

Procedural Control of the Bureaucracy, Peer Review, and Epistemic Drift

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ABSTRACT

Regulatory peer review—in which independent scientists comment on the technical underpinnings of proposed regulations—is a recently pursued form of political control of the bureaucracy. This article situates regulatory peer review in the context of both the history of technical advice to government and the principal-agent perspective often used to explain the presence of administrative procedures. Much of the academic discussion of attempts to influence bureaucratic decision making has utilized principal-agent theory. We introduce two novel concepts to accommodate regulatory peer review into the principal-agent framework. The first is “technocracy” where the preferences of technical experts displace public preferences. The second is “epistemic drift,” a change in embodied knowledge that contributes to departures from the policy intentions of an enacting coalition of policy makers. In addition to introducing these concepts, we argue that regulatory peer review is more complex than other administrative procedures and that its efficacy critically depends on the details of its implementation. We hypothesize that regulatory peer review will cause nongovernmental participants in regulatory conflicts to devote more effort to creating research and other epistemic resources. But we also hypothesize that, just as courts have become more politicized with their role in regulatory policy, peer review and regulatory science will become increasingly politicized as well.

INTRODUCTION

Administrative procedures may be used as instruments for the political control of the bureaucracy, preventing policies from drifting from the original intentions of an enacting coalition of legislators and interest groups through the independent action of bureaucrats (McCubbins, Noll, and Weingast 1987). Legislative principals also worry about additional actors who may attempt to change the specified administrative, procedural safeguards because they belong to a coalition that has drifted in composition and/or interest since the original legislative action (Horn and Shepsle 1989).

Since these initial descriptions of “bureaucratic” and “coalitional” drift, respectively, regulatory politics has discovered a new instrument of potential control, regulatory peer

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review—roughly, the process in which scientists who are independent of regulatory agencies comment on the technical underpinnings of proposed regulations. After several drafts and significant controversy, the Office of Management and Budget finalized agency requirements for regulatory peer review in January 2005 (OMB 2005). Both bureaucratic and coalitional forms of drift contain a role, implicit if not always explicit, for substantive or cause-and-effect knowledge (science)—and the uncertainty surrounding it—in the regulatory process. Placing regulatory peer review in the context of legislative and executive attempts in the United States to solve the principal-agent problem brings this role to the fore. It also reveals a third type of drift that requires discussion, what we call *epistemic drift*.

In this article, we provide a brief overview of the history of regulatory peer review and situate it in the literature on administrative procedures as instruments of political control of the bureaucracy. Like that literature, we assume but do not elaborate a principal-agent relationship between political actors and bureaucratic ones.¹ Because an asymmetry of information between the (relatively ignorant) political principal and the (relatively knowledgeable) bureaucratic agent is critical to the structure of problems and solutions in delegated authority, it is appropriate to focus specifically on epistemic issues as well as organizational and political ones. Substantive knowledge is a great political resource in making regulatory decisions—particularly around issues of the environment, occupational health and safety, and food, drugs, and consumer products. But science is also an ongoing activity and a changeable body of knowledge that can become the focus of political as well as scientific disputes. We therefore introduce and elaborate on two concepts: *technocracy*, as a consequence of information asymmetries between political principals and bureaucratic agents, and *epistemic drift*, as a third explanatory category along side bureaucratic and coalitional drift. Both concepts are critical for understanding the potential impact of regulatory peer review, particularly the question of whether it will allow political principals to control bureaucratic agents.

In addition to introducing these concepts, we also argue that the structure of regulatory peer review is more complex than other administrative procedures and that its efficacy is likely to depend at least as much on the details of its implementation as on its design. We hypothesize that, under regulatory peer review, nongovernmental participants in regulatory conflicts will devote more effort to creating epistemic resources, that is, research and other forms of technical expertise. But we also hypothesize that, just as courts have become more politicized because of their role in oversight and enforcement of regulatory policy, peer review and regulatory science will become increasingly politicized as a consequence as well.

The article proceeds as follows: The first section below defines regulatory peer review and situates it in the context of both the history of technical advice to government agencies and the development of administrative procedures, including executive efforts at regulatory reform. The second section analyzes the prospects of regulatory peer review in the framework of bureaucratic drift and introduces the concept of technocracy. The third section analyzes the prospects of regulatory peer review in the framework of coalitional drift and introduces the concept of epistemic drift. The fourth section sorts through the difficulties of implementation and bureaucratic compliance with regulatory peer review. The article concludes by questioning whether regulatory peer review will achieve its ostensible goal of promoting the use of sound analysis in support of sound regulatory

1 See Moe (1984) for a general overview of agency theory applied to the political control of the bureaucracy, and see Niskanen (1971) for an antecedent.

decision making or whether it will, instead, perversely encourage the further politicization of science in the regulatory process.

REGULATORY PEER REVIEW

Peer review is a practice through which resources (e.g., funding, journal space) that are scarce but important to the scientific community are distributed with the advice of the members of the scientific community itself (Chubin and Hackett 1990). Traditional accounts locate its origins in the 17th century Royal Society, which implemented a practice of distributing manuscripts to its members for commentary prior to publication in the Society's *Philosophical Transactions* (Zuckerman and Merton 1971), although antecedent practices existed (Kronick 1985,24). In the United States, peer review for both funding and journals began to be institutionalized in the early 20th century, but it did not become widespread for either purpose until after World War II; other mechanisms for the distribution of such resources, for example, geographic earmarks or editorial discretion, are still common (Chubin and Hackett 1990; Savage 1999; Smith 1990), but they tend to be considered less legitimate. Despite a recent trend toward increased geographic earmarks for the federal funding of research (Savage 1999), peer review for funding and for informed bureaucratic (and judicial) decision making is expanding (Guston 2003b).

