

GUERRILLA DECISIONMAKING: JUDICIAL REVIEW OF RISK ASSESSMENTS*

WILLIAM H. RODGERS, Jr.

University of Washington, Seattle, DC 98105 (U.S.A.)

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Summary

This paper describes four types of uncertainty confronted by decisionmakers undertaking risk assessments. It then discusses individual and institutional responses to uncertainty; these include both formal attempts to acquire more information, and pragmatic efforts to isolate and act upon salient considerations. The tendency of decisionmakers to narrow the agenda and search for a decisive datum or metaphor is called guerilla decisionmaking. Courts oversee agency decisions by techniques known widely in the legal community as the hard-look doctrine. This doctrine is defined, and the case law is used to illustrate how courts insist upon identification of salient risk-assessment factors and the production of information on all four types of uncertainty.

Introduction

While risk assessments occur in many legal contexts, the dominant one is in judicial review of administrative agency decisions. Each year, hundreds of agency judgments on societal risks are reviewed in the courts at the behest of parties aggrieved by the administrative choices. The courts engaged in this review, no less than other institutions, are creatures of their environment. An understanding of how these courts behave is assisted by recognizing that their agendas are set chiefly by the administrative agencies whose judgments are subject to review. Judges do no more than stake out the permissible reach of discretionary agency choice; the law marks the limits of judicial tolerance. We have here no models of perfection, no prescriptions for reform. Courts, in a sense, act as predators culling out unacceptable forms of administrative behavior. Predatory oversight in the courts of appeal tells us only that some admin-

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istrative decisionmaking phenotypes* are unsuited for perpetuation. Survivors, of course, are not the best; they are only good enough, and they have characteristics that may be perpetuated in the population.

Agency decisions, as the prey in this drama, confront a variety of stresses that influence survival rates in the courts of appeal. Among these, the dominant one is uncertainty. Uncertainty, to be sure, is rampant in the physical and social sciences, often in ways that are alien to the legal profession which tends to equate thoroughness of inquiry with approximation of truth. Uncertainty is a cloak of many colors, however, and lends itself to a descriptive typology distinguishing between four different types of unknowns. We will pursue these descriptive differences in the expectation that they will lead to deeper understanding of judicial review.

Four types of uncertainty

1 Data uncertainty

Decisionmaking under uncertainty commonly means that the decision-maker lacks the facts to make a considered choice. The fossil-record, for example, offers a limited peek at the past; it reluctantly yields grab-bag samples, tantalizingly incomplete, heavily skewed by geological caprice [1]. Notwithstanding the gaps, however, the bits and pieces have been put to use to support sweeping inferential judgments. Nothing less than the evolutionary history of human beings has been rewritten and corrected many times [2]. There is no other choice except to suspend judgment indefinitely.

2 Indeterminacy

A second type of uncertainty arises out of attempts to answer questions that have no answer. The obvious example comes from quantum mechanics where we are told "it is not possible, *even in principle*, to know enough about the present to make a complete prediction about the future" [3]. 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. Elsewhere in the sciences, much investigation takes place in a minefield of presently unanswerable questions, which are often treated as black boxes "inaccessible to explanation" [4].

*To pursue the metaphor, the agency decision is better viewed as an entire population, as courts are able to disapprove selectively parts of the rationale, some of the studies relied upon, or particular techniques used. It is an authority to disapprove the antlers of the Irish Elk while endorsing the rest of the beast. There is also some kind of Lamarckian evolution at work since courts believe, at least provisionally, that they can change agency policy by the simple expedient of giving helpful and advice.

3 Nonrecurring and nonreplicable events

A third type of uncertainty arises out of attempts to understand events that are nonrecurring or nonreplicable. I call this historical uncertainty. Inquiries into these mysteries suffer from fact shortages and indeterminacies but also from information barriers unique to understanding events that come around but once. There are observation problems; we get but one quick look, and no chance for further verification by experimentation [5]. There are interpretation problems: archeologists [6] and historians [7,8] can offer only plausible accounts of the past, faced as they are by such imponderables as where to stop, what to exclude, and what it all means. With increasing complexity, chains of causation become matters of opinion. Attempts to understand historical events also illustrate that, for purposes of uncertainty standing in the way of choice, information overload is functionally indistinguishable from information underload. Many of the rocks and debris of historical research, deserving summary rejection, mimic valuable finds and appear in the guise of something useful. In history, the uniqueness of past events and their defiance of single descriptions encourages us to accept a high degree of variability in accounts of what "really" happened.

