Fixing Innovation Policy: A Structural Perspective

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Innovation is central to economic growth and human welfare. Government officials and commentators have recognized this reality and have called for a variety of different substantive incentives for stimulating innovation. But the question of how an innovation regulator should be structured has received little attention. Such consideration is important not only because of the significance of innovation but also because current government innovation policy is so haphazard. There is no government entity that looks at innovation broadly, and the narrower agencies that regulate aspects of innovation policy not only fail to pay systematic attention to innovation goals but often act at cross-purposes with each another.

In this Article, Professors Benjamin and Rai analyze how government policy on innovation should be structured. Drawing on existing theoretical and empirical work, as well as their own original empirical research, they propose the creation of an entity in the executive branch that would both analyze pending agency action and offer regulatory suggestions of its own. This entity would introduce a new, trans-agency focus on innovation while drawing upon, and feeding into, existing executive branch processes that aim to rationalize the work of disparate federal agencies. This approach, Professors Benjamin and Rai contend, offers a great improvement over existing government institutions while avoiding a costly (and politically infeasible) remaking of the administrative state.

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Introduction

Both theory and empirics support the primacy of technological innovation in securing long-term economic growth and, ultimately, human welfare.[1] Innovation will also be central to addressing the challenges (for example, environmental challenges) that can accompany economic growth.[2] Thus, questions of how to foster technological innovation are, quite properly, at the forefront of scholarly analysis.

The great attention to innovation policy notwithstanding, the issue of which institution(s) should be making these decisions is a relatively underexamined area of the law. Commentators have discussed at length a variety of substantive innovation inputs and incentives—for example, patents, trade secrecy, government funding and procurement, availability of venture capital, ownership of innovation "platforms" and "infrastructure," science and engineering education and graduates, university technology transfer, competition, concentration, innovation prizes, open and/or collaborative strategies, or so-called liability rules.[3] But these discussions have generally been divorced

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1 As we discuss below, technological innovation has been shown to be the major impetus behind the productivity increases that produce long-term economic growth. *See infra* Part I.A.

2 *See, e.g.*, Cass R. Sunstein, *Of Montreal and Kyoto: A Tale of Two Protocols*, 31 HARV. ENVTL. L. REV. 1, 4–5 (2007) (observing that countries have done a much better job of adhering to the Montreal Protocol on chlorofluorocarbons ("CFCs") than the Kyoto Protocol on greenhouse gases, in significant part because innovation has produced good substitutes for CFC-producing refrigerants but not for greenhouse-gas-generating fuels).

3 *See generally, e.g.*, Wesley Cohen, Richard Nelson & John Walsh, *Protecting Their Intellectual Assets: Appropriability Conditions and Why Manufacturing Firms Patent (or Not)* (Nat'l Bureau of Econ. Research, Working Paper No. 7752, 2000) (patents and trade secrecy); Stephen Maurer & Suzanne Scotchmer, *Procuring Knowledge*, *in* 15 INTELLECTUAL PROPERTY AND ENTREPRENEURSHIP: ADVANCES IN THE STUDY OF ENTREPRENEURSHIP, INNOVATION AND GROWTH 1 (Gary Libecap ed., 2004); Kenneth Arrow, *Economic Welfare and the Allocation of Resources for Invention*, *in* THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS 609 (Richard Nelson ed., 1962) (government funding and procurement); Robert Merges & Richard Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990) (ownership of platforms and infrastructure); Samuel Kortum & Joshua Lerner, *Does Venture Capital Spur Innovation?* (Nat'l Bureau of Econ. Research, Working Paper No. 6856, 1998) (venture capital); JOSEPH SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 81–86 (1942) (competition versus concentration); Steven Shavell & Tanguy van Ypersele, *Rewards Versus Intellectual Property Rights*, 44 J.L. & ECON. 525 (2001) (innovation prizes); Arti K. Rai, *"Open and Collaborative" Research: A New Model for Biomedicine*, *in* INTELLECTUAL PROPERTY RIGHTS IN FRONTIER INDUSTRIES: SOFTWARE AND BIOTECHNOLOGY 131 (Robert W. Hahn ed., 2005); James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 LAW & CONTEMP. PROBS. 33, 49–52 (2003) (open access); Yochai Benkler, *Coase's Penguin, or, Linux and the Nature of the Firm*, 112 YALE L.J. 369 (2002) (open collaboration); J.H. Reichman, *Saving the Patent Law from Itself*, *in* PERSPECTIVES ON PROPERTIES OF THE HUMAN GENOME PROJECT 289 (F. Scott Kieff ed., 2004) (liability rules). For an interesting

from the specifics of regulatory implementation.[4] By the same token, discussions of specific regulatory systems (e.g., the patent system or telecommunications regulation) tend to focus rather narrowly on the particular tools that might be available to agencies and courts that operate within that system.[5] And the more general literature on regulatory reform, while addressing in-depth such questions as capture and cost-benefit analysis, has tended to ignore the central role of innovation in addressing the majority of regulatory challenges.[6]

