

A Cognitive Science Approach to Takings

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No matter how beautiful and no matter how perfectly the laws or the way may bring order into the lives of the People, those powers must be renewed; otherwise the People will become separated from their laws. They will no longer understand the power of their symbols, and it will not be long before the power they are following will destroy them. First the ritual will become important; then the law and ritual will demand that the People follow the law blindly. The People will become blind to their own law, and that power will devour them. The way and the law must be completely understood by the People and truly be a part of the People.

—Hyemeyohsts Storm, Song of Heyoehkah¹

Introduction

TAKINGS LAW DETERMINES WHEN governmental action has such an impact on private property that a remedy, by way of injunction, damages, or forced condemnation, is required by Just Compensation clauses in state and federal constitutions.² Examples include governmental

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1. HYEMEYOHSTS STORM, SONG OF HEYOEKKAH 131 (1981) (quotations omitted). *See also* HYEMEYOHSTS STORM, SEVEN ARROWS 1–11 (1972).

2. **Error! Main Document Only.** The Fifth Amendment to the Constitution provides in relevant part: “[N]or shall private property be taken for public use, without just compensation.” U.S. CONST. amend. V.

State just compensation provisions are similar to the federal just compensation clause, except that many add that “damaging” of private property will also give rise to a takings claim. *See, e.g.*, CAL. CONST. art. I, § 19(a) (“Private property may be taken or damaged for a public use and only when just compensation . . . has first been paid . . .”); UTAH CONST. art. I, § 22 (“Private property shall not be taken or damaged for public use without just compensation.”).

prohibitions against the filling of wetlands,³ prohibitions on the sale of eagle feathers,⁴ and restrictions on modifying historic structures.⁵

Takings doctrine,⁶ however, is in serious disarray. Courts and commentators have long been baffled by identification of the relevant property for purposes of takings analysis and determining exactly when a “taking” occurs.⁷

This Article addresses the takings problem by proposing that we change the discourse. The Article suggests that a cognitive science approach to the takings field will result in a reconstruction of this area that will allow us to better address the concerns underlying the present doctrinal confusion. Part I describes the field of cognitive science, which seeks to organize knowledge in terms of what we perceive and the way we use cognitive models to learn and re-learn the world around us.⁸ The Article demonstrates that legal doctrines can be productively viewed as cognitive models. The Article then critically analyzes the strengths and shortcomings of viewing legal doctrines in cognitive terms.⁹

Part II illustrates the application of the cognitive science approach to the takings area.¹⁰ Since the area has proved particularly intractable under conventional legal analysis,¹¹ it is an especially useful laboratory in which to

3. *Palazzolo v. Rhode Island*, 533 U.S. 606, 611–12 (2001); *Lost Tree Vill. Corp. v. United States*, 707 F.3d 1286, 1288 (Fed. Cir. 2013).

4. *Andrus v. Allard*, 444 U.S. 51, 52–54 (1979).

5. *Penn Cent. Transp. Co. v. City of New York*, 438 U.S. 104, 107 (1978).

6. For a more thorough examination of the takings doctrine, see *infra* Part II.

7. See **Error! Main Document Only.** *Penn Cent. Transp. Co.*, 438 U.S. at 124 (“[T]his Court, quite simply, has been unable to develop any ‘set formula’ for determining when ‘justice and fairness’ require . . . [compensation] by the government”); see also *San Diego Gas & Elec. Co. v. City of San Diego*, 450 U.S. 636, 649 n.15 (1981) (Brennan, J., dissenting) (“One distinguished commentator has characterized the attempt to differentiate ‘regulation’ from ‘taking’ as ‘the most haunting jurisprudential problem in the field of contemporary land-use law . . . one that may be the lawyer’s equivalent of the physicist’s hunt for the quark.’” (quoting CHARLES HAAR, *LAND-USE PLANNING* 766 (3d ed. 1976)); Gideon Kanner, *Hunting the Snark, Not the Quark: Has the U.S. Supreme Court Been Competent in Its Effort to Formulate Coherent Regulatory Takings Law?*, 30 URB. LAW. 307, 308 (1998) (“The incoherence of the U.S. Supreme Court’s output in this field has by now been demonstrated time and again by practitioners and academic commentators *ad nauseam*, and I refuse to add to the ongoing gratuitous slaughter of trees for the paper consumed in this frustrating and increasingly pointless enterprise.”); Lynda J. Oswald, *Cornering the Quark: Investment-Backed Expectations and Economically Viable Uses in Takings Analysis*, 70 WASH. L. REV. 91, 91 (1995); Carol M. Rose, *Mahon Reconstructed: Why the Takings Issue is Still a Muddle*, 57 S. CAL. L. REV. 561, 566–67 (1984) (criticizing the diminution in value test).

8. See *infra* Part I.

9. See *infra* Part I.

10. See *infra* Part II.

11. See, e.g., Holly Doremus, *Takings and Transitions*, 19 J. LAND USE & ENVTL. L. 1, 1 (2003)

test a cognitive science approach. Cognitive analysis reveals that conventional takings doctrine is a captive of the public-private distinction, which posits a domain of private existence completely separate from government.¹² Because property rights gain significance only when enforced by government, and since conventional takings doctrine presupposes instead sharply differentiated public and private domains, the use of conventional takings analysis to differentiate a clear boundary between public and private spheres in property law is bound to fail.¹³ Cognitive analysis points the way toward alternative formulations of takings analysis that do not suffer from that critical weakness.

I. Cognitive Science

A. What is Cognitive Science?¹⁴

Cognitive science¹⁵ is the study¹⁶ of how we acquire, process, and use

(“Regulatory takings doctrine . . . is famously incoherent.”); Rose, *supra* note 7, at 561 (“By far the most intractable constitutional property issue is whether certain governmental actions ‘take’ property without satisfying the constitutional requirements of due process and just compensation.”).

12. See generally Hila Shamir, *The Public/Private Distinction Now: The Challenges of Privatization and of the Regulatory State*, 15 THEORETICAL INQUIRIES L. 1, 2–3 (2014) (“[F]ocus[ing] on the survival and perhaps revival of the distinction in the regulatory state of the twenty-first century, and sketch[ing] what form it may take today.”); Christian Turner, *Law’s Public/Private Structure*, 39 FLA. ST. U. L. REV. 1003, 1004–08 (2012) (suggesting that the categorization of laws as public or private should depend on the relative institutional capacities of public or private actors).

13. One way to address the problems that the embedded public-private distinction causes for takings doctrine is to reconstruct takings doctrine by conceiving of property rights in the same fashion as we think of sovereignty rights. See John Martinez, *Reconstructing the Takings Doctrine by Redefining Property and Sovereignty*, 16 FORDHAM URB. L.J. 157, 176–78, 187–94 (1988). In the present article, I suggest an alternative approach that transcends legal doctrine and posits a radically different way of looking at law in general and at takings doctrine in particular.

14. I am indebted to Steven L. Winter and Pierre J. Schlag for their pioneering work in the development of a cognitive approach to law. See Pierre Schlag, *Missing Pieces: A Cognitive Approach to Law*, 67 TEX. L. REV. 1195 (1989); Steven L. Winter, *Bull Durham and the Uses of Theory*, 42 STAN. L. REV. 639 (1990); Steven L. Winter, *The Cognitive Dimension of the Agon Between Legal Power and Narrative Meaning*, 87 MICH. L. REV. 2225 (1989); Steven L. Winter, *Transcendental Nonsense, Metaphoric Reasoning, and the Cognitive Stakes for Law*, 137 U. PA. L. REV. 1105 (1989) [hereinafter Winter, *Transcendental Nonsense*]; Steven L. Winter, *The Metaphor of Standing and the Problem of Self-Governance*, 40 STAN. L. REV. 1371 (1988).

15. See John Martinez, *A Cognitive Science Approach to Teaching Property Rights in Body Parts*, 42 J. LEGAL EDUC. 290, 290–91 (1992).

16. It is not a single unified field, but instead exists as a composite of portions of “philosophy, psychology, artificial intelligence, linguistics, anthropology, and neuroscience.” HOWARD GARDNER, *THE MIND’S NEW SCIENCE* 6–7, 38–45 (1985).

information.¹⁷ The insight of cognitive science provides that meaning is in large part a function of things we already know.¹⁸ These things are method constructs for information processing and memory constructs for information retention. Such constructs are embodied in a “cognitive” dimension of human activity with respect to information.¹⁹ They may be expressed in visual terms, such as pictures, diagrams, or graphs,²⁰ or in

17. See *id.* at 6. There is a substantial body of scholarship on cognitive science. See, e.g., PHILLIP J. DAVIS & REUBEN HERSH, *THE MATHEMATICAL EXPERIENCE* (1981); HOWARD GARDNER, *THE MIND'S NEW SCIENCE: A HISTORY OF THE COGNITIVE REVOLUTION* (2d ed. 1987); PHILIP JOHNSON-LAIRD, *THE COMPUTER AND THE MIND: AN INTRODUCTION TO COGNITIVE SCIENCE* (1989); ZENON W. PYLYSHYN, *COMPUTATION AND COGNITION: TOWARD A FOUNDATION FOR COGNITIVE SCIENCE* (1984); STEPHEN STICH, *FROM FOLK PSYCHOLOGY TO COGNITIVE SCIENCE: THE CASE AGAINST BELIEF* (1983). See also John Martinez, *From Lark Rise to The Storied City*, 3 BRIT. J. AM. LEGAL STUD. 141, 141 (2014) (suggesting a storytelling approach to analyze local government law).

18. JEAN M. MANDLER, *STORIES, SCRIPTS, AND SCENES: ASPECTS OF SCHEMA THEORY* 113 (1984) (“There is indeed structure in the environment, but except at fairly simple perceptual levels, it must be learned through experience. When it is learned it becomes a mental structure that guides the course of future information extraction. The knowledge that is so gained does not consist of lists of unrelated factors or a heap of haphazard associations. As Piaget so often emphasized, the mind has a tendency to organize itself.”).

19. GARDNER, *supra* note 16, at 38.

20. Chaos theory is a related field of learning that touches on the central themes of cognitive science. Sometimes known as nonequilibrium theory or transformation theory, chaos theory “presents a view of the processes of change in which instability, disorder, and unpredictability serve as central features in the development of new forms of organization and complexity.” L. Douglas Kiel, *Nonequilibrium Theory and Its Implications for Public Administration*, 49 PUB. ADMIN. REV. 544, 544 (1989). Chaos theory attempts to explain how apparently random systems, such as natural phenomena, may suddenly and unpredictably experience dramatic transformations. See, e.g., ROBERT SHAW, *THE DRIPPING FAUCET AS A MODEL CHAOTIC SYSTEM* 1–3 (1984) (providing the example of dripping faucets); THOMAS A. BASS, *THE EUDAEMONIC PIE* 1–11 (1985) (providing the example of roulette wheels); JAMES GLEICK, *CHAOS, MAKING A NEW SCIENCE* 11–14 (1987) (providing the example of weather patterns); JOHN BRIGGS & F. DAVID PEAT, *TURBULENT MIRROR, AN ILLUSTRATED GUIDE TO CHAOS THEORY AND THE SCIENCE OF WHOLENESS* 45–52 (1989) (providing an additional example of weather patterns). Additionally, chaos theory attempts to explain how social phenomena experience dramatic transformations. David Loye & Riane Eisler, *Chaos and Transformation: Implications of Nonequilibrium Theory for Social Science and Society*, 32 BEHAV. SCI. 53, 53–54 (1987). See, e.g., Kiel, *supra*, at 544 (providing the example of methods of public administration); John L. R. Proops, *Organization and Dissipation in Economic Systems*, 6 J. SOCIAL & BIOLOGICAL STRUCTURES 353, 353 (1983) (providing the example of market economies). At a general level of analysis, the application of cognitive theory to understanding of law and legal reasoning may be viewed in chaos theory terms as a “paradigm shift” or “transformation” from one way of looking at law to another.

