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# THE NATURAL LAW OF ADMINISTRATIVE LAW

WILLIAM H. RODGERS, JR.\*

Law teachers and researchers today are strongly committed to borrowing models, theories, paradigms, and just plain ideas from other disciplines to explain legal phenomena.<sup>1</sup> History long has been treated by legal academics and courts as a respectable source of legal inspiration. In recent years, law people have embraced the models of economics and moral philosophy, sometimes with an enthusiasm that is hard to explain.<sup>2</sup> Now it is psychology<sup>3</sup> or decision theory<sup>4</sup> or anthropology<sup>5</sup> that is said to offer the key insight, decisive to the resolution of a particular legal problem.

For the most part, the new law modeling has drawn upon research in the social sciences. There are reasons for this: lawyers and law teachers are social scientists, with undergraduate educations concentrated heavily upon such subjects as economics, history, and political science; law faculties traditionally have limited their interdisciplinary contacts to the social sciences; and law, devoted as it is to the ordering of human affairs, could be expected to look to the social sciences for insights into how the written rules of life affect human relationships.

These legal versions of social science model-building have been by no

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1. See Symposium, *Legal Scholarship: Its Nature and Purposes*, 90 YALE L.J. 955 (1981).

2. See, e.g., Horwitz, *Law and Economics: Science or Politics?*, 8 HOFSTRA L. REV. 905 (1980); Kennedy, *Cost-Benefit Analysis of Entitlement Problems: A Critique*, 33 STAN. L. REV. 387 (1981); Rodgers, *Building Theories of Judicial Review in Natural Resources Law*, 53 U. COLO. L. REV. 213 (1981).

3. See, e.g., Loh, *Psycholegal Research: Past and Present*, 79 MICH. L. REV. 659 (1981).

4. See, e.g., Brooks, *The Law of Plan Implementation in the United States*, 16 URB. L. ANN. 225 (1979); Diver, *Policymaking Paradigms in Administrative Law*, 95 HARV. L. REV. 393 (1981); Rodgers, *Judicial Review of Risk Assessments: The Role of Decision Theory in Unscrambling the Benzene Decision*, 11 ENVTL. LAW 301 (1981); Leff, *Law and*, 87 YALE L.J. 989 (1978).

5. See, e.g., Selznick, *Jurisprudence and Social Policy: Aspirations and Perspectives*, 68 CALIF. L. REV. 206 (1980).

means universally successful, and some of these efforts may strike us as remote descriptive caricatures of the human condition.<sup>6</sup> It all depends on the intuitive appeal of the descriptive picture, the persuasive power and testability of the claimed linkages, and how the posited associations appear in light of empirical reality. This paper suggests that the natural sciences, like the social sciences, can be put to use in the construction of law-related modeling.<sup>7</sup> I am interested in descriptive theory, and I suggest that the natural sciences offer phenomena with descriptive credentials deserving no less a priori respect for law modeling than the social sciences that are now drawn upon so heavily.

Law teachers and researchers are inveterate seekers of metaphors. The metaphor, even if glib and obvious, invariably suggests further parallels and relationships, the conjoinder of phenomena. This is the road to uncovering unsuspected linkages and building simple descriptive models. Theory building, in administrative law as elsewhere, begins with the capture and expression of the convincing metaphor.

Extracting metaphors from the natural sciences to account for social happenings begins with a figure of speech and often ends there. Legislatures now are squeezing fat out of administrative agencies, an apt biological picture of a weight watcher's rigor being imposed on flabby, middle-aged institutions. Some agencies are considered senile (the ICC), others appeared on this planet stillborn (the Department of Energy), still others are going through an identity crisis or are in hibernation (the EPA). Yet others survive by establishing parasitic or symbiotic relationships with supporting institutions. Is the Corps of Engineers a leech or a virus? Those water projects are buried so deeply in the body politic that the Reagan cutbacks cannot reach them; they are cancers immune from cosmetic surgery. And so on. We draw our metaphors from horticulture: a little pruning here will concentrate growth over there. From navigation: "midcourse corrections" (the Clean Air and Water Acts), "fogbound and foundering." From paleontology: the dinosaur (the Bureau of Land Management) is ill-suited to survival under contemporary conditions.