A broad examination of the relationship between regulatory institutions and innovation highlights certain well-established pathologies of the regulatory state. Specifically, the relative absence of innovation from the agenda of Congress, the courts, and many relevant agencies—as well as interagency processes such as the centralized cost-benefit review performed by the Office of Management and Budget's ("OMB") Office of Information and Regulatory Affairs ("OIRA")—arguably manifests the confluence of two regulatory pathologies: first, the tendency of political actors to focus on short-term goals and consequences; and second, their reluctance to threaten the existing business models of powerful incumbent actors.[7] Additionally, even when Congress, courts, or agencies do think about innovation, they often do so in ways that are contradictory and confused.

Consider the patent system. Article I, Section 8, Clause 8 is unique among the Constitution's grants of power in articulating a purpose, and that purpose sounds in innovation ("To promote the Progress of . . . the useful Arts").[8] So one might imagine that Congress would have created an entity with substantial expertise that would focus on how patents could best promote innovation. But that is not the case. Currently, neither the Patent and Trademark Office ("PTO") nor the United States Court of Appeals for the Federal Circuit (which hears all patent appeals) has the capacity to promulgate such policy. The PTO lacks social science expertise, while the Federal Circuit not

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taxonomy of "innovation elements," see Alliance for Science & Technology Research in America, Periodic Table of Innovation Elements (on file with authors).

4 A notable exception is Michael Abramowicz, who examines in detail how an administrative agency would implement a prize scheme. *See generally* Michael Abramowicz, *Perfecting Patent Prizes*, 56 VAND. L. REV. 115 (2003). However, as the title suggests, Abramowicz's analysis is narrowly focused on a particular patent proposal.

5 *See generally, e.g.*, Stuart Minor Benjamin & Arti K. Rai, *Who's Afraid of the APA? What the Patent System Can Learn from Administrative Law*, 95 GEO. L.J. 269 (2007).

6 *See infra* Part II.C.

7 On this tendency, see *infra* Part II.B.

8 U.S. CONST. art. I, § 8, cl. 8.

only lacks such expertise but typically disavows any role in articulating policy.[9] Some agencies with social science expertise do better—for example, the 1995 guidelines on intellectual property licensing promulgated by the Department of Justice ("DOJ") and the Federal Trade Commission ("FTC") are considered well thought out, even by those who may disagree with them.[10] As Professors Michael Katz and Howard Shelanski have recently pointed out, however, even these "antitrust agencies" do not model uncertainty well when they engage in merger review, with the result that mergers with pro-innovation possibilities could be blocked and mergers with anti-innovation possibilities allowed to go forward.[11]

When it comes to questions of innovation, the copyright system arguably fares even worse. Because new technological innovations (e.g., the VCR, the Internet, and peer-to-peer sharing technology) can be used in a manner that violates copyright laws, copyright holders have successfully used doctrines of contributory and vicarious liability to shut down the technologies.[12] A rational analysis of whether such doctrines should apply would carefully consider not only the costs and benefits of the technology in promoting cultural creation and dissemination, but also threats to *technological* innovation that might emerge from a heavy-handed or uncertain application of indirect liability doctrine. The institutions that primarily address issues of copyright—Congress, the courts, and the Copyright Office—do not perform particularly well on the question of cultural creation. And they fare even less well on questions of innovation. The Supreme Court's most recent opinion on the liability of technology purveyors introduces a novel "inducement" test that decides the issue of secondary liability by focusing on such nebulous factors as the "intent" of the technology

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9 *See* Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1102–10 (2003) (discussing the Federal Circuit's choice of a formalistic approach to judicial decisionmaking rather than a policy-based approach).

10 *See, e.g.*, John J. Flynn, *Antitrust Policy, Innovation Efficiencies, and the Suppression of Technology*, 66 ANTITRUST L.J. 487, 508 (1998) ("The best framework for analyzing intellectual property licensing practices threatening innovation efficiencies is found in the joint DOJ/FTC Intellectual Property Guidelines."); Michael L. Katz & Howard A. Shelanski, *Merger Analysis and the Treatment of Uncertainty: Should We Expect Better?*, 74 ANTITRUST L.J. 537, 540–41 (2007).