Chaos theory also incorporates the use of graphic representations in the form of diagrams to illustrate the operation of dynamic systems. The application of cognitive science to law similarly entails the use of mental representations to explain the acquisition, processing, and use of information to achieve meaning. This is a characteristic of chaos theory as well in its use of graphic representations for understanding the operation and transformation of dynamic systems.

conceptual terms such as analytical models, paradigms, schemas, stock stories, narratives, or rules.²¹ For example, the idea of “an apple” may be represented in visual terms by the picture of an apple that we saw in our first-grade reading books. In conceptual terms, it may be represented as an example of a food group we call “fruits” or as an example of the items which we can usually safely consume.²²

We live and re-live our experiences through our cognitive models.²³ Thus, we recognize apples because of our cognitive construct of “apple-ness,” and can adjust our behavior accordingly. If we hold a ripe apple in our hand, applying what we already know about apples, we can go ahead and eat it without further concern. Knowledge is therefore a process of “recognition” or “knowing again,” as well as the acquisition of fresh awareness.²⁴

At that more specific level of analysis as well, then, a cognitive science approach to law resembles the explanatory method of chaos theory.

21. Edward L. Rubin, *The Practice and Discourse of Legal Scholarship*, 86 MICH. L. REV. 1835, 1838–39 (1988) (“[O]ur sense of reality is determined . . . by the *cognitive constructs* that make thinking possible.”) (emphasis added); GARDNER, *supra* note 16, at 383 (“Any number of vocabularies and conceptual frameworks have been constructed in an effort to characterize the representational level—scripts, schemas, symbols, frames, images, mental models, to name just a few.”). See also MANDLER, *supra* note 18 (discussing the relationship of “schema theory,” another branch of the cognitive science tree).

22. Cognitive constructs also may be used as metaphors to express a collection of characteristics. For example, an apple may be a cognitive construct symbolizing good health, as in the expression, “an apple a day keeps the doctor away.” The expression, “an apple for the teacher,” may be an ambiguous construct symbolizing either healthy appreciation for a teacher, or, in contrast, obsequious behavior to curry favor.

23. MANDLER, *supra* note 18, at 112.

Selection and abstraction, interpretation and integration surely occur. We would be in a sorry state without them. But to understand these processes in detail requires us to understand the knowledge structures of the processor, since it is these structures that determine what is selected and abstracted, that control interpretation, and into which new material is integrated.

Id.

24. GARDNER, *supra* note 16, at 126.

[R]esearchers have come to appreciate anew that human subjects do not come to tasks as empty slates: they have expectations and well-structured schemata within which they approach diverse materials Thus, an influential alternative approach in cognitive psychology focuses . . . on how the organism, with its structures already prepared for stimulation, itself manipulates and otherwise reorders the information it freshly encounters—perhaps distorting the information as it is being assimilated, perhaps recoding it into more familiar or convenient form once it has been initially apprehended.

Id.

Gerald Frug makes similar observations in his article on cities:

In this limited endeavor, I suggest that people perceive the world by selecting out those

Cognitive models have descriptive and normative dimensions. The descriptive dimension may be defined as an approximation of reality as it is. The normative dimension may be defined as an approximation of reality as it should be. Each of these dimensions may be expressed in terms of past, present, and future time frames. Thus, in their descriptive dimension, cognitive models embody recollections of what past reality *was*; impressions of what present reality *is*; and predictions about what future reality *will be*. For example, we construct an impression of what we were like as children, what we are like today, and what we will be like in our old age. In their normative dimension, cognitive models embody a desire about what each of these time frames *should* be. Thus, we construct for ourselves a desire of what we should have been like as children; a desire about what we should be like today, and a desire about what we should be like in our old age.

The descriptive and normative dimensions of cognitive models play off each other. For example, there is constant interplay between what we were like, and what we wish we had been like when we were young. Our memories begin to fade as our standards for ourselves change, so we may tend to believe that we were, in fact, the ideal child that we imagine that

things which seem important to them and that their actions are tailored to those selected perceptions. Thus, the empirical world—the economic, demographic, and political activities that affect city life—has been the source of people’s understanding of cities, and has affected their ideas of and actions regarding city power. But their frames of reference, their liberal ideology, have organized the mass of empirical data and experience in a way that has channeled their perceptions and actions, and therefore has influenced the development of the cities. To put it another way, there has been a continual process of accommodation of people’s ideas about cities to the empirical world as they saw it and at the same time what was seen has been affected by selecting out, or assimilating, possible perceptions of the world and of the city to conform to preexisting ideas. The combined process of accommodation of ideas to experience and assimilation of experience to ideas means that, to some extent, the world is made to conform to our ideas and, to some extent, our ideas are made to conform to the world.

Such a process should not be totally unfamiliar to lawyers, who understand the world as presenting problems that demand legal solutions (a role for experience) and the enactment of laws as changing that world by affecting human behavior (a role for ideas). The methodology applied here merely broadens that view. It is not only the passage of laws that affects how cities develop. Our ideology, that is, our way of understanding the world, affects our selection of the laws we pass, and that understanding itself, in addition to the laws it generates, affects people’s actions and thus the development of social life.

Gerald E. Frug, *The City as a Legal Concept*, 93 HARV. L. REV. 1057, 1079–80 (1980) (footnotes omitted). Frug acknowledges that this dynamic may derive from any of the various areas of learning, including Gestalt psychology, phenomenology, Marxism, structuralism, or the later Wittgenstein. *Id.* at 1079 n.92. Gardner makes a similar observation by gathering up the fields of philosophy, psychology, artificial intelligence, linguistics, anthropology, and neuroscience under the umbrella of cognitive science. GARDNER, *supra* note 16, at 6–7 (describing that “cognitive science” exists as a composite of portions of each of these fields, not as a single, unified cognitive science).

every child should be. To extend the example into the present time frame; as our standards for ourselves change, we may tend to believe that we are, in fact, the people we believe we should be. Reaching into the future, in this same way, we may tend to believe that we will, in fact, become the people we think we should be.

The interplay between the descriptive and normative dimensions of our cognitive models has profound implications. If what we see is a function of what we want to believe is real, then we will only see what we want to see. Our cognitive models, thus, are not just tools we use to observe the world; they also embody and implement our values by determining what we see and how we value (or devalue) what we see. If this interaction between the descriptive and normative dimensions of cognitive models exists in reference to the physical world, it is reasonable to believe that it also exists in reference to the world of *ideas*, such as the realm of law.

Cognitive models are not new in the law. We use powerful cognitive representations about reality and about the processes of reasoning in law—and we may do so implicitly and without reflection. For example, we use “A v. B” to represent the “reality” of an appellate resolution of a legal dispute. This is the symbolic expression of a dichotomy, one of the most powerfully captivating forms of reasoning.²⁵ It embodies the idea that either A or B will win. The possibility that both will win, or that both will lose, does not fit comfortably within that cognitive construct. We also reify the symbolic representation of the dispute by treating the cognitive construct as if it were reality: we make arguments for each side. As the substantial literature on alternative dispute resolution demonstrates, reality is far from that paradigm of sharply focused contests turning on a few issues.²⁶

Another example of cognitive modeling in law is the classic formulation of how first year students approach the briefing of cases:

Facts
Issue
Rules

25. JACQUES DERRIDA, *DISSEMINATION* viii (Barbara Johnson trans., 1981) (discussing such dichotomies as bipolar conceptualizations).

26. See, e.g., STEPHEN B. GOLDBERG, ERIC D. GREEN & FRANK E.A. SANDER, *DISPUTE RESOLUTION* (1985); Jeffrey S. Brenner, *Alternatives to Litigation: Toxic Torts and Alternative Dispute Resolution—A Proposed Solution to the Mass Tort Case*, 20 RUTGERS L.J. 779 (1989); James J. Calder, James P. Kleinberg, Abbott B. Lipsky, Jr. & Carlton A. Varner, *A New Alternative to Antitrust Litigation: Arbitration of Antitrust Disputes*, 3 ANTITRUST 18 (1989); Steven C. Nelson, *Alternatives to Litigation of International Disputes*, 23 INT'L LAW. 187 (1989); Steering Committee Report, *American Law Institute Study on Paths to a “Better Way”: Litigation, Alternatives, and Accommodation*, 1989 DUKE L.J. 811 (1989).

Analysis

Conclusion

This model communicates a deductive process that moves from identification of the facts, to identification of the questions raised by those facts, to the identification of the applicable rules for resolving those facts, to a discussion of the interrelationship of facts, rules, and issues, and then moving inexorably to the conclusion in the case. However, as we become more familiar with the workings of judicial decision making, this formal approach quickly breaks down. We find that the rules reflect deeper social values, that the rules change as values change, and that values change as society changes. We learn that facts become relevant or irrelevant according to the applicable doctrine. We learn that the identity of the issues is affected by whether the doctrine is in flux or relatively stable. We find that analysis can take many different forms, and, finally, we discover that conclusions are ephemeral, controlling only with respect to the space and time that gave rise to the particular dispute.

Cognitive science seeks to place talk of the cognitive dimension of human activity on an equal footing with conventional modes of discourse.²⁷ There is a well-established tradition of incorporating ideas from the natural sciences²⁸ and social sciences²⁹ into legal analysis,³⁰ so it is not surprising that a significant body of scholarship has already developed around the application of cognitive science to law.³¹ This Article adds to the

27. GARDNER, *supra* note 16, at 383; Winter, *Transcendental Nonsense*, *supra* note 14, at 1106.

28. See, e.g., G. Edward White, *From Sociological Jurisprudence to Realism: Jurisprudence and Social Change in Early Twentieth-Century America*, 58 VA. L. REV. 999, 1013–26 (1972); Donald H. Gjerdingen, *The Politics of the Coase Theorem and Its Relationship to Modern Legal Thought*, 35 BUFF. L. REV. 871, 907 (1986).

29. See, e.g., HUNTINGTON CAIRNS, *LAW AND THE SOCIAL SCIENCES* (1969); MORRIS L. COHEN, NAOMI RONEN & JAN STEPAN, *LAW & SCIENCE: A SELECTED BIBLIOGRAPHY* (1978); RICHARD LEMPert & JOSEPH SANDERS, *AN INVITATION TO LAW AND SOCIAL SCIENCE: DESERT, DISPUTES AND DISTRIBUTION* (1986); LEON LIPSON & STANTON WHEELER, *LAW AND THE SOCIAL SCIENCES* (1988); WALLACE D. LOH, *SOCIAL RESEARCH IN THE JUDICIAL PROCESS: CASES, READINGS AND TEXT* (1984); JULIUS STONE, *LAW AND THE SOCIAL SCIENCES IN THE SECOND HALF CENTURY* (1966); JUNE L. TAPP & FELICE J. LEVINE, *LAW, JUSTICE, AND THE INDIVIDUAL IN SOCIETY: PSYCHOLOGICAL AND LEGAL ISSUES* (1977).

30. See generally COHEN, RONEN & STEPAN, *supra* note 29 (listing works involving analysis on law and science).

31. See, e.g., Jay M. Feinman, *The Jurisprudence of Classification*, 41 STAN. L. REV. 661 (1989); Gerald P. López, *Lay Lawyering*, 32 UCLA L. REV. 1 (1984); Schlag, *supra* note 14; see also Timothy P. Terrell, *Flatlaw: An Essay on the Dimensions of Legal Reasoning and the Development of Fundamental Normative Principles*, 72 CALIF. L. REV. 288, 304–07 (1984) (applying cognitive principles to explain legal reasoning by means of graphic representations, such as lines, planes, and cubes). For an excellent discussion on how entrenched cognitive models act as cognitive blocking mechanisms on counter-hegemonic methods of legal analysis, see MARK KELMAN, *A GUIDE TO CRITICAL*

conversation.