The important step, of course, is to move beyond the mere figure of speech to the convincing metaphor that has some explanatory and organizing persuasiveness.

#### A. *The Entropy Laws: Models of Decline*

The second law of thermodynamics holds that in closed systems heat cannot be completely transformed into work; something is lost along the

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6. See, e.g., Horwitz, *supra* note 2; Kennedy, *supra* note 2; Rodgers, *Bringing People Back: Toward a Comprehensive Theory of Taking in Natural Resources Law*, 10 *ECOLOGICAL L.Q.* 205 (1982).

7. For a companion piece to this paper, see Rodgers, *supra* note 2.

way.<sup>8</sup> This law of nature—which, by the way, has not been discovered by many economists—is obviously pertinent to issues of energy policy where a physical efficiency model (getting the most work out of a particular allocation) is competitive with an economic efficiency model (getting the most dollars out of the allocation).<sup>9</sup> But the entropy laws go farther to suggest ideas of disintegration, decay, and collapse over time that could be applied to social institutions. They are a kind of Murphy's law of the physical sciences.

Consider, for example, how the entropy laws might be invoked to assist in developing a theory of legislation. The prevailing view of legislation is that of sustained consensus over time. This theory would predict a stable allocation of authority on a given subject. Another view,<sup>10</sup> which I endorse,<sup>11</sup> is that legislation is better perceived as a temporary accommodation of interests that comes apart over time. Thus a statute gradually falls prey to repeals by implication, administrative revisionism, more recent enactments, and judicial gloss that puts an entirely new face on the old law. The predicted result, describing the resolving power of legislation over time, could be expressed "by a curve that slopes downward and then evens off as the courts insist upon enforcing the core of even outdated legislation as the most responsible way to inspire a contemporary legislative judgment."<sup>12</sup>

So, too, the advent of the sunset laws<sup>13</sup> suggests the need for a theory of institutional decay. What help can physical laws be in developing such a theory? Biological organisms, faced with starvation, tend to protect the vital organs by shedding the fat first. The pattern suggests a model that most likely represents the predominant political view during the present budget cutbacks. At the University of Washington, for example, we were faced recently with a proposed ten percent budget cut. Suppose there were ten successive cuts of the same magnitude. Look around your law school or university and ask how such losses would be allocated. Fat first? Then what? Is there any doubt about who would be left after step nine? Does this make the dean's office the heart of the organization? The brain? The reproductive organs?

All I am suggesting is that the observable phenomenon of organiza-

8. See J. RIFKIN, *ENTROPY: A NEW WORLD VIEW* 33-43 (1980).

9. See *Federal Energy Comm'n v. Transcontinental Gas Pipe Line Corp.*, 365 U.S. 1 (1961); W. RODGERS, *CASES AND MATERIALS ON ENERGY AND NATURAL RESOURCES LAW* 368-71 (1979).

10. See generally G. CALABRESI, *A COMMON LAW FOR THE AGE OF STATUTES* (1982); Davies, Gilmore & Calabresi, *A Response to Statutory Obsolescence: The Non-primacy of Statutes Act*, 4 VT. L. REV. 203 (1979).

11. Rodgers, *supra* note 2, at 218.

12. *Id.* (citing *Wilderness Society v. Morton*, 479 F.2d 842 (D.C. Cir.), *cert. denied*, 411 U.S. 917 (1973)).