11 Katz & Shelanski, *supra* note 10, at 538.

12 *See In re* Aimster Copyright Litig., 334 F.3d 643, 655–56 (7th Cir. 2003) (upholding preliminary injunction against Aimster on grounds of contributory liability); A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1027 (9th Cir. 2001) (upholding, in part, a preliminary injunction against Napster on grounds of contributory and vicarious liability).

creator.[13] Such a nebulous test does little to balance costs and benefits. Moreover, it hardly creates the legal predictability that technology creators and investors need in order to innovate.

Another set of pathologies involves situations where agencies pursue innovation strategies that are in tension, if not entirely contradictory. Some of these situations arise because Congress has set up agencies with contradictory missions. For example, in the case of the International Trade Commission ("ITC") and the PTO, Congress has set up agencies whose organic statutes direct them to interpret patents in divergent ways. In other cases, the organic statutes may allow harmonization, but harmonization does not occur for other reasons.[14]

Additionally, the cost-benefit analysis that is part of the regulatory review of major agency action undertaken by OIRA could be greatly enhanced through more thorough consideration of innovation.[15] Such consideration would ensure that the cost figures associated with regulatory compliance accounted for future technological development. As matters currently stand, because the innovation-related guidance provided to agencies by OIRA is sparse,[16] agencies (and OIRA itself) may overestimate the costs of regulatory compliance. More broadly, a robust cost-benefit analysis might consider not simply the ways in which innovation reduces compliance costs, but also possible long-term positive effects of inducing innovation through regulation.

Congress has recently acknowledged the importance of a more systematic and coordinated approach to innovation policy. The America COMPETES Act,[17] passed in August 2007, provides, *inter alia*, for a "President's Council on Innovation and Competitiveness" that will make recommendations on innovation policy.[18] The Act envisions a Council with hortatory authority that would be composed of the heads of the major agencies whose actions affect innovation.[19]

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13 MGM Studios, Inc. v. Grokster, Ltd., 545 U.S. 916, 919 (2005) (holding that "one who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties").

14 *See infra* text accompanying notes 73–80.

15 For a brief discussion of the mechanics of OIRA review, see *infra* text accompanying notes 95–102.

16 *See infra* text accompanying notes 108–10.

17 America COMPETES Act, Pub. L. No. 110-69, 121 Stat. 572 (2007) (codified as amended in scattered sections of 5, 15, 20, 29, 31, 33 and 42 U.S.C.).

18 *Id.* § 1006 (codified at 15 U.S.C. § 3718 (2006)).

19 Another prominent feature of the Act is its authorization of significantly increased funding for science and engineering research at the National Science Foundation, the National

In this Article, we go considerably further, proposing an executive entity that would be independent of existing agencies and would have more than mere hortatory influence.[20] As we discuss in detail below, our executive entity would have some authority to push agencies to act in a manner that either affirmatively promoted innovation or achieved a particular regulatory objective in a manner "least damaging" to innovation. At the same time, the entity in question would operate efficiently by drawing upon, and feeding into, existing interagency processes within OIRA and other White House offices (e.g., the Office of Science and Technology Policy).

Importantly, the existence of this authority would be as likely, or perhaps even more likely, to lead to regulatory action than is currently the case. For example, more Environmental Protection Agency ("EPA") regulations might pass muster under cost-benefit analysis if innovation-related effects were calculated. The centralized innovation regulator might also push agencies like the EPA to regulate in cases where the regulation was a good mechanism for sending the appropriate price signals necessary for stimulating innovation.

This Article is the first attempt at analyzing how government institutions as a whole should be structured in order to advance innovation. Indeed, commentators have largely ignored questions of institutional design when advocating policy goals. Identifying broad objectives is important, as is articulating substantive policies, but so too is analyzing how to design government institutions that have the best chance of pursuing particular social goals and implementing sound policy. In putting forward this analysis, the Article offers an analytical framework for such decisions of regulatory design. Although innovation may be the social goal that is most likely to be given short shrift within the current regulatory structure, it is probably not the only social goal that is systematically underappreciated.