In regulatory peer review, government officials seek the opinions of experts about the quality of scientific and technical inputs to regulatory and other policy decisions.² More than any other Western democracy, the United States makes use of outside experts to advise its governing institutions (Weiss 1992). The historian of science Dupree (1957) dates the use of ad hoc advisory committees to the early days of the Republic. During the Civil War, Congress created the National Academy of Sciences (NAS), not only as an honorific institution, but also to “investigate, examine, experiment, and report on any subject of science” when called upon by the government (NAS 1985). NAS created the National Research Council (NRC), its operating arm, in 1916, which President Wilson perpetuated by request in 1918.

A proliferation of advisory committees, technical and otherwise, occurred with the management of the twin crises of the Depression and World War II. The Depression-era Science Advisory Board, for example, failed in its attempt to bring scientific thinking and technological applications to bear on the social problems of the 1930s (Hart 1998, 72–5). A chain of advisory boards relating to defense science, culminating in the creation of the Defense Science Board in 1956, exemplified the “successful use of science advisers” (Blanpied 1995; Smith 1992, 48–67), and the defense model was influential in the creation of the President's Science Advisory Committee (now, President's Council of Advisors for Science and Technology) later in the second Eisenhower administration. The 1973 creation of the Environmental Protection Agency's Science Advisory Board formally brought the advisory committee model to regulatory science (Jasanoff 1990; Smith 1992). Other

² Regulatory peer review has no coherent literature, and only a few major works of scholarship or analysis bear directly on it. Ashford (1984) is very much in the tradition of participants in the process offering observations on and analytical frames for their experiences. Perhaps the most significant treatment, but focused exclusively on scientific advisory committees, is Jasanoff (1990), although Smith (1992) is important and relevant as well. Other works deal more generally with science and risk in the regulatory process (Breyer 1993; Graham, Green, and Roberts 1988; Graham and Weiner 1995). There are also some studies addressing particular agencies, notably Powell (1999). More recently, Noah (2000) has addressed expectations about the intersection of regulatory peer review and judicial review.

agencies appointed advisory committees and increased their use of professional and honorific societies, including NAS/NRC, for similar purposes.

This proliferation of advisory committees in the decades after the war led Congress to pass the Federal Advisory Committee Act (FACA) in 1972, setting down rules governing their use and mandating some degree of openness in their activities and balance in their membership.³ The General Services Administration (GSA), which is charged to fulfill FACA's reporting requirements, reported the number of active FACA committees in 2005 at 941,⁴ a number that has been quite steady since a modest reduction under President Clinton's 1993 Executive Order 12838, which limited their numbers. GSA counted 23% of these committees as scientific/technical and another 10% as grant review, percentages consistent with, but slightly reduced from, previous years.⁵ Thus, one-third of the Federal Advisory Committee apparatus is aimed at gathering the opinions of scientific and technical experts, and potentially one-fifth to one-quarter could be considered regulatory peer review.

The implementation of the Administrative Procedures Act (APA) of 1946 paralleled the postwar growth of advisory committees. The APA set up the process followed to this day for notice and comment rulemaking in which agencies planning a regulation publish a proposal and solicit and consider public comments before finalizing it (Kerwin 1999). Public comment has given interest groups and the public the ability to provide information to regulatory decision makers (West 2004), but advocates of regulatory peer review distinguish the ability of public comment to express interested opinion from regulatory peer review's potential to elicit independent technical advice (Noah 2000; OMB 2004).

APA and FACA each represent attempts by legislative principals to control the bureaucracy. Executive principals have had their own agenda of control as well. Although on the agenda of President Carter, the presidential oversight of the regulatory process, and particularly economic analysis, grew sharply under President Reagan. In 1981, Reagan issued Executive Order 12291, which centralized the review of regulations and regulatory impact analyses in the Office of Information and Regulatory Affairs (OIRA), a new office within OMB created the previous year by the Paperwork Reduction Act. Executive Order 12291 required agencies to submit all proposed and final regulations to OIRA before publication, and it granted OIRA the authority to approve or disapprove those regulations based on cost-benefit tests.⁶ President Clinton rescinded Executive Order 12291, but he replaced it with Executive Order 12866, which cemented the place of regulatory impact analysis and OIRA's review authority in the regulatory process while moderating OIRA's centripetal role.⁷

3 Smith (1992, 24) describes how the congressional impetus for FACA was driven by a perceived abuse of secret deliberations by advisory committees in Environmental Protection Agency and the Department of Agriculture in their consideration of 2,4,5-T (dioxin).

4 From www.fido.gov/facadatabase.

5 In 1997, a federal court ruled that the government "utilized" the National Academy complex under FACA, and since, with some legislative direction, the Academy has altered its procedures to provide greater openness (GAO 1998).

6 Executive Order 12291 § 2, 3 C.F.R. 128 (1981) reprinted in 5 U.S.C. § 601 note (1988).

7 Executive Order 12866 increased the transparency of OIRA review, prohibiting contacts between OIRA and outside parties concerning rules under review unless such contacts took place in meetings that were a public fact and to which the regulating agency was invited. The order also restricted OIRA's review to "significant" regulatory actions rather than all regulations issued by agencies. The definition of significant, however, is sufficiently broad to include any rule on which there is significant controversy. As a result of this change, the number of rules OIRA reviews dropped from nearly 3000 per year to approximately 600 per year. Executive Order 12866 §11, 3 C.F.R. 638, 649 (1993) reprinted in 5 U.S.C. § 601 (Supp. 1993).