13. See S. BREYER & R. STEWART, *ADMINISTRATIVE LAW AND REGULATORY POLICY* 146-47 (1979).

tional decay to the point of disappearance suggests new lines of inquiry and metaphors about agency behavior. My belief in the transitory nature of statutes and administrative regulations has led me to formulate a general principle, called Rodgers' Constant or, more popularly, the Rule of Ruin, which holds that the irreversible process of legal decay inevitably creates a detectable gap between the declared rules and the prevailing practice. This gap often can be characterized as lawlessness or fiasco, and it suggests a need for functional and empirical studies of agency behavior, not simply investigations of the formal record. This hypothesis can inform a research program. It often guides litigation where discovery is designed to validate hypothesized instances of the gap.

What can be predicted about judicial review by courts convinced that agencies muddle through with outmoded regulations and policy that departs from formal legislative norms? Such courts take a hard look to ascertain what the rules of the game were and how well they were explained to the losers.<sup>14</sup>

Another discouraging natural science idea suggesting models of decline is that of species overspecialization. Rooted in evolutionary biology, overspecialization occurs when a species finds itself on an evolutionary track from which there is no turning back.<sup>15</sup> Specialists, of course, are very good at what they do, so it is perhaps not surprising in administrative law that deference to experts is a byword. But there is a point at which the expert becomes too good at fine work and is unable to cope with the exigencies imposed by a new environment. The normal biological outcome is extinction. It is not surprising that this biological metaphor has brought us to the point of sunset laws, of decisions where specialization is a badge of suspicion in light of new values,<sup>16</sup> and of mandate-modifiers (i.e., NEPA) designed to fight off overspecialization.

Another idea suggested by the entropy laws and similar machine models is that of limited energy to accomplish interest group or agency goals. As an observer of the Northwest fishing conflicts, I am convinced that the intense efforts by the losing nontreaty groups to reverse the outcome in the courts<sup>17</sup> took some force out of the political efforts to win a legislative overruling of the judgment in the Congress. This was a case of dissipation of

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14. See Rodgers, *Benefits, Costs, and Risks: Oversight of Health and Environmental Decisionmaking*, 4 HARV. ENVTL. L. REV. 191, 214-15 (1980).

15. See generally P. EHRLICH & A. EHRLICH, *EXTINCTION: THE CAUSES AND CONSEQUENCES OF THE DISAPPEARANCE OF SPECIES* (1981).

16. See Leventhal, *Environmental Decisionmaking and the Role of the Courts*, 122 U. PA. L. REV. 509, 523-24 (1974) (suggesting close review where agency expertise is hostile to environmental values). See also Estreicher, *Pragmatic Justice: The Contributions of Judge Harold Leventhal to Administrative Law*, 80 COLUM. L. REV. 894 (1980).

17. These culminated unsuccessfully in the United States Supreme Court's decision in *Washington v. Washington State Comm'l Pass. Fishing Vessel Ass'n*, 443 U.S. 658 (1979).

limited influence. Assume that agencies have comparable needs to husband influence and fight only limited battles. How would such a view of agency behavior influence judicial review? One would expect tolerance for the drawing of administrative lines of convenience that would make more manageable the fulfillment of congressional goals.<sup>18</sup> The husbanding of limited resources would become an important value recognized by judicial review.

### B. *Models of Equilibrium or Punctuated Change*

Circumstances do not necessarily get worse. Sometimes they just change or appear to change. Physical laws are at work here, too, and they may be put to use in understanding legal phenomena.

Evolution is a dominant influence in the history of ideas although the term often appears in legal discussions as simply synonymous with change.<sup>19</sup> A closer look at evolutionary biology<sup>20</sup> discloses that the process itself requires variations in the population, random or otherwise, competition or other means of selection, and differences in survival rates. Assuming for the moment that agencies strive to protect their decisions,<sup>21</sup> the courts serve as the chief means of selection, significantly influencing what future rulings will look like. Under this brutal metaphor the courts are predators feeding on agency offspring too feeble to withstand the hard look. The approach opens up interesting questions for empirical inquiry into attack and survival rates, agency means for modifying its decision-types, and the effectiveness of judicial selection. What are the differences, for example, in the agency response to an outright reversal and to the raised eyebrow that promises sterner measures later?<sup>22</sup>

Many judges view themselves as instruments of evolutionary change—or at least write as if they do. Academics, accustomed to recursive or cybernetic modes of thought, prefer judicial decisions that are long on dicta, filled with speculation about future trends and advice about agency behavior. These are the opinions we put in our casebooks, starting our own process of natural selection favoring the fifty-page essay.