A caveat on scope: We focus here on the role of regulatory decisions in stimulating, or hindering, innovation. We define regulatory decisions broadly to include not only congressional legislation and agency rulemaking, but also adjudicatory decisions made by agencies and courts.[21] Of course, other government action, most notably con-

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Institute of Standards and Technology, and the Department of Energy Office of Science. Whether this authorization will actually result in increased appropriations is quite unclear. *See* DEBORAH D. STINE, CONG. RESEARCH SERV., THE AMERICA COMPETES ACT AND THE FY 2009 BUDGET 1–2 (2008).

20 As we discuss further below, this new innovation regulator could be a new office or could be housed within existing White House offices.

21 Notably, several of the agencies whose actions have a significant impact on innova-

gressional decisions about how to allocate research and development spending among agencies, may be equally, or even more, important as an influence on innovation.[22] Even within an agency, decisions about how to allocate research and development spending could have considerable influence on innovation. We focus here on regulation principally because rationalizing regulation poses legally interesting, and heretofore unanalyzed, challenges. However, our proposed innovation regulator would logically also have a role to play in rationalizing innovation-related spending.[23]

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tion—for example, the FTC, the antitrust division of the DOJ, and the PTO—act primarily through adjudication rather than rulemaking.

22 In fact, one recent empirical study provides dramatic evidence that federally funded innovation, as well as innovation arising from collaborations between private industry and federally funded research, represents an increasing percentage of breakthrough innovation. *See generally* Fred Block & Matthew R. Keller, *Where Do Innovations Come From?: Transformations in the U.S. National Innovation System, 1970–2006* (unpublished working paper sponsored by the Info. Tech. & Innovation Found., 2008), *available at* http://www.itif.org/files/Where_do_innovations_come_from.pdf. According to Block and Keller, in 1971 eighty-six percent of innovations that were recognized by *R&D Magazine* as among the top 100 innovations of the year came from large firms largely acting on their own. *Id.* at 10. In 2006, more than two-thirds of these award-winning innovations involved some public sector involvement. *Id.* In recent years, federal laboratories have been represented particularly well, averaging about thirty-five award-winning innovations per year. *Id.*

23 *See id.* at 19 (noting that although some level of decentralization in research funding is useful in that it may allow different teams of researchers to take different approaches to the same problem, the current system "carries decentralization to an unproductive extreme. Under current arrangements, it is entirely possible that five different government agencies might be supporting 30 different teams of technologists working on an identical problem without a full awareness of the duplication of efforts.") Additionally, greater centralization would ensure that the overall portfolio of research and development efforts served the larger goal of innovation rather than simply the specific missions of the agencies that disburse research and development dollars.

Greater centralization would be useful not only in decisions regarding funding of research but also in coordination of the scattered government programs that promote commercialization of inventions (e.g., several Department of Commerce programs, various agency-based Small Business Innovation Research programs). The Information Technology and Innovation Foundation ("ITIF") has recently suggested consolidating (and expanding) these programs through the establishment of a several billion dollar "National Innovation Foundation." *See* Robert Atkinson & Howard Wial, *Boosting Productivity, Innovation, and Growth Through a National Innovation Foundation* 4, 27 (unpublished working paper sponsored by the Info. Tech. & Innovation Found., 2008), *available at* http://www.itif.org/files/NIF.pdf. Atkinson and Wial note that their proposed Foundation would not only use grants to promote commercialization and diffusion but also would "advocate for innovation," *id.* at 4. However, they do not flesh out how such advocacy would work in contexts where funding was not involved. Similarly, the National Innovation and Job Creation Act of 2008, S. 3078, 110th Cong. (2008), a bill introduced by Senators Hillary Clinton, Evan Bayh, and Susan Collins that appears to be modeled on the Atkinson/Wial National Innovation Foundation proposal, focuses on funding.

Our discussion proceeds as follows. In Part I, we discuss the reasons for our focus on innovation and make the argument that government policy is important for promoting innovation. In Part II, we identify examples of pathologies associated with current government regulation of innovation. Part III takes an institution-specific look at the assets and liabilities that are most likely to be associated with formulation of innovation policy by each of the available institutional options (Congress, courts, and agencies). This institution-specific examination is necessary for purposes of determining where an innovation regulator would be usefully placed. We conclude that housing an innovation regulator in the executive branch is likely to be the most efficacious option. Part IV discusses the details of how an innovation regulator would function. Our position on these details—and specifically on the role of notice-and-comment rulemaking—is informed by original empirical work that we have done on the role of comments in the innovation context. Finally, we finish with a brief conclusion, followed by an appendix detailing the results of our empirical work.

