complexity, making it possible to solve problems that otherwise would boggle the mind. The disadvantage in restricting one's attention, however, is that it often screens out important aspects and leads the analyst to the wrong conclusion.

Seldom are legal scholars' abstractions sufficiently well defined that they can be operationalized⁴ and the assertions made about them tested empirically. One must accept (or reject) on faith that people are utility maximizers, that texts have meaning, or that people would

¹ Francis A. Allen, The Dolphin and the Peasant: Ill-Tempered, but Brief, Comments on Legal Scholarship, Nw. Rep., Spring 1990, at 8, 11.
² See, e.g., Edward L. Rubin, The New Legal Process, the Synthesis of Discourse, and the Microanalysis of Institutions, 109 Harv. L. Rev. 1393, 1435 (1996) (noting that "[m]ost legal scholarship consists of prescriptions or recommendations to public decisionmakers" and arguing that "prescriptive discourse is what distinguishes legal scholarship and requires it to deploy a methodology distinct from those of other disciplines").
³ But see Robert W. Gordon, Lawyers, Scholars, and the "Middle Ground," 91 Mich. L. Rev. 2075, 2087 (1993) ("Sometimes I think I would happily trade a whole year's worth of the doctrinal output turned out regularly by smart law review editors and law teachers for a single solid piece describing how some court, agency, enforcement process, or legal transaction actually works.").
⁴ Among social scientists, a concept is said to be operationalized when it is expressed in objectively verifiable terms. Lynn M. LoPucki, Legal Culture, Legal Strategy, and the Law in Lawyers' Heads, 90 Nw. U. L. Rev. 1498, 1503 n. 22 (1996) (citing definitions and examples).
make particular choices behind a veil of ignorance. One effect of the screening out of complexity is to protect the scholar from contradiction by facts. Another is to render much of modern legal scholarship highly stylized and largely divorced from reality.

"Systems analysis" is a methodology developed in the fields of engineering, business information systems, and computer programming specifically to manage complexity. Instead of screening complexity out, the systems analyst attempts to accommodate as much complexity as possible. A comprehensive description of the system's functioning is a precondition to the analysis. Abstraction is employed sparingly, and, in the kind of systems analysis that is advocated in this Article, every concept is operationalized, so that every proposition can be tested empirically.

Systems analysis proceeds by identifying systems, discovering their goals or attributing goals to them, mapping their subsystems and the functions each performs, determining their internal structures, depicting them with attention paid to efficiency of presentation, and searching for internal inconsistencies. These methods generate analytical power by increasing the number of goals, elements, and circumstances that the analyst can take into account simultaneously. These methods also provide a language by which to express the kinds of relationships that are commonly encountered.

This Article describes the methods of systems analysis and how they are being applied in the field of law. Part I describes these

---


6 See, e.g., Laszlo, supra note 5, at 10-11 (proposing "systems concepts" as a "general metalanguage of scientific discourse" and giving examples of useful terms). Among the terms in common use are "wholeness," "feedback," "steady and stationary states," and "entropy," id. at 19, as well as "homeostasis" and "equifinality," id. at 11.

methods as they are traditionally applied in computer programming, business information systems, and a few related fields. Part I also distinguishes systems analysis from related methods. Part II describes the shift in perspective from law as a conceptual system to law as an element of concrete, empirically-verifiable "law-related" systems. Part III provides a step-by-step account of how one identifies and then analyzes a law-related system. Part IV compares this new legal methodology to the weaker version that judges and legal scholars have long employed. Part V illustrates how legal scholars can apply systems analysis to law-related systems by describing four systems projects, three completed and one proposed. This Article concludes that systems analysis has the potential to put legal scholarship in touch with reality.

I

What Is Systems Analysis?

A "system" is "a regularly interacting or interdependent group of items forming a unified whole." The "items" might be the atoms that interact to form a molecule; the bones, organs, and tissues that constitute the human body; the sun and planets that together form the solar system; or the police, lawyers, judges, courts, prisons, and computer programs that together make up the "criminal justice system." To "analyze" a system is to break it down into its constituent parts, to de-


8 Webster's Ninth New Collegiate Dictionary 1199 (1991) [hereinafter Webster's Ninth]. A text on systems analysis and design defines a system as "a set of interrelated and interactive elements that work together to accomplish specific purposes." Gibson & Hughes, supra note 5, at 5. Notice that Gibson and Hughes have added the element of "purpose" to the dictionary definition.

9 See Laszlo, supra note 5, at 25-80 (linking physical, chemical, biological, ecological, sociological and political systems in a single "hierarchy" of systems composed of subsystems).
termine the nature and identity of its subsystems, and to explain the relationships among them.

The idea that a molecule and a judicial system have enough in common to make it profitable to study both using the same basic methodology may at first seem odd.\(^\text{10}\) In fact, the theory that links them—called "general systems theory"—is less than three decades old.\(^\text{11}\) "General systems theory" postulates that "systemness" is a characteristic of the organization of the universe; for reasons not yet unexplained, phenomena order themselves largely as discrete systems.\(^\text{12}\)

Readers should distinguish the systems analysis advocated here from systems theory, Parsonian functionalism, and related methods of policy analysis. Although currently out of vogue,\(^\text{13}\) systems theory has had, and continues to have, considerable success as a discipline. Systems theory is a set of principles\(^\text{14}\) arguably applicable to various kinds of systems, including physical, biological, and social systems.\(^\text{15}\) Systems theory provides the theoretical basis for "systems analysis" as an applied discipline and supplies many of the tools used in it. Systems theories are seldom, however, directly useful in analyzing particular law-related systems, so the discipline has limited applicability to law reform.\(^\text{16}\) At levels of broad generality, law-related systems probably

\(^{10}\) But see Ludwig Von Bertalanffy, Foreword to LASZLO, supra note 5, at xvii-xviii (describing general systems theory as "models and principles of an interdisciplinary nature, applying to generalized 'systems' or classes of systems independently of their realization as mechanical, electrical, biological, social (etc.) systems").

\(^{11}\) Ludwig von Bertalanffy is generally credited as the originator of general systems theory. LUDWIG VON BERTALANFFY, GENERAL SYSTEM THEORY (1968).

\(^{12}\) Laszlo refers to this concept as that of a "natural system," LASZLO, supra note 5, at 30-32, and states that "much of the universe available to our scrutiny can be conceptually 'mapped' as hierarchies, i.e., as a realm of systems-in-environments, constituting higher order systems which, within their particular environments, constitute systems of still more inclusive order," id. at 19.

\(^{13}\) Kenneth Bailey suggests that the disrepute of systems theory in some quarters resulted at least in part from its association with functionalism. KENNETH D. BAILEY, SOCIOLOGY AND THE NEW SYSTEMS THEORY at xiii (1994) ("Social systems theory is alive and well . . . . However, this contemporary variety is not characterized by the functionalism of the 1960s."). Probably its disrepute also results from so much of the work being carried on at a level of abstraction that renders it largely unintelligible. This is particularly true of continental systems theory. See, e.g., Niklas Luhmann, Law as a Social System, 83 Nw. U. L. Rev. 136 (1988).

\(^{14}\) Among the general system characteristics discovered are (1) autopoesis, the self-generating, self-regulating, and self-reproducing nature of systems; (2) the tendency for systems to become more structured, more capable and more vulnerable with age; (3) the tendency for systems to accumulate information over time; and (4) entropy, the tendency for systems to dissipate.

\(^{15}\) See LASZLO, supra note 5, at 55-117; VON BERTALANFFY, supra note 11, at xviii. The objective of systems theory is to discover principles applicable to all or many kinds of systems. See WEINBERG, supra note 5, at 35-38.

\(^{16}\) But see J.B. Ruhl, Complexity Theory as a Paradigm for the Dynamical Law-and-Society System: A Wake-Up Call for Legal Reductionism and the Modern Administrative State, 45 DUKE L.J.
do respond to general system principles, but at the level of specificity required for most legal reform, systems theory has little to offer.

"Policy analysis" is a method derived from systems analysis, which was used in the 1960s to analyze government programs. It is, however, a method for making policy—that is, selecting goals—rather than a method for analyzing systems. It seems to have failed as a method of policymaking because of the complexity involved in attempting to link an agency's budget expenditures to the agency's goals.

"Parsonian functionalism," in a broad sense, is the attempt to "explain[ ] . . . legal forms or practices by reference to social 'purposes' or 'interests.'" Although the same is true of systems analysis, Parsonian functionalism differs in at least two respects that explain its current disrepute. First, the purposes or interests examined using Parsonian functionalism are often highly abstract, ill-defined, "social forces" that are incapable of being operationalized and therefore

17 Systems theory has only rarely been applied to law. For examples of attempts to make these kinds of broad applications, see Luhmann, supra note 13, and Ruhl, supra note 16.

18 See, e.g., Aaron Wildavsky, Rescuing Policy Analysis from PPBS, 29 Pub. Admin. Rev. 189, 190 (1969) [hereinafter Wildavsky, Rescuing Policy] (describing policy analysis as "equivalent to . . . 'deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives'" and as "similar to a broadly conceived version of systems analysis"). See generally AARON WILDAVSKY, SPEAKING TRUTH TO POWER: THE ART AND CRAFT OF POLICY ANALYSIS (1979) (discussing and employing policy analysis).

19 See, e.g., Colin S. Diver, Policymaking Paradigms in Administrative Law, 95 Harv. L. Rev. 939 (1981) (describing "comprehensive rationality" and "incrementalism" as the two principal models of policy making by administrative agencies); Aaron Wildavsky, The Political Economy of Efficiency, 1967 Pub. Interest 30, 34 (describing systems analysis as "concerned with the building of models that abstract from reality but represent the crucial relationships one is interested in studying"); id. at 31-33 (distinguishing systems analysis from "cost benefit analysis"); id. at 38-41 (distinguishing systems analysis from "program budgeting").

20 See generally Wildavsky, Rescuing Policy, supra note 18 (explaining policy analysis).


22 See id. at 68 ("Social scientists who have heard previous versions of this piece wonder why I worry so much about evolutionism . . . and functionalism . . . ; these views have been so thoroughly discredited in modern social theory, they argue, as to be left almost without serious defenders."); see also Joan C. Williams, Culture and Certainty: Legal History and the Reconstructive Project, 76 Va. L. Rev. 718, 716 (1990) (agreeing with Gordon that "functionalism . . . [has] long since lost respectability in the social sciences"). But see John Stick, Charting the Development of Critical Legal Studies, 88 Colum. L. Rev. 407, 424 (1988) (book review) (stating that "[Gordon's argument] only cuts against shallow forms of functionalism which seek general historical laws and not particular explanations").

are not empirically verifiable. Second, rightly or wrongly, Parsonian functionalism has been tagged with the Panglossian notion that the law always finds its way to the correct result. Systems analysis incorporates no such assertion.

Systems analysis regards systems as goal-seeking. That is, systems analysis regards each system as having one or more purposes or functions. With biological systems, the idea seems intuitive. A rabbit, for example, is a system. Most observers would not be troubled by the notion of attributing to the rabbit the goals of finding food, surviving, and reproducing. But with physical systems—an atom, for example—the approach is counter-intuitive. An atom does not seem to have a goal, and its "function" seems to be attributed to it by people who themselves have goals. Nevertheless, many of the best metaphors for explaining scientific phenomena depend on anthropomorphism. Computers "search" for the right data, positive and negative electrical charges "attract" one another, and a mixture of chemicals "seeks" equilibrium.

Most legal scholars, judges, and legislators regard law-related systems as purposeful, and they do not hesitate to attribute to laws goals or purposes, even ones distinct from the goals that the legislators who enact them may have had in mind. For example, functionalism—

24 Gordon gives as a "comically vulgar" example, that "the evolution of the right of privacy was a response to the increasing complexity and interdependence of modern society." Gordon, supra note 21, at 64. The example appears to be an apocryphal, but nevertheless a fair characterization of the manner in which the method was applied. See also id. at 64-65 (presenting a list of additional examples).
25 See id. at 64.
26 See, e.g., C. West Churchman, The Systems Approach 11 (2d ed. 1979) ("Systems are made up of sets of components that work together for the overall objective of the whole. The systems approach is simply a way of thinking about these total systems and their components."); Gibson & Hughes, supra note 5, at 5 ("[A] system is a set of interrelated and interactive elements that work together to accomplish specific purposes."); Paul S. Licker, Fundamentals of Systems Analysis 5 (1987) ("A system is defined as a set of elements that are related and that, through this set of relationships, aim to accomplish goals.") (emphasis omitted).
27 See, e.g., Lon L. Fuller, The Morality of Law 146-51 (rev. ed. 1969) (arguing that it is meaningful to assign purposes to institutions, even though they do not have the capacity to form mental states).