The ascendancy of a Republican majority in Congress in the mid-1990s elevated the issue of regulatory reform on the agenda. The 104th Congress (1995–1996) passed a number of regulatory reforms, including the Unfunded Mandates Reform Act (Public Law 104-4) and the Congressional Review Act (Public Law 104-121). The 105th Congress (1997–1998) debated S. 981, which would have implemented a comprehensive effort of peer review across all regulatory agencies. The Clinton administration opposed the bill, citing concerns about the relative costs and benefits of a peer review requirement and about conflict-of-interest provisions that seemed to tilt the playing field from the agencies to the regulated entities.⁸ Although not all the witnesses at the hearings on S. 981 commented specifically on the bill’s peer review provisions, industrial interests (e.g., General Motors, American Industrial Health Council, National Federation of Independent Businesses) tended to favor the bill, and environmental, labor, and activist organizations (e.g., National Resources Defense Council, American Federation of Labor and Congress of Industrial Organizations, and Public Citizen) tended to oppose it. An “academic middle,” represented by scholars from the AEI-Brookings Joint Institute, the NAS, the Georgetown Center for Food and Nutrition Policy, and the Harvard School of Public Health, was also in favor of the bill and its peer review provisions.

The 106th Congress (1999–2000) debated a similar bill, S. 746 (see also S. Rpt. 106–110). Minor bills involving single agencies (e.g., the Occupational Health and Safety Administration) were also introduced. Although S. 746 had some bipartisan support, including tacit support from the Clinton Administration, for its broad sweep of regulatory reform, of which peer review was only a part, it did not pass, as Senator Joe Lieberman (D-CT) threatened to offer too many amendments for the liking of Majority Leader Trent Lott (R-MS). Meanwhile, the House passed its own regulatory reform bill, which contained no peer review provision, but Senator Carl Levin (D-MI)—who supported S. 746—opposed any action on the House bill.

In the absence of congressional action, however, the Bush administration’s OMB took up the cause⁹—perhaps because regulatory peer review plays into the agenda of executive control of the bureaucracy at least as strongly, if not more so, than into that of legislative control. Executive control is traditionally seen as a means for improving efficiency and accountability in the bureaucracy. The President is seen as more accountable to the public as a whole than Congress, and can more easily formulate coherent policy goals than a legislative body (Kagan 2001). Regulatory peer review may improve accountability by making agency scientists accountable to external peers and improve presidential oversight by providing external opinions on agency actions. It may also improve efficiency by potentially eliminating court challenges to the science behind controversial rules (OMB 2003). On September 15, 2003, OIRA issued a draft guideline proposing that all significant technical information supporting a regulatory action be peer reviewed. The guideline outlined the peer review requirements, specifying who could serve as a peer reviewer and defining the scope of disseminated information to which the requirement applied.

In response to the draft’s publication, OMB received 187 public comments, in addition to comments from federal agencies that would be subject to the bulletin. According to

⁸ See testimony of Sally Katzen, OMB.

⁹ The Bush administration claimed that the peer review guidelines were implementing what has become known as the data quality act, Section 515 of the Treasury and General Government Appropriations Act for FY2001 (Public Law 106-554). The act makes no mention of regulatory peer review however.

OMB Watch (2004), 57% of the public comments were from scientists, academics, or individuals; 26% were from industry; and 13% from public interest groups; approximately one-third of the comments supported the OMB bulletin and two-thirds opposed it.¹⁰ In May 2004, OMB (2004b) published a more detailed second draft, altering key provisions and granting substantially more autonomy to the agencies to conduct peer reviews in their own fashion. Although the revised bulletin was more deferential to agencies for most scientific information, it still required them to meet numerous detailed standards for “highly influential scientific assessments.” It left vague the process by which scientific information would be classified as highly influential but made clear that the OIRA Administrator would have a significant role in this process.

OMB received 56 comments on its revised draft. OMB (2004c) noted that “A majority of the commenters even those who oppose promulgation of OMB standards for peer review, noted that the revised draft was responsive to criticisms and significantly improved compared to the initial draft.” Sixteen of these comments merely requested an extension of the comment period, whereas 24 supported the guidelines or thought they should be stronger and 16 opposed the guidelines. OMB (2005) published a final information quality bulletin for peer review in the Federal Register on January 14, 2005. The final guidelines had few changes from the revised guidelines issued in 2004.¹¹

PEER REVIEW AND BUREAUCRATIC DRIFT

Shirking, Corruption, and Oligarchy

A novel instrument of administrative procedure, regulatory peer review, can be conceived of as a way for political principals to retain control of bureaucratic policy making even, as McCubbins, Noll, and Weingast (1987, 244) emphasize, “without specifying, or even necessarily knowing, what substantive outcome is most in their interest.” As they also point out, such mechanisms are necessary because agencies with discretionary authority may make decisions that “depart from the policies that Congress or the President would have chosen” (McCubbins, Noll, and Weingast 1987, 246). More important than its stated reasoning, regulatory peer review may offer political principals a potential way around the informational asymmetry that leads to this “bureaucratic drift.”¹² This information asymmetry gives agency officials the ability to subvert the will of elected officials. This potential subversion concerns political officials both because it means their policy preferences are less likely to be implemented and because policy decisions are being made by unaccountable members of the bureaucracy.