I. Why Government Innovation Policy Should Be a Priority

A. Why It Is Important

A major goal of any society should be to increase people's well-being or welfare, broadly defined.[24] Technological innovation—which begins with the invention of a product or process but also involves putting the invention into productive use—is a primary contributor to long-term well-being. By mitigating disease and hunger, biological and agricultural innovation contribute directly to health. Innovation in communications and the organization of information fosters educational, political, and social development. And innovation is the engine behind economic growth, which is central to increasing well-being, particularly to the extent that the fruits of this economic growth flow in some measure to the least well-off.

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24 For discussions of social welfare functions, see, for example, Matthew D. Adler, *QALYs and Policy Evaluation: A New Perspective*, 6 YALE J. HEALTH POL'Y L. & ETHICS 1, 50–52 (2006) (discussing the World Health Organization's "Quality of Life" ("WHOQOL") index, which produces a multi-dimensional profile of scores across six domains (physical domain, psychological domain, levels of independence, social, environmental, and spiritual), and the difficulties with attempting to implement WHOQOL on a policy level). *Cf.* AMARTYA SEN, DEVELOPMENT AS FREEDOM (1999) (discussing an approach based on enhancing "capabilities," defined as a combination of health, educational, and other functions, rather than utilities).

The strong link to economic growth helps define the contours of our vision of innovation policy (as contrasted to, for example, science and technology policy).[25] Thus, it is worth highlighting briefly. In the long run, productivity is the key to economic growth. There is no natural limit on growth in productivity, and in fact, productivity growth has swung wildly among different countries.[26] Although a host of factors affects productivity growth, technological innovation is particularly important.[27] Indeed, Robert Solow won his Nobel Prize in part for showing (based on U.S. economic data from 1909–1949) the central importance of "technical change" to growth.[28]

In the Solow model, technical change was the very large residual that was left as an explanatory factor after the contributions of labor and capital to productivity growth had been taken into account.[29] Accordingly, technical change arguably encompasses more than the types of improvements in machines and methods of production that we ordinarily consider "technological" in nature. For purposes of this Article, however, we restrict ourselves to a more limited definition of technical change—change involving the development and deployment of technological improvements. This definition of innovation is not only tractable but it also comports with the most recent data on drivers of productivity growth. Specifically, while the United States ex-

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25 Indeed, in our view, science and technology policy is an example of a policy "box" that does not comport particularly well with a coherent social goal. Science and technology policy could be used to promote innovation and economic growth, but it could also be used to promote other goals such as national security or risk reduction.

26 *See generally* LAWRENCE MISHEL, JARED BERNSTEIN & SYLVIA ALLEGRETTO, THE STATE OF WORKING AMERICA 2006/2007, at 17 (2007) (discussing the marked changes in U.S. productivity growth, from 1.4% annually in the mid-1970s, to 2.5% from 1995–2000, and finally 3.3% from 2000–2005).

27 *See, e.g.*, Press Release, U.S. Dep't of Commerce, Gutierrez Calls for Government, Private Sector, and Academic Actions on Innovation Measurement (Jan. 18, 2008), *available at* http://www.commerce.gov/NewsRoom/PressReleases_FactSheets/PROD01_005059 ("The United States today is more than 75 percent wealthier in terms of real GDP per capita than it was 30 years ago, which is largely attributable to productivity gains driven, in large part, by innovation."); *see also* Charles I. Jones, *Sources of U.S. Economic Growth in a World of Ideas*, 92 AM. ECON. REV. 220, 223, 235–37 (2002) (finding that research and development accounts for about 1.46 percentage points of annual GDP growth and further estimating that the social rate of return to research and development is as high as thirty percent).

28 *See generally* Robert Solow, *A Contribution to the Theory of Economic Growth*, 70 Q.J. ECON. 65 (1956); Robert Solow, *Technical Change and the Aggregate Production Function*, 39 REV. ECON. & STAT. 312 (1957) [hereinafter Solow, *Technical Change*]. Notably, however, because Solow saw technical change as an exogenous residual, many econometric studies continued to focus on capital (and to a lesser extent labor), not technology, as the key to economic growth. *See* DAVID AUDRETSCH ET AL., ENTREPRENEURSHIP AND ECONOMIC GROWTH 13–16 (2006) (making this point).