Guido Calabresi agrees:

Law is a human construct desiged to accomplish certain goals. Often—perhaps most of the time—the goals are terribly complex and hard to analyze clearly, and one is properly suspicious of analysis and prescription that would discard time-honored legal terms because one cannot find immediate, clear policy justifications for them. Still, the object of law is to serve human needs, and thus legal terms . . . must sooner or later be linked to the service of human needs.

essentially the ascription of purposes to a legal system—continues to dominate modern tort scholarship.\textsuperscript{28}

The attribution of goals to systems is merely shorthand for one of two propositions. The first, employed in positive analyses, is definitional, holding that the goals of a system are the results that the system in fact produces. The second, employed in normative analyses, equates the goals with the results that the researcher believes desirable. One who wishes to do so can conduct systems analyses by specifying one of these propositions as a substitute for attributing goals to systems.\textsuperscript{29}

When regarding a social system as goal-seeking, it is important to distinguish the goals of the system from the goals of participants in the system. The participants may have a variety of conflicting goals. The prosecutor may seek to lock up as many people as possible for as long as possible. The crusading public defender may seek only to frustrate the prosecutor, or may even seek to "bring down the system." The parole officer may want nothing more from the system than to hang onto her job and minimize the number of hours she must work. The purpose of the system—to protect society and its members from criminal activity—may enter none of their minds.

Nor is the existence of a system designer, who had goals for the system in mind a prerequisite for the existence of a system. Systems theory holds that systems are "autopoietic"—self creating. Systems "shake into place" as their components and environment interact. Numerous changes—some intended and some not—contribute to the whole. Changes that are successful from the standpoint of the system

\textsuperscript{28} For example, Calabresi sees law as "a human construct designed to accomplish certain goals" and in 1975 stated that "[t]his functional approach [had] come to dominate American tort scholarship." Calabresi, \textit{supra} note 27, at 105. Scholars have continued to debate whether the purposes of the tort system are to deter, compensate, spread losses, or some combination of these, in the process attributing purposes to the law-related system. \textit{See} Henderson, \textit{Process Constraints}, \textit{supra} note 7, at 901 ("Fierce debates have raged in recent years over the objectives reflected in the tort-law system."); Robert L. Rabin, \textit{Law for Law's Sake}, 105 YALE L.J. 2261, 2262 (1996) (book review) (describing the prevailing view as being that "tort law is only legitimate if it serves some useful purpose, and whether it meets this test depends on its satisfaction of independent societal goals").

\textsuperscript{29} One might specify, for example, that $x$ is the outcome produced by a system and then go on to identify the subsystems that contribute to $x$. Alternatively, one might assert that a particular combination of subsystems would be capable of producing outcome $y$, which the analyst favors.
survive; unsuccessful ones are overwritten. The system evolves toward a state in which no one who has the power to impose changes on the system would choose to do so. Presumably, the system will then serve its constituency reasonably well.

Systems are composed of subsystems. Subsystems are themselves systems, which in turn have their own subsystems. For example, a house typically includes at least the following subsystems: foundation, structure (walls), roof, electrical system, plumbing system, and heating and air conditioning system. The concrete foundation is itself a system, one of the components of which is concrete. The crystalline structure of concrete has as a subsystem, the molecules of its components. Those molecules have atoms as their subsystems.

To analyze a system is to break it down into its component parts, and to examine how those parts relate to one another and contribute to the functioning of the whole. The emphasis in systems analysis is on relationships rather than on the component parts themselves.

When analyzing social systems, analysts often seek to improve the system's functioning. When they do, consistency and efficiency in achieving the system's goals are the criteria for quality. The analyst wants the system to work, or to work better. That is, however, not always the case. Social groups often choose to employ systems that contain inconsistencies or that work inefficiently. This may be true, for example, of the law-related system for coercive collection of debts. The legal remedies for creditors suing to collect under state law are notoriously inefficient. Some scholars refuse to work on improving

---

30 The manner of change described here is exemplified in the common law method of case adjudication and even more accurately in the "incrementalist" paradigm of administrative lawmaking. See Diver, supra note 19, at 399-400 (stating that under the incrementalist model "policymaking becomes a series of small adjustments" and that "incrementalism is decentralized" so that "[p]olicy is made by many actors at many levels of government and indeed in the society at large").

31 This is not to say that the system ever reaches an equilibrium. The environment in which law-related systems function is constantly in flux, continuously altering the optimal system configuration.

32 See, e.g., Bailey, supra note 13, at 189 (reprinting an illustration showing the hierarchical relationship with cells as constituents of organs, organs as constituent of organisms, organisms as constituents of groups, groups as constituents of organizations, organizations as constituents of communities, communities as constituents of societies, and societies as constituents of supranational systems); Laszlo, supra note 5, at 19 (noting that "much of the universe available to our scrutiny can be conceptually 'mapped' as hierarchies, i.e., as a realm of systems-in-environments, constituting higher order systems which, within their particular environments, constitute systems of still more inclusive order").

33 The concept of law as a component of law-related systems that can be created, improved and redirected is arguably in conflict with the concept of natural law. Natural law posits the moral superiority of particular outcomes; systems theory posits that the moral superiority of an outcome may be relative to what else is occurring in the system at the same time.

34 See, e.g., Alex M. Johnson, Jr., Critiquing the Foreclosure Process: An Economic Approach Based on the Paradigmatic Norms of Bankruptcy, 79 Va. L. Rev. 959, 959 (1993) ("In the vast
them, however, because improvements would benefit the creditor class.\textsuperscript{35}

In any event, using a systems approach to determine and document how systems work does not commit the researcher to their improvement. The "systems approach" is a method for understanding systems. An analyst can seek to understand a system for the purpose of rendering it inefficient, disrupting its functioning, or destroying it.

II  
LAW-RELATED SYSTEMS

The potential for systems analysis to contribute to legal scholarship is greatest with respect to concrete, law-related systems. A concrete system is one that exists in "physical space-time" and is composed of real people and/or other physical objects.\textsuperscript{36} The court system, composed of courthouses, records, judges, clerks, lawyers, bailiffs, law books, and the like is an example of a concrete system. By contrast, a conceptual system is a system whose basic units are words or symbols.\textsuperscript{37} The common law, conceived of as a set of integrated concepts, is an example of a conceptual system. Some systems theorists also distinguish a third type of system, an "abstracted" system, by which they mean a model of a concrete system in which only the most important variables are represented.\textsuperscript{38} Many of the models generated in legal scholarship are abstracted systems.

That a system is "law-related" signifies only that formal law, that is, state-made law, plays a role in it. Examples of law-related systems include the criminal justice system, the bankruptcy system, the tort system, the banking system, and the system of private property. Each of

\footnotesize{majority of cases, the sale price realized at . . . a foreclosure sale will be so inadequate that not only will the mortgagor lose her home but she will also lose any equity she owns in the property."); LoPucki, \textit{State Remedies/Bankruptcy System}, supra note 7, at 316-21 (arguing that the state remedies are highly inefficient in transferring value from debtor to creditor and operate primarily \textit{in terrorem}); Whitford, supra note 7, at 1126 ("Coercive execution is effective as leverage because of the harm visited on the debtor, largely due to secondary costs, and because one execution always impliedly threatens another.").

\textsuperscript{35} \textit{But see} Whitford, supra note 7, at 1127 ("My own intuition favors minimization of the secondary costs [of execution], in large part because of my distaste for gaining settlement leverage by threatening harm to another.").

\textsuperscript{36} \textit{See} \textit{Bailey}, supra note 13, at 47. Concrete systems are sometimes referred to as "real," "acting," or "physical" systems. Law professors with whom I have discussed systems analysis are often troubled by the concept of a "physical" system. Systems analysts are comfortable with the term as a means of distinguishing the reality of a system from their model of it. \textit{See}, \textit{e.g.}, Gibson & Hughes, supra note 5, at 15 (making the distinction between a "physical firm" and a "conceptual firm").

\textsuperscript{37} \textit{See} \textit{Bailey}, supra note 13, at 47 (describing a typology of systems). Conceptual systems are sometimes referred to as "pattern" systems. \textit{See id}.

\textsuperscript{38} \textit{See}, \textit{e.g.}, \textit{id}. at 55-57. "The abstracted system is a variable system—the units are variables and the relationships are relationships among variables." \textit{Id} at 56 (emphasis omitted).
these systems is "law-related" in that state-made law "governs," and the courts play some role in the operation of the system. Each is, however, only law-related, not legal, because the goals of the system are not goals primarily associated with law, and important elements of the system are not legal in nature.

Formal, state-made law is principally a means for governments to control the behavior of individuals and groups. In most instances, behavior can be controlled by other means. The most effective and efficient means for controlling behavior usually is a physical means. If the government wishes to slow traffic, it can do so by installing speed bumps. Alternatively, it can bank the highway so that speeders tumble off on the curves. If the government wishes to protect private property, it can build fences to prevent physical access, or it can deploy police to physically restrain trespassers. If the theft of social security checks is a problem, the government can make direct deposits. Because legal scholars are not used to thinking of physical constraints on behavior as substitutes for the law, they go largely unnoticed.

The conduct of individuals is also often constrained by the "autonomous law" that spontaneously arises in social groups and the individuals' desires for continuing good relations with others. To illustrate, even if there were no laws, no court system, and no physical impediment to theft or the nonpayment of debts, most people might still find it in their self-interest not to steal and to pay their debts. Formal law is not what structures society. Law is marginal.

---

39 Some scholars define "law" more broadly to include "autonomous law," the means by which groups maintain social control over their members. See Walter Otto Weyrauch & Maureen Anne Bell, Autonomous Lawmaking: The Case of the "Gypsies," 103 YALE L.J. 325 (1993). By whatever name known, autonomous law sometimes has the capacity to displace or override formal law. See id. at 382-85. But see W. Michael Reisman, Autonomy, Interdependence, and Responsibility, 103 YALE L.J. 401, 411 (1993) (arguing that "we need to know more about the relationship between autonomous law and the law of the state before we can say if and when one trumps the other"). Reisman's argument is undercut, however, by his failure to dispute any of Weyrauch and Bell's examples.

40 Scholars have noted from time to time the possibility of substituting physical systems for law. See, e.g., Izhak Englard, The System Builders: A Critical Appraisal of Modern American Tort Theory, 9 J. LEGAL STUD. 27, 69 (1980) (commenting that "the most promising way to reduce car accidents is by investing in the physical substructures of traffic").

41 See Weyrauch & Bell, supra note 39, at 333-34. The concept is similar to that of "social norms" in the literature of sociology.


44 See Harold C. Havighurst, The Nature of Private Contract 65 (1961) ("When we are able to consider the matter without bias, we recognize that most of us are affected in our actions only to a very limited degree by law."); Stewart Macaulay, Non-Contractual Relations in Business: A Preliminary Study, 28 AM. SOC. REV. 55 (1963) (discussing the marginal
Each of these three means of controlling behavior—the physical, autonomous law, and governmental law—operates, to some degree, by creating patterns of incentives and disincentives. One can speed over speed bumps, but it is physically uncomfortable and may damage one's automobile. Violate the autonomous law of the social group and one may become the object of suspicion. The result may be the loss of a business deal or worse. Violate government-made law and the result may be arrest, prosecution, and incarceration. The patterns of incentives and disincentives created by efforts to control behavior are often complex. The persons whom the system seeks to control may respond in correspondingly complex ways. I refer to these responses as "legal strategy." The role of legal strategy in the analysis of law-related systems is discussed below in Part III.E.

Law is a relatively expensive and, for the government, a relatively dangerous way of controlling behavior. The resolution of even the simplest conflict in court is likely to cost thousands of dollars, and the resolution of a complex conflict is likely to cost millions. Even when the system is willing to incur the expense, the promulgation and enforcement of law might not work. The system must adjudicate violations and stand ready to enforce its adjudications through the use of violence. To the lawbreaker, the threat of legal sanctions is usually highly abstract, problematic, and temporally distant. The process of adjudication and enforcement may cause confrontations, exacerbate conflicts, or ultimately lead to a rebellion against the government.

Where the physical control of behavior is technologically possible, it is usually cheaper, safer, and more effective than control through law. Only where physical systems are impractical and autonomous law is inconsistent with the government's wishes, does it become cost-effective for the government to control behavior through law. For a law-related system, the law is a means of last resort. One consequence is that law ends up being somewhat of a patchwork. Where technology provides the means for controlling particular behavior,

effect of court enforced norms and legal sanctions in the governance of contractual relations).

Legal strategy has gained increasing recognition in recent years. See, e.g., DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 4-5 (1990):

Conceptually, what must be clearly differentiated are the rules from the players. The purpose of the rules is to define the way the game is played. But the objective of the team within that set of rules is to win the game — by a combination of skills, strategy, and coordination; by fair means and sometimes by foul means. Modeling the strategies and the skills of the team as it develops is a separate process from modeling the creation, evolution, and consequences of the rules.