10 OMB (2004b) characterized the comments as follows: “The comments on the originally proposed Bulletin spanned the spectrum from highly favorable to blanket requests that the draft be withdrawn and reconsidered. Other comments suggested one or more specific modifications to the originally proposed Bulletin. The suggestions of some commenters (e.g., expand the applicability of the Bulletin) were sometimes in conflict with the suggestions of other commenters (e.g., narrow the applicability of the originally proposed Bulletin). In the revised Bulletin, we have sought to achieve a balance among the broad spectrum of perspectives that were expressed.”

11 Among the minor changes were slightly broadening the exemption for time-sensitive safety and health information and requiring agencies to adopt or adapt the NAS policy for evaluating conflicts of interests among peer reviewers.

12 Critics of regulatory peer review cite an alternative purpose for political principals. They argue that regulatory peer review will add to the delays in the regulatory process and thereby create disincentives for agency bureaucrats to undertake regulatory efforts (OMB Watch 2003).

The literature focuses on three potential consequences of the information asymmetry for the behavior of bureaucracies: *shirking*, or underperformance of delegated tasks; *corruption*, or capture of the agency's decision making by an external group contrary to the preferences of the legislature; and *oligarchy*, or overriding by particular bureaucratic preferences of democratic ones (McCubbins, Noll, and Weingast 1987, 247). These three categories are important because they help define types of behaviors that might be anticipated and that can affect outcomes. Regulatory peer review bears differently on the first two consequences of the information asymmetry than it does on the third.¹³

The prospect of regulatory peer review would ideally combat shirking by breaking the monopoly over analysis that the agency possesses and asking independent peer reviewers to examine agencies' technical analyses. If the peer reviewers determined that the agency bureaucrats had shirked the performance of a competent technical analysis, the analysis would presumably have to be repeated or supplemented. Similarly, a panel of neutral peer reviewers might identify a corrupt or biased analysis, that is, one tilted toward an outcome that benefited a favored constituency by selecting evidence for no technically valid reason. In circumstances of such corruptions, agency bureaucrats could be subject to political or professional sanctions.

As McCubbins, Noll, and Weingast (1987) argue, making the substantive results of the procedural control of regulatory peer review publicly available can render political rewards and punishments more effective because legislators, executive branch actors, the courts, and constituent groups who may want to challenge bureaucratic decisions will be able to cite findings by independent experts, which might carry more polemical weight than complaints by interest groups in the traditional model of fire alarm oversight (McCubbins and Schwartz 1984). For political principals to fully realize these benefits of regulatory peer review in reducing shirking and corruption, however, either the full review process, including the identities of the peer reviewers, would have to be public or the peer review would have to be conducted by an institution that the principals implicitly trusted. Thus, appropriately designed regulatory peer review could combat shirking and capture.

Regulatory peer review, however, may exacerbate the problem of oligarchy. In policy areas reliant on sophisticated or expert knowledge, it might be the case that the policy preferences of political principals either directly conflict with scientific consensus or require pushing the interpretation of the available evidence beyond all credibility.¹⁴ Regulatory peer review might therefore keep bureaucracies from either honestly following unrealistic but democratically expressed preferences or give them intellectual and, ultimately, political resources to oppose them.

But extended to a foreseeable extreme, these resources might introduce a fourth problem of asymmetric information, technocracy, which we here define as the procedural displacement of public preferences by the preferences of technical experts, as another distinct consequence of the information asymmetry.¹⁵ We distinguish technocracy from oligarchy because the triumphant preferences in the case of technocracy are those of

13 The administrative procedures discussed by McCubbins, Noll, and Weingast (1987) are generally procedures tied to specific programs, but much of the literature discussing procedural controls has applied the analysis to procedures used for general oversight purposes as well as specific programs.

14 There is a modest literature on Congress as a problematic consumer of scientific and technical information, for example, Robinson and Wellborn (1991), Bimber (1996), and Morgan and Peha (2003). See note 19 below for references to contemporary conflicts between political principals and scientific agents.

15 See Fischer (1990) for an introduction to the literature on technocracy more generally.

allegedly neutral experts and not necessarily those of the agency bureaucrats and from corruption because the capture of decision making is not predicated on a presumption of naked self-interest but instead a presumption of superior substantive knowledge.

Fire Alarms and Stacked Decks

Regulatory peer review may also be seen as a form of institutionalized fire alarm oversight (McCubbins and Schwartz 1984). If a bureaucracy is in the midst of promulgating a rule that is out of accord with the beliefs of the relevant aspect of the scientific community, then the peer reviewers get to pull the alarm, and political principals can investigate. McCubbins, Noll, and Weingast (1987, 250) suggest that the effectiveness of this kind of monitoring is limited, in part because “cause-effect relations in human affairs often are subject to an important degree of irreducible uncertainty.” Part of the purpose of regulatory peer review, however, is an attempt to reduce technical uncertainty to its bare minimum and to provide an alternative venue in which to discuss uncertainty, among other issues defined as technical.

McCubbins, Noll, and Weingast (1987) also suggest that monitoring is far from optimal because it usually does not happen until after an action is taken. Regulatory peer review, however, is placed in the midst of the decision process in hopes of assuring that technical inputs are adequate for ultimate decision making. In this sense, it is more like a fire inspection than a fire alarm.¹⁶ Finally, with regulatory peer review, it may no longer be the case that, as McCubbins, Noll, and Weingast (1987, 251) write, “the agency both keeps the books and performs the audit.” External reviewers provide an interim analysis. These reviewers are presumably acting on the same documentation as agency officials and also on their independent expert knowledge and, possibly, a different set of professional norms.¹⁷ It may, however, make a profound difference who selects these reviewers and under what conditions of oversight and review they work.