B. A Cognitive Science Approach to Law

Cognitive science explains that the processes of formation, use, and transformation of cognitive models are systematic and imaginative. The first step involves the “basic experiences” common to all human beings by virtue of the general structure and functioning of the human organism in its environment.³² For example, one of these basic experiences is our primal discovery “that we can obtain desired objects by moving toward them through space.”³³ As a second step, we conceptualize—or imagine—cognitive models that embody these basic experiences. Thus, we may imagine a *source-path-goal* cognitive model to represent the basic experience of obtaining a desired object by moving toward it through space.³⁴ Third, we may use the source-path-goal cognitive model and its source, basic experience to “experience” more abstract purposive behaviors, such as our conceiving of a half-completed task as “being halfway there.”³⁵ Finally, we may use the source-path-goal cognitive model as the basis for metaphors to structure other aspects of our existence. Thus, the metaphor, “Life is a journey,” may be elaborated from the source-path-goal cognitive model to conceptualize the nature of life.³⁶

We use cognitive models and their derivative metaphors to understand, retain, and apply more complex concepts.³⁷ Legal concepts thus can be profitably explored in terms of a cognitive science approach.³⁸ For example, conceived in terms of cognitive models, legal doctrine may be said to arrange legal analysis into *core areas of certainty*—in which “most legally trained observers committed to applying [a] rule will experience the

LEGAL STUDIES 270–356 (1987) (discussing a move toward cognitive theory of legitimation).

32. Winter, *Transcendental Nonsense*, *supra* note 14, at 1133.

33. *Id.* at 1132.

34. *Id.* Winter sets out some of the most important schemas as source-path-goal, container (in-or-out orientation), front-back, center-periphery, part-whole, and balancing. *Id.* at 1147. These will be discussed later in the Article as the experientialist epistemological approach as applied to legal doctrine. *See infra* Part I.D.

35. Winter, *Transcendental Nonsense*, *supra* note 14, at 1132.

36. *Id.*

37. *Id.* at 1133–34.

38. “Experientialist epistemology suggests that the courts will not function in a substantially different manner [if they self-consciously acknowledge the figurative discourse that clothes their decisionmaking]: They will not be able to purge metaphors from their analyses, but will be driven to other metaphors.” *Id.* at 1164. “Metaphor is inevitable in legal analysis because it is central to human rationality; it is a primary mode of comprehension and reasoning.” *Id.* at 1166.

rule as having sufficient structure to constrain decision”—and *peripheries*, where the degree of “fit” between the cognitive model and the particular circumstances leads to indeterminacy, and where metaphoric extensions of the cognitive model inform the manner in which we resolve cases.³⁹

Expressing substantive legal doctrines as categorical imperatives reveals their *core-and-periphery* structure. Thus, for example, “if there are facts evidencing an offer, an acceptance and consideration, then the legal conclusion that there is a contract can be drawn.”⁴⁰ Or, “if there are facts evidencing a governmental approval of a construction project, upon which a developer has substantially and reasonably relied in good faith, then the legal conclusion can be drawn that the developer has a vested right to continue the project to its completion even though the prevailing zoning regime has been changed to prohibit the project.”⁴¹ There are circumstances that fall clearly within the cores of these doctrines. For example, if a person does not assent to be bound, then in the absence of any other factors suggesting that we find an enforceable relationship, no contract will be found.⁴² Similarly, if no governmental representation is made, there is no basis upon which the developer can claim to have

39. *Id.* at 1182–83 (emphasis added). *See also* Willard Van Orman Quine, *Two Dogmas of Empiricism*, in WILLIAM R. BISHIN & CHRISTINA D. STONE, LAW, LANGUAGE, AND ETHICS 327 (1972) (referring to rules as force fields with cores and peripheries); Duncan Kennedy, *Freedom and Constraint in Adjudication: A Critical Phenomenology*, 36 J. LEGAL EDUC. 518, 533–38 (1986) (also referring to “force fields” of legal doctrines). The “core” of legal doctrines might also be viewed as the idea of the “determinate” character of law: “The main criterion for judging the existence of a determinate answer is whether virtually any intelligent person familiar with the legal system would conclude, after careful study, that the law provides that answer.” Kent Greenawalt, *How Law Can Be Determinate*, 38 UCLA L. REV. 1, 3 (1990). The rhetorical technique of conceptualizing legal analysis dealing with “force fields” with cores and peripheries, of course, is itself a cognitive model. It allows us to ask whether there are any rules for determining which particular legal rule-cognitive model—is applicable in any given situation. This “characterization” step can have a powerful effect on the outcome in any particular case. Our central project here, however, is not to deal with the substance of outcomes, but to demonstrate that the cognitive approach can help illuminate the way in which we do legal analysis.

40. *Cohen v. Cowles Media Co.*, 457 N.W.2d 199, 202 (Minn. 1990); *Ferguson v. New England Mutual Life Ins. Co.*, 554 N.E.2d 1013, 1015 (Ill. App. Ct. 1990); *Shell Pipeline Corp. v. Coastal States Trading, Inc.*, 788 S.W.2d 837, 844 (Tex. App. 1990).

41. *See* Richard B. Cunningham & David H. Kremer, *Vested Rights, Estoppel, and the Land Development Process*, 29 HASTINGS L.J. 623, 625–26 (1978); Donald G. Hagman, *Estoppel and Vesting in the Age of Multi-Land Use Permits*, 11 SW. U. L. REV. 545, 549–50 (1979); David G. Heeter, *Zoning Estoppel: Application of the Principles of Equitable Estoppel and Vested Rights to Zoning Disputes*, 1971 URB. L. ANN. 63, 63–64 (1971).

42. *See generally* RESTATEMENT (SECOND) OF CONTRACTS § 17(1) (1982) (“[In general,] the formation of a contract requires a bargain in which there is a manifestation of mutual assent to the exchange . . .”).

reasonably relied, so no vested right will be found.⁴³ Exploring these legal doctrines at their peripheries, suppose a promisee reasonably understands a promise as intended to induce action, and reasonably relies upon it to his or her detriment or to the benefit of the promisor. Then one can say that another cognitive model, promissory estoppel, has been brought into play.⁴⁴ Similarly, suppose a person completes a construction project and a good reason of social policy in such a scenario (such as the need to avoid waste), screams out for consideration. Then the *nonconforming use theory*, whereby governments must allow a reasonable time for such persons to realize their investment in such projects, comes into play.⁴⁵

C. The Special Role of Standards of Judicial Review

Judicial review of governmental action is a court's appraisal of the correctness of government conduct.⁴⁶ Government conduct may take the form of legislative, judicial, or administrative action. Standards of judicial review are the cognitive lenses through which courts perceive governmental conduct. The elements of such cognitive constructs define not only the "reality" which courts perceive, but also the standard against which the validity of that reality will be measured.⁴⁷

Standards of judicial review of governmental action play a crucial role in legal doctrine. Traditional "legal process" forms of judicial review, for instance,⁴⁸ examine the validity of governmental action in reference to

43. See generally 3 JOHN MARTINEZ, LOCAL GOVERNMENT LAW § 16:64 (2014) (discussing the element of a governmental representation as essential to a claim of estoppel or vested right).

44. Quake Constr., Inc. v. American Airlines, Inc., 537 N.E.2d 863, 867–68 (Ill. App. Ct. 1989); Panto v. Moore Bus. Forms, Inc., 547 A.2d 260, 266 (N.H. 1988); Contempo Constr. Co. v. Mountain States Tel. & Tel. Co., 736 P.2d 13, 16 (Ariz. Ct. App. 1987); RESTATEMENT (SECOND) OF CONTRACTS § 90 (1981).

45. See, e.g., Metromedia, Inc. v. City of San Diego, 610 P.2d 407, 410–12, 425–28 (Cal. 1979), *rev'd on other grounds*, 453 U.S. 490, 493–97 (1981) (billboards); Harris v. Mayor & City Council of Baltimore, 371 A.2d 706, 706–12 (Md. Ct. Spec. App. 1977) (holding that structures converted to multi-unit dwellings were required to be rolled-back to prior, less intensive use). See generally ROBERT C. ELLICKSON & A. DAN TARLOCK, LAND USE CONTROLS 194–98 (1981).

46. John Martinez, *A Critical Analysis of the 1987 Takings Trilogy: The Keystone, Nollan and First English Cases*, 1 HOFSTRA PROP. L.J. 39, 56–65 (1988).

47. Stephen M. Feldman, *Exposing Sunstein's Naked Preferences*, 1989 DUKE L.J. 1335, 1341–44 (1989) (discussing how standards of judicial review are pre-conceived notions of what we expect to see); Martha Minow, *Justice Engendered*, 101 HARV. L. REV. 10, 13–17 (1987) (examining how the Supreme Court's often unstated vantage points affect outcomes); Schlag, *supra* note 14, at 1209–20 (1989) (discussing prerationalist, rationalist, modernist, and postmodernist cognitive modes of perception used as forms of standards of judicial review).

48. See, e.g., HENRY M. HART, JR. & ALBERT M. SACKS, THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW (tent. ed. 1958).

broad policy objectives, depending at least initially on the nature of the interests affected by such action.⁴⁹ For example, governmental action that only affects economic interests is generally viewed with great deference by courts.⁵⁰ Courts first ascertain whether merely economic interests are affected by the governmental action, and if so, go on to ask whether there is a legitimate governmental objective sought to be achieved, and whether the means used to achieve it are reasonably likely to do so under the circumstances.⁵¹ More activist standards of judicial review⁵² apply when fundamental rights, such as speech or privacy,⁵³ or suspect trait

49. This of course is a result of footnote four in *United States v. Carolene Products*, in which the Court distinguished between judicial protection of economic interests and liberty interests. 304 U.S. 144, 152–53 n.4 (1938). See Richard E. Levy, *Escaping Lochner's Shadow: Toward a Coherent Jurisprudence of Economic Rights*, 73 N.C. L. REV. 329, 361 (1995); see also Michael A. Fitts, *The Vices of Virtue: A Political Party Perspective on Civic Virtue Reforms of the Legislative Process*, 136 U. PA. L. REV. 1567, 1571 (1988).

50. The classic case making this distinction is *Williamson v. Lee Optical Co.*, 348 U.S. 483, 490 (1955). See also *Euclid v. Ambler Realty Co.*, 272 U.S. 365, 395 (1926) (utilizing minimal scrutiny in the zoning setting).

51. In *Hancock Industries v. Schaeffer*, the court said:

The court accepts at face value contemporaneous declarations of the legislative purposes, or, in the absence thereof, rationales constructed after the fact, unless “an examination of the circumstances forces [the court] to conclude that they ‘could not have been a goal of the legislation.’” *Minnesota v. Clover Leaf Creamery Co.*, 449 U.S. 456, 463 n.7 (1981) (quoting *Weinberger v. Wiesenfeld*, 420 U.S. 636, 648 n.16 (1975)). Thus, where “there are plausible reasons for [the legislative] action, [the court’s] inquiry is at an end. It is, of course, ‘constitutionally irrelevant whether this reasoning in fact underlay the legislative decision.’” *U.S. Railroad Retirement Board v. Fritz*, 449 U.S. 166, 179 (1980) (quoting *Flemming v. Nestor*, 363 U.S. 603, 612 (1960)).