See also LoPucki, supra note 4, at 1522-28, 1533-41, 1545-49; Mark J. Roe, Corporate Strategic Reaction to Mass Tort, 72 VA. L. REV. 1 (1986) (describing strategies); Weyrauch & Bell, supra note 39, at 382-85 (presenting a theory of the role of legal strategy in accommodating autonomously generated informal law to the system of state-made law).
law is rarely used. The same is true in areas where social norms provide adequate control. Law's domain is only what is left over.\footnote{Civil law probably makes a greater effort to be comprehensive. Yet, one can easily imagine subjects that have never become the subject of a law for the simple reason that the behavior that the law would control is already blocked by other means. 46}

For a concrete system to consist of nothing but law is virtually impossible. To control behavior, the system must have at least some physical components. Law is best thought of as an element of law-related systems and a technique by which governments can intervene in those systems.\footnote{See Ann Seidman & Robert B. Seidman, State and Law in the Development Process: Problem-Solving and Institutional Change in the Third World 75-84 (1994) (advocating a “problem-solving approach” for state intervention that relies heavily on empirical research); James A. Henderson, Jr. & Richard N. Pearson, Implementing Federal Environmental Policies: The Limits of Aspirational Commands, 78 COLUM. L. REV. 1429 (1978) (describing the difficulty of controlling behavior through “aspirational commands” from legislatures or courts); Robert B. Seidman, Justifying Legislation: A Pragmatic, Institutionalist Approach to the Memorandum of Law, Legislative Theory, and Practical Reason, 29 HARV. J. ON LEGIS. 1 (1992) (presenting a step-by-step empirical method for legislative intervention in law-related systems).}

Not every system that controls human behavior will be law-related. Some systems are entirely physical, or depend only on voluntary cooperation. Although such a system might perform the same function as a law-related system or even substitute for a law-related system, such a system is outside the definition of a law-related system for the simple reason that it does not involve any formal law.

Confining the study of law to concrete systems has at least three advantages. First, the system can be operationalized and studied empirically, giving the study objectivity.\footnote{Valuable insight may sometimes come from the study of matters that cannot be operationalized and investigated empirically. But that insight is for the most part limited to the person who has it. Unless a matter can be operationalized, neither science nor any other rational means of resolving differences about it can be brought to bear. 48} Second, partial criteria exist for the normative evaluation of any proposed system reform: once the reform is implemented, will the system be more or less able to achieve its purposes? Third, the imperative that the system function, though not always honored in fact, is honored sufficiently that one can often infer the nature of parts of the system one cannot directly investigate.

This third advantage requires some elaboration. A law-related system must operate within limits of physical reality which are impossible to ignore.\footnote{See, e.g., Fuller, supra note 27, at 150 (“Coordination among the elements of a legal system is not something that can simply be imposed; it must be achieved. Fortunately, a proper sense of role, reinforced by a modicum of intelligence, will usually suffice to cure any defaults of the formal system.”). For example, when debt is trading in an active market for a given price, the court's declaration that it is worth more probably will not increase its price. A cow that eats will gain weight regardless

\footnote{47 See, e.g., Fuller, supra note 27, at 150 (“Coordination among the elements of a legal system is not something that can simply be imposed; it must be achieved. Fortunately, a proper sense of role, reinforced by a modicum of intelligence, will usually suffice to cure any defaults of the formal system.”).}
of what the court says about the process of consumption. Courts can lie about the effects of their actions, but the lies bring a law-related system no closer to achieving its measurable goals.

Three examples of "system imperatives"—requirements that must be met for the system to achieve its goals—may help to illustrate. First, the bankruptcy reorganization of a financially distressed business is a process accomplished through the drafting and adoption of a written plan. To draft and adopt such a plan necessarily takes time. If creditors are permitted to take coercive collection action during the reorganization, the "facts" of the reorganization case will change in unpredictable ways, making the process unworkable. Thus, Professor George Triantis and I conclude that any system of bankruptcy reorganization that relies on a written plan must include a stay of coercive collection activity or some functional equivalent.

The second and third examples of system imperatives are both examples of specific instances in which system imperatives overrode clear legal doctrine to the contrary. The second involves the system for titling, registering, and granting security interests in motor vehicles. Generally, a security interest in a motor vehicle is effective against a purchaser only if it is recorded on the vehicle's certificate of title. Knowing this, prospective purchasers check the certificate on file with the state government before purchasing. When a vehicle is moved from one state to another, the system calls for a surrender of the old certificate and the issuance of a new certificate by the destination state. The security interest can be preserved, because the destination state demands surrender of the old certificate and transfers notations of security interests to the new certificate before destroying the old one.

In stating the legal rule governing this process, the drafters of the Uniform Commercial Code specified that liens noted only on the old certificate would expire four months after the issuance of a "registration," rather than a "certificate of title" by the new state. Viewing the law merely as a set of concepts, the reference to the registration was not wrong; the statement making reference to the registration was not verbally inconsistent with anything else in the Code. Viewing law as an

---

50 In dazzling displays of "junk science," courts have held that when cattle consumed feed that was a secured creditor's collateral, the feed did not become part of the mass of the cattle because "[o]nce eaten the feed not only loses its identity, but in essence it ceases to exist and thus does not become part of the mass in the sense that the code uses the phrase." First Nat'l Bank v. Bostron, 564 P.2d 964, 966 (Colo. Ct. App. 1977); accord Farmers Coop. Elevator Co. v. Union State Bank, 409 N.W.2d 178 (Iowa 1987). By the words "in the sense that the code [sic] uses the phrase ['become[s] part of the mass']," the courts signal that their holdings are limited to the world of legal concepts.

51 See LoPucki & Triantis, supra note 7, at 274-77 (outlining the functional imperatives of a system of bankruptcy reorganization that relies on certain basic assumptions).
element of a law-related system, however, reference to the registration was wrong. If a debtor could register the debtor's vehicle without surrendering the certificate of title and obtaining a new one, four months after such a registration the creditor's security interest in the vehicle would expire. Merely by registering the automobile in another state and waiting four months, any debtor could strip the creditor's lien from it. The creditor would not even know that this had happened.

Not only was the reference to the registration wrong, it also was unambiguous. Each state issued both a registration and a certificate of title for each vehicle. The courts were forced to choose between the clear and unambiguous command of the law and the imperative that the system function. After struggling with the issue for some time, the courts finally construed the reference to "registration" to be a reference to the issuance of a certificate of title. The system imperative—only the issuance of a new certificate should start the four month period running because only the issuance of a new certificate would result in the preservation of the lien—overrode the clear wording of the statute.

A second example of a system imperative overriding the unambiguous command of the formal law is the continued functioning of the United States Bankruptcy Courts from 1982 to 1984, after the decision of the Supreme Court in *Northern Pipeline Construction Co. v. Marathon Pipe Line Co.* In *Marathon Pipe Line*, the Court determined that the grant of jurisdiction to the Bankruptcy Courts by Congress was unconstitutional, because it put Article III power in the hands of bankruptcy judges who did not have lifetime tenure. The Court decided *Marathon Pipe Line* on June 28, 1982. The opinion stayed the Court's judgment until October 4, 1982 to "afford Congress an opportunity to reconstitute the bankruptcy courts or to adopt other valid means of adjudication, without impairing the interim administration

---

52 To explain the error, White and Summers offer a "vicious rumor" (which they attribute to Homer Kripke, one of the drafters of Article 9) that the drafters were unaware of this fact. "[T]he drafters[,] being mostly from the east coast, and knowledgeable only about subways, airplanes, and limousines, did not realize that one could register an automobile without getting a certificate of title." 2 JAMES J. WHITE & ROBERTS S. SUMMERS, UNIFORM COMMERCIAL CODE § 24-22, at 402 (3d ed. 1988).

53 See, e.g., Chrysler Credit Corp. v. Religa, 999 F.2d 607 (2d Cir. 1993) (holding that obtaining a certificate of title was a necessary part of registration); General Motors Acceptance Corp. v. Rupp, 951 F.2d 283 (10th Cir. 1991) (holding that a car had not been "registered" despite issuance of a certificate of registration).

54 For another example of a system imperative overriding the clear, unambiguous language of a statute, see LoPucki, supra note 4, at 1526 & n.139 (describing an error that would have rendered mortgages and other liens dischargeable in bankruptcy, but which the courts ignored).


56 See id. at 87.
of the bankruptcy laws." The Court made no attempt to explain the source of the authority the bankruptcy judges would exercise from June 28 to October 4. However, all concerned recognized the system imperative of continuing to manage the over 600,000 cases pending in the bankruptcy courts at the time.

When Congress failed to act by the deadline, the Supreme Court, at the request of the Solicitor General, extended the stay of judgment to December 24, 1982. Before that deadline expired, the Judicial Conference of the United States proposed an emergency rule that was adopted by each of the United States District Courts. The rule provided for the bankruptcy judges to continue in office in a status similar to U.S. Magistrates, and for them to continue to manage their caseloads under the authority of the district judges. The rule required that some findings and orders of the bankruptcy judges be rubber stamped by the district judges, but in practice even that often did not occur. In reality, the same judges managed the same caseloads. Like a character in a Road Runner cartoon, the bankruptcy courts had run off the cliff—but had not fallen.

The leading bankruptcy scholars of the day quickly pronounced the emergency rule unconstitutional, as did nearly every bankruptcy court that considered the issue. The district courts and the courts of appeals, however, were unanimous in holding that the rule was constitutional, and, for its part, the Supreme Court denied certiorari in every case. The bankruptcy system continued to operate.

57 Id. at 88.
59 See Walter J. Taggart, The New Bankruptcy Court System, 59 AM. BANKR. LJ. 231, 236 (1985) ("Subject to a variety of slight changes, the Emergency Rule was adopted and made applicable throughout the country.").
60 See, e.g., Vern Countryman, Emergency Rule Compounds Emergency, 57 AM. BANKR. LJ. 1, 6 (1983) (describing the draft version of the proposed rule as "both invalid and unworkable"); Lawrence P. King, The Unmaking of a Bankruptcy Court: Aftermath of Northern Pipeline v. Marathon, 40 Wash. & Lee L. Rev. 99, 116 (1983) (discussing the Emergency Rule and stating that "[t]he rule is invalid because it tries to do what the Supreme Court has said Congress may not do").
63 See, e.g., First Nat'l Bank v. Hansen (In re Hansen), 702 F.2d 728 (8th Cir. 1983) (holding the emergency rule constitutional).
On June 28, 1984, as Congress was about to enact bankruptcy legislation, the extension of the terms of all sitting bankruptcy judges expired. The Administrative Office of the United States Courts announced that it would no longer pay the salaries of the bankruptcy judges. Some bankruptcy judges did indeed play golf for a few days, but most switched from their roles as quasi-magistrates to new roles as "consultants." They continued to process cases, just as they had when the bankruptcy courts existed in the eyes of the law. Twelve days later, Congress enacted legislation reappointing the bankruptcy judges and making the reappointments retroactive. Constitutional challenges to the legislation were uniformly rebuffed.

One might explain these events as a series of decisions based on the rule of law with the chips falling where they may; the courts in fact did so. But these events make a great deal more sense if one also considers the system imperative of 600,000 pending cases, and many times that number of parties attempting to formulate both litigation and business strategies in the face of the uncertainty generated by the crisis. For the bankruptcy courts to be declared unconstitutional and lose their jurisdiction was no great problem, but for them to cease processing cases—for even a few days—would have caused a spillover into the court system at large and then into numerous other law-related systems yielding unpredictable consequences. Moreover, participants cannot turn such a system off and on again without creating massive waste. In this case, as a result of the system imperative, neither Congress nor the Supreme Court could shut the system.

---

64 See David Lauter, Bankruptcy Law Spurs New Battle, Nat'L L.J., July 23, 1984, at 3 (noting the "decision by the Administrative Office of the U.S. Courts not to pay the $66,100 salaries of the country's 227 bankruptcy judges").

65 See id. (noting that "[b]ankruptcy judges in Los Angeles and other parts of the 9th Circuit were refusing to work last week while judges in Chicago were serving, at least temporarily, without pay").

66 See id. (noting that in New York and Chicago, "the district and bankruptcy judges decided to ignore Mr. Foley's letter," and quoting a bankruptcy judge as saying "[w]e are functioning as bankruptcy judges" and "[w]e've got a job to do and we're trying to do it"); Bill Ott, Judicial Decision: Black Robes Traded for Business Suits, San Diego Union-Trib., July 14, 1984, at B2 (describing a San Diego bankruptcy judge as wearing a business suit instead of his judicial robe and "presiding over bankruptcy cases as a 'consultant'").

67 See Ott, supra note 66, at B2.


69 See, e.g., Benny v. England (In re Benny), 812 F.2d 1133, 1142 (9th Cir. 1987) (holding the retroactive appointments valid).