Predicting nonrecurring events returns us to the realm of the indeterminate. The risks flow from events that have not been observed because they have not happened. Opinions count heavily here, and those who venture an opinion are called risk-assessors, or futurists, or soothsayers.

4 Transcientific or global policy choice

Alvin Weinberg has given the name transcientific to high policy questions that may be asked of science but are not answerable by science [9,10]. Questions of this sort are not answerable because they require physical predictions that cannot be made (e.g., rates of accumulation of CO₂ in the atmosphere) and social choices that cannot be defended. Any choice obliges the decision-maker to predict the unpredictable, compare the incommensurable, identify elusive political or cultural preferences, respond to ever-changing constituencies, choose among values, and elevate one discipline over another. Uncertainty here is rarely overcome by consensus opinions of qualified experts; many opinions count in these cases, and any sampling of opinion is bound to be tentative as views and information are constantly changing. Decisions to wage war, move against acid rain, or curtail the fumigant EDB are of this type. Generalized, transcientific or global policy decisionmaking is what is usually meant by public policy decisionmaking.

The four types of uncertainty in the regulation of toxics

In regulating toxic substances, it is evident that all four types of uncertainties stand in the way of confident judgments. Any single decision confronts

numerous data shortages, including unknowns about groups exposed, routes of exposure, patterns and practices of uses, behavior of chemicals within the environment [11–14]. Indeterminate questions abound, including the shape of the dose–response curves, the relevance of animal studies, the relationship of exposures to effects observed in epidemiological studies, and even whether there are safe threshold levels for exposures to given substances [15–17]. Historical uncertainty is rampant. Even the easy cases (saccharine is commonly mentioned) offer a virtual blank in assessing the costs and benefits of a product used for years by over fifty million people [18]. These problems are also demonstrably nonrecurring in any physical sense; the sheer chemistry of the mixtures at many of the waste disposal sites is not duplicable, for example, leaving in its wake unanswerable questions about causes and effects [15–17,19,20]. The difficulties of predicting what will happen and what to do about it combine to make the regulation of toxics prototypical of transcientific or global policy choices.

Individual and institutional responses to uncertainty

While uncertainty may offer sufficient grounds for not deciding, choice is often obligatory. One reason is that uncertainty is an inevitable component of any decision. Uncertainty must be coped with, and different types of uncertainty are solved in different ways.

For data uncertainty, one option is to suspend judgment, pending the gathering of additional facts. As individuals, we may pause to collect the best available evidence or pursue studies. Decisionmaking institutions may do this and more; they may attempt to extend the visibility by modeling, decision trees, and the other apparatus of contemporary rational decisionmaking [21]. Along the way tactical battles against uncertainty are fought with reasoned assumptions, consensus opinions, and qualified guesses. Stopped short, the search for more information is dangerously incomplete. Carried too far, it produces the scorched-earth excesses of formal decisionmaking.

How much additional information is required to decide is a matter of sharp debate. An economist is likely to recommend that more facts be pursued until the costs of collection exceed the benefits of an improved decision [22]. A philosopher might say that potential losers deserve at least a best-efforts attempt to answer the open questions [22]. Lawyers are inclined to speak in terms of burdens of coming forward and of persuasion [23–25], assigning information-producing responsibilities to different parties under different circumstances.

Eventually, uncertainties can be combatted only by nonrational, intuitive, or creative models of thought. As individuals, we are walking advertisements for resisting massive introspection and information overload. Humans are programmed to compute on the basis of limited data, to the extent of being given “underprivileged access” to what’s going on in our minds [26]. We pay atten-

tion only to considerations that jump out at us as salient, unusual, disruptive of the normal pattern, “mismatches” in the accustomed flow of information [27]. This “salient consideration” mode of decisionmaking is assisted by patterned responses to uncertain, stressful, and confusing situations; we may act by avoiding the worst case or the catastrophic outcome, adhering to past practice, striving for margins of safety, following the crowd, or isolating the manageable [28–30]. This kind of decisionmaking involves a search for salient and controlling factors, and the acting upon them until some better advice comes along.