This court recently examined whether, in seeking a legislative purpose supporting a provision under equal protection challenge where the legislative history does not disclose any purpose, the court is limited to considering only actual, articulated purposes. *Delaware River Basin Comm’n v. Bucks County. Water & Sewer Auth.*, 641 F.2d 1087, 1094–97 (3d Cir. 1981). We concluded: “So long as we are careful not to attribute to the legislature purposes which it cannot reasonably be understood to have entertained, we find that in examining the challenged provisions we may consider purposes advanced by counsel for the Commission or suggested initially by ourselves.” *Id.* at 1097 (internal citations and footnote omitted).

Hancock Indus. v. Schaeffer, 811 F.2d 225, 237 n.10, 238 (3d Cir. 1987). See generally LAURENCE H. TRIBE, *AMERICAN CONSTITUTIONAL LAW* §§ 16-2–16-5 (2d ed. 1988) (discussing minimum rationality review under the Equal Protection Clause). But see generally RICHARD A. EPSTEIN, *TAKINGS: PRIVATE PROPERTY AND THE POWER OF EMINENT DOMAIN* (1985) (arguing that close scrutiny is required when property is affected by governmental action).

52. “Strict scrutiny is thus the process whereby a court makes a detailed examination of a statute, rule or order of a tribunal for exact compliance with, or adherence to, a standard or norm. It is the antithesis of a deferential review.” *Machado v. Musgrove*, 519 So. 2d 629, 632 (Fla. Dist. Ct. App. 1987).

53. See, e.g., *NAACP v. Alabama*, 357 U.S. 449, 460–63 (1958) (freedom of association);

classifications, such as race, are involved.⁵⁴ In those settings, courts inquire whether the government can show an “important” or “compelling” governmental objective to be achieved, whether the means involved is likely to “substantially advance” or is “necessary” to the achievement of the objective, whether there are “alternative channels” for the exercise of the fundamental right involved, and perhaps whether the government has selected the least restrictive means to achieve that objective.⁵⁵ In comparison to these traditional approaches to standards of judicial review of governmental action, revisionist economic theories seek to have courts ensure that legislatures are acting “efficiently.”⁵⁶ “Civic virtue” forms of judicial review, in contrast, seek to have courts assure that legislatures are sufficiently “public-regarding.”⁵⁷

Regardless of which theoretical foundation is used, standards of judicial review embody significant substantive values that are implemented each time the standards are applied. As such, they are particularly powerful kinds of cognitive models. Therefore, we cannot fully understand legal doctrine in cognitive terms without taking the role of standards of judicial review into account because, in a very real sense, substantive law is manifested through such standards.

Harper v. Virginia Bd. of Elections, 383 U.S. 663, 667 (1966) (right to vote); Roe v. Wade, 410 U.S. 113, 152–54 (1973) (right to privacy). For a recent discussion of fundamental interests generally, see City of Cleburne v. Cleburne Living Center, 473 U.S. 432, 439–47 (1985). *But see* C. Edwin Baker, *Property and Its Relation to Constitutionally Protected Liberty*, 134 U. PA. L. REV. 741, 741–42 (1986) (criticizing the dichotomy between liberty and property interests and suggesting that we need to refine our understanding of both instead).

54. *See generally* TRIBE, *supra* note 51, § 16-14 (discussing racial discrimination and equal protection issues).

55. *Id.* § 12-30 (discussing the concept of less restrictive alternatives in the context of First Amendment protections from laws that are overbroad or vague).

56. *See* Frank H. Easterbrook, *The Court and the Economic System*, 98 HARV. L. REV. 4, 7 (1984); Frank H. Easterbrook, *Statutes' Domains*, 50 U. CHI. L. REV. 533, 544–47 (1983); Owen M. Fiss, *The Forms of Justice*, 93 HARV. L. REV. 1, 8–10 (1979); William M. Landes & Richard A. Posner, *The Independent Judiciary in an Interest-Group Perspective*, 18 J.L. & ECON. 875, 885–88 (1975); Richard A. Posner, *Statutory Interpretation—in the Classroom and in the Courtroom*, 50 U. CHI. L. REV. 800, 815–17 (1983); Peter H. Schuck, *The Thickest Thicket: Partisan Gerrymandering and Judicial Regulation of Politics*, 87 COLUM. L. REV. 1325, 1346 (1987).

57. *See* Michael A. Fitts, *The Vices of Virtue: A Political Party Perspective on Civic Virtue Reforms of the Legislative Process*, 136 U. PA. L. REV. 1567, 1574–78 (1988) (providing a skeptical perspective on the civic virtue approach). For a preliminary analysis of the interactive relationship between moral virtue and law, see Donald F. Brosnan, *Virtue Ethics in a Perfectionist Theory of Law and Justice*, 11 CARDOZO L. REV. 335, 336–37 (1989).

D. The Strengths and Shortcomings of a Cognitive Approach to Law

A significant advantage of cognitive legal epistemology is that it expands the methodology of legal analysis to include the role of diverse human experiences. This is particularly evident in critical race theory, in which scholars of color and feminist scholars argue that if the perception of law and legal analysis is in significant part a product of one's experiences, and given that experiences of people of color and women differ significantly from males who are not people of color, then the methods of analysis brought to bear on law by people of color and women will differ commensurately from the methods used by males who are not people of color.⁵⁸ Such an experientialist epistemology provides a useful theoretical structure for the elaboration of diverse perspectives of law. In applying that structure, this Article makes both descriptive and normative claims: an experientialist epistemology may help us understand how conventional legal analysis proceeds and perhaps can also guide us toward how it *should* proceed.⁵⁹

Conceiving of legal analysis in cognitive terms helps us not only to

58. See, e.g., Katharine T. Bartlett, *Feminist Legal Methods*, 103 HARV. L. REV. 829, 880 (1990) ("Experience interacts with an individual's current perceptions to reveal new understandings and to help that individual, with others, make sense of those perceptions."); Richard Delgado, *When a Story is Just a Story: Does Voice Really Matter?*, 76 VA. L. REV. 95, 95 (1990) (discussing the importance of voice in scholarship from the perspective of females and people of color); Richard Delgado, *Storytelling for Oppositionists and Others: A Plea for Narrative*, 87 MICH. L. REV. 2411, 2414-18 (1989) (suggesting the use of narrative as a device to transcend the constraints of conventional legal discourse); Richard Delgado, *The Imperial Scholar: Reflections on a Review of Civil Rights Literature*, 132 U. PA. L. REV. 561, 561-63 (1984) (arguing that there has been systematic exclusion of scholarship by people of color regarding civil rights); Mari Matsuda, *Affirmative Action and Legal Knowledge: Planting Seeds in Plowed-up Ground*, 11 HARV. WOMEN'S L.J. 1, 1-2 (1988) (discussing exclusion of the views of people of color from traditional legal scholarship); Carrie Menkel-Meadow, *Excluded Voices: New Voices in the Legal Profession Making New Voices in the Law*, 42 U. MIAMI L. REV. 29, 29-31 (1987) (discussing exclusion of feminist views from traditional legal scholarship); Kim Lane Scheppele, *Foreword: Telling Stories*, 87 MICH. L. REV. 2073, 2074 (1989) (discussing the use of storytelling as a mental representation for legal analysis); *Pedagogy of Narrative: A Symposium*, 40 J. LEGAL EDUC. 1 (1990).

59. SUSANNE K. LANGER, *PHILOSOPHY IN A NEW KEY: A STUDY IN THE SYMBOLISM OF REASON, RITE, AND ART* x-xi (3d ed. 1957).

The process of philosophical thought moves typically from a first, inadequate, but ardent apprehension of some novel idea, figuratively expressed, to more and more precise comprehension, until language catches up to logical insight, the figure is dispensed with, and literal expression takes its place. Really new concepts, having no names in current language, always make their earliest appearance in metaphorical statements; therefore the beginning of any theoretical structure is inevitably marked by fantastic inventions.

Id.

recognize the cognitive structure of law, but also to more clearly appreciate that such cognitive structuring is both liberating and constraining. Cognitive models help us cope with reality by allowing us to use embodied experiences to structure our perceptions and responses to life. At the same time, however, they constrain our ability to “see” things that may be important.⁶⁰ They do so in at least three significant ways. First, as embodied experiences, they are static representations of a reality that changes: what may have existed in the past may not exist when we use the models to inform us about the present or the future. Second, they filter out data which may be important; thus, our use of cognitive models may lead us astray, either because they were faulty to begin with or because they have become outdated. Third, we may begin to engage in idolatry by treating the models as if they were reality.

We do so in at least two ways. First, we begin to address the models instead of reality. For example, instead of asking whether it is unfair for someone to be subjected to a new zoning regime, even though the person started construction before the law was changed, we instead ask whether the person has a proper permit and has substantially relied on the permit in good faith. While such a construct is useful in the ordinary situation in which a sophisticated developer is involved, it may be inappropriate in other settings. For example, suppose an elderly person began conversion of a single-family residence to a duplex when duplexes were allowed in the neighborhood. Suppose further that she is on a fixed social security income and needs the revenue from the extra unit to make ends meet. Finally, suppose that she merely received oral assurance, not a formal written permit from the building department. The vested rights doctrine⁶¹—and, in fact, most estoppel regimes⁶²—would not allow her to finish the conversion if, in the meantime, duplexes have been zoned out of the neighborhood. Thus, consideration of the underlying reasons for the vested rights doctrine, such as the impact on the property owner in comparison to the interests of

60. “It is the theory which decides what we can observe.” DANIEL BELL, *THE COMING OF POST-INDUSTRIAL SOCIETY: A VENTURE IN SOCIAL FORECASTING* 9 (1973) (quoting Albert Einstein, *in* WERNER HEISENBERG, *PHYSICS AND BEYOND: ENCOUNTERS AND CONVERSATIONS* 63 (1971)). “What interests us, given who we are and where we stand, affects our ability to perceive. . . . [W]e can alter the theory we use to frame our perceptions of the world, [but] we cannot see the world unclouded by preconceptions.” Minow, *supra* note 47, at 46. Martha Minow points out that our cognitive models not only determine what we see, but, like looking through binoculars prevent us from studying the binoculars, cognitive models also prevent us from studying the models themselves. *Id.* at 72 (“[P]atterns for organizing the world . . . foreclose their own reconsideration.”).

61. **Error! Main Document Only.** See 3 MARTINEZ, *supra* note 43, § 16:64.

62. *See id.*

the neighborhood, are not—and, in fact, cannot—be considered.

Cognitive modeling captures the imagination in a second, perhaps more seductive, way.⁶³ We elaborate cognitive models through metaphors. Metaphors are figures of speech in which two objects or relationships are compared using at least one similarity that they share.⁶⁴ For example, when we say that someone is a tiger, we are stating that he shares at least one similarity with a tiger, perhaps aggressiveness. Using a metaphor enables us to transmit a substantial amount of information with a single, powerful rhetorical device. Knowing that someone is a tiger also conveys to our listener that he or she would not want to tangle with this person, since tigers have claws and fangs. Unfortunately, metaphoric representations are packages, which may contain unintended or unsubstantiated information. Accordingly, metaphoric communication may make something appear self-evident, which is far from what is intended or justified in the circumstances. Thus, someone may be a “tiger” at work, but a “pussycat” at home. The tiger metaphor alone, however, carries with it the information that a tiger is a tiger all of the time.

We use metaphors in law extensively. One of the first metaphors students learn in law school is that law is a seamless web.⁶⁵ Legal principles are strands in a web that are tied to every other legal principle, if only remotely. This is a useful metaphor because it helps in understanding, for example, that a vested rights rule may blend into an estoppel rule, and the two may blend into a nonconforming use rule,⁶⁶ and all three may blend into a takings rule.⁶⁷ But how far does the metaphor extend? That is, to

63. For a discussion of the way in which rules of law capture the imagination, see Margaret Jane Radin, *Reconsidering the Rule of Law*, 69 B.U. L. REV. 781, 819 (1989) (“[O]ur understanding of rule-following must be reconstituted so that we know that rules are neither formal in the traditional sense, nor eternal, nor existing independently of us; and so that we know that every application of them is a reinterpretation.”). See also JAMES CLIFFORD, *THE PREDICAMENT OF CULTURE* 25 (1988) (Ethnographers have also become captives of their cognitive lenses, as “[t]he process is complicated by the action of multiple subjectivities and political constraints beyond the control of the writer.”).

64. ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* 7–9 (1990).

65. See Henry E. Smith, *Modularity in Contracts: Boilerplate and Information Flow*, 104 MICH. L. REV. 1175, 1220 (2006) (describing the “law is a seamless web” metaphor as “well-worn cliché”).

66. See 3 MARTINEZ, *supra* note 43, § 16:64 (describing the interconnected concept of a vested right with the estoppel rule).

67. These can all be mapped onto a continuum in which a nonconforming use is a completed project, such as an existing duplex in a zone that has been changed to single family residential. As a general rule, such a structure may remain until the person has amortized his/her investment and/or the useful life of the building. But suppose someone merely obtained a building permit, incurred substantial liabilities, and performed substantial construction in good-

what extent can we trust the cognitive model qua metaphor to present information from the domain of biology that is useful in the domain of law? In terms of the metaphor, one is tempted to ask: Who or what is the spider? Are legislatures or judges or lawyers who make law “spider-like?” Do they capture the careless and suck out their vital juices? Are these bits of information carried by the web metaphor necessarily true of law? Or are they just possible dangers? Are people caught in the web and eaten by the spider?

A cognitive approach to law facilitates understanding of the processes of legal change, but it does not do so predictably. As legal doctrines change over time, we may trace their development in cognitive terms; legal theories as cognitive constructs can evolve over time, interact with neighboring theories and be completely replaced by new theories reflective of more contemporary experiences, metaphors, cultural knowledge, and economic experience.⁶⁸ This results in indeterminacy regarding which theory applies in any given case, which metaphoric elaborations inform that theory, and whether, when, and how a theory may evolve into or be supplanted by another theory. This indeterminacy, however, does not diminish the explanatory power of the cognitive science approach to law, but merely confirms the contingent character of our thought processes.⁶⁹ Cognitive science rejects the objectivist claim that there is a mind-body dichotomy

faith reliance on the permit before the zoning was changed? Then the person would have the right to continue the construction to its completion, at which point the structure would be a nonconforming use subject to being removed in a reasonable period of time as any other nonconforming use. But suppose that there was no “permit” as such, but that there were substantial and specific representations by the local city council that the construction would be allowed to continue even after the zoning was changed. Then, unless some overriding public policy would be offended, the person would be able to continue the project to completion under an “estoppel” doctrine in spite of the changed zoning. But what if there had been no permit or representation and the landowner had instead merely bought the property with the expectation of developing it as duplexes by the time the zoning was changed? Then the just compensation clause would ask whether the government would be required to allow the construction to continue, on the ground that the proposed rezoning “goes too far” and constitutes a “taking” of property.

68. For an examination of First Amendment doctrine in cognitive terms, see Winter, *Transcendental Nonsense*, *supra* note 1416, at 1186–95 (tracing evolution from a rudimentary first amendment “idealized cognitive model,” or “ICM,” consisting of the image of an individual on a soapbox and the image of a basement press cranking out leaflets, to a more sophisticated *marketplace of ideas* ICM, which entails the metaphors of minds as machines, and ideas as products and commodities). Later in the same article, Winter examines commerce clause doctrine and demonstrates how a *container* ICM, whose metaphor is a stream of commerce, is replaced by a *source-path-goal* ICM, whose metaphor is a journey. *See id.* at 1199–1206.

69. *See id.* at 1195–98 (exploring this indeterminacy); *see also* Elinor Ostrom, *Institutional Arrangements and the Commons Dilemma*, in *RETHINKING INSTITUTIONAL ANALYSIS AND DEVELOPMENT* 101, 120 (Vincent Ostrom, David Feeney & Hartmut Picht eds., 1989) (suggesting that multiple levels of analysis are needed to understand institutional behavior).

whereby cognitive models correspond to some part of the body's experience in the world and that, therefore, there must be a "true" cognitive model that accurately represents reality and against which all other models can be measured; instead, cognitive science proposes that cognitive models are simply phenomena that describe how humans behave.⁷⁰ A liberating insight of cognitive science is that there is no "perfect" cognitive model, only different models.⁷¹ Cognitive science thus accommodates different solutions to problems. Different people may entertain different solutions to the same problem, depending on their unique experiences.⁷² In fact, the same individual may entertain different solutions to the *same* problem, depending on which cognitive model or models the person applies.⁷³ This does not necessarily lead to the "slide to solipsism,"⁷⁴ whereby there are no right answers—because there are no wrong answers—as there is no objective reality against which to measure *any* answer. Such criticism presupposes that it is answers we seek, rather than illumination of the processes that we use to arrive at answers.⁷⁵

We can apply a cognitive approach to law by (1) describing the core and periphery of legal doctrine in any given field in conventional terms; (2) identifying the basic experiences, cognitive models, and related metaphors which legal doctrine may embody; (3) critically analyzing these basic experiences, idealized cognitive models, and metaphors to review their

70. Winter, *Transcendental Nonsense*, *supra* note 1416, at 1117–19.

71. "[S]elective [obtaining and recalling of information through schemas] can no more be disputed than selective attention due to motivation, interests, or task demands." MANDLER, *supra* note 18, at 110.

72. See Winter, *Transcendental Nonsense*, *supra* note 16, at 1127 ("One is forced to confront the possibility that each individual may have her own internally coherent system of meaning."). Motorcycles and their parts illustrate this concept well:

For example, the feedback mechanism[,] which includes the camshaft[,] cam chain[,] tappets[,] and distributor[,] exists only because of an unusual cut of this analytic knife. If you were to go to a motorcycle-parts department and ask them for a feedback assembly they wouldn't know what the hell you were talking about. They don't split it up that way. No two manufacturers ever split it up quite the same way and every mechanic is familiar with the problem of the part you can't buy because you can't find it because the manufacturer considers it a part of something else.

ROBERT M. PIRSIG, *ZEN AND THE ART OF MOTORCYCLE MAINTENANCE* 79 (1974).

73. See Schlag, *supra* note 14, at 1207–09, 1243–50 (explaining that individual judges may entertain prerationalist, rationalist, modernist and postmodernist modes of cognition simultaneously). "Since many schemas can be active simultaneously, it cannot be that only the information relevant to one schema is selected [for obtaining and recalling information]." MANDLER, *supra* note 18, at 109.

74. Winter, *Transcendental Nonsense*, *supra* note 16, at 1127.

75. "[Experientialist epistemology] rejects, an objectivist, correspondence view of meaning and rationality." *Id.* at 1131.

application in contemporary doctrine; and (4) making observations about the possible evolution of doctrine in cognitive terms.

II. A Cognitive Science Approach to Takings

A. Core Areas of Takings Doctrine in Conventional Terms

Takings doctrine is notoriously untidy.⁷⁶ However, some core areas garner general consensus. One core area is that there are several constitutional clauses that are relevant to takings analysis: the Equal Protection Clause,⁷⁷ the Contract Clause,⁷⁸ the Due Process Clause,⁷⁹ and the Just Compensation Clause.⁸⁰

The Equal Protection Clause prohibits dissimilar treatment of similarly situated people.⁸¹ Together with 42 U.S.C. § 1983,⁸² the Equal

76. The Author's work in the takings field includes JOHN MARTINEZ, *GOVERNMENT TAKINGS* (2006) (one-volume treatise); *A Prudential Theory for Providing a Forum for Federal Takings Claims*, 36 REAL PROP. PROB. & TR. J. 445 (2001); *No More Free Easements: Judicial Takings for Private Necessity*, 40 REAL EST. L. J. 425 (2012); *Getting Back the Public's Money: The Anti-Favoritism Norm in American Property Law*, 58 BUFF. L. REV. 619 (2010); *A Proposal for Establishing Specialized Federal and State "Takings Courts"*, 61 ME. L. REV. 467 (2009); *Wrongful Convictions as Rightful Takings: Protecting "Liberty-Property"*, 59 HASTINGS L. J. 515 (2008); *Taming the Takings Tiger*, 12 JAN. UTAH B.J. 7 (1999); *A Framework for Addressing Takings Problems*, 9 JUL. UTAH B.J. 13 (1996); *Statutes Enacting Takings Law: Flying in the Face of Uncertainty*, 26 URB. LAW. 327 (1994); *Trees in the Forest: A Reply to Professor Laitos*, 13 J. ENERGY NAT. RESOURCES & ENVTL. L. 51 (1993); *A Critical Analysis of the 1987 Takings Trilogy: The Keystone, Nollan and First English Cases*, 1 HOFSTRA PROP. L. J. 39 (1988); *Reconstructing the Takings Doctrine by Redefining Property and Sovereignty*, 16 FORDHAM URB. L. J. 157 (1988); *Taking Time Seriously: The Federal Constitutional Right to Be Free From "Startling" State Court Overrulings*, 11 HARV. J.L. & PUB. POL'Y 297 (1988). See also 3 JOHN MARTINEZ, *LOCAL GOVERNMENT LAW* §§ 16:53–16:62 (last updated Sept. 2014) (suggesting a framework for considering standards of judicial review of local government land use decisions).

77. "No State shall . . . deny to any person within its jurisdiction the equal protection of the laws." U.S. CONST. amend. XIV, § 1.

78. The Contract Clause prohibits a state from passing a "[l]aw impairing the [o]bligation of [c]ontracts." U.S. CONST. art. I, § 10, para. 1.

79. "No State shall . . . deprive any person of life, liberty, or property, without due process of law" U.S. CONST. amend. XIV, § 1.

80. "[N]or shall private property be taken for public use, without just compensation." U.S. CONST. amend. V.

81. *F.S. Royster Guano Co. v. Commonwealth of Virginia*, 253 U.S. 412, 414 (1920) (stating that the Equal Protection Clause of the Fourteenth Amendment requires that all similarly situated people be treated alike). See also *Mahone v. Addicks Util. Dist. of Harris Cnty.*, 836 F.2d 921, 932 (5th Cir. 1988) ("Because the [equal protection] clause's protection reaches only dissimilar treatment among similar people, if the challenged government action does not appear to classify or distinguish between two or more relevant persons or groups, then the action does not deny equal protection of the laws.").

82. 42 U.S.C. § 1983 provides:

Protection Clause provides a monetary remedy for circumstances in which governmental action detrimentally affects one person's private property, while not similarly affecting the property of others who are similarly situated. Equal Protection Clause jurisprudence, however, has developed a tiered structure of judicial review, under which economic interests affected by governmental action are given only minimal protection.⁸³ When purely economic interests are affected, it is fairly settled that a court will afford a remedy only if the means used is not rationally related to the achievement of a legitimate governmental objective.⁸⁴ That standard of review is highly likely to result in sustaining governmental action. For that reason, the Equal Protection Clause, when used as a device for protection of private economic interests from governmental action, has more or less withered on the vine.⁸⁵

The Contract Clause, by its terms, only protects against unreasonable interference with contracts by state legislative action.⁸⁶ The limited scope of

Every person who, under color of any statute, ordinance, regulation, custom, or usage, of any State or Territory or the District of Columbia, subjects, or causes to be subjected, any citizen of the United States or other person within the jurisdiction thereof to the deprivation of any rights, privileges, or immunities secured by the Constitution and laws, shall be liable to the party injured in an action at law, suit in equity, or other proper proceeding for redress.