More profoundly, however, regulatory peer review may be seen as a deck-stacking mechanism rather than merely as a fire alarm. Regulatory peer review stacks the deck in favor of technical experts by providing them with a separate and privileged forum—distinct from the opportunity for public comment accorded under the APA. Indeed, OMB’s guidelines distinguish between peer review and public comment, stating, “Peer review should not be confused with public comment and other stakeholder processes. The selection of participants in a peer review is based on expertise, independence, and the absence of conflict of interest. Furthermore, notice-and-comment procedures for agency rulemaking do not provide an adequate substitute for peer review, as disinterested experts—especially those most knowledgeable in a field—often do not file public comments with federal agencies” (OMB 2004b, 23231).

There are four ways to view deck stacking with respect to regulatory peer review. As initially proposed by OMB, regulatory peer review looks like the type of deck-stacking mechanism envisioned by McCubbins, Noll, and Weingast (1987). It appeared to stack the

¹⁶ The logic here is akin to the informational explanation for the relative balance of partisanship on legislative committees, as the conflicting opinions and preferences there will serve the majority party by preparing legislation for the partisan debate in the full chamber (Arnold 1990).

¹⁷ Jasanoff’s (1990) distinction between academic science and regulatory science is critical to this point. If regulatory peer reviewers are inculcated in the norms of academic science, they may apply inappropriate standards to the evaluation of the product of regulatory science.

deck in favor of industry, as did the early Senate bill, because the provisions for conflicts of interest appeared to exclude academic researchers who may have had grant support from the agency in question while appearing not to necessarily exclude corporate researchers whose companies may have had financial interest in the outcome of the agency's actions. This apparent favoritism was substantially reduced in the final guidelines, but residuals remain.¹⁸

Second, the scientific community—unlike the other pullers of fire alarms—is not a beneficiary to any of these decisions in the normal (i.e., direct economic) sense. Scientists might, however, have what could be called an epistemic interest in regulations, especially to the extent that regulations that are reliant on science and scientists may serve to enhance the prestige and cognitive authority of the scientific community.¹⁹ Such an interest might well explain why the academic middle supported the earlier S. 981, even when academicians as a political group might be expected to align with environmental and labor groups against business and industry.

Third, agency officials might have a preference for stacking the deck against any and all political coalitions by using regulatory peer review in a strategically sensitive manner. If the management of the peer review process is placed in the hands of the regulatory agency, agency bureaucrats may be able to use experts outside of government to build support for their proposals. Once proposals have the support of experts inside and outside of government, it will be harder for political coalitions to alter or veto such proposals.

Fourth, regulatory peer review is also a way of reshuffling the deck by saying that old procedural rules are not as important as getting the science right or, for that matter, allowing a different coalition of technocrats to speak at a pivotal moment in the decision-making process. In this sense, it counts as “subsidized representation” (McCubbins, Noll, and Weingast 1987, 266) for epistemically privileged interests. This model relies on a model of science as neutral, objective, and technically virtuous because it supposes, as the preamble to the guidelines does, that the representation of the scientific community embodied in regulatory peer review is different not only from the representation of interests through public comment but also from any representation of expertise that might happen through public comments as well (Haas 2001).

However, just as the courts end up becoming the focus of political conflict when they are delegated similar authorities, there is no reason to think that science will not likewise become more of a political battleground with this form of regulatory peer review. Politicians will battle over which scientists should be trusted, much as they currently battle over confirmation of judges.²⁰ Much as parties to legal proceedings shop for favorable venues in which to try their cases, agencies may shop for scientists who can be deemed objective but who are more likely to provide favorable reviews of agency work.

18 The revised bulletin emphasizes the independence of the reviewers noting that scientists whose work is funded by an agency may be independent if the funding was determined through a competitive grants review process. The guidelines also emphasize balance as one of the considerations agencies should strive for when choosing peer reviewers.

19 Haas (2001) speaks of epistemic communities that share common characteristics and advance particular scientific ideas.

20 Representative Henry Waxman (D-CA) and the Union of Concerned Scientists (UCS) have each condemned the Bush administration for politicizing federal science by manipulating the membership of advisory committees, deleting politically unsavory information from Web sites, and suppressing controversial findings, particularly in areas of environmental and reproductive science. See Waxman (2003) and UCS (2004).

We therefore expect that regulatory peer review will serve as a potentially effective but also ambivalent tool in the oversight of bureaucratic decisions. It could enhance the fire alarm aspect of oversight by introducing timely and informed commentary into the decision process. But it also could stack the deck and alter the decision-making environment faced by bureaucrats. Whether it stacks the deck as envisioned by the coalition enacting it—that is, in a politically responsive way—or in a way that exacerbates the information asymmetry problems faced by legislative and executive overseers—that is, in a technocratic way—depends significantly on the details of how agencies implement and comply with specific requirements.

COALITIONAL DRIFT AND EPISTEMIC DRIFT

Horn and Shepsle (1989) argue that, in addition to the concern that an enacting coalition of legislators shows for the threat of bureaucratic drift, they also display concern for the future composition of their policy's constituencies, that is, the threat of "coalitional drift." They emphasize that the finding of McCubbins, Noll, and Weingast (1987) that *ex post* action-sanctions, enforcement, etc., which are needed to make *ex ante* requirements worthwhile—requires a coalition that may or may not be as solid as the original, enacting coalition. Such changes can occur if only because differences in implementation can benefit different parts of the coalition differently, but they could also occur with broader or unrelated sociopolitical changes.