Our risk assessment institutions, too, are torn between the needs for more study and provisional choice. On the one hand, comprehensive decisionmaking is greedy for facts [31,32], and serves agency purposes of more money, staffing, conflict-avoidance and decision-delay [33]. Statutes such as the National Environmental Policy Act have encouraged the extension of formal decisionmaking. On the other hand, choice in the presence of limitations is inescapable. Agencies often find themselves obliged to shun formal analyses in favor of more functional, stripped down, and pragmatic forms of decisionmaking. Some agencies and advisory bodies have pursued worst case analyses [34–36], comparative analyses (which ask whether the universe of risk will be improved by replacing an existing product with another) [18,37], or a strictly limited comparison of health gains with health costs. (This is called a “risk–risk” framework of regulation [38].) Agencies may ask questions such as whether a tentative policy choice will be reversible later [39], and they may make rule-of-thumb assessments about “the relative risks of underprotection as compared to overprotection” [40,41]. All of this amounts to policy groping, attempting to deal provisionally with the many uncertainties standing in the way of definitive choices.

My name for decisional strategies that seek to isolate and act upon salient considerations is guerilla decisionmaking. The practice seeks out the short agenda, a handful of options, and the compelling metaphor. Characterization of the risk (for example, as catastrophic) is often the decisive step in analysis. Guerrilla decisionmaking is opportunistic, provisional, ad hoc, a search not so much for crucial links in the chain but rather for obstacles that can be overcome. It is a divide and conquer strategy, one that isolates the manageable and postpones the obscure. It is a strategy attuned to targets of opportunity, and a search for dispositive factors. It seeks not some ideal “best” outcome, but only one that is good enough given the multiple constraints and ever-present uncertainty.

Under guerilla decisionmaking acceptability of risks turns not upon global assessments of costs and benefits but upon emergence of a single, or a handful, of “controlling” considerations that are sensitive measures of the economic, psychological, political and legal acceptability of a given risk. These consid-

erations, which are no mystery to writers in the field or close observers of technological conflict, include:

1. voluntariness [42,43];
2. catastrophic nature [44];
3. comparability to natural risks [45];
4. universality (e.g., the widespread dissemination of PCBs, DDT and lead);
5. government sponsorship (swine flu is commonly mentioned);
6. vulnerability of the target group [46,47];
7. necessity (the example most often cited is that of fluorocarbons);
8. familiarity of the risk; [18,48,49];
9. immediacy of anticipated effects [44];
- 10 de minimis nature [50].

While these indicators may be in conflict and do not always control outcomes, they offer surprisingly convincing explanations for a number of well-known policy decisions.

Hard-look doctrine defined

The legal name that has been given to the judicial review of risk-assessment decisionmaking is the hard-look doctrine (the term was coined by the late Judge Harold Leventhal) [51-55], although it has some decidedly soft-glance components. Courts take a hard look at agency explanations, a soft glance at their policy choices. Distinguishing between the two is one of the great difficulties of contemporary environmental law.

It is possible to describe with some particularity (and even to predict) [56] how courts will respond to administrative choices pertaining to societal risk. Typically, a court will be confronted by industrial and commercial claimants saying the restrictions went too far, and by environmental or health groups claiming they didn't go far enough. The court, usually in this order, will subject the administrative decision and its accompanying rationale to three tests of acceptability. First, it will read confidently the legislative charter under which the agency is acting to make sure the prescribed decisionmaking model is followed (for example, cost-benefit, cost-effectiveness, or cost-oblivious) [57]. A second crucial feature of this review is the "incessant demand" of the courts for "reasoned decisionmaking" [58-60]. The indispensable requirement here is the sufficiency of the agency's explanation because fulfillment of the functions of judicial review is utterly dependent upon the agency being able to explain what it did. The hard look that is taken at the agency explanation, and often also at its justification, appears in close proximity to the soft glance that is extended to the assumptions and policy choices bound up in the decision. While the courts feel confident in demanding an accounting, they quickly reach questions foreign to their expertise and beyond their competence if they quarrel with technical assumptions or second-guess a policy choice. A third impor-