29 *See* Solow, *Technical Change*, *supra* note 28, at 312, 320.

perienced average annual productivity increases of less than one-and-a-half percent between 1980 and 1995, since 1995 it has averaged increases of more than two percent.[30] The best explanation for these productivity increases is the widespread diffusion of advances in information and communications technology.[31]

Innovation is of course no quick fix: the introduction of new technologies does not immediately increase productivity. Rather, increases occur only when technologies are fully digested in the workplace. The rise of the personal computer, for example, began long before 1995, but it was not until the mid-1990s that businesses began to really benefit from their use.[32] The steam engine took longer—the increases in productivity arose decades after it was invented.[33] But the point is that those increases did come.[34] More importantly, innovation is the only reliable long-term method to increase productivity.[35]

Significantly, innovation is also central to addressing the most salient dangers that earlier productive activity (often spurred by innovation) has created. Innovation that produced economically attractive alternatives to ozone-layer destroying chlorofluorocarbons ("CFCs") prompted the United States to take the lead in securing rapid international agreement to the Montreal Protocol for limiting CFCs.[36] In large part because of innovation, "the monetized benefits [to the United States] dwarfed the monetized costs and hence the circumstances were extremely promising for American support and even en-

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30 *See* DEAN BAKER & DAVID ROSNICK, CTR. FOR ECON. & POLICY RESEARCH, "USABLE PRODUCTIVITY" GROWTH IN THE UNITED STATES: AN INTERNATIONAL COMPARISON, 1980–2005, at 7, 11 (2007).

31 *See generally* Harald Edquist & Magnus Henrekson, *Technological Breakthroughs and Productivity Growth*, *in* 24 RESEARCH IN ECONOMIC HISTORY 1 (Alexander J. Field et al. eds., 2007); William Nordhaus, *The Sources of the Productivity Rebound and the Manufacturing Employment Puzzle* (Nat'l Bureau of Econ. Research, Working Paper No. 11354, 2005); DALE W. JORGENSON, MUN S. HO & KEVIN S. STIROH, INFORMATION TECHNOLOGY AND THE AMERICAN GROWTH RESURGENCE (2005); Erik Brynjolfsson & Lorin M. Hitt, *Beyond the Productivity Paradox*, COMMS. ACM, Aug. 1998, at 49, 50.

32 *See* Edquist & Henrekson, *supra* note 31, at 33–34.

33 *See id.* at 9, 14–15.

34 *See id*. at 9–15. *See generally* Susanto Basu, John G. Fernald, Nicholas Oulton & Sylaja Srinivasan, *The Case of the Missing Productivity Growth: Or, Does Information Technology Explain Why Productivity Accelerated in the US but Not the UK?* (Nat'l Bureau of Econ. Research, Working Paper No. 10010, 2003).

35 *See generally* Paul A. David, *The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox*, 80 AM. ECON. REV. 355 (1990).

36 *See* Sunstein, *supra* note 2, at 14.

thusiasm for the agreement."[37] For similar reasons, managing global warming may require unprecedented levels of innovation.

Yet another salient reason for the importance of innovation relates to timing. Because innovation is highly cumulative—building on earlier discoveries and developments—small changes in initial innovation conditions can have huge future impacts. Any current event can have an impact on later events, of course. But the failure to, say, tax a complex transaction at time T1 can be ameliorated by taxing it at time T2. If the government nets the same amount of constant dollars, then the difference of timing is small. By contrast, the failure to sufficiently encourage an innovation at time T1 may mean that innovators at time T2 lack a crucial building block and thus that the course of innovation is significantly retarded.

B. Why the Government Needs to Play a Role

In light of innovation's enormous importance to the future well-being of our society, a key question is what, if anything, the government should do to foster innovation. The answer cannot be "nothing." Even the libertarian skeptic must recognize that, at a minimum, government needs to establish the legal institutions that allow for efficiency in both market transactions and the formation of firms.

Additionally, optimal levels of innovation will sometimes—perhaps often—require government regulation beyond that involved in ordinary competitive markets. Economists have long advanced good theoretical and empirical arguments for why markets will not allow innovators to capture a sufficient percentage of the welfare benefits they produce. With early-stage research, the welfare benefits may be too uncertain, long-term, and diffuse to monetize, let alone control.[38] Problems of uncertainty and lack of appropriability are less acute for more directed innovation. Even in that case, however, controlling inexpensive copying is likely to be difficult.[39] Thus, government subsi-

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37 *See id.* at 5.

38 *See, e.g.*, Arrow, *supra* note 3, at 619 ("To sum up, we expect a free enterprise economy to underinvest in invention and research (as compared with an ideal) because it is risky, because the product can be appropriated only to a limited extent, and because of increasing returns in use.").