42 U.S.C. § 1983 (1982).

83. Classifications affecting suspect traits or fundamental rights are subjected to strict judicial scrutiny. Under strict scrutiny, the burden is on the government to demonstrate that the classification is necessary to achieve a compelling state interest. If quasi-suspect classifications, such as gender, illegitimacy or disability are involved, a middle-tier form of judicial review, whereby the government must show a substantial rather than a necessary relationship to an important rather than a compelling governmental interest is triggered. *See, e.g.,* Kirchberg v. Feenstra, 450 U.S. 455, 459 (1981) (discussing the use of the middle-tier form of judicial review, intermediate scrutiny, in a case involving gender).

84. *See* Hancock Indus. v. Schaeffer, 811 F.2d 225, 237–38 (3rd Cir. 1987) (demonstrating how deferential such a standard can be).

85. In *Vill. of Willowbrook v. Olech*, 528 U.S. 562, 565 (2000), the Court in a *per curiam* opinion held:

[The plaintiff properly stated an equal protection violation by] alleging that the Village had intentionally demanded a 33-foot easement as a condition of connecting her property to the municipal water supply where the Village required only a 15-foot easement from other similarly situated property owners. The complaint also alleged that the Village's demand was "irrational and wholly arbitrary" and that the Village ultimately connected her property after receiving a clearly adequate 15-foot easement. [The Court concluded that] [t]hese allegations, quite apart from the Village's subjective motivation, [were] sufficient to state a claim for relief under traditional equal protection analysis.

Olech, however, is relatively recent, and there is no indication that the comparatively activist standard of judicial review developed under the Just Compensation Clause will apply in such an Equal Protection setting alleging deprivation of property rights.

86. Michael L. Zigler, *Takings Law and the Contract Clause: A Takings Law Approach to Legislative*

the Contract Clause makes it less desirable as a tool for challenging governmental action. More significantly, judicial review under the Contract Clause has traditionally been deferential.⁸⁷ Thus, as with minimal review under the Equal Protection Clause, the Contract Clause has also been relegated to a secondary status as a tool for challenging governmental action affecting private rights.⁸⁸

The Due Process Clause prohibits governmental deprivation of life, liberty or property without due process.⁸⁹ Procedural due process, consisting of notice and an opportunity to be heard,⁹⁰ is not usually the problem in takings cases; claimants do not usually maintain that they have not been given the necessary procedural protections, but instead insist that the substantive standards applied are improper.⁹¹ That, of course, brings up the thorny *Lochner*⁹² problem, whereby courts—especially federal courts—are hesitant to second-guess governmental determinations on a substantive ground premised on the Due Process Clause alone.⁹³ Thus, the standard of

Modifications of Public Contracts, 36 STAN. L. REV. 1447, 1449–54 (1984). A classic study of the Contract Clause is Robert L. Hale, *The Supreme Court and the Contract Clause (pts. 1–3)*, 57 HARV. L. REV. 512, 621, 852 (1944).

87. *E.g.*, *Energy Reserves Grp., Inc. v. Kansas Power & Light Co.*, 459 U.S. 400 (1983); *Allied Structural Steel Co. v. Spannaus*, 438 U.S. 234 (1978).

88. *Keystone Bituminous Coal Ass’n v. DeBenedictis*, 480 U.S. 470, 502–06 (1987) (discussing the severely reduced role of the Contracts Clause in property rights protection). *See also* JOHN MARTINEZ, GOVERNMENT TAKINGS § 2:31 (2014) (discussing reduced utility of Contracts Clause for protection of property rights).

89. “[N]or shall any State deprive any person of . . . property, without due process of law . . .” U.S. CONST. amend. XIV, § 1.

90. *See, e.g.*, *Crosby v. Florida Parole Comm’n*, 975 So. 2d 1222, 1223 (Fla. Dist. Ct. App. 2008) (“**Error! Main Document Only.**Procedural due process serves as a vehicle to ensure fair treatment through the proper administration of justice where substantive rights are at issue, and requires fair notice and a real opportunity to be heard at a meaningful time and in a meaningful manner.”).

91. *See, e.g.*, *Vill. of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 395 (1926) (“[Zoning regulations violate substantive due process if they] are clearly arbitrary and unreasonable, having no substantial relation to the public health, safety, morals, or general welfare.”); *Corn v. City of Lauderdale Lakes*, 997 F.2d 1369, 1375–76 (11th Cir. 1993) (“[Substantive due process] prevents a government from restricting land use for no reason, or for an illegitimate reason such as corruption, racial or ethnic prejudice, or any other illegitimate motivation.”).

92. **Error! Main Document Only.***Lochner v. New York*, 198 U.S. 45 (1905).

93. Substantive due process is not entirely absent today, even in federal courts. In fact, because of the prerequisites to takings claims, explained in this section, substantive due process is experiencing a resurgence of sorts as an alternative to a takings theory under the Just Compensation Clause. *See, e.g.*, *Marks v. City of Chesapeake*, 883 F.2d 308, 311 (4th Cir. 1989) (explaining that denial of permit application for use of property for palmistry business solely to placate those members of the public who express “religious” objections to palmistry is not legitimate governmental objective); *Greenbriar, Ltd. v. City of Alabaster*, 881 F.2d 1570, 1577, 1581 n.13 (11th Cir. 1989) (asking whether actions are arbitrary and capricious, whether there

judicial review under the Due Process Clause is also highly deferential, requiring only an arguably legitimate governmental objective and a rational relationship between the ends and the means.

This leaves the Just Compensation Clause. Just Compensation Clause takings claims initially seem straightforward: the Fifth Amendment's Just Compensation Clause,⁹⁴ as well as analogous state constitutional provisions,⁹⁵ provide that the government shall not take private property⁹⁶ for public use without payment of just compensation. Two major settings arise: the generally uncontroversial *direct* condemnation setting and the *non-direct* condemnation setting. With the *direct* condemnation setting, the government acts purposefully to acquire private property for some public project, so there is usually no question that property is affected, the government has taken it for public use, and the government will provide

has been an abuse of power, and whether the actions have no rational relationship to a legitimate governmental objective); *Nelson v. City of Selma*, 881 F.2d 836, 838 (9th Cir. 1989) (“[L]egitimate government purposes of maintaining the character and integrity of the single family neighborhood, preventing undue concentration of population, lessening traffic congestion and maintaining property values.”); *Lake Lucerne Civic Ass’n, Inc. v. Dolphin Stadium Corp.*, 878 F.2d 1360, 1370 (11th Cir. 1989) (“The test for determining whether a law comports with substantive due process is whether the law is rationally related to a legitimate state interest.” (quoting *Rogin v. Bensalem Twp.*, 616 F.2d 680, 689 (3d Cir. 1980)); *Jackson Court Condo., Inc. v. City of New Orleans*, 874 F.2d 1070, 1077 (5th Cir. 1989) (framing the test as whether action is “at least debatable”); *Harding v. Cnty. of Door*, 870 F.2d 430, 431 (7th Cir. 1989) (asking whether the decision allegedly denying substantive due process is “invidious or irrational”). As in takings analysis, there is a requirement that the governmental action be ripe for review, so the decisions must be “final” with respect to the property at issue. *See, e.g., Greenbriar*, 881 F.2d at 1571. However, in contrast to takings analysis, there is *no* requirement that compensation be sought prior to bringing suit under substantive due process. *Id.* at 1574 n.8. Local government actions found valid under substantive due process may nevertheless require that the government pay compensation for a “taking” of property. *Lake Lucerne Civic Ass’n*, 878 F.2d at 1370.

94. The Fifth Amendment provides in relevant part: “[N]or shall private property be taken for public use, without just compensation.” U.S. CONST. amend. V. This prohibition extends to *state* governments through the Due Process Clause of the Fourteenth Amendment. The Fourteenth Amendment’s Due Process Clause provides in pertinent part: “[N]or shall any State deprive any person of . . . property, without due process of law” U.S. CONST. amend. XIV, § 1. The Supreme Court first held that the Fifth Amendment’s Just Compensation Clause is applicable to the states through the Fourteenth Amendment’s Due Process Clause in *Chicago, Burlington & Quincy R.R. v. Chicago*. *See* 166 U.S. 226, 241 (1897).

95. State just compensation provisions are similar to the federal Just Compensation Clause, except that many add that “damaging” of private property will also give rise to just compensation. *See, e.g., CAL. CONST.* art. I, § 19 (“Private property may be taken or damaged for a public use and only when just compensation . . . has first been paid to, or into court for, the owner.”); *UTAH CONST.* art. I, § 22 (“Private property shall not be taken or damaged for public use without just compensation.”).

96. The prohibition also applies to taking by the federal government of property held by state and local governmental entities. *United States v. 50 Acres of Land*, 469 U.S. 24, 31 (1984).

the remedy of just compensation to the owner.⁹⁷ For example, if I own a vacant lot that happens to be located in the path of a proposed freeway, there is no question that the government can use its inherent power of eminent domain to bring a direct condemnation proceeding at which experts will battle to determine the amount of compensation I will receive.⁹⁸

Problems arise, however, in the *non-direct* condemnation setting, where governmental conduct varies from the classic direct condemnation script.⁹⁹ Suppose that, when I purchased the vacant lot, it was zoned for apartment buildings. If the city thereafter rezones the area to allow only single-family residences in order to reduce traffic congestion, noise, and the overall crowded conditions that apartment buildings bring, then it is far from clear whether my lost *expectation* of someday constructing an apartment building is “property,” whether the governmental down-zoning constitutes a taking, and whether any remedy should be provided.

In the non-direct condemnation setting, the United States Supreme Court has announced four takings tests.¹⁰⁰ The first test is the Permanent Physical Occupation (PPO) setting, in which the government, or a third party authorized by the government, physically occupies private property permanently.¹⁰¹ In the second, Complete Deprivation of Economically Valuable Use (C-DEVU) test, the government regulation does not necessarily result in a physical occupation, but nevertheless deprives the owner of all value or economically beneficial use.¹⁰² In the third, Partial

97. **Error! Main Document Only.** See generally MARTINEZ, *supra* note 88, § 2:7 (discussing elements of direct condemnation).

98. The *power* of eminent domain, sometimes known as the power of “direct condemnation,” is referred to as “an attribute of sovereignty.” *Mississippi & Rum River Boom Co. v. Patterson*, 98 U.S. 403, 406 (1878) (“The right of eminent domain, that is, the right to take private property for public uses, appertains to every independent government. It requires no constitutional recognition [sic]; it is an attribute of sovereignty. The [constitutional] clause[s] . . . providing for just compensation for property taken [are] . . . mere limitation[s] upon the exercise of the right.”). See also *Hawaii Hous. Auth. v. Midkiff*, 467 U.S. 229, 241–42 (1984); *Berman v. Parker*, 348 U.S. 26, 33 (1954) (“Once the object is within the authority of Congress, the right to realize it through the exercise of eminent domain is clear. For the power of eminent domain is merely the means to the end.”); *City of Oakland v. Oakland Raiders*, 646 P.2d 835, 837 (Cal. 1982) (explaining that eminent domain power is an “attribute of sovereignty,” which authorizes the taking of intangible personal property such as a professional football franchise).

99. See generally MARTINEZ, *supra* note 88, § 2:9 (discussing four types of non-direct condemnation settings).

100. *Id.* §§ 2:9–2:20 (elaborating on the four takings tests).

101. *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 434–35 (1982) (demonstrating the PPO where a private cable television company was authorized by New York law to install relay boxes and cables on private apartment buildings).