tant feature of judicial review, also having its hard-look and soft-glance components, is the issue of procedural regularity. Courts are not at all bashful about enforcing the procedural rules prescribed by the Congress but are attentive also to tolerating decisionmaking experimentation that may very well be necessary for satisfactory resolution of global policy issues [61].

Taken together, these three ingredients of skeptical judicial oversight have come to be known as the hard-look doctrine of judicial review. They illustrate that the judicial function is confined chiefly to process considerations. The courts make sure the rules of Congress are applied by agencies able to give a reasoned defense to the outcomes they propose. It is true, moreover, that the long roster of process rights that emerge (e.g., rights to have methodology explained, studies disclosed, and objections answered) are not linked to the peculiar vulnerabilities of the victims of low-level pollution or widely disseminated carcinogens. Victims have these rights, but so do the commercial entities who suffer economically from restrictions on product uses. The hard look offers value-neutral administrative due process rights, available to polluters and victims alike [55]. Every user of DDT or EDB, and every unwilling consumer of them, may have a day in court.

The process-intensive features of judicial review are not surprising. The usual reasons of institutional limits serve as strong precautions against judicial entry into the empirical thickets and policy minefields associated with the regulation of environmental hazards. Process, in the short run, is a kind of nonzero-sum good where A can be favored with a procedural entitlement without exacting a reciprocal toll from B [62]. It is easier for the courts to recognize or invent these "new" rights without discernible losers than to wade into the fray with substantive pronouncements where victory for B is understood as a setback for A [63]. Process rights are a popular currency among attorneys, who dominate the litigation and legislation processes, and not only for the obvious reason that more process means more work for lawyers. Procedural proliferation also is a convenient option for any decisionmaker searching for a "correct" outcome, or even a guiding ethic, where no substantive choice is clearly recommended. Under this view, "justice" becomes any outcome that happens to be churned out by just procedures; it is unnecessary, in the end, to choose between irreconcilable values.

Judicial enforcement of salient decisional criteria

Courts assume a role both in isolating risk assessment criteria and assuring that all types of uncertainties are accounted for adequately by agency decisions. The strict reading that is given to the legislative charters is the technique for giving prominence to certain aspects of the risk being evaluated. In this instance, the courts forego their normal preference for process solutions but their boldness is attributed to legislative choice.

Several writers have pointed out that the Congress regularly departs from a benefit-cost decisionmaking model [64,65]. One option, which I call the cost-oblivious model [66], explicitly rules out the consideration of economics in achieving the statutory objectives, such as the protection of health [67] or of nonhuman endangered species [68]. Many analysts [69-71] are sharply critical of statutes of this sort - the Delaney Amendment [72-75] is an especially attractive target - on the grounds that no conceivable version of a rational decision can be built on absolutes such as protecting snail darters [76], forbidding the introduction of all pollutants into the water [77], or keeping carcinogens out of the food supply [72-75].

Most explanations of these cost-oblivious or absolutist legislative charters do little to rehabilitate the practice. These legislative choices may represent a preemptive judgment representing an advance assessment of costs [78] that is likely to founder on the specifics of individual cases. They may be an expression of gut-level morality [79] that coincidentally calls for inordinate sacrifices from those not favored legislatively. Or they may represent the leftover choices of a simpler age before technology made it possible to detect poisons in the range of parts per billion [83].

Another interpretation of the cost-oblivious statutes, not inconsistent with the morality view, is that they represent the provisional elevation of a limited question to a place of prominence on the policy agenda. Whatever the criteria for a "best" or "complete" decision, it is not written in stone that a single decisionmaker must make all the choices. Referrals of properly isolated questions are the norm, not the extreme, of internal agency decisions. Although the proposition is by no means unanimous [81], one can think of good reasons for asking an agency to prescribe health-based or ambient-air emission standards, reserving for another body (perhaps the Congress itself) questions that arise about costs of compliance. We might have greater confidence in health-based standards of this sort because they are divorced from the politics of compliance, free from a comparison of incommensurables (posed classically by choices between health and job losses caused by industry shutdown), and less demanding of new and untested methodologies.