Horn and Shepsle (1989, 503) further emphasize the inability of the enacting coalition to "constrain private interests and *future* coalitions from tampering with an enacted agreement" (emphasis in the original). "[A]n enacting coalition cannot bind the actions of a subsequent coalition, [but] it is able to influence the costs that subsequent coalitions must incur to modify a deal." Moreover, they contend that there is a conflict between dealing with bureaucratic drift, which requires an easy way for future coalitions to intervene to correct contrary bureaucratic action, and coalitional drift, which requires obstacles in defense of such interventions.

Regulatory peer review may represent a way to solve both these problems because, in the ideal, an enacting coalition under regulatory peer review can constrain both the bureaucracy and subsequent coalitions under all conditions except two: the elimination of regulatory peer review itself or changes in the embodied knowledge of the situation—what we here call epistemic drift.²¹ If bureaucratic drift and coalitional drift are effectively controlled, then only epistemic drift will remain as a reason for possible departure from the preferences of an enacting coalition.²² Regulatory peer review, if constructed in such a way as to not allow agency hijacking (or deck stacking) of the process, thus sets the bar

21 Haas (1989, 1992) played a major role in reintroducing issues of knowledge creation into political science through the concept of "epistemic communities," which he derived from Holzner and Marx (1979). Our analysis draws on similar concerns and is backed by a similar reading of the literature from the social studies of science, portrayed here particularly through the work of Jasanoff (1990). Elzinga (1997) used the same term "epistemic drift" to mean something quite different—the changing criteria that scientists use to evaluate their own enterprise based on the changing societal context, for example, a greater emphasis on the marketability of research or its use in regulatory decision making.

22 One plausible example of such epistemic drift is the case of saccharin, determined by the National Toxicology Program in 1981 to be reasonably anticipated to be a human carcinogen but then determined in 2000 not to be. See Guston (2003a, 2005) for details.

very high by empowering unelected technocrats as watchdogs over bureaucratic and coalitional change.

Why would enacting coalitions trust unelected outsiders with such a role? The likely reason is that these coalitions have more faith in the consistency of the views of these interests than they do in their own ability to hold power and forestall coalitional drift. In the context of regulatory peer review, requiring “balance” among peer reviewers guarantees that certain voices (such as those of industry) will always be heard in the peer review process and that these voices will have increased ability to forestall policy changes.

If this is the case, then interests (with the foresight Horn and Shepsle endow them) will likely begin to sink more resources into winning an argument in the present, rather than waiting to win in the future—including investing more in the production of regulatory science to create current epistemic resources and the groundwork for future epistemic resources, that is, epistemic drift. Given the profound deck-stacking potential of regulatory peer review, expectations of Horn and Shepsle of fighting at the time of enactment are borne out in that the greatest opposition to regulatory peer review comes from interests who are less likely to be able to mount current or future epistemic challenges. An important result of this anticipated battle to create or deter epistemic drift would be the likely increased politicization of science. Haas (2004, 572) notes that “the more autonomous science is from policy, the greater its potential influence.” Regulatory peer review breaks down this autonomy and may potentially make scientists the adjudicators of policy disputes.

The discussions of regulation in the political economic literature suggest that the only change over time that occurs is the change in the membership of legislative and executive institutions and in the composition of coalitions, constituencies, and interest groups. Admitting that substantive knowledge is at least occasionally an important input to regulatory decisions, the literature nevertheless fails to acknowledge that epistemic change occurs and can influence not only the composition of coalitions, constituencies, and interests but also the salience of issues and their place on the agenda. As Jasanoff (1990, chap. 9) writes, “In the several years consumed by a complex rulemaking process, the state of knowledge undergoes constant redefinition, often as a result of purposeful scientific activity by parties to the proceeding. The dimension of change has to be factored into any comprehensive account of science policy for it bears on key aspects of the relationship between knowledge and politics.” Or, as the Office of Science and Technology Policy (1985) argues, “an unstated zeroth principle is that regulatory judgments should embody an openness to advances in science and emerging scientific understanding.” By accounting for epistemic drift, political science can embody that openness as well.

As Horn and Shepsle (1989, 501–2) argue that both bureaucratic and coalitional drift must be taken into account to make sense of “delegation to independent agents like the courts,” we argue that it is critical to take epistemic drift into account to make sense of the delegation to (allegedly independent) scientists upon whom regulatory peer review confers authority. Enacting coalitions that see regulatory peer review as a way to control bureaucratic drift without inviting coalitional drift must also recognize the increased importance they have given to epistemic drift.

The experience with the OMB guidelines illustrates the attempt by the enacting coalition to control coalitional drift. The original guidelines attempted to place significant restrictions on who could serve as a regulatory peer reviewer. Such restrictions would have constrained the ability of future coalitions to manipulate regulatory peer review to ensure

their own preferred outcomes. In this scenario, only epistemic drift or the abolition of regulatory peer review itself would subvert the goals of the enacting coalition. However, the enacting coalition for this proposal was insufficient to put it into place. In order to bring in scientists into the enacting coalition, or at least ensure that their opposition was minimized, the enacting coalition had to refine its proposal to allow more scientists as potential peer reviewers. This compromise increases the possibility of coalitional drift and shows the importance of the details of the structure of regulatory peer review, as well as compliance and implementation in controlling coalitional drift as well as bureaucratic drift.