102. See *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1009 n.2, 1016–23 (1992) (illustrating the C-DEVU test, whereby an owner was prohibited from constructing anything

Deprivation of Economically Valuable Use (P-DEVU) test, the government regulation deprives the owner of part of the owner's property value or economically beneficial use.¹⁰³

The fourth, Land Use Exactions test for takings, involves "circumstances in which government regulatory conduct requires an owner to convey a property interest to the government."¹⁰⁴ That test arose from two cases. In *Nollan v. California Coastal Comm'n*,¹⁰⁵ the Coastal Commission conditioned the issuance of a permit to build a residence on a beachfront lot on the landowner's dedication of an easement allowing the public to traverse a strip of the lot between the owner's seawall and the mean high-tide line.¹⁰⁶ In *Dolan v. City of Tigard*,¹⁰⁷ the City conditioned the issuance of a permit to expand a store and parking lot on the landowner's dedication of an easement for water runoff and an easement for a bike/pedestrian path over the landowner's land.¹⁰⁸ The *Nollan/Dolan* cases require that when the government conditions a land development permit upon the conveyance of an easement to the public, the government must provide an individualized determination showing that the extent of harm prevented by the conditions imposed on the landowner are roughly proportional to the extent of the harm which the landowner's development project will impose on the public.¹⁰⁹

other than wooden walkways no wider than six feet or small wooden decks no larger than one hundred forty-four square feet on two beachfront residential lots).

103. *Palazzolo v. Rhode Island*, 533 U.S. 606, 614–618 (2001) (deciding that the owner of waterfront land who was allowed to construct residences on two lots that are part of a larger parcel of land has not suffered a "total taking," but nevertheless should be allowed to demonstrate whether he has suffered a "partial taking" of the larger parcel).

104. MARTINEZ, *supra* note 88, §§ 2:18–2:19. Exaction situations arise both (a) when the government *denies* a land use permit as well as when it *conditions* the grant of a land use permit on the dedication of realty to the government, and (b) when the government demands *money*, as well as when it demands *conveyance of realty* as a condition on the grant of a land use permit. *Koontz v. St. Johns River Water Mgmt. Dist.*, 133 S.Ct. 2586, 2589–93 (2013).

105. 483 U.S. 825 (1987).

106. *Id.* at 828.

107. 512 U.S. 374 (1994).

108. *Id.* at 380–81.

109. *Id.* at 391 ("We think a term such as 'rough proportionality' best encapsulates what we hold to be the requirement of the Fifth Amendment. No precise mathematical calculation is required, but the city must make some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development."). The *Nollan/Dolan* cases also require, as a threshold matter, that the government demonstrate there is an "essential nexus" between a "legitimate state interest" and the permit conditions demanded from the landowner. *Id.* at 386. That requirement is easily met, however, because any police power objective falling within protection of the health, safety, welfare, and morals will suffice and the means used (the condition imposed) need only be reasonably likely to achieve it. Thus, both of

In identifying the circumstances in which the rough proportionality standard is triggered, the U.S. Supreme Court in *Dolan* explained (1) if no permit had been required or sought by Mrs. Dolan, and the City had simply demanded the easements, that would be the classic direct condemnation setting, and the City could not have done so without payment;¹¹⁰ (2) the City clearly could have subjected Mrs. Dolan to general zoning restrictions, even if that substantially diminished the value of her land;¹¹¹ and (3) the Court distinguished Mrs. Dolan's situation from general zoning restrictions, characterizing it as more akin to the direct condemnation scenario:¹¹²

First, [general zoning restrictions] involved essentially *legislative* determinations classifying entire areas of the city, whereas here the city made an *adjudicative* decision to condition petitioner's application for a building permit on an individual parcel. Second, the conditions imposed were not simply a limitation on the use petitioner might make of her own parcel, but a requirement that she deed portions of the property to the city. . . . Under the well-settled doctrine of "*unconstitutional conditions*," the government may not require a person to give up a constitutional right—here the right to receive just compensation when property is taken for a public use—in exchange for a discretionary benefit conferred by the government where the benefit sought has little or no relationship to the property.¹¹³

the conditions in *Dolan* easily met that test: the floodplain easement condition was reasonably likely to combat additional flooding caused by Mrs. Dolan's expanded hardware store and the bikepath easement condition was reasonably likely to address the additional traffic that would be generated by the expansion. *Id.* at 387 ("Undoubtedly, the prevention of flooding along Fanno Creek and the reduction of traffic congestion in the Central Business District qualify as the type of legitimate public purposes we have upheld. . . . It seems equally obvious that a nexus exists between preventing flooding along Fanno Creek and limiting development within the creek's 100-year floodplain."). Thus, since it is largely duplicative of deferential Due Process Clause judicial review, the "essential nexus" requirement is neither significant nor problematic for Just Compensation Clause takings analysis. Instead, it is the "rough proportionality" standard that has the real bite.

110. *Id.* at 384 ("Without question, had the city simply required petitioner to dedicate a strip of land along Fanno Creek for public use, rather than conditioning the grant of her permit to redevelop her property on such a dedication, a taking would have occurred.").

111. *Id.* at 384–85 ("Government hardly could go on if to some extent values incident to property could not be diminished without paying for every such change in the general law." (quoting *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 413 (1922))).

112. *See id.* at 396 **Error! Main Document Only.** ("Cities have long engaged in the commendable task of land use planning, made necessary by increasing urbanization, particularly in metropolitan areas such as Portland. The city's goals of reducing flooding hazards and traffic congestion, and providing for public greenways, are laudable, but there are outer limits to how this may be done. 'A strong public desire to improve the public condition [will not] warrant achieving the desire by a shorter cut than the constitutional way of paying for the change.'" (quoting *Pennsylvania Coal*, 260 U.S. at 416)).

113. *Id.* at 385 (emphasis added). The Court held that since the City had not made the

The *Nollan/Dolan* rough proportionality standard cannot be fully understood without factoring in the connection between that test and the “not substantially advance-legitimate governmental objective”¹¹⁴ (NSA-LGO) test for takings. The NSA-LGO test asks whether the means used by the government substantially advances the ends it seeks to achieve.¹¹⁵ In *Lingle v. Chevron U.S.A. Inc.*,¹¹⁶ the U.S. Supreme Court overruled its twenty-five year history of using the NSA-LGO test on the ground that it was more of a Due Process Clause test, focused on the legitimacy of governmental action rather than a Just Compensation Clause test, focused on the burden that the government imposes on property owners.¹¹⁷ The Court held that the NSA-LGO test violated separation of powers concerns by authorizing courts to second-guess legislative determinations.¹¹⁸ Significantly, however, the Court held in *Lingle* that the *Nollan/Dolan* rough proportionality standard was still good law, reasoning that while the *Nollan/Dolan* cases “drew upon the language” of the NSA-LGO standard, they “did not apply [it].”¹¹⁹

required “rough proportionality” showing, it could not impose the easement conditions on Mrs. Dolan’s permit. If the City wanted the easements, it would have to pay for them. *Id.* at 396 (“The city’s goals of reducing flooding hazards and traffic congestion, and providing for public greenways, are laudable, but there are outer limits to how this may be done. ‘A strong public desire to improve the public condition [will not] warrant achieving the desire by a shorter cut than the constitutional way of paying for the change.’” (quoting *Pennsylvania Coal*, 260 U.S. at 416)).

114. *Agins v. City of Tiburon*, 447 U.S. 255, 260 (1980) (“The application of a general zoning law to particular property effects a taking if the ordinance does not substantially advance legitimate state interests . . .”), *abrogated in part*, *Lingle v. Chevron U.S.A. Inc.*, 544 U.S. 528, 545 (2005).

115. **Error! Main Document Only.** See *id.* at 260–61.

116. *Lingle*, 544 U.S. 528.

117. *Id.* at 540 (“There is no question that the ‘substantially advances’ formula was derived from due process, not takings, precedents.”).

118. *Id.* at 544 (“[T]he ‘substantially advances’ formula is not only doctrinally untenable as a takings test—its application as such would also present serious practical difficulties. The *Agins* formula can be read to demand heightened means-ends review of virtually any regulation of private property. If so interpreted, it would require courts to scrutinize the efficacy of a vast array of state and federal regulations—a task for which courts are not well suited. Moreover, it would empower—and might often require—courts to substitute their predictive judgments for those of elected legislatures and expert agencies.”).

119. *Id.* at 546. The Court further distinguished the *Nollan/Dolan* decisions by noting that both cases involved “adjudicative land-use exactions—specifically, government demands that a landowner dedicate an easement allowing public access to her property as a condition of obtaining a development permit.” *Id.* The Court held that in those cases, it was the burden on the landowner that was relevant and decisive: “[B]oth involved dedications of property so onerous that, outside the [permit condition] context, they would [have been] deemed *per se* physical takings.” *Id.* at 547. Thus, the Court concluded, the *Nollan/Dolan* cases actually involved

The *Nollan/Dolan* rough proportionality standard also cannot be fully understood without an appreciation of its connection to the distinction between governmental prevention of imposition of harms on the public by private development projects, on the one hand, and governmental extraction of benefits to be conferred on the public from private development projects, on the other.¹²⁰ This “harm prevention-benefits extraction” distinction also was soundly rejected as a takings test by the U.S. Supreme Court in *Lucas v. South Carolina Coastal Council*,¹²¹ where the Court emphasized that

the distinction between “harm-preventing” and “benefit-conferring” regulation is often in the eye of the beholder. It is quite possible, for example, to describe in *either* fashion the ecological, economic, and esthetic concerns that inspired the South Carolina Legislature in the present case. One could say that imposing a servitude on Lucas’s land is necessary in order to prevent his use of it from “harming” South Carolina’s ecological resources; or, instead, in order to achieve the “benefits” of an ecological preserve.¹²²

B. Basic Experiences, Idealized Cognitive Models, and Related Metaphors Which Takings Doctrine May Embody

The structure of the conventional takings tests reflects a profound division between people’s property, on the one hand, and governmental action that affects that property, on the other. This conceptualization of the takings problem casts the government in the role of actor in relation to people’s property as the object. It reveals an alienation from government that may be an elaboration of a basic experience that government is “out

a special application of the “doctrine of unconstitutional conditions,” which provides that “the government may not require a person to give up a constitutional right—here the right to receive just compensation when property is taken for a public use—in exchange for a discretionary benefit conferred by the government where the benefit has little or no relationship to the property.”

Id. at 547 (quoting *Dolan v. City of Tigard*, 512 U.S. 374, 385 (1994)).

120. *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1024–25 (1992) (“[T]he distinction between ‘harm-preventing’ and ‘benefit-conferring’ regulation is often in the eye of the beholder.”); *compare* *Miller v. Schoene*, 276 U.S. 272, 279 (1928) (determining that the destruction of cedar trees to prevent contamination of apple orchards with cedar rust is prevention of public harm), *and* *Just v. Marinette Cnty.*, 201 N.W.2d 761, 770–71 (Wis. 1972) (preventing landowner from filling shoreline wetlands constitutes preventing a public harm), *with* *Bartlett v. Zoning Comm’n of Old Lyme*, 282 A.2d 907, 910 (1971) (explaining that an owner barred from filling tidal marshland has been subjected to an unconstitutional taking and must be compensated).

121. 505 U.S. 1003.

122. *Id.* at 1024.

there,” acting on individual interests, and is often not benign.

The idealized cognitive model that these basic experiences inform is the public-private distinction.¹²³ Under the public-private distinction model, there is a domain of private existence distinct from government within which we are substantially free from constraints that are socially defined.¹²⁴ Within that private sphere, at least in an idealized sense, every person is a law unto himself or herself.¹²⁵

The metaphors that derive from the public-private dichotomy reinforce its binary character: we attack governmental action “on its face,” attempting to invalidate it in all circumstances, or we attack governmental action “as applied,” whereby we try to check governmental power in specific circumstances.¹²⁶

123. See Chris Sagers, *Monism, Nominalism, and Public-Private in the Work of Margaret Jane Radin*, 54 CLEV. ST. L. REV. 219, 219–23 (2006) (discussing the origins and evolution of the public-private distinction).