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18. See *Environmental Defense Fund v. Costle*, 578 F.2d 337, 346 (D.C. Cir. 1978).

19. See generally Clark, *The Interdisciplinary Study of Legal Evolution*, 90 YALE L.J. 1238 (1981).

20. See S. LURIA, S. GOULD & S. SINGER, *A VIEW OF LIFE* (1981); J. KREBS & N. DAVIES, *AN INTRODUCTION TO BEHAVIORAL ECOLOGY* (1981).

21. They do not always do so, however. Agencies sometimes appear to give expansive readings to judicial decisions overturning administrative rulings. Such a response might serve a variety of agency needs, including the need to promote formal decisionmaking or to placate reallocation losers by assigning responsibility to an outside and alien force.

22. See *Shell Oil Co. v. Federal Power Comm'n*, 520 F.2d 1061, 1071 (5th Cir. 1975); Pierce & Shapiro, *Political and Judicial Review of Agency Action*, 59 TEX. L. REV. 1175, 1188-89 (1981).

A recent trend of thought in evolutionary biology is to substitute ideas of punctuated equilibrium, of rapid and episodic change, for the gradualism associated with classical Darwinism.<sup>23</sup> Similar ideas are at large in modern geological thinking. The common law is the legal analogue brought to mind by gradualist theories. Administrative law might be better described by notions of punctuated change where episodic legislative, judicial, or executive intervention brings fits and starts in particular policy fields.<sup>24</sup> Without elaborating further, it is not implausible that courts viewing their product as just another entry in the flow of the common law would behave differently than those perceiving their utterances as marking the onset of a new era of administrative law.<sup>25</sup>

Equilibrium is another common idea from physics, raising suggestive metaphors for administrative lawyers.<sup>26</sup> The idea recognizes a condition of stable inputs, or at least stable outputs, and balanced performance over time. Agencies with agendas of routine adjudication (i.e., the FERC), proven staying power, and strong institutional ties to the Congress are likely to be in equilibrium. Courts will treat this output circumspectly or at least with indifference.<sup>27</sup> Agencies with novel agendas, rulemaking pretensions, and a fractious constituency are treated with skepticism. The hard look doctrine certainly has arisen in the rulemaking context marked by sudden legislative initiatives, controversy, and disequilibrium. Rulemaking review is the hotbed of catastrophe theory in administrative law.<sup>28</sup>

Another phenomenon observed by the physical sciences and adaptable to law is that of cyclical change. I don't dare ask Walter Gellhorn or Clark Byse or Nat Nathanson what they think of this outbreak of "new" ideas, suggesting limits on the hard look review that represents today's synthesis of administrative law.<sup>29</sup> I have been around just long enough to suffer termi-

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23. For a forceful statement of this view, see S. GOULD, *THE PANDA'S THUMB: MORE REFLECTIONS IN NATURAL HISTORY* 179-85 (1980). See generally S. STANLEY, *THE NEW EVOLUTIONARY TIMETABLE: FOSSILS, GENES, AND THE ORIGIN OF SPECIES* (1981).

24. See Rodgers, *supra* note 4, at 313-14. See also Goldberg, *Controlling Basic Science: The Case of Nuclear Fusion*, 68 GEO. L.J. 683, 720-25 (1980).

25. See *Calvert Cliffs Coord. Comm. v. United States Atomic Energy Comm'n*, 449 F.2d 1109, 1111 (D.C. Cir. 1971).

26. Contrast the idea of an evolutionary stable strategy, derived from population biology. See R. DAWKINS, *THE SELFISH GENE* 74-94 (1976).