70 See Paul C. Wohlmuth, Traveling the Highway: Sources of Momentum in Behavioral Regulation, 6 J. Contemp. Legal Issues 1, 1 (1995) (using a highway metaphor to develop the proposition that concrete systems have momentum); id. at 8 (observing that "[t]he authority regulating the driving of motor vehicles on the highway does not reside exclusively, or even primarily, in the Motor Vehicle Code").
down—regardless of the authority that these bodies possess under the Constitution. 71

The effects of a system imperative are usually less dramatic than they were in the bankruptcy court crisis. Ambiguity permeates the law, and the recognition of system imperatives is a primary means of resolving ambiguity. Faced with a question of interpretation, a judge can examine the context—that is, the system—in which the problem arises. 72 Often, the judge is able to see that one interpretation is consistent with the smooth functioning of the system and the other interpretation is disruptive. 73

To the extent that anyone designs law-related systems, it is legal scholars, legislatures, and courts. If those designers regard the systems they design as merely conceptual, their task is made easy. They need only express or imply the goals of the system in the laws they propose, and avoid self-contradiction. Other error is impossible because the goals are achieved merely by promulgating the law. For example, when the legislature declares it illegal for pigs to be in the streets, it becomes illegal. If pigs remain in the streets, that is a defect in the pigs, not in the law. 75 If the system designer chooses to do so, the designer could even deem the pigs not to be there, in which case it would be the job of judges to ignore them.

If the designers regard the systems they design as concrete, rather than as merely conceptual, and operationalize their goals, they make their task more difficult. They must work within the physical limits of the system and make the system work to accomplish an empirically verifiable result. But by doing so, they make the system infinitely more useful. The system can alter behavior and achieve concrete goals rather than merely express ideas.

The task of designing a concrete system is made more difficult by the hierarchical structure of systems. Recall that each system is typi-

71 My point is not that the bankruptcy courts inevitably had to continue in operation during the crisis. Systems sometimes fail. My point is that a meaningful description of the crisis—the only type of scholarly description that is really useful—cannot be given without taking into account the imperatives of the concrete, law-related system involved.

72 The method described here is similar to the “dynamic statutory interpretation” model proposed by Professor Eskridge in that both interpret statutes by reference to context. William N. Eskridge, Jr., Dynamic Statutory Interpretation, 135 U. Pa. L. Rev. 1479 (1987). It is different, however, in that the context referred to in the method described here is a system.

73 See infra Part IV (discussing National Peregrine, Inc. v. Capitol Fed. Sav. & Loan Ass’n (In re Peregrine Entertain., Ltd.), 116 B.R. 194 (C.D. Cal. 1990)).

74 But see Stuart Banner, Please Don’t Read the Title, 50 Ohio St. L.J. 243 (1989) (providing an entertaining description of problems that can plague even the designer of a conceptual system).

75 See Hendrik Hartog, Pigs and Positivism, 1985 Wis. L. Rev. 899, 900-06 (describing the gap between the law on the books and the pigs on the streets in 19th century New York City).
cally both the product of its subsystems and a component of larger systems. Any change in the system must be evaluated not only for its effects on the operation of that system, but also in terms of its effects on the operation of related systems.  

Consider, for example, the proposed change to Article 9 of the Uniform Commercial Code, which would require the filing of financing statements in the debtor's state of incorporation, rather than where the collateral or the debtor is located. Analysis of this simple change requires consideration not only of the systems by which filers file financing statements and searchers look for them, but also of the effect on system interface with the systems for filing corporate records, the local UCC filing systems, real estate filing systems, the system for filing against unincorporated debtors, foreign filing systems, and state revenue raising systems. An error or untoward result in any of these interfaces might result in a malfunctioning system.

III

SYSTEMS ANALYSIS AS METHODOLOGY

This Part presents a step-by-step guide to the application of systems analysis to law-related systems. The reader should keep in mind that this guide presents only a few of the many ways of conducting such analyses.

A. Step One: Identify the System To Be Analyzed

The initial tasks are to identify a system for study and to distinguish it from its environment. The ability to do this is based on the premise of systems theory that phenomena, including social phenomen-

---

76 For an elaboration of this point, see Henderson, Process Constraints, supra note 7, at 907-11 (discussing the "polycentric" planning problems resulting from the mutual interdependency of issues, and arguing that these problems are unsuitable for the adjudicatory process and instead should be addressed in the rulemaking process).

77 See LoPucki, Debtor's State, supra note 7 (discussing filing under Article 9 of the UCC).

78 See id. at 593-611.
79 See id. at 615-19.
80 See id. at 619-20.
81 See id. at 620-22.
82 See id. at 623.
83 See id. at 623-25.
84 See id. at 625-30.
85 See id. at 630-32.
86 A "methodology" is "1: a body of methods, rules, and postulates employed by a discipline: a particular procedure or set of procedures 2: the analysis of the principles or procedures of inquiry in a particular field." WEBSTER'S NINTH, supra note 8, at 747.
The act of distinguishing a social system from its environment is not whimsical; it indicates the analyst's discovery of a testable, empirical fact. The structure of relatively distinct systems, each composed of subsystems which are themselves composed of subsystems, is the natural structure of our universe.

Distinguishing social systems, including law-related systems, from their environments is often difficult. Social systems are often interwoven in a rich, complex tapestry that can at first appear seamless. A single actor, element, or subsystem may contribute simultaneously to the functioning of several systems.

There are, nevertheless, at least three tools for making the distinction. They will be referred to here as the "human participant test," the "interaction principle," and the "purpose principle." The "human participant test" posits that any law-related system will include one or more human beings. That is, to qualify as a "law-related system," the system must to some degree engage in the promulgation or enforcement of law. In the lexicon employed here, as in common usage, when a law is implemented by embedding it in a physical system, one ceases to think or speak of it as a law. When a road is banked so that one cannot drive on it at speeds in excess of thirty miles per hour, the system is physical; only when the rule is articulated by judges and the legislatures for enforcement by the police and the courts does it become law. It follows that virtually any law-related system will consist at least in part of human beings whose jobs contribute to the control of other human beings.

The analyst who begins with an issue or problem in mind, and seeks to identify the relevant law-related system or systems, is likely to find the "human participant test" particularly useful. "Where," the analyst should inquire, "are there people who grapple with this issue at least occasionally, if not in their daily lives?" If no one grapples with the issue, then the analyst should suspect that the issue is purely conceptual.

Once the analyst identifies someone involved with the is-

87 See, e.g., LASZLO, supra note 5, at 30-32 (describing "natural systems").
88 See, e.g., id. at 90 (stating that the "concept natural system replaces the many misleading disjunctive names of natural entities . . . such as 'atoms,' [and] 'molecules.'").
89 Social systems are never entirely distinct from their environments. In systems terminology, they are "open systems" engaged in continuous interaction with their environments. See id. at 102-03.
90 For example, a judge sitting in a court of general jurisdiction may function as part of the tort system in hearing a tort case, as part of the criminal justice system in hearing a criminal case, as part of the court system while participating in either or while carrying out administrative tasks, and as part of the Kiwanis Club at lunch.
91 For example, on reading an early draft of my manuscript, Gary Schwartz raised the issue of flag burning. We were able to identify at least five kinds of people concerned with the issue: those who wished to burn flags as political protests, those who wished to prevent
issue, the analyst need only see who and what that person interacts with to discover the shape of the entire system.

Both the "interaction" and "purpose" principles are derived from the definition of a "system" as "a set of interrelated and interactive elements that work together to accomplish specific purposes." The "interaction principle" holds that the persons and things that form a system interact more closely and more frequently among themselves than they do with persons and things in their environment. Systems can be defined more or less expansively by varying the degree of closeness or frequency of interaction required to define a person or thing as included in the system. The only limitation that must be observed is that persons and things with less interaction cannot be included if persons and things with more interaction are excluded.

The "purpose principle" holds that persons and things that are necessary to the functioning of the system—that is, to the accomplishment of system goals—are included. Those that are unnecessary are excluded.

One can begin the process of defining the scope of a system with either a purpose or a system in mind. For example, assume one wishes to define the scope of the law-related system or systems by which money that is lent is recovered. One might interview lenders and ask them how they recover the money they lend. They probably would tell the interviewer that most borrowers repay "voluntarily." By asking about payments that are not made voluntarily, the interviewer might discover the system that processes civil litigation and ultimately sends the sheriff out to seize property. The interviewer probably would also discover the bankruptcy system that liquidates debtors' property and sometimes sends checks to creditors in the mail; collection agencies that accept assignments of claims, pester the debtors until some of them pay, and then reassign the unpaid claims back to the creditors; and outlaw enforcers who threaten people and sometimes break their kneecaps.

Has the interviewer discovered one system, or many? To answer this question, the systems analyst examines the relationships among the people and things involved in each of these putative systems. Do
the people in the civil litigation system relate more closely to others in the civil litigation system than they do to people in the bankruptcy system? Do either relate significantly to collection agencies or outlaw enforcers? Assume this empirical inquiry yields three results. First, people and things involved in any one of the four processes have substantially more interaction with people and things within their own process than with people and things outside that process. From this, the analyst can conclude that there are four systems in operation. Second, people and things in three of these systems—civil litigation, bankruptcy, and collection agencies—have moderate levels of interaction with people and things in the other of these three processes, but lower levels of interaction with people and things outside them. From these first two results, the analyst can conclude that it might be useful to regard the three systems as subsystems of a larger system I will call the "legal collection system."94 Third, assume that the empirical inquiry discovers that the people and things in the outlaw enforcement system have little or nothing to do with the people and things in the other three systems. That is, different lenders and borrowers are involved, and the people in the outlaw enforcement process have little or no contact with people in the other three processes. From this result, one can conclude that the outlaw collection system is not part of the legal collection system.95

Having empirically distinguished three subsystems of the legal collection system from their environment using the "interaction principle," the analyst can refine the distinction by applying the "purpose principle." With regard to the bankruptcy system, application of the "purpose principle" yields what some may consider a surprising result: the bankruptcy system has numerous other purposes in addition to just collecting money for creditors. It seeks, for example, to give individual debtors a "fresh start," free of their debt, and to reduce the debt of business debtors to levels sufficiently low that the viable among them can continue to operate and, among other things, provide jobs to their employees, provide markets to their suppliers, and pay taxes to government.

Recognition of these additional purposes should not dramatically alter the analyst's judgment as to where the boundaries of the bankruptcy system lie. To some degree, the analyst determined those boundaries by observing the levels of interaction among people and

94 E.g., LoPucki, State Remedies/Bankruptcy System, supra note 7, at 312 (treating the state remedies and bankruptcy system as subsystems of a single coercive collection system).
95 The distinction is not based on the fact that one system is prohibited by law and the other is not. Rather, it is based on the lack of interaction between the two. If, for example, it were shown that drug smuggling is an integral part of the system that has as its main purpose the enforcement of laws against drug smuggling, then the two would be considered a single system.
SYSTEMS APPROACH

things; those levels have not changed. But considering the crude methods the analyst probably employed to discover those interactions, the analyst should expect recognition of these additional purposes to lead to new discoveries or revised judgments about the levels of those interactions. The analyst's reassessment of the empirical reality is a second application of the "interaction principle," which can put the analyst in a better position to make a second application of the "purpose principle." The process can be repeated until the analyst is confident of having discovered the natural system boundaries.

The process described here is likely to lead to the discovery of a range of possible systems for investigation, rather than a single one. For example, one interested in the issues of alimony and child support might identify any of the following systems for study: the system for coercing the payment of alimony and child support, the system for providing support to dependent persons (including public and voluntary private support), the system for obtaining and enforcing divorce decrees, or even the family as a system. Each may in fact be a system that satisfies all three tests discussed here. That the analyses of these various systems may lead to different conclusions demonstrates the flexibility rather than the weakness of the method. The accuracy of the analysis depends on whether the analyst has defined the system broadly enough to take into account all of the material factors.

Systems theorists recognize that where one draws the line between a system and its environment is often somewhat arbitrary. For example, the bankruptcy courts are clearly part of the bankruptcy system. So are the books and newsletters that convey information about the activities of these courts, and the judges and practitioners who use the books and newsletters. The district courts and courts of appeals—both of which hear appeals from the bankruptcy court—can be regarded as part of the bankruptcy system or as part of the environment in which the bankruptcy system functions, depending on the level of interaction the analyst requires for inclusion.

The problem of deciding what level of interaction to require in the definition of a system is analogous to the problem of what altitude to require in the definition of a mountain. Depending on the definition employed, the boundary of a mountain can be anywhere from its peak to a point well below sea level. Geographers solve the problem by drawing contour maps that show what land is above each of several altitudes, leaving it to the user of the map to define the mountain however the user wishes. Depending on the level of interaction required of a system, the boundary of the system can likewise expand or contract. Theoretically, it should be possible for systems analysts to draw contour maps of systems, showing where the boundaries would be at various levels of interaction. The key point is that the existence
of the widely acknowledged "boundary problem" in systems analysis\textsuperscript{96} should be no more troubling than the problem of defining a mountain. The analyst's inability to specify a precise boundary for either without first somewhat arbitrarily fixing an altitude or level of interaction should not cast doubt on the existence of either the mountain or the system.