This vision of a provisional, tentative, or partial referral carries with it a perspective of public policy choice that departs from the legal norm. The dominant legal model, built no doubt on experience with limited disputes and single answers, expects definitive resolution within a prescribed time. Public policy choices on many topics today, including the controversial toxics (DDT, PCBs and many others), proceed with no end in sight, a progression of partial decisions, giving way to the next partial decision built on shifting coalitions, new information, and mosaic values. In this world, conflict is the norm, reconsideration the prospect, and choice always is provisional.

By reading restrictive charters as an expression of provisional choice courts cooperate in the guerrilla or "salient consideration" decisionmaking agencies

are obliged to resort to. This charter-reading responsibility also makes it possible for the courts to enforce central values – or, less elegantly, the provisional choice of the moment – against agencies who succumb to the temptations of massive formal analyses. The charters, and the detectable policies behind them, often suggest a dominant approach to risk evaluation that may recommend an outcome in a surprisingly large number of cases.

Reasoned decisionmaking

Apart from charter-reading responsibilities giving hints about the acceptability of risk, the task of judicial review is devoted mostly to improving agency decisionmaking in the face of uncertainty. Scores of cases take up the question of data shortages, and often result in directives for more study, investigation, and even experimentation. The leading cases include Refs. [82–85]. (NEPA often is invoked for data supplementation purposes [86,87].) Reaction to these cases turns chiefly upon one's normative assessment of whether the line on how much information is enough was wisely drawn [22–25]. The benzene case [88] is one where the Supreme Court went too far by calling for the production of data that was not practicably available.

Indeterminacies, sometimes mistaken for mere data shortages by lawyers [56], are also commonplace in the case law [89]. Predictably, the courts require disclosure of those questions that cannot be answered and recognition of the limitations of the methodologies employed [89]. This disclosure obviously may invite disagreement and questioning of the agency opinions.

Historical uncertainties, sensitive as they are to choice of methodology, are also dealt with in the course of hard-look review by requiring disclosure, including assumptions, authoritative studies, or qualified guesses serving as the foundation of the analysis [90]. While the choice of assumptions in, say, cancer research, ultimately may represent value judgments, they are judgments that are closely held, confined to the inner sanctum, and hardly open to repudiation by the public at large. In these instances the hard look may function to force a debate among experts by requiring the agency to answer this plausible objection or explain why it dismissed that credible opinion or chose this assumption over that one. Few scientists realize that the aura of credibility customarily associated with reports of panels of the National Academy of Sciences, to mention but one example, means that the agencies must give plausible explanations for departing from this advice [91].

At the level of transscientific policy choices, courts require explanation of the salient considerations and the basic policy choices that made risk A acceptable and risk B unacceptable. Because these choices depart from a scientific model, where technical analysis and professional opinion hold sway, and approach the world of pure political choice, one is likely to find that judges are vigilant to expose the value choices that may be revised by political second-guessing [92],

and to enforce rights of public participation [93]. The Supreme Court's decision in the PANE case [94], excusing disregard of psychological effects from the start-up of the reactor at Three Mile Island, is open to criticism as being insufficiently sensitive to the fact that "correct" global risk assessment should give weight not only to technical consensus but also to popular opinion [95].

Conclusions

While the agencies grapple with uncertainties, the courts grapple with agency methodologies. The result is a coevolutionary normative commentary on the agency treatment of data shortages, indeterminacies, historical uncertainties, and transscientific policy judgments. Courts also oversee choices that are made on fact-gathering and risk acceptability. Statutory charters, and their less explicit purposes, are used to identify salient features of a risk that suffice to point the way to provisional choice. Judicial review also serves to open process doors so that losers may be heard and winners kept insecure in conflicts perceived as having no end and few right answers.

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