27. Cf. Rodgers, *supra* note 2, at 216 (suggesting deference to culturally preferred allocation rules); Stewart, *Regulation, Innovation, and Administrative Law: A Conceptual Framework*, 69 CALIF. L. REV. 1256, 1341-53 (1981) (suggesting deference to consensus standards).

28. See generally R. GILMORE, *CATASTROPHE THEORY FOR SCIENTISTS AND ENGINEERS* (1981).

29. See Rodgers, *supra* note 14, at 216-18 (urging acceptance of "soft glance" component of judicial review). The recommendations of Stewart can be read, perhaps unfairly, as advice to return to the discredited days of the New Deal where

nal smugness when observing the replay of some of the environmental controversies of the early 1970's. There are reasons to believe that the answers to some of the more enduring questions of administrative law, such as the degree of deference, might evolve on a cyclical basis. The competing considerations are delicately balanced; once a critical mass representing a trend is established, it is subject to rapid reinforcement and acceleration by the sheer volume of judicial review case law. The result is an oscillation around the norm and could be depicted by a type of curve familiar to population biologists—rapid growth, followed by collapse, build-up, and another period of rapid growth. Witness, in this regard, the phenomenal rise of the hard look in the wake of the 1971 *Overton Park*<sup>30</sup> decision and the striking retrenchment after *Vermont Yankee*<sup>31</sup> came down in 1978.

### C. *Models of Growth or Improvement*

Optimism is a powerful guide, in law as elsewhere, and only someone with a miserly mind-set could say anything against it. Growth models, dominated by the search for the bigger pie, rule economics and, I would argue, politics as well.<sup>32</sup> Natural laws of growth and improvement are everywhere evident, with evolutionary biology often—if mistakenly—cited as confirmation.

A more-is-better philosophy is evident in administrative law, too. I have argued elsewhere<sup>33</sup> that the great process explosion associated with the hard look doctrine is attributable in part to the fact that process fairness is not a zero-sum good. Unlike many entitlements of status or resource wealth, giving some process to *A* does not necessarily withdraw a like amount from *B*. We can afford to be generous with process. Upon such assumptions, courts at least should be receptive to legislative efforts to expand the roster of process beneficiaries—less immunity, more standing, hearings, impact statements.

Suppose, however, that the question being reviewed involves not the administrative grant of a growing resource but a reallocation, where *A*'s gain is *B*'s loss. *B*, once a worried onlooker, is now a proven loser. Can we expect an intensified judicial look at administrative zero-sum choices? How does or should this review differ from that extended in non-zero-sum contexts?

Consider another variation. Suppose the legislature, with its more-is-better conviction, proposes to double the supply of harvestable fish by di-

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bargains were struck behind closed doors in smoke-filled rooms. See Stewart, *supra* note 27, at 1341-53.

30. *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402 (1971).

31. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 U.S. 519 (1978). See generally Verkuil, *Judicial Review of Informal Rulemaking*, 55 TULANE L. REV. 418 (1981).

32. See R. NISBET, *HISTORY OF THE IDEA OF PROGRESS* (1978).

33. See Rodgers, *supra* note 2, at 227.

recting administrative implementation of a hatchery expansion program. In developing the rules implementing the program, the agency is besieged by evidence contradicting each and every empirical premise of the legislative action: more hatcheries mean fewer fish because hatchery gains are offset by natural losses due to interspecies predation, food competition, genetic dilution, changed harvest practices, and so on. Assume further that the fish are distributed in a new pattern, so that the policy thoroughly revises the roster of winners and losers consisting of the people who fish.