B. Step Two: Attribute Goals to the System

Understanding of a law-related system is achieved through a dialectic. The analyst tentatively attributes goals\textsuperscript{97} to the system based on observations of its operation and evaluates the operation in terms of its ability to achieve the attributed goals. The dialectic repeats until the analyst is satisfied that the analyst's understanding of a system's goals is consistent with what the system is doing to achieve them. Because law-related systems are engaged in constant exchanges with their environments, they never reach equilibrium. Hence, there is no expectation that the system's operation will ever be completely consistent with the system's goals. The analyst almost inevitably discovers some malfunction in the system and can suggest some possibilities for improving it.

To yield a useful analysis, the analyst should state the goals of a law-related system in concrete terms so that the analyst can operationalize and empirically test whether the system is achieving them. Such goals might be, for example, to deter crime, to promote invention, to encourage the free exchange of ideas, or to enable viable companies that are unable to pay their debts to continue to operate.

There are essentially two methods for attributing goals to a law-related system, the "positive" and the "normative." The positive method is to observe the operation of the system, determine what results it is in fact bringing about, and then to assume that it intends to bring about those results. Careful empirical observation of a law-related system almost always reveals that the system is doing things and producing results that participants in the system did not intend or anticipate.\textsuperscript{98} Systems-oriented sociologists refer to them as "latent

---

\textsuperscript{96} See, e.g., Weinberg, supra note 5, at 144-50 (describing the problem of identifying the boundary between system and environment). "Boundary" is the metaphor employed almost universally in systems analysis. "Contour" might have been a better choice.

\textsuperscript{97} The words "goal" and "purpose" are used interchangeably throughout this Article. Both are used because "goal" seems to be the word of choice in systems analysis, while "purpose" is the word of choice in law. The underlying concept seems to me to be identical.

\textsuperscript{98} See, e.g., Lynn M. LoPucki & William C. Whitford, Venue Choice and Forum Shopping in the Bankruptcy Reorganization of Large, Publicly Held Companies, 1991 Wis. L. Rev. 11 (reporting the discovery of rampant forum shopping that led to higher attorneys' fees and delay). Of course, the lawyers and clients engaged in forum shopping were aware of their
functions." Despite their unexpected nature, it is appropriate to treat these results as intended. Recall that the search is for the goals of the system, not the goals of the system's participants or even the system's designers.

A positive attribution of goals can be helpful in mapping the system and determining how it functions. It can contribute only indirectly, however, to generating proposals for reform. When a system's outputs are assumed to be its goals, the system usually will prove to be a very effective means of achieving them. Generating proposals for reform requires that the analyst discover some tension between the system's function and its goals. The analyst will rarely be able to accomplish this through the positive attribution of goals. In this respect, the positive attribution of goals is tautological.

The "normative method" of attributing goals to a law-related system consists of the analyst deciding what the analyst thinks the goals of the system should be. Such goals are arbitrary, but if the user of the analysis—typically a legislator or a judge—shares them, the analysis can nevertheless be useful. The analysis will show what changes are necessary for the system to achieve the desired goals. In a variant of the "normative method," the analyst attributes the express goals of the system designer or some other person to the system. For example, the analyst might seek to determine how well a statutorily-created system is achieving the goals expressed by the legislature. Although the resulting analysis is based on particular normative assumptions, it can still result in an objective, positive determination of how the system would have to be changed to achieve the goals. That determination is, however, of little use to one who does not share the normative assumption.

C. Step Three: Determine the Structure and Function of the System

"Systems theory" holds that a system will be composed of discrete subsystems that combine to accomplish the system's goals. The analytical task is to discover and analyze those subsystems. Because the sub-

---

99 See, e.g., Robert K. Merton, Social Theory and Social Structure 63 (1957) (defining "latent function" to mean the system's "unintended and unrecognized consequences"). But see Colin Campbell, A Dubious Distinction? An Inquiry into the Value and Use of Merton's Concepts of Manifest and Latent Function, 47 Am. Soc. Rev. 29 (1982) (arguing that the distinction between manifest and latent functions has not proven useful in sociology). Legal scholars have readily accepted the notion that rules of law frequently serve latent functions. See, e.g., Gordon, supra note 3, at 2083 (referring to legal scholarship as "digging out the latent functions of legal rules and asking whether the rules in force effectively serve them").
systems are themselves systems, the analyst can expect that most will be composed of subsystems. The analysis of a law-related system should include as many levels of subsystems as are unique to the system. That is, at some level in the investigation of the bankruptcy system, the subsystems are no longer unique to bankruptcy. They may be, for example, computer programs that could manage nonbankruptcy material as well as bankruptcy material, people who are not specialized to bankruptcy, or courtrooms that can be used for a variety of purposes.

Methodologies are useful in large part, because they provide the researcher with a set of questions to ask about the subject of study. Systems analysis provides two general lines of inquiry capable of illuminating nearly any system. First, what subfunctions must be performed for this system to function? By answering this question the analyst generates ideas on where to look for subsystems. For example, one of the goals of the bankruptcy reorganization system is to distinguish the financially distressed businesses that can be restored to profitability from those that cannot. The technique of systems analysis suggests that the analyst attempt to determine how the system makes that distinction. The method of inquiry will likely be "soft" empiricism; the analyst either talks to people in the system or observes the system in operation. The analyst may already know, for example, that debtors have internal mechanisms for determining whether to attempt to continue in operation, the most prominent being the collection and review of accounting data, and the projection of future profitability based on historical data. The analyst may discover that bankruptcy judges are sometimes called upon to decide whether a business should be permitted to continue in operation. In some cases, this occurs at the insistence of creditors' committees. Knowing that, the analyst can inquire into how the creditors' committee reaches its decision to request a decision from the judge. Such an inquiry is likely to lead to other processes that either furnish financial information from which the committees can make that decision or

100 See, e.g., Gibson & Hughes, supra note 5, at 149-59 (describing methods of collecting the data necessary to design an information system for a private firm, including interviewing, searching data archives, making personal observation, and conducting on-site work sampling).

101 For two empirical studies suggesting that bankruptcy judges perform this function only rarely, see Jerome R. Kerkman, The Debtor in Full Control: A Case for Adoption of the Trustee System, 70 MARQ. L. REV. 159, 169 (1987) ("An examination of unsecured creditors' efforts in Milwaukee supports the finding in Kansas City of unsecured creditors' general inability to close nonviable businesses."); Lynn M. LoPucki, The Debtor in Full Control—Systems Failure Under Chapter 11 of the Bankruptcy Code?, 57 AM. BANKR. L.J. 247, 263-66 (1983) (finding only a single case in which the court had ordered the closing of the business).

102 Typically this will occur on a motion brought by some other party, with the Committee in opposition to a closing of the business.
that enables them to make the decision without financial information. The empirical nature of the inquiry allows the analyst to determine not just what subsystems exist, but how frequently each is used, and how well each works.

The second line of inquiry regards the system under investigation as a subsystem of a larger system. It asks what that larger system is and how the system under investigation contributes to the larger system's functioning. In the course of such inquiries into "how it works," the analyst discovers how the various components of the systems relate to one another.

The functioning of a law-related system will always include some exchange between the system and its environment. The analyst should be conscious of these exchanges, because the changes the analyst recommends may disrupt them.

D. Step Four: Describe or Depict the Relationships Among System Components

Every scholarly effort involves a trade-off between complexity and manageability. That is, the effort would benefit from the recognition of the greater complexity in the subject matter, but at some point further recognition of complexity renders the work unwieldy and less useful.\(^{103}\)

The great strength of systems analysis is its ability to deal with this tradeoff. It accomplishes the tradeoff through an efficient presentation of complexity. Probably the two most common applications of systems analysis today are in financial accounting and computer program design.\(^{104}\) In these fields, the interrelationships among the components of the system are far too complex for the human mind to comprehend in their entirety. The designer needs external aids to keep track of the work and to communicate with others about problems and ideas. Not surprisingly, much of the effort in the field of systems analysis is devoted to the development of methods for describing or depicting complex interrelationships. These come in

---

\(^{103}\) Posner recognizes the fundamental difficulty with complete, accurate description in scholarship. E.g., Richard A. Posner, *The New Institutional Economics Meets Law and Economics*, 149 J. INSTITUTIONAL & THEORETICAL ECON. 73, 74 (1993) (criticizing Willard Hurst's book on the history of the lumber industry in Wisconsin as "a dense mass of description—lucid, intelligent, and I am sure scrupulously accurate, but so wanting in a theoretical framework—in a perceptible point—as to be virtually unreadable"). Later in his article, Posner attempts to force this tradeoff into a dichotomy between "efficient theory" and "case studies," that is, facts. *Id.* at 78-79. But a theory is nothing more than a method of ordering facts; it is no better or worse than the factual basis on which it is constructed. See Lynn M. LoPucki, *Reorganization Realities, Methodological Realities, and the Paradigm Domination Game*, 72 WASH. U. L.Q. 1307, 1309-10 (1994).

\(^{104}\) See, e.g., Burch, supra note 5; Gibson & Hughes, supra note 5.
the form of protocols for diagramming, flow charting, drafting algorithms, and writing "pseudo-code." Pioneers like Professor Edward R. Tufte of Yale have taken the art of envisioning information to new heights.

E. Step Five: Identify Inconsistencies Between Goals and Functions

If the analysis performed is in any part normative, then the analysis may discover inconsistencies between the goals of the system and what is being done to achieve them. For example, assume that a goal of the debt collection system is to enable judgment creditors to collect the amounts specified in their judgments, subject to the overriding goal that the collection not deprive debtors of certain property deemed to be necessary for their continued well-being ("exempt property"). If the analysis discovers either that some judgment creditors are unable to collect their debts, even though collection could be accomplished without depriving the debtor of exempt property or that some debtors are deprived of exempt property as part of the collection process, then the system is apparently malfunctioning. The analyst might respond by examining cases in which the apparent malfunction occurred. The analyst might discover, for example, that debtors are deprived of exempt property because they do not claim their exemptions. Inquiring further, the analyst might discover that they do not claim their exemptions because they are unaware of the necessity to make such a claim. At this point, the analyst might consider whether the debtor's making a claim is necessary to the functioning of the system. If the claim serves a sufficiently important purpose that it cannot be dispensed with, then the analyst might consider the addition of a subsystem that would notify the debtor of the necessity to make the claim. Alternatively, the analyst might consider a change in the putative goals of the system to add economy of operation—just a way of saying that the system has decided not to pay for something it ideally would want. What is critical is that the problems are addressed directly and decisions are made expressly—on what may be a tremendous number of issues. The capacity of systems analysis to accommodate complexity makes this possible.

105 See Burch, supra note 5, at 36-42 (describing the process of creating a data flow diagram); id. at 57-58 (discussing the use of Warnier-Orr diagrams); id. at 58-61 (discussing Jackson diagrams); Gibson & Hughes, supra note 5, at 251-68 (describing the "Data Flow Diagram (DFD) Modeling Method"); id. at 43-46 (discussing entity relationship diagrams (ERDs).

106 See Burch, supra note 5, at 52-53 (discussing structured program flowcharts).

Strategic analysis is another technique for discovering internal inconsistencies and other weaknesses in systems designed to control human behavior. The law-related system may be thought of as operating according to a set of rules. As participants in the system seeking advantage, they develop and execute strategies. Strategic analysis examines those strategies as a means of understanding the system.\footnote{Douglass C. North applies a similarly bifurcated approach to understanding economic systems: Conceptually, what must be clearly differentiated are the rules from the players. The purpose of the rules is to define the way the game is played. But the objective of the team within that set of rules is to win the game . . . . Modeling the strategies and the skills of the team as it develops is a separate process from modeling the creation, evolution, and consequences of the rules. \textsc{North, supra note 45, at 4-5.}}

In essence, strategic analysis is a modern-day adaptation of Oliver Wendell Holmes's "bad man" theory of the law. Holmes argued that the meaning of a law might be best understood by the use that a bad man might make of it.\footnote{\textsc{Oliver Wendell Holmes, The Path of the Law, in Collected Legal Papers 167, 171 (1920) (observing that "if you want to know the law and nothing else, you must look at it as a bad man, who cares only for the material consequences which such knowledge enables him to predict").}} In systems terms, Holmes's bad man is replaced by a strategist. The strategist may be either a real person, whose actual strategies are observed by the system analyst,\footnote{\textit{See, e.g.}, Ronald J. Mann, \textit{Explaining the Pattern of Secured Credit}, 110 \textsc{Harv. L. Rev.} 625, 668-83 (1997) (describing, based on interviews, the strategies employed by lenders and borrowers in response to transaction costs); Ronald J. Mann, \textit{The First Shall Be Last: A Contextual Argument for Abandoning Temporal Rules of Lien Priority}, 75 \textsc{Tex. L. Rev.} 11 (1996) (analyzing the mechanics lien system by empirical observation of the strategies employed in it).} or a hypothetical person.\footnote{\textit{See, e.g.}, \textsc{Lynn M. LoPucki, Strategies for Creditors in Bankruptcy Proceedings} (2d ed. 1991) (analyzing bankruptcy law from the viewpoints of various kinds of strategically-minded creditors).} The strategist modifies his or her conduct to seek advantages from the system. If the strategist is able to bring about "system-unintended" results, the strategist thereby demonstrates the need for changes in the system.