COMPLIANCE AND IMPLEMENTATION

As discussed above, regulatory peer review has significant potential as an instrument of fire alarm oversight to control bureaucratic drift. Like traditional fire alarm oversight, regulatory peer review appears to have an “autopilot” aspect to it. Regulatory peer review may even reduce the costs to political principals of applying sanctions, given the cultural status of science and the ideal of neutral, objective, and technically virtuous analysis. Although there has been little discussion of how an agency would use or respond to the substance of a regulatory peer review, new legislation would likely not be required to make an agency compliant with the results of a contrary regulatory peer review. Rather, analogous to other peer review situations, the agency would likely defend its conflicting decision in detail, accommodate its findings to the peer review, or face potential legal challenge or other sanctions from political principals. Moreover, defending science is a good thing for the principal to be seen to be doing, particularly when partisan conflict runs high.

Will regulatory peer review also control bureaucratic drift by stacking the deck against policy changes opposed by those putting regulatory peer review in place? Will it be able to guard against coalitional drift? This is where we expect the details of the peer review requirement and its enforcement to play a significant role. If agencies acquire significant discretion in selecting the peer reviewers, then future political coalitions and agency bureaucrats will likely be able to thwart the enacting coalition’s desire to stack the deck against regulatory change. This likelihood sets up expectations regarding various particular requirements of regulatory peer review.

One of these particulars is the choice of who gets to serve as regulatory peer reviewers. Interests that will find it harder to marshal epistemic resources will thus be more likely to oppose tight restrictions on who can serve as a peer reviewer. Conversely, epistemically privileged interests would be more likely to support such restrictions. Such restrictions could take the form of deciding who would select peer reviewers—agencies themselves, OMB, or an outside body such as the NAS. They could also take the form of definitions of conflicts of interest, which mediate the eligibility of individual scientists to serve as peer reviewers. Looser restrictions on who could serve empower those selecting the peer reviewers. If an agency is selecting peers under loose restrictions, oligarchy is likely to be exacerbated. If future coalitions are selecting peers under loose restrictions, coalitional drift will occur. Tighter restrictions on who can serve as a peer reviewer will suggest technocracy by empowering a small group of outside experts and in doing so would further make it more likely that the occurrence of epistemic drift is the only way that policy changes opposed by the enacting coalition can succeed.

“If procedures do affect outcomes,” McCubbins, Noll, and Weingast (1987, 254) argue, then political actors can alter procedures to “change the expected policy outcomes

of administrative agencies by affecting the relative influence of people who are affected by the policy.” This strategy seems to be what at least part of the legislative coalition and the original executive coalition in favor of regulatory peer review were doing when they drafted conflicts of interest requirements to potentially favor industrial scientists by prohibiting anyone who received grant funds from the agency from serving as a peer reviewer—thus placing academic scientists under suspicion. The revised guidelines appear to correct this bias by requiring a “balanced” selection of peer reviewers, but even the term “balanced” implies that agencies should include peer reviewers prone to be skeptical of their work.²³

A second particular is the locus of enforcement. Administrative procedures must be enforced, and courts are typically the locus. For regulatory peer review, the locus of enforcement is unclear, but it may be the courts, OMB, or Congress (which could muster a coalition for oversight of regulatory peer review more easily than it could muster a majority to pass a law). This uncertainty around oversight is further emphasized by the implicit change in evidentiary standards in regulatory peer review, which promises to raise the bar for agencies. Regulatory peer review implicitly amends the “substantial evidence” standard to something more akin to “peer-reviewed evidence that is deemed substantial by independent experts.”

Judicial behavior in the wake of a regulatory peer review requirement is likely to have profound effects on the effectiveness of such a requirement in controlling drift (Noah 2000). Regulatory peer review may make judicial review more likely as the result of inherent disagreements in the scientific process, which may give any party aggrieved by a regulation the grounds to challenge not only the agency’s decision but also the peer reviewers’ findings. The delay caused by environmentalists, cited by McCubbins, Noll, and Weingast (1987, 265), that may have killed the nuclear industry may be a paradigm for some who favor regulatory paralysis through peer review analysis and judicial review.²⁴ If judges show significant deference to peer reviews, regulatory change will become more difficult.²⁵

Even if regulatory peer review is successful in curbing both bureaucratic and coalitional drift—without sliding into technocracy—it will have costs that may compromise its effectiveness. We take it for granted that conducting regulatory peer reviews will have operational costs that range from preparing documents for several reviewers to staffing significant advisory committees. There will also be costs associated with delaying regulations that promise net benefits by forcing them through months of review. Two more subtle costs may be the threat of false positives and what could be called “rough draft syndrome.”

In arguing for regulatory peer review, neither OMB nor the Senate reports on the regulatory reform bills produced an analysis showing how common bureaucratic departures from “sound science” are, and so the incidence of the problem that regulatory peer review is instrumentally designed to correct is unknown. It is also unclear what the sensitivity of regulatory peer review as a diagnostic tool is, especially if agencies are in charge of selecting the peer reviewers.²⁶ In other words, no one knows the true scope of

23 Moreover, a report by GAO (2004) emphasizes the difficulty agencies face and the guidance they require in determining how to implement FACA’s balance criterion.