Without knowing the specifics, can we say anything instructive about the role, or perhaps more importantly the form, of judicial review of these rules implementing the hatchery policy? The court, of course, is stuck with the policy choice, however rash and optimistic it might be, but it should not be duty-bound to pay obeisance to all the empirical nonsense bound up in that choice. I, for one, would applaud a tough and skeptical hard look opinion, with venomous dicta, pointing out how unconvincing certain legislative assumptions appear in light of an improved record.<sup>34</sup> It is assumed here that the administrative record is thorough, thus giving rise to a judicial conviction about what the facts are. The court has an important function to play in the process of perpetual reassessment associated with regulatory legislation.<sup>35</sup> A tentative legislative choice, which most of them are, should not be read as freezing the empirical world at the moment of utterance.

#### D. *Models of Uncertainty*

One of the questions that bedevils us, in fashioning the scope of judicial review, is how much information is enough to sustain the administrative judgment below? There are several ways to look at this.<sup>36</sup> I would like to focus on the inevitable uncertainty in human affairs and the lessons this suggests for judicial review.

Uncertainty is rampant in the physical sciences, often in ways that must seem intolerable to a profession like ours that tends to equate thoroughness of inquiry with approximation of truth. The fossil record, for example, offers a limited peek at our past; these are grab-bag samples of convenience and heavily skewed by geological caprice. Repeatedly, however, these bits and pieces have been put to use to support sweeping inferential judgments. Nothing less than the evolutionary history of human beings

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34. I will acknowledge the delicacy of the normative assertion that the record before the agency, and therefore the court, might be "better" than the one before the legislature. A reading of the negative burden on commerce cases, however, suggests that this statement is sometimes supportable. See *Southern Pacific R.R. v. Arizona*, 325 U.S. 761, 788 (1945) (Black, J., dissenting). Legislatures, of course, are free to act without facts, or despite them, although they usually claim a consistency with empirical reality.

35. See Rodgers, *supra* note 4, at 315-17.

36. See Rodgers, *supra* note 2, at 226.

has been rewritten and corrected many times.<sup>37</sup> There is no other choice except to suspend judgment indefinitely. The "best available evidence" is distressingly thin.

The fossil record example and others like it suggest that we should be wary of models of comprehensive rationality that generate dissatisfaction by demanding proof not present and accounted for.<sup>38</sup> In rulemaking review, perhaps this means that courts should focus on determinations of acceptable methodology, not the factual products of the search. The "hard look" needs a "soft glance" component to protect professional judgments based on limited data.<sup>39</sup> It is a simple concession to necessity.

Another blow at comprehensive rationality is provided by the quantum mechanics revolution in physics. In quantum mechanics, "it is not possible, *even in principle*, to know enough about the present to make a complete prediction about the future."<sup>40</sup> Heisenburg's famous uncertainty principle holds that in the subatomic realm we cannot know both the position and momentum of a particle with absolute precision; the more we know about one, the less we know about the other. Future behavior cannot be predicted, only approximated by probability statements.

Metaphors are always imperfect, and people may not follow the same rules as electrons. But there is little to suggest that the outcomes of human endeavors are more tightly determined than the behavior of subatomic particles and much to the contrary. I, for one, find comforting the view that my own failed predictions are the consequences of an uncertainty principle, not simply ineptitude in fact-gathering. For those inclined to this point of view, we have added the realities of limited predictability to the rationale for a soft glance component of hard look review.<sup>41</sup> This is another concession to necessity.

A third qualifier of comprehensive rationality world views comes from the domain of psychology and emphasizes what could be called the nonra-

37. See generally D. JOHANSON & M. EDEY, *LUCY: THE BEGINNINGS OF HUMAN KIND* (1981). Cf. J. DAVIDSON & M. LYTLE, *AFTER THE FACT: THE ART OF HISTORICAL DETECTION* iii (1982) (discussing difficulties of historians in determining whether research is complete).

38. See Diver, *supra* note 4, at 399-400.

39. See Rodgers, *supra* note 14, at 216.

40. G. ZUKAV, *THE DANCING WULI MASTERS: AN OVERVIEW OF THE NEW PHYSICS* 52 (1979).

Even if we have the time and determination, it is not possible. Even if we have the best possible measuring devices, it is not possible. It is not a matter of the size of the task or the inefficiency of the detectors. The very nature of things is such that we must choose which aspect of them we wish to know best, for we can only know one of them with precision.