39 *See, e.g.*, STAFF OF S. COMM. ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM 59 (Comm. Print 1958) (written by Fritz Machlup) (discussing the idea that the marginal cost of using an invention that has already been made is zero and that "perfectly competitive pricing" will not permit recovery of any of the initial investment necessary to make the invention). Empirical studies have found that social rates of return from private-firm research and development are at least twice private rates of return. Charles I. Jones & John Williams, *Measuring the Social Return to R&D*, 113 Q.J. ECON. 1119, 1120–21, 1133 (1998).

dies—whether they take the form of patents, allocation to private parties of spectrum rights, prizes, research funding, or other mechanisms—are likely to be important.

More generally, the weight of economic authority has decisively turned against Robert Solow's view that technical change is an exogenous variable that cannot be influenced by policy. Leading growth theorists like Paul Romer have demonstrated that innovation is endogenously determined and emerges as a consequence of knowledge externalities and spillovers. These externalities and spillovers, in turn, represent variables on which many forms of government policy, including but not limited to subsidies, can have an impact.[40]

Finally, in cases where innovation produces large social welfare benefits that are not necessarily reflected in market prices (even market prices bolstered through the artificial scarcity created by patents), government policy will have a large role to play. Such innovation may arise in contexts, such as the environmental context, where market prices do not reflect negative externalities. Alternatively, innovation may particularly benefit those with a limited ability to pay. Under such circumstances, government actions designed to push the creation and dissemination of innovation might be attractive.

C. Why Innovation Policy Is Slighted by Ordinary Political Processes

Absent measures designed to foster careful thinking about innovation, it will likely be systematically ignored and/or misunderstood by government actors. In the discussion below, we give examples of pathological regulatory behavior with respect to innovation. A skeptic might note that such pathologies are a pervasive phenomenon no matter what the substantive policy goal. In many cases, existing agency "boxes" do not even purport to align well with coherent substantive policy goals. But there is reason to believe that these pathologies will be even more pervasive in the context of innovation than in the context of other goals.

There is also some evidence that in recent years venture-capital-backed firms have shifted away from risky basic and applied research. Atkinson & Wial, *supra* note 23, at 11.

40 *See* Paul Romer, *The Origins of Endogenous Growth*, 8 J. ECON. PERSP. 3, 20–21 (1994). For example, geographically based industry clusters may be particularly important for producing, and taking advantage of, externalities and spillovers. Government policy can play a role in encouraging such clusters. Atkinson & Wial, *supra* note 23, at 13–14. Atkinson and Wial also cite economic research on market failures that may cause entire industries (e.g., the healthcare sector) to lag behind in the adoption of new technologies. *Id.* at 12–13.

First, almost by definition, innovation involves thinking about long-term outcomes. Government actors have very little incentive to force themselves to think about long-term outcomes, as they are unlikely to be around to reap credit (or blame).

Second, the theoretical and empirical literature indicates that small, entrepreneurial firms with little ability (relative to powerful incumbents) to influence the regulatory process are particularly likely to be the sources of breakthrough, or disruptive, innovation. On the theoretical side, economists from Joseph Schumpeter onwards have noted that such entrepreneurial firms may be more likely than large firms with vested interests in existing products to be able to move outside routine tasks into "untried technological possibilit[ies]."[41] As an empirical matter, the data indicate that significant innovations in biotechnology and information technology have been driven by small firms.[42] And to the extent citations to firm patents are a measure of an invention's significance,[43] it is noteworthy that, in recent years, small-firm patents have been more likely than large-firm patents to be in the top 1% of frequently cited patents.[44] Unfortunately, large in-

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41 JOSEPH SCHUMPETER, CAPITALISM, SOCIALISM, DEMOCRACY 13 (1942); *see also* WILLIAM J. BAUMOL, THE FREE-MARKET INNOVATION MACHINE: ANALYZING THE GROWTH MIRACLE OF CAPITALISM 57–59 (2002) (describing the significance of the entrepreneur in facilitating innovation); MICHAEL CARRIER, INNOVATION FOR THE 21ST CENTURY: HARNESSING THE POWER OF INTELLECTUAL PROPERTY AND ANTITRUST LAW (forthcoming 2009) (discussing recent work by Clayton Christensen and others on why established firms are unlikely to pursue disruptive innovation). Carrier and many others have also discussed the manner in which disruptive technologies can threaten the business models not only of incumbent technologists but also of adjunct industries, such as purveyors of copyrighted material. Like incumbent technologists, well-financed copyright holders are likely to have disproportionate influence over regulatory processes.