Strategic analysis works only if the system under investigation is a concrete, law-related system, as opposed to a conceptual system of laws. As nearly every law student realizes by the end of the first year, bright judges are not significantly constrained by conceptual law. The judge who realizes that a strategist is manipulating the system can always find sufficient flexibility in rules of law or in equitable doctrine to deny the system-unintended result. When law is viewed as merely a conceptual system, the consequence, as Professor Lon Fuller noted in
response to Holmes's bad man theory of the law, is that strategy never works.\footnote{112}{Lon L. Fuller, The Law in Quest of Itself 92-95 (1940) (arguing that to understand what judges will do, Holmes's bad man would have to "look at the law through the eyes of a good man"). For further development of this point, see LoPucki, supra note 4, at 1545-47.}

That legal strategy does work demonstrates the fallacy in the traditional approach to law as a purely conceptual system. If the analyst views law as merely one element of a law-related system that also has physical and autonomous law elements, the analyst can begin to see the limitations on judicial action that give rise to legal strategy. They include "process constraints" that prevent the law from taking particular matters into account or providing certain kinds of remedies.\footnote{113}{See, e.g., Henderson, Process Constraints, supra note 7, at 907-11 (describing a class of "polycentric" problems that "cannot be addressed effectively by the traditional adjudicatory process").} Judges are not always free to attempt to restore the world to the state it was in before the execution of the strategy. A clever strategist can place a judge in such a position that the judge will choose validation of a system-unintended strategy over the available alternatives.

For example, taxicab companies judgment-proof their operations by dividing the operations among numerous corporations, often with only one or two cabs in each. Viewing law purely conceptually, such a scheme should not work. At the behest of any injured person, the court would disregard the separate existence of corporations used in this manner and impose liability on the owners. Nevertheless, this flimsy judgment-proofing strategy has been successful enough to survive more than three decades of earnest veil piercing.\footnote{114}{Recently, a court noted that:

[In a 1966 opinion] Judge Fuld observed the existence of "what appears to be a rather common practice in the taxicab industry of vesting the ownership of a taxi fleet in many corporations, each owning only one or two cabs." This Court has conferenced over fifteen hundred motor vehicle actions over the last four months, many of which involve taxicab corporations, and notes that this method of conducting business remains a common practice in the taxicab industry to this day.

Goldberg v. Lee Express Cab Corp., 634 N.Y.S.2d 337, 338 n.1 (Sup. Ct. 1995) (citations omitted) (quoting Walkovsky v. Carlton, 18 N.Y.2d 414, 416 (1966)).} Among the hypotheses that might explain the success of the taxi companies' strategy are: (1) many plaintiffs' attorneys do not have sufficient skill or motivation to bring the necessary issues before the courts; (2) the strategy does not work in litigated cases, but the cost of building the judgment-proof structure is nevertheless justified by the discounts achieved in settled cases; (3) some judges decline to disregard the separate corporate entity, because they regard the building of such
judgment-proof structures as system-intended strategy; and disregard of the corporate veil does not lead to recovery, but merely to the extension of liability to other entities that either are already judgment-proof or that become so after the injury that gives rise to the action. This type of strategic analysis, documented through empiricism, can illuminate the actual mechanisms by which the system operates.

IV
CURRENT APPLICATION OF SYSTEMS ANALYSIS IN THE COURTS

Systems analysis builds upon traditional methods of analyzing the law. Law students are taught to search for the latent policy or value in an opinion of the court; often that policy or value is consistency with the functioning of the law-related system. Judicial opinions today often refer to the “purposes,” if not the “goals,” of the laws they implement, and judges at least sometimes discuss the effects of their decisions on the functioning of the legal system or the affected law-related system.

For example, in National Peregrine, Inc. v. Capitol Federal Savings & Loan Ass’n, the court addressed whether the holder of a copyright

---

115 See, for example, Radaszewski v. Telecom Corp.: The doctrine of limited liability is intended precisely to protect a parent corporation whose subsidiary goes broke. That is the whole purpose of the doctrine, and those who have the right to decide such questions, that is, legislatures, believe that the doctrine, on the whole, is socially reasonable and useful. We think that the doctrine would largely be destroyed if a parent corporation could be held liable simply on the basis of errors in business judgment.

981 F.2d 305, 311 (8th Cir. 1992). Even if such a strategy is not system-intended, particular legal communities may share a mental model in which it is. See LoPucki, supra note 4, at 1516-21.

116 Probably the best formal justification for the use of systems analysis in judicial decisionmaking is Professor Eskridge’s theory of “dynamic statutory interpretation.” Eskridge argues for interpretation of statutes in “light of their present societal, political, and legal context.” Eskridge, supra note 72, at 1479. Eskridge’s examples make clear that what he is in effect doing is discovering the current purposes or goals of the systems that will be affected by an interpretation and making the interpretation give effect to the purposes or goals. Id. at 1484-88 (finding deterrence of civil rights violations by officers to be a vibrant purpose that justifies punitive damages under § 1983).

117 See, e.g., Gordon, supra note 3, at 2082 (“Search for the Latent Policy or Value and Make it Explicit”—has (in tandem with the older classical mode of finding latent principles) been the overwhelmingly dominant mode of both scholarship and teaching since the 1940s.”).

118 See, e.g., Aronson v. Quick Point Pencil Co., 440 U.S. 257, 262 (1979) (stating that the “purposes” of the patent system are “to foster and reward invention . . . [to] promote[ ] disclosure of inventions to stimulate further innovation and to permit the public to practice the invention once the patent expires . . . [and] to assure that ideas in the public domain remain there for the free use of the public”). For an additional example, see supra note 115.

could perfect a security interest in the copyright by filing with either
the state UCC filing office or the United States Copyright Office or
could only perfect the security interest by filing with the latter. After
examining both state and federal laws concerning the issue, Judge
Kozinski addressed the systems aspect of the problem:

A recordation scheme best serves its purpose where interested
parties can obtain notice of all encumbrances by referring to a sin-
gle, precisely defined recordation system. The availability of paral-
lel state recordation systems that could put parties on constructive
notice as to encumbrances on copyrights would surely interfere with
the effectiveness of the federal recordation scheme.120

In this passage, Judge Kozinski's focus is on what kind of system would
work best. He then finds, within legal doctrine, a peg on which to
hang his systems analysis. "Given the virtual absence of dual recorda-
tion schemes in our legal system, Congress cannot be presumed to
have contemplated such a result. The court therefore concludes that
any state recordation system pertaining to interests in copyrights
would be preempted by the Copyright Act."121

In a footnote to the opinion, Judge Kozinski returned to the issue
of what system would work best. He noted that the Copyright Office
employed antiquated methods that would cause filing there to be, on
the facts of the case before him, about a hundred times as expensive
as filing in the state system. This time, however, he concluded that
the problems with the system's functioning were outside his
jurisdiction:

This technical shortcoming of the copyright filing system does
make it a less useful device for perfecting a security interest in copy-
right libraries. Nevertheless, this problem is not so serious as to
make the system unworkable. In any event, this is the system Con-
gress has established and the court is not in a position to order
more adequate procedures. If the mechanics of filing turn out to
pose a serious burden, it can be taken up by Congress during its
oversight of the Copyright Office or, conceivably, the Copyright Of-
Office might be able to ameliorate the problem through exercise of its
regulatory authority.122

Judge Kozinski is correct both in his criticism of the functioning
of the Copyright Office filing system and in his conclusion that fixing
it is beyond his authority. He recognizes that he is himself part of
another system—the court system—whose function is limited to de-

120 Id. at 201.
121 Id. at 201-02.
122 Id. at 202 n.10.
ciding cases. Courts are not equipped to administer filing offices;\textsuperscript{123} nor is it their proper role to move filings from one office to another because the first office is not going to do a good job in processing them. There is an organized system for making such changes, and it delegates the responsibility for the problem to legislators and regulators.\textsuperscript{124} Judge Kozinski simply remarks on these facts.

Although Judge Kozinski's systems analysis probably reaches the correct result—creditors taking security interests in copyrights should file in the Copyright Office and not in the state UCC system—his analysis is incomplete in at least one crucial respect. He supposes that after his decision, creditors taking security interests in copyrights will only have to file in the Copyright Office and can ignore the state UCC system. Post-\textit{Peregine} commentary suggests the contrary. Conservative practice requires dual filing on the chance that \textit{Peregine} will not apply or will not be followed.\textsuperscript{125} An empirical inquiry into the closely analogous practice of filing security interests in trademarks, where the reported opinions unanimously hold that only state filing is required,\textsuperscript{126} found that commentators continued to recommend dual filings,\textsuperscript{127} and secured creditors continued to make them.\textsuperscript{128} Such dual filing probably existed in the copyright system prior to Judge Kozinski's decision and probably continued after it. Given that fixing the dual filing problem was beyond his power and would require legislative action, Judge Kozinski's decision voiding the security interest in the case before him is questionable.

\textsuperscript{123} See Henderson, \textit{Process Constraints}, \textit{supra} note 7 (describing limitations of the adjudicative process).


\textsuperscript{125} See, e.g., Henry Beck, \textit{The Development, Financing, and Acquisition of Information Age Assets}, 12 \textit{Computer Law.} 14, 17 (1995) ("The careful lawyer will record his security interest in unpatented copyrightable computer software both with the U.S. Copyright Office and under the Uniform Commercial Code.").

\textsuperscript{126} See, e.g., In \textit{re TR-3 Indus.}, 41 B.R. 128, 131 (Bankr. C.D. Cal. 1984) (holding that the Lanham Act does not require federal filing against trademarks); In \textit{re Roman Cleanser Co.}, 43 B.R. 940, 943-44 (Bankr. E.D. Mich. 1984) (holding that filings against trademarks are to be in the U.C.C. filing system, not the federal trademark filing system).

\textsuperscript{127} For example, two prominent commentators note that:

> Although it is clear that applicable state law governs the creation and foreclosure of security interests in trademarks, it is considered unclear whether the perfection and priority of those security interests are governed by federal law . . . or state law . . . . Accordingly, many practitioners now conduct dual state and federal lien filings against trademarks.


\textsuperscript{128} See George Chih-Lun Yu, Security Interests in Federally Registered Trademarks: The Double Filing Problem and a Proposal for a State-Based Perfection System 15 (1996) (unpublished manuscript, on file with author) (finding that 80 of 81 sets of assignors/assignees who had filed in the trademark office had also made a filing in a UCC filing office).
This Part sets forth four examples of how the systems approach can lead to better analyses of law-related systems. The first three examples are completed projects; the fourth is a proposed project.

A. Formulating Proposals for Reform: The Controversy over Place of Filing

Creditors who take a security interest in certain kinds of personalty must file notice of the interest in a public filing system maintained by the state. If more than one state is involved in the transaction, the law must specify the state in which the filing should be made. For decades, the law specified filing in the jurisdiction where the collateral was located or the jurisdiction in which the residence or chief executive office of the debtor was located, depending on the type of collateral involved. The law included complex provisions to deal with the possibility that the collateral or the debtor might move while the security interest remained outstanding.

Based on a systems analysis in 1995, I proposed that the law specify the debtor's state of incorporation as the proper place to file. The analysis proceeded essentially as follows. I identified the system to be analyzed as the system by which filers filed financing statements and searchers sought to discover them. I attributed to the system the goal of communicating the existence of a security interest from the filer to the searcher at minimum cost. In my analysis, I discovered the following subsystems: (1) subsystems by which filers determined where to file, verified that they filed in the right place, and prepared to prove later that they filed in the right place; (2) subsystems by which searchers determined where to search; and (3) subsystems by which filers and searchers determined how to deal with changes in the circumstance that determined the correct place to file or search. I described the functioning of the system in an article and prepared a two-page table comparing the subsystem functions of the three alternative systems under consideration. I concluded that the goals of this system could be achieved less expensively if the system

---

130 See id.
131 LoPucki, Debtor's State, supra note 7, at 647-55.
132 Id. at 582.
133 Id.
134 Id. at 593-611.
135 Id. at 615-19.
136 Id. at 611-15.
137 Id. at 593-636.
138 Id. at 660-61.
were based on filing at the place of incorporation. This proposal has been adopted by the American Law Institute’s Article 9 Drafting Committee and is part of the current draft of the proposed revision.\textsuperscript{139}

B. Replacing Legal Systems with Physical Systems: The Case of Payment Systems

Professor Ronald Mann is preparing a set of teaching materials that tracks the evolution of modern payment systems from checks through credit cards, to electronic funds transfers and e-money.\textsuperscript{140} Perhaps the most striking characteristic of this evolution has been the use of physical—in this case electronic—components to replace legal components of the payment system. For example, the checking system verified the existence of the payor’s funds by physically moving the check through the bank clearing system. Because substantial time elapsed, numerous parties were involved, and reliance interests began to accrue. Complex law developed to fix liability on the various parties, including criminal liability for fraudulent or worthless checks, to fix “midnight deadlines” for bank processing, to provide warranties on transfers during the collection process, and to determine when transactions became final. Newer systems verify the existence of the payor’s funds electronically before the transferee gives value, reducing the need for legal rules to a small fraction of those required for checking. The new payment systems perform the same function as the old systems, assigning funds on deposit from one entity to another, but physical attributes of the new systems have replaced legal attributes of the old ones.