*Id.* See also H. PAGELS, *THE COSMIC CODE: QUANTUM PHYSICS AS THE LANGUAGE OF NATURE* 17-190 (1982).

41. See Rodgers, *supra* note 14, at 217.

tional, intuitive, or creative aspects of human thought.<sup>42</sup> To borrow from one among many maps of the human mind, dwell for a moment on the differences between what have been described as horizontal and vertical modes of thinking.<sup>43</sup> Horizontal thinking is divergent, creative, exploratory; vertical thinking is convergent, reductive, and thorough. This map of the mind metaphor, if you like it, conveys a somewhat different lesson about the scope of judicial review in administrative rulemaking. Creative administrative judgments, call them experimentation, should certainly be protected. We thus build again on our soft glance rationale, which already acknowledges limited data and limited predictability, by adding the precaution that agencies must be given room to make creative choices.<sup>44</sup> Add the assumption that true innovation will come from sources outside the agency, and judicial review is given some new directions. External advice from authoritative voices should be taken seriously by the agencies, and the hard look doctrine requires it.<sup>45</sup> External advice from political bodies will be taken seriously by the agencies, and the hard look doctrine permits it.<sup>46</sup>

But honoring the creative leaps of the horizontal thinkers surely has its limits. How many of us believe that what administrative law needs today is a heavy dose of respect for administrative intuition? Should NRC licenses be issued upon an intuitive sense that the radioactive waste problem will turn out all right in the long run? We want horizontal thinking within the agencies, to be sure, but there is something to be said also for the nitty gritty of converging on right answers after the right questions have been asked. Imagine a world of Roberto Ungers without hornbooks. The hard look doctrine needs no apologies for demanding closely reasoned results and explanations of methodology from the agencies.<sup>47</sup> This process sharpens the kind of decisionmaking agencies do best: dealing with incremental changes

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42. See *id.* at 217 nn. 176, 177. Is there any doubt about the high frequency of nonrational or judgmental components in human thought? Do you believe, for example, that your favorite professor's recent choice of a research project, surely the epitome of rational choice, could withstand a GAO investigation? The topic evolved out of a paper presented at a conference? How does one decide to participate in a conference? Is this professionally important time allocation decision made on the basis of who asked first? Did the same criteria apply to one's choice in marriage? Isn't this a subject that should be shielded from the hard look? There are differences, of course, between personal and collective spur-of-the-moment decisions. But problems of judgment apply to both kinds of choices.

43. See C. HAMPDEN-TURNER, *MAPS OF THE MIND: CHARTS AND CONCEPTS OF THE MIND AND ITS LABYRINTHS* 104 (1981).

44. See *Ethyl Corp. v. EPA*, 541 F.2d 1, 6-7 (D.C. Cir. 1976).

45. See W. RODGERS, *ENVIRONMENTAL LAW* 300-01 (discussing role of National Academy of Sciences in establishing auto emissions standards).

46. See Gellhorn & Robinson, *Rulemaking "Due Process": An Inconclusive Dialogue*, 48 U. CHI. L. REV. 201, 203-04 (1981).

47. See Rodgers, *A Hard Look at Vermont Yankee: Environmental Law Under Close Scrutiny*, 67 GEO. L.J. 699, 704-08 (1979).

in a tightly structured world, acting as the vertical workhorse serving those horizontal sages in the Congress.

E. *Conclusion*

Of the pain inflicted on law students within the nation's law schools, administrative law as it is customarily taught accounts for more than its fair share. The case law is strongly wedded to empty verbalization and dry classification. Breaking out of these habits of thought and expression requires metaphor-making and a good deal more. All I have attempted to accomplish in this paper is to suggest that natural science theory is rich in metaphor and that there is something there that can be put to use in building theories of administrative law.