124. The debate about the public-private distinction has turned largely on whether private activity should be subject to the same constraints as governmental action, and has revolved around the state action doctrine, an analytical tool for determining whether otherwise private conduct is subject to constitutional constraint. See Christopher D. Stone, *Corporate Vices and Corporate Virtues: Do Public/Private Distinctions Matter?*, 130 U. PA. L. REV. 1441, 1483–92, 1484 n.156 (1982) (arguing for elimination of the state action requirement altogether). See generally Duncan Kennedy, *The Stages of the Decline of the Public/Private Distinction*, 130 U. PA. L. REV. 1349 (1982) (demonstrating amusingly that the public-private distinction is unworkable). This debate notwithstanding, the accepted wisdom is that purely private action is not subject to constitutional constraint: “Where an ordinary mortal is concerned, we can discern a value in preserving a sphere, free from state influence, in which he or she may be arbitrary, capricious, and prejudicial.” Stone, *supra*, at 1489. Professor Brest, however, has demonstrated the fundamental connection between the state action doctrine and the natural rights theory of property; the state action doctrine prevents examination of assertions of private power in the name of rights to property existing independently of government. Paul Brest, *State Action and Liberal Theory: A Casenote on Flagg Brothers v. Brooks*, 130 U. PA. L. REV. 1296, 1299–1300 (1982). See also Frug, *supra* note 24, at 1128–49 (1980) (discussing both traditional and modernist critiques of the “private”-ness of the power of private corporations).

125. But see *Emp’t Div. v. Smith*, 494 U.S. 872, 876 (1990) (using peyote for religious reasons, which properly prohibited by state law of general application, was upheld as basis for denial of unemployment benefits).

126. The Court in *Keystone Bituminous Coal Ass’n v. DeBenedictis*, 480 U.S. 470, 493–94 (1987), expressly distinguished *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393 (1922) on that basis:

The second factor that distinguishes this case from *Pennsylvania Coal* is the finding in that case that the Kohler Act made mining of “certain coal” commercially impracticable. In this case, by contrast, petitioners have not shown any deprivation significant enough to satisfy the heavy burden placed upon one alleging a regulatory taking. . . . The posture of the case is critical because we have recognized an important distinction between a claim that the mere enactment of a statute constitutes a taking and a claim that the particular impact of government action on a specific piece of property requires the payment of just compensation.

DeBenedictis, 480 U.S. at 493–94.

C. Critical Analysis of the Basic Experiences, Idealized Cognitive Models, and Metaphors in Contemporary Takings Doctrine

The basic experience that government is “out there” acting on private interests is a constraining foundation upon which to build a workable takings doctrine. It casts individuals as alienated from government. This is not necessarily bad, if it keeps government from oppressing its citizens. Unfortunately, and more perniciously, such a basic experience simultaneously places a value on people according to their net economic worth. Thus, Donald Trump is probably glad that there is a sphere of private sovereignty in which government cannot intrude. He can gold-plate the bathtub spigots on his yacht without governmental constraint. The average welfare recipient may not be so content to know that her lack of income or assets means government can dictate what she must eat, where she must sleep, whether she must work, what she can buy, and where she can buy it.¹²⁷ For the welfare recipient, there is no protective “property” sphere. There is only grudgingly conferred minimal survival, and often not even that.¹²⁸

The two questions posed by the takings problem are really one: “[U]nder what circumstances is government justified in expanding, contracting or even completely eliminating private expectations?”¹²⁹ This conceptualization of the takings problem is premised on a basic experience

The distinction has also been elaborated as highly significant in the due process field. For example, in *Vill. of Euclid v. Ambler Realty Co.*, the Court was asked whether the Due Process Clause prohibited the enactment of a zoning ordinance, which had the effect of depriving a property owner from making the most profitable use of its property. In sustaining the ordinance, the Court emphasized that invalidation of statutes on their face was less likely than in “as applied” situations under the Due Process Clause. *See Vill. of Euclid v. Ambler Realty Co.*, 272 U.S. 365, 387 (1926). As if by contrast, in *Nectow v. City of Cambridge*, the Court confronted an “as applied” situation in which a zoning ordinance restricted a property owner to using a 100-foot portion of its property for residential uses even though no public harm or benefit would have resulted from allowing the property owner to use the portion for industrial purposes. The remainder of the property was zoned for industrial uses, and that side of the property was almost entirely surrounded by industrial uses. In that circumstance, the Court invalidated the application of the ordinance as a violation of Due Process. *See* 277 U.S. 183, 185–89 (1928).

127. *See* William H. Simon, *The Invention and Reinvention of Welfare Rights*, 44 MD. L. REV. 1, 34 (1985) (noting that the conceptualization of welfare as a new form of property did not place any limits on the power or discretion of the state, but simply moved the power to determine welfare benefits from “lower tier officials toward upper tier officials and judges”).

128. **Error! Main Document Only.** *See generally* 3 MARTINEZ, *supra* note 43, § 19:51 (describing income, financial responsibility, and household unit character as factors that restrict welfare benefit eligibility).

129. Martinez, *supra* note 13, at 186.

that does not differentiate in hard, dichotomous terms between private property and government. That alternative basic experience is that a legal claim to property is an appeal to the coercive power of the State.¹³⁰ Thus, I cannot use, transfer, or exclude others from something I call mine unless the State will support my claim against others through the force of its administrative officers, courts, and police. Accordingly, that which I would call mine is but an assertion that if my claim is challenged, the State will stand behind me. The State and I are one, or so I would hope, whenever I make claims that I would like to have others take seriously. We may refer to this as an “integrated citizen” basic experience to differentiate it from the “alienated citizen” basic experience that is perhaps reflected in prevalent takings doctrine.

An idealized cognitive model elaborating on that alternative basic experience would reject the public-private distinction and instead adopt any number of analytical structures. Duncan Kennedy suggests that we may consider a continuum, rather than the strict dichotomy inherent in the public-private distinction.¹³¹ According to a continuum cognitive model, we might view any particular case as located along a line, in relation to private prerogative on one extreme and governmental interests on the other. Where any particular case would fall along that spectrum would depend on the factors that we consider important.

Alternatively, we can look at property rights in terms of the functions that such rights fulfill.¹³² These are the “general use” function, which is integral to self-expression, development, production, and survival; the “welfare” function, intended to secure an individual a meaningful life beyond mere survival; the “protection” function, which shields people from exploitation by others; the “allocative” function, which assures people a share of resources sufficient to allow them to participate meaningfully in the political process; and the “sovereignty” function, which confers upon owners the power to influence others through control of the terms under which property will be exchanged.¹³³

Another alternative cognitive model suggested by Kennedy focuses on functional considerations that also inhere in a loop model. According to

130. See, e.g., Morris R. Cohen, *Property and Sovereignty*, 13 CORNELL L.Q. 8, 10 (1927); Frug, *supra* note 24, at 1066–67; Robert L. Hale, *Force and the State: A Comparison of “Political” and “Economic” Compulsion*, 35 COLUM. L. REV. 149, 149 (1935); Louis L. Jaffe, *Law Making By Private Groups*, 51 HARV. L. REV. 201, 201–202 (1937); Martinez, *supra* note 13, at 158.

131. Kennedy, *supra* note 124, at 1352.

132. Martinez, *supra* note 13, at 191. The functional approach is derived in part from Baker, *supra* note 53, at 744.

133. Martinez, *supra* note 13, at 191–92.

that cognitive structure, two situations apparently most unlike each other may actually be closely related, and therefore should be treated similarly for legal purposes.¹³⁴ Kennedy's illustrative examples involve family matters. For example, we view questions about what values we will teach our children as among the most intimate matters of our lives, and into which government should not intrude. On the other hand, if a parent were periodically lashing a child with a bullwhip in order to get him or her to mind, government intervention would be a necessary and foregone conclusion.

By using a functional approach in a loop cognitive model, we might not currently end up with resolutions through the conventional takings doctrine, as resolutions will depend on the functions we consider important and the hierarchical ordering among those functions. Thus, for example, suppose a statute prohibited Donald Trump from gold-plating his faucets. Suppose further that we adopt a standard of judicial review that incorporates Duncan Kennedy's loop model, with substantive considerations derived from the functional approach posed by this Article (Martinez-Kennedy standard of judicial review). Such judicial review might conclude that he may have little general use function interest in gold faucets, because they may be only minimally important to his development, production, or survival, though they may be a means of self-expression. They are probably not necessary to secure a meaningful life, so the welfare function is probably not involved.¹³⁵ They are not necessary to shield him from exploitation by others, so the protective function also is probably not involved. And they are probably not necessary to assure him meaningful participation in the political process, so the allocative function is not involved. Only the sovereignty function is arguably involved, since it represents control of those who sell gold-plated spigots, and since otherwise there would be no market for them to sell their wares. The question would then become whether this is a sufficient ground to allow the state to prevent Trump from gold-plating his spigots.¹³⁶

134. The classic examples are probably love and hate, two apparently opposite emotions that share many characteristics.

135. The welfare function may also incorporate the expectation of rewards or profit as incentives to productive effort that is socially beneficial. Preventing Donald Trump from gilding his spigots may demoralize him and others from making enough money to be able to afford to pay to gild spigots, but the social utility of such incentives probably does not justify giving this consideration much weight. For a discussion of demoralization costs, see Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law*, 80 HARV. L. REV. 1165, 1214 (1967).

136. Whether any or all of the functions of property are threatened may be a fact determination for a jury or judge. See *City of Monterey v. Del Monte Dunes at Monterey, Ltd.*,

In contrast, suppose a state statute reduces a welfare recipient's aid dollar for dollar for whatever money she earns by working. Judicial review using the Martinez-Kennedy standard of judicial review might conclude that her general use function is arguably not involved, since her net level of support will remain the same. Her welfare function is probably involved because mere survival is not sufficient for human happiness. The exploitation function is involved, since she would be subject to exploitation by those who would threaten to inform the welfare department if she tried to work without telling the welfare agency. The allocative function may not be involved, since she would perhaps be *better* able to participate in the political process if she were not working, and the statute encourages her not to do so. And, finally, the sovereignty function would probably not be involved, since she would have no significant property with which to influence others in any event. The question, again, would become whether this constellation of functions suffices to prevent government from prohibiting her from working without experiencing a commensurate reduction in her welfare aid.

The continuum and loop alternative cognitive models, enriched by a functional analysis, generate different metaphors than under contemporary takings doctrine. Under these conceptualizations, one can legitimately ask whether governmental conduct affecting individuals is jeopardizing the individual's civilized existence in an enlightened society, or whether government improperly treads upon the important objectives, in functional terms, for which we have property in society. Such questions would not necessarily be possible under current formulations of the takings problem. And the alternative formulations suggested here would not be possible without a cognitive approach to takings doctrine.

Conclusion: Possible Evolution of the Takings Doctrine in Cognitive Terms

As reflected in the prevailing standard of judicial review for takings cases, contemporary takings doctrine is a captive of the public-private distinction. Although there have been efforts to suggest alternative views, such reformulations operate within the strictures of current legal doctrine. The advantage of cognitive modeling is that the terms of the discussion are transformed into an altogether different form of discourse. Whether takings

526 U.S. 687, 702–14 (1999) (demonstrating that a jury trial in takings cases is narrowly defined; whether a legitimate governmental objective is involved is question of law, while the question of whether the means used substantially advances the legitimate governmental objective is question of fact).

doctrine evolves through consideration and adoption of alternative basic experiences, cognitive models, and elaborated metaphors depends, in large part, on whether the terminology and propositions of cognitive science become part of accepted legal thinking. The cutting edge of the changes, however, will be embodied in modified standards of judicial review.