There are many circumstances in which physical systems are more effective in controlling human behavior than legal systems. For example, a few decades ago, the theft of social security checks from mailboxes was a major problem. The system might have responded with more laws, more law enforcement, and harsher penalties. Instead, it responded by directly depositing the social security check in the payee’s bank account, which solved the problem. Systems analysis can assist in identifying other areas in which effective physical systems can replace ineffective laws. Once the analyst determines what functions law performs in the law-related system, the analyst can more easily imagine physical systems that might substitute for law.

\textsuperscript{139} U.C.C. §§ 9-103(a)(4)(i) (Discussion Draft 1996).
\textsuperscript{140} Ronald J. Mann, Payment and Credit Systems (Spring 1997) (unpublished manuscript, on file with author).
Comparative law scholars are struggling with the problem that has come to be known as "cultural translation." It is difficult for an observer of phenomena that occur in one cultural context to translate a description of the phenomena in a manner which makes them comprehensible to a participant in another culture. When the phenomena are legal, the problem is compounded, because each culture is likely to describe its phenomena only in legal doctrine. The doctrine will probably describe what is actually occurring only poorly. A literal translation between doctrines will likely yield nonsense. To translate effectively, the translator has to be aware not just of the special meanings of words when they are employed in the "legal" sense, but also of actual practices that may not be described in the doctrine at all—or that may even be contrary to the doctrine.

Systems analysis can facilitate cross-cultural comparison by providing an easily translatable framework for describing the operation of a law-related system. The framework translates easily because events are described in terms that are operationalized and empirically verifiable. For example, the analyst who seeks to compare the criminal justice systems of two countries can focus on what physical conduct leads to imprisonment, what steps are taken when a person is accused, and the physical conditions of imprisonment. There are also a growing number of technologies and institutions that cut across cultures and that can provide trans-cultural concepts for comparison. For example, money is denominated differently in different cultures, but the concept of a credit that can be transferred in payment is the same from one culture to another.

The systems approach to comparison is most powerful when the analyst has direct empirical evidence of how each system functions. In the absence of direct empirical evidence, the analyst can derive useful information from judicial opinions, legislative history, the language of statutes, interviews with participants in the system, and other descriptions that link the facts of cases with legal outcomes. But these kinds of materials must be used cautiously, because they may reflect

141 Compare O. Kahn-Freund, Comparative Law as an Academic Subject, 82 LAW Q. REV. 40, 45 (1966) (observing that countries may respond to identical economic and social needs through very different legal and extra-legal techniques that are determined in each case by legal and political traditions), with Frances H. Foster, Parental Law, Harmful Speech, and the Development of Legal Culture: Russian Judicial Chamber Discourse and Narrative, 54 WASH. & LEE L. REV. (forthcoming Spring 1997) (describing the problem of translating law between cultures).

142 See LoPucki, supra note 4, at 1516-21.

143 See, e.g., Benson, supra note 7 (offering a comparative study of Chinese practices based on interviews with Hong Kong lawyers).
what the system purports to be doing, rather than what it actually does.\textsuperscript{144}

Professor George Triantis and I recently conducted a systems comparison of United States and Canadian reorganization of financially distressed companies.\textsuperscript{145} We identified the systems to be analyzed as "the systems for court-supervised reorganization of financially distressed companies" in the two countries\textsuperscript{146} and the goals of the system as "reorganiz[ing] viable businesses while minimizing the losses to all parties during the effort."\textsuperscript{147} In each country, we found three categories of subsystems: (1) those that triggered or prevented the triggering of formal reorganization;\textsuperscript{148} (2) those that preserved firm value during the reorganization process;\textsuperscript{149} and (3) those that determined the terms of reorganization.\textsuperscript{150} We wrote a lengthy article comparing how the various functions necessary to the reorganization process were performed in the two systems.\textsuperscript{151}

What we found in comparing the two systems was "a remarkable similarity in function . . . masked by sharp doctrinal differences."\textsuperscript{152} For example, a "trustee" was appointed in every Canadian case, while a "trustee" was rarely appointed in United States cases. The comparison was, however, false, because the function of a trustee in the Canadian system was very different from the function of a trustee in the United States system.\textsuperscript{153} Similarly, the Canadian Parliament considered whether to adopt the United States practice of allowing the judge to impose a plan on objecting classes of creditors or shareholders. Parliament expressly rejected the United States rule, leaving objecting classes of creditors with an ostensible veto power over the plan.\textsuperscript{154} We found, however, that the apparent difference was not real. Liberal Canadian classification rules gave courts that wished to impose a plan the ability to gerrymander classes so that they would accept the plan. The result is that judges in fact have the power to impose plans in

\textsuperscript{144} See LoPucki & Triantis, \textit{supra} note 7, at 273-74 (describing one approach to the use of materials).
\textsuperscript{145} Id.
\textsuperscript{146} Id. at 268, 274.
\textsuperscript{147} Id. at 275.
\textsuperscript{148} Id. at 279-87.
\textsuperscript{149} Id. at 288-811.
\textsuperscript{150} Id. at 316-38. For a similar analysis of reorganization functions, see \textsc{Mark S. Scarberry et al.}, \textit{Business Reorganization in Bankruptcy} 21 (1996) (identifying the "ingredients" needed for reorganization to be successful as follows: (1) "Keeping the Ship Afloat"; (2) "Turning the Business Around"; (3) "Determining Claims By and Against the Estate"; and (4) "Restructuring the Debts and Dividing the Enterprise's Value").
\textsuperscript{151} LoPucki & Triantis, \textit{supra} note 7, at 940.
\textsuperscript{152} Id.
\textsuperscript{153} \textit{See id.} at 307-09.
\textsuperscript{154} \textit{See id.} at 325.
nearly all circumstances.\textsuperscript{155} The key to discovering the underlying similarity between the two systems was to examine what the systems \textit{did} instead of what the system \textit{purported to do}.\textsuperscript{156}

D. Evaluating the Work of the Supreme Court

In the traditional view, the United States Supreme Court stands at the pinnacle of the United States legal system. As cases make their way through the legal system—that is, the court system—the most important issues become the subjects of appeals. They can reach the Supreme Court only if the Court agrees that they are of a certain level of importance. This system of appeals is generally considered to have as one of its goals uniform interpretation of the Constitution, statutes, and other legal doctrine.\textsuperscript{157}

From the perspective of participants in the many law-related systems that can fall subject to Supreme Court review, the view is quite different. Supreme Court intervention in any particular system is quite rare. When it occurs, the Supreme Court brings to the task a virtually complete lack of expertise in the system and applies methods unlikely to enlighten it. From a systems perspective, the Court is a wild card, striking unexpectedly and focusing not on the system but on some highly specific facet of it. The Supreme Court's methods—principally interpreting statutes and applying precedent—place the focus on petty distinctions in wording, history, and fictional intentions. The materials the Court considers are narrowly legal. Nothing in the process is designed to familiarize the Court with the workings of the law-related system in which it is about to intervene.

Consider, for example, the Court's decision in \textit{Dewsnup v. Timm}.\textsuperscript{158} In that case, the Court addressed whether a Chapter 7 debtor could "strip down" a creditor's lien on real property to the value of the collateral, as judicially determined, when that value is less than the amount of the claim secured by the lien.\textsuperscript{159} Despite the existence of a statute stating that a Chapter 7 debtor could do so,\textsuperscript{160}

\begin{itemize}
  \item \textsuperscript{155} See \textit{id.} at 824-28, 341-42.
  \item \textsuperscript{156} See Benson, supra note 7, at 185 (applying the method set forth here to a comparison of Chinese and U.S. security practices).
  \item \textsuperscript{157} See, e.g., Atascadero State Hosp. v. Scanlon, 473 U.S. 234, 256 (1985) (Brennan, J., dissenting) (referring to the "essential function of the federal courts—to provide a fair and impartial forum for the uniform interpretation and enforcement of the supreme law of the land"); Gulf Offshore Co. v. Mobil Oil Corp., 453 U.S. 473, 483 (1981) (referring to "the desirability of uniform interpretation").
  \item \textsuperscript{158} 502 U.S. 410 (1992).
  \item \textsuperscript{159} \textit{id.} at 412.
  \item \textsuperscript{160} Title 11 U.S.C. § 506(a) (1994) provides that:
    \begin{itemize}
      \item \texttt{[a]}n allowed claim of a creditor secured by a lien on property in which the estate has an interest . . . is a secured claim to the extent of the value of such creditor's interest in the estate's interest in such property . . . and is an
  \end{itemize}
the Court held that a Chapter 7 debtor could not. To reach this result, the Court first strained to find ambiguity in the statute and then adopted a strained interpretation of the statute. The Court gave two reasons for the result, one based on legislative history and the other on the manner in which the court supposed that the system operated. The law prior to the 1978 Bankruptcy Code had permitted a secured creditor's lien to "pass through bankruptcy unaffected." Indeed, that language appeared in some of the legislative history of the 1978 Code. The Court presumed it should continue to do so. The systemic reason the Court gave for not permitting the "strip down" was that it would cause the creditor to "lose the benefit of any increase in the value of the property by the time of the foreclosure sale."

This second reason—the only part of the opinion that addresses the functioning of the bankruptcy system—evidences a curious misunderstanding on the part of the Court. The Court supposed that the bankruptcy judge would determine the value of the property, and then there would be a substantial delay during which the value of the property might appreciate and finally a foreclosure in which the debtor would be able to claim the appreciation. In fact, bankruptcy practice permits a variety of creditor strategies for avoiding the occurrence of a time gap, the loss of appreciation, and even the foreclosure itself.

The Court was probably unaware that, in or out of bankruptcy, a debtor can reduce the value of a secured debt to the value of the collateral by a variety of means. Assume, for example, that the debtor

unsecured claim to the extent that the value of such creditor's interest . . . is less than the amount of such allowed claim.

Title 11 U.S.C. § 506(d) (1994) provides that "[t]o the extent that a lien secures a claim against the debtor that is not an allowed secured claim, such lien is void." For cases and comment agreeing with the interpretation I present here, see infra notes 167-68 and accompanying text.

161 See Dewsnup, 502 U.S. at 417.
162 Id. at 418.
163 See id. at 419.
164 Id. at 417.
165 For example, (1) the Chapter 7 trustee may distribute collateral directly to the secured creditor, see 11 U.S.C. § 725 (1994); see also LoPucki, supra note 111, at 398-99 (discussing § 725); (2) the Chapter 7 trustee may, with the consent of the secured creditor, sell the property during the chapter 7 case, thus fixing the value as the net sale price, see 11 U.S.C. § 363(f) (1994); In re Kids Stop of America, Inc., 64 B.R. 397, 402 (Bankr. M.D. Fla. 1986); LoPucki, supra note 111, at 400-07; Barry E. Adler, Creditor Rights After Johnson and Dewsnup, 10 BANKR. DEV. J. 1 (1993-94) (arguing that the correct resolution of the Dewsnup problem is to force liquidation of the collateral in the bankruptcy court rather than to permit the lien to "pass through bankruptcy unaffected"); (3) the court may lift the stay, permit the secured creditor to take possession of the collateral and sell it, and then fix the value on the basis of the sale price, see 11 U.S.C. § 506(a) (1988); or (4) the bankruptcy court may conduct the foreclosure, see In re Memorial Estates, Inc., 797 F.2d 516 (7th Cir. 1986) (fixing the value as the net sale price).
owes $10,000 on a car worth $6,000. In theory at least, the debtor can surrender the car to the secured creditor. The secured creditor will have to sell it. Based on the assumption of a $6,000 value, the sale price will not exceed that amount. If the debtor is the purchaser, the lien in effect has been stripped down. Alternatively, the debtor could strip the lien down through confirmation of a plan under Chapter 11, Chapter 12, or Chapter 13 of the Bankruptcy Code. In providing for an automatic strip-down, Bankruptcy Code §506(d) opened no new substantive remedy to debtors; it merely permitted debtors to do directly what debtors already could do by strategic action—reduce secured debt to an amount no greater than the value of the collateral. Section 506(d) enabled the debtor—who is often the highest and best user of the collateral—to continue to own it and use it if the debtor chose to do so.