24 Noah (2000) describes a similar situation of delay with the Consumer Products Safety Commission.

25 Indeed the regulatory process may become further “ossified” as described by McGarity (1992).

26 The experience with journal peer review suggests that a well-crafted, intentional fraud will not be revealed by peer review.

bureaucratic shirking, corruption, or oligarchy with respect to technical issues, and neither does one know what fraction of such alleged abuses regulatory peer review will reveal and correct. If the incidence of bureaucratic failure is small enough and the sensitivity of peer review is low enough, the number of false positives—episodes in which the regulatory peer reviewers turn out to be wrong and the agency bureaucrats turn out to be right—may be a significant proportion of all regulatory peer review findings. In such a case, the costs of regulatory peer review will be borne for a significant number of rules for which there will be no objective improvement in the rules, and some rules may be made worse by the imposition of such a requirement.

Even more subtle may be the rough draft syndrome, in which agency bureaucrats, who have the foreknowledge that their analyses are going to be second-guessed by independent peer reviewers, may opt to perform less thorough work and rely on the reviewers to perform the work for them—like students who submit rough drafts to professors for comments. This scenario, in which regulatory peer review encourages shirking rather than discouraging it as we would expect, may occur when the peer reviewers are institutionalized in places like the NAS/NRC or other private entities, and the OMB guidelines explicitly encourages agencies to seek out the academies and others to conduct peer reviews. It would presumably also occur when the relationship between the agency and the peer reviewers is not subject to judicial review—as befits a confidential advisory relationship but which may not reflect the court’s view. Rough draft syndrome, if it were to occur, would see not only the delegation of considerably more authority to the peer reviewers than initially conceived but also the reduction of the capacity or competence of the agency bureaucrats by providing them with an incentive not to perform technically challenging work but instead to farm it out, thus suborning the threat of technocracy,²⁷ and exacerbating “shirking” rather than curing it.

Finally, there is a larger political concern lurking, which is related to both the threat of technocracy and the focus on epistemic drift. As interests opposed to the regulatory status quo realize that epistemic drift is the only way to bring about change, they will invest significant resources in bringing about epistemic drift. Strategies to do so will certainly include investing in the production of more regulatory science, but they will also certainly include investing in the deconstruction of their political opponent’s knowledge. Just as judicial oversight of regulatory affairs has encouraged the politicization of the courts, regulatory peer review will likely result in the increased politicization of science. Rather than providing more certainty and leading to closure, the addition of more knowledge can lead to more conflict (Sarewitz 2004). Regulatory peer review may thus perversely contribute to the delegitimation of political institutions by politicizing the science that such institutions are supposed to rely on for conflict resolution.

CONCLUSION

Regulatory peer review is a new and potentially effective tool for the political control of administration. Drawing on the history and techniques of peer review for the funding and publication of scientific research for both its procedures and its legitimacy, regulatory peer review is alleged to be a mechanism to increase the quality of scientific information

²⁷ Recognition of the importance of internal analytical capacity is one reason why, for example, the Government Performance and Results Act requires the analysis to be performed by agency personnel.

brought to bear in regulatory decision making. But because of issues of implementation and compliance, its effectiveness may be severely constrained—and perhaps even perversely altered to reduce rather than enhance the role of reasoned analysis in regulatory decision making.

The guidelines issued by OMB in 2005 fit well into the history of both the increasing presence of science and scientists in advisory positions in the US government and the increasing efforts by Congress and the President to exert political control over the large and expert bureaucracy. The political coalition behind regulatory peer review, however, proved insufficient to navigate the Congress, and the Bush administration subsequently began to implement regulatory peer review through administrative guidelines.

Considered in a principal-agent framework, the prospect of regulatory peer review would ideally combat both shirking and corruption by agency bureaucrats, who would through its application be exposed to independent, external, expert criticism. However, regulatory peer review could also exacerbate the problem of oligarchy by providing resources to the bureaucracy to resist political preferences. This resistance could even extend to what we introduced above as technocracy, in which the preferences of unelected technical experts displace the preferences of public officials. Moreover, by not just stacking the regulatory deck but also by reshuffling it to allow epistemically privileged interests access that is separate and prior to the public comment period, regulatory peer review further abets technocracy.

The prospect of regulatory peer review would also, ideally, combat the problem of coalitional drift by securing regulations from changes in the composition of interests that support or oppose them, unless those interests can also affect the science underlying the regulations. Such a change, what we define above as epistemic drift, would be the only way—short of abandoning regulatory peer review itself—to change regulatory decisions under this regime. We therefore hypothesize that organized interests will be more likely to sink resources into winning arguments in the present—including by investing in epistemic resources—than waiting to win in the future.

Both of these arguments, however, further suggest that a potentially perverse politicization will follow regulatory peer review. For its promised control of shirking and corruption, regulatory peer review requires, as do other administrative procedures, at least some oversight and enforcement by an external authority. Although regulatory peer review in a way casts science and scientists in this authoritative role, disputes among experts are frequent and judicial involvement, neither prescribed nor proscribed by the proposed guidelines, seems likely. But likely, too, is the consequent attempt to politicize that external authority, and even the creation of new epistemic resources that regulatory peer review might encourage would not prevent the deployment of those resources in a fashion dedicated more to undermining opposing argument than to constructing an edifice of increased mutual comprehension.

The likelihood and extent of these consequences, though, are dependent on the real details of implementation and compliance, for example, who selects the regulatory peer reviewers and by what specific rules and how deferential will courts be to agencies with agreeable reviewers or to reviewers who disagree with agencies. In the form issued by OMB, regulatory peer review seems most likely to lead to a more complicated regulatory process that will tend to displace politics not only from Congress to the bureaucracy and the courts but also to nongovernmental experts and groups capable of generating epistemic resources.

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