Principally, what Dewsnup accomplished was to channel strategically-minded debtors into alternative strategies that reached the same result, though probably with higher transaction costs. To the extent that Dewsnup was “successful” in permitting liens to “pass through

---

166 In practice, the debtor might encounter some difficulty in becoming the purchaser. If the secured creditor knows that the debtor values the car at an amount above market price, then the secured creditor might charge an above market price. After the debtor buys the car, the creditor might enforce the deficiency judgment against the debtor. Debtor-creditor strategists regard both of these problems as easy to solve.
167 See, e.g., Wade v. Bradford, 39 F.3d 1126, 1129 (10th Cir. 1994) (“[W]e agree with the majority of courts considering this issue that ‘Dewsnup’s holding cannot be imported into Chapter 11 cases without eviscerating other key provisions and principles of that reorganization chapter.’”) (quoting Dever v. IRS (In re Dever), 164 B.R. 132, 133 (Bankr. C.D. Cal. 1994)); In re Butler, 139 B.R. 258, 259 (Bankr. E.D. Okla. 1992) (holding that the application of Dewsnup to a reorganization case would “gut the sum and substance of the reorganization and rehabilitation of debt concept[s]”).
168 See, e.g., Harmon v. United States, 184 B.R. 352, 354 (D.S.D. 1995) (“‘Chapter 12 was specifically designed to facilitate the stripping down of liens on family farms with repayment of reduced debt by installments under a plan of reorganization—in other words, exactly what the Dewsnup debtors were trying to do.’”) (quoting In re Dever, 164 B.R. at 159).
169 See, e.g., Bank One, Chicago, NA v. Flowers (In re Bank One), 183 B.R. 509, 513-14 (N.D. Ill. 1995) (holding that the phrase “allowed secured claim” in § 506(d) of the Bankruptcy Code should not be given the same meaning in Chapter 13 that Dewsnup assigned to it in Chapter 7 and permitting lien stripping in Chapter 13 after Dewsnup).
170 See Adler, supra note 165, at 16 (arguing that the correct resolution of the Dewsnup problem is to force liquidation of the collateral in the bankruptcy court rather than to permit the lien to “pass through bankruptcy unaffected”); Robert K. Rasmussen, A Study of the Costs and Benefits of Textualism: The Supreme Court’s Bankruptcy Cases, 71 WASH. U. L.Q. 535, 584-85 (1993) (arguing against the result in Dewsnup, because it enables the secured creditor to recover more than the market value of the collateral whereas “strip down simply replicates [the legitimate elements of] state law foreclosure proceedings—the creditor is left with the value of the collateral”).
171 See, e.g., Hoffman Farms v. Pokela (In re Hoffman Farms), 195 B.R. 80, 83 (Bankr. D.S.D. 1996) (noting a line of cases in which strategy-minded debtors have, with mixed success, employed the “strip down” available in the reorganization chapters, and then converted to Chapter 7 to discharge the unsecured portion of the lien); In re Dever, 164 B.R. at
bankruptcy unaffected," it gave the creditor control of the collateral and thwarted a central goal of the bankruptcy system: to prevent hold-ups.\footnote{172}{Generally speaking, a “hold-up” is a bargaining position based on the ability to harm the other party, without benefit to one's self. The secured creditor who “controls the collateral” has the ability to deprive the debtor of the collateral, but cannot get more than market value by selling it to someone else. See Margaret Howard, Stripping Down Liens: Section 506(d) and the Theory of Bankruptcy, 65 Am. Bankr. L.J. 975, 419-20 (1991) (“Denial of strip down carries a potential for inappropriate strategic behavior by creditors that runs counter to Congress’ [sic] demonstrated concern with creditor misbehavior. This concern appears throughout the Code.”); Rasmussen, supra note 170, at 585 (explaining that “[a]t an actual foreclosure sale, the creditor can bid in its claim even though this claim exceeds the value of the collateral . . . [thereby] forcing the bidding . . . up to the subjective value which the debtor attaches to the [collateral].”).}

The reaction of the bankruptcy community to \textit{Dewsnup} bordered on contempt.\footnote{173}{See, e.g., Phoenix Mut. Life Ins. v. Greystone III Joint Venture (\textit{In re Greystone III Joint Venture}), 995 F.2d 1274, 1285 (5th Cir. 1992) (Jones, J., dissenting from grant of rehearing) (“How one should approach issues of a statutory construction arising from the Bankruptcy Code has been clouded, in my view, by \textit{Dewsnup} v. Timm.”); In re Dever, 164 B.R. at 158 (arguing that “[t]he basic premises of the \textit{Dewsnup} opinion are faulty” and stating that “that the \textit{Dewsnup} rule is unworkable in Chapter 11 strongly suggests that the Supreme Court should reconsider its decision”); Taffi v. United States (\textit{In re Taffi}), 144 B.R. 105, 114 (Bankr. C.D. Cal. 1992) (referring to the “faulty statutory analysis engaged in by the \textit{Dewsnup} majority” and hypothesizing “[i]f I could apply 11 U.S.C. § 506(d) as Congress wrote it.”); Margaret Howard, Dewsnupping the Bankruptcy Code, 1 J. Bankr. L. & Prac. 513 (1992) (discussing the unfortunate consequences of \textit{Dewsnup}); Lawrence Ponoroff, Construction Claims in Bankruptcy: Making the Best of a Bad Situation, 11 Bankr. Dev. J. 343, 356 n.60 (1995) (stating that “[t]he emerging view . . . seems to wisely limit the holding in \textit{Dewsnup} to the facts of the case.”); Jane Kaufman Winn, Lien Stripping After Nobelman, 27 Loy. L.A. L. Rev. 541, 558 (1994) (referring to \textit{Dewsnup} as “widely criticized” and a “strained interpretation”); see also Karen Gross, Justice Thurgood Marshall's Bankruptcy Jurisprudence: A Tribute, 67 Am. Bankr. L.J. 447, 456-57, 457 n.81 (1993) (stating that she predicted the opposite outcome in \textit{Dewsnup} from a reading of the text and referring to the Court's approach as “mock-textualism”); Rasmussen, supra note 170, at 585 (stating of \textit{Dewsnup} that “[a] practical reasoning approach relying on traditional bankruptcy policy would reach a contrary result”). But see Adler, supra note 165, at 2 (acknowledging that the \textit{Dewsnup} Court “refused to honor the plain meaning of the Bankruptcy Code,” but applauding the decision because it protected creditors against erroneous valuations by bankruptcy judges).}

Given that the Court has little or no expertise regarding the systems with which it tinkers and no systematic means of acquiring the benefit of the expertise of others,\footnote{174}{The Court might get the benefit of the expertise of the bankruptcy judge who decides the case in the first instance, but only haphazardly. The bankruptcy judge may not write an opinion or may not give it the consideration it would receive if the judge knew that the case was bound for the Supreme Court. In many instances, the bankruptcy judge will not have the level of expertise that a system designer would call upon. Most importantly, the system provides no practical means for the bankruptcy judge to interact with the Court by, for example, answering the Justices' questions on matters that puzzled them. Amicus briefs are another possible source of information. But briefs are a poor medium for presenting a systems analysis, even if the brief writer were aware of the possibility and had the expertise to conduct such an analysis.} mistakes like \textit{Dewsnup} probably
occur with great regularity. In deciding cases, the Court should concern itself with the objectives of both the court system and the law-related system in which the Court intervenes. The discussion of Judge Kozinski's decision in *Peregrine* in Part IV illustrates the distinction between these two sets of objectives. When Judge Kozinski talked about "parallel state recordation systems that could put parties on constructive notice as to encumbrances on copyrights . . . interfering with the effectiveness of the federal recordation scheme," he demonstrated his concern with the objectives of the recordation system. When Judge Kozinski acknowledged that "this is the system Congress has established and the court is not in a position to order more adequate procedures," he demonstrated his concern with the objectives of the system that allocates authority to legislatures and courts. In short, Judge Kozinski recognized the authority of Congress to prescribe questionable procedures for the recordation system, because only such a recognition could assure the continued smooth functioning of the court system. If one assumes that Judge Kozinski was in a better position than the legislature to decide what is best for the recordation system, then the trade-off was unfortunate. One might wonder whether it is possible to design a system that allowed the pursuit of both sets of objectives in optimal combination. That is the kind of question that systems analysis is uniquely suited to explore.

---


177 The lack of concern with the functioning of the court system was Justice Scalia's principal objection to the majority's opinion in *Dewsnup*. Scalia wrote:

The principal harm caused by today's decision is not the misinterpretation of § 506(d) of the Bankruptcy Code. The disposition that misinterpretation produces brings the Code closer to prior practice and is, as the Court irrelevantly observes, probably fairer from the standpoint of natural justice. . . . The greater and more enduring damage of today's opinion consists in its destruction of predictability, in the Bankruptcy Code and elsewhere . . . . When a seemingly clear provision can be pronounced "ambiguous" sans textual and structural analysis, . . . innumerable statutory texts become worth litigating.

*Dewsnup*, 502 U.S. at 435 (Scalia, J., dissenting).

178 The judge who has concrete facts is in a better position to make certain kinds of decisions. That may at least partially explain why the American legal system has evolved from one in which judges did not "make" law to one in which they do. *See* Posner, *supra* note 125, at 5 (arguing that judges appropriately make law in a restricted class of cases because of their access to "the information generated by the parties to concrete disputes"); *cf.* Jerome Frank, *Law and the Modern Mind* 35-45 (1970) (discussing the reasons for maintaining the myth that judges do not make law). *But see* Henderson, *Process Constraints*, *supra* note 7, at 907-11 (describing the planning problems resulting from the mutual interdependency of issues as "polycentric," and arguing that they are unsuitable for the adjudicatory process and instead should be addressed in the rulemaking process).
A complex, modern society is composed of law-related systems that perform a variety of functions. Among other things, these systems process litigation, produce goods and services, provide financing for entrepreneurs, gather and publish information, and control behavior in public places. The control necessary for the proper functioning of these systems is provided through physical systems, social norms, and formal law.

Most legal scholarship is normative; scholars propose changes in the rules governing these systems. Yet, most legal scholars know little about the operation of these systems. As a result, no one should take this type of legal scholarship seriously, and few do. Such scholarship is out of touch with reality.

In fact, no one may have a very good understanding of the operation of many of these systems. Members of Congress are unlikely to understand much about bankruptcy, corporate finance, telecommunications, or most of the other systems they attempt to alter through legislation. Staff members who write the legislative history rarely have much expertise. Both look to lobbyists and those they represent for information and understanding. Those who are participants in the law-related system will ordinarily understand how the system affects them, but most are not well situated to observe the system's overall functioning. For the most part, the systems are not designed; they simply grow up over time. Courts, legislatures, and administrative agencies occasionally attempt to make changes in them, but nearly always incrementally and often without success.

The systems approach provides a way for legal scholars to get in touch with reality, to discover how law-related systems work through empiricism, and to discover how they can be improved through modeling. The method is analogous to the kind of systems analysis used to manage complexity in the creation of business information systems and other complex computer programs. A basic text on building business information systems defines systems analysis as "the investigation of a system to decide what needs to be done to make it more...

179 My impression gleaned from twenty-five years of studying the bankruptcy system, during which time I have formally interviewed hundreds of lawyers and discussed bankruptcy with many more, is that bankruptcy lawyers know a great deal about the kinds of cases they handle, but are surprisingly ignorant about what is going on in the rest of the bankruptcy system. Lynn M. LoPucki, Chapter 11: An Agenda for Basic Reform, 69 AM. BANKR. L.J. 573, 580 (1995) (arguing that "the Chapter 11 procedure designed by big-case lawyers for big cases has produced unreasonable delay and expense in ordinary Chapter 11 cases").

efficient and effective." That often is precisely the task of legal scholars with respect to law-related systems.

The first step in building a business information system is to figure out what the company wants the system to do—that is, the purposes of the system. To do that, the analyst examines the existing system to see how it works and interviews people in the company to find out how the system presently serves them and how it could serve them better in the future. The second step is to generate a system design, a sort of "blueprint" for the system. This blueprint "identif[ies] the components of a system and specif[ies] their operation and interaction." For the law-related systems with which I am most familiar, bankruptcy and secured credit, there is no equivalent to this blueprint—no document or model that purports to state what purposes the systems are supposed to serve or how they are supposed to operate. Legisla-
tive history generally is simplistic. The fact that these systems operate without blueprints may explain why many of them work so badly. Legal scholars are the persons in our society best situated to analyze these systems and document them.

To analyze a law-related system, the analyst must take account of the complex interrelationships among its parts. The limit on what the analyst can accomplish in that regard is the limit on what the human mind—with whatever external aids are available—can comprehend. Systems analysis is a methodology specifically directed at the management of complexity. The analytical power of the methodology is a function of the number of goals, elements, and circumstances that the methodology can take into account simultaneously. Systems analysis is powerful specifically because it seeks to maximize that number.

The type of systems analysis described in this Article is heavily dependent on empiricism. Systems analysis identifies the questions for empirical research and thereby provides the theoretical framework for empirical inquiry. One can conduct a systems analysis norma-
tively, but that analysis does not have inherent normative content. By making the putative goals and system functions explicit, systems analy-

181 Gibson & Hughes, supra note 5, at 7-8.
182 Id. at 9.