42 *See* ZOLTAN ACS & DAVID AUDRETSCH, INNOVATION AND SMALL FIRMS 12–23 (1990); DAVID AUDRETSCH, INNOVATION AND INDUSTRY EVOLUTION 35–38 (1995).

43 Economists routinely use such forward citations as a measure of patent value and have shown that such forward citations are positively correlated to the market value of the firms that own the underlying patents. *See generally, e.g.*, Bronwyn H. Hall, Adam Jaffe & Manuel Trajtenberg, *Market Value and Patent Citations*, 36 RAND J. ECON. 16 (2005). However, one difficulty with these studies is that private value may diverge from social value. A patent may be privately valuable because it purports to cover a fair amount of inventive territory but nonetheless of suspect validity given the prior invention (and unlikely to be challenged in litigation because of various well-rehearsed market failures associated with challenging patents, *see* Joseph Farrell & Robert Merges, *Incentives to Challenge and Defend Patents: Why Litigation Won't Reliably Fix Patent Office Errors and Why Administrative Review Might Help*, 19 BERKELEY TECH. L.J. 943, 951–60 (2004); Joseph Scott Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 BERKELEY TECH L.J. 667, 668–77 (2004).

44 CHI RESEARCH, INC., SMALL SERIAL INNOVATORS: THE SMALL FIRM CONTRIBUTION TO TECHNICAL CHANGE 11–12 (2003), *available at* http://sba.gov/advo/research/rs225tot.pdf. Of course, there are many noteworthy exceptions, even within biotechnology and information tech-

cumbents are generally better organized and have more lobbying clout than upstarts. Certainly they are better organized than the highly decentralized innovators that engage in what economist Eric von Hippel has called "user innovation."[45]

Our innovation policy is thus heavily influenced by firms that represent only one portion of the innovation ecosystem. While large firms clearly have an important role, they should not be the only players at the policymaking table.

II. The Importance of Institutional Structure

When legal scholars and economists who study innovation speak of institutions, they often mean particular types of innovation incentives—market competition, imperfect competition through such mechanisms as lead time or patents, government funding, and the like.[46] Here, by contrast, we envision institutions as the mix of courts, agencies, and legislatures that make up the regulatory state. The decisions that must be made in allocating power within the latter set of institutions are procedural, not substantive. But because procedure and substance are intimately related, different structures will make different sorts of substantive policies easier or harder to implement. So institutional choices should reflect substantive policy priorities—or at least not place huge hurdles before them.

A. The Nature of the Review

Before we can discuss the institutional structure of innovation policy formation, we need to outline what such policy formation would entail. We will return to this issue in fleshing out our proposal for an innovation regulator, and objections to it, but it makes sense to provide a concrete example now, as a way of bringing the institutional considerations to the fore.

Consider the recurrent debate among legal scholars and economic analysts over how technology platforms—that is, basic or infrastructural innovation that is difficult to invent around and can serve as the basis for much future innovation—should be regulated.[47] Em-

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nology, to the predominance of small firms. In some cases from an earlier era (e.g., Bell Labs), a reliable flow of monopolistic or oligopolistic profits allowed for the funding of in-house labs that produced breakthrough innovation.

45 *See generally* ERIC VON HIPPEL, DEMOCRATIZING INNOVATION (2005).

46 *See generally* SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES (2004) (examining innovation "institutions" such as patents, government funding, prizes, and the like).

47 *See generally* Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17

bedded within this inquiry is a host of complicated subsidiary inquiries.

First, the regulator must make a threshold assessment of the degree to which the innovation in question is in fact a platform technology. In the case of certain types of invention—say embryonic stem cells or the protocols that control how the Internet operates—the answer may be relatively clear. In other situations, the answer may be much less clear. For example, the Windows operating system is by no means intrinsically a platform innovation. Many other operating systems could do the job. But operating systems are subject to network effects that may make widespread adoption of a single operating system standard a likely outcome.[48] Thus the result may be an invention that looks a lot like a platform.

Second, assuming that the regulator has determined that a given innovation is in fact a platform technology, it must determine whether the owner is likely to exploit that technology in a manner that is detrimental to innovation. Chicago-school economics teaches that if the platform owner is not able optimally to deploy all of the available improvements to the platform, it will maximize its profit by licensing its platform to entities that have ideas regarding how to improve the platform. The phrase often used to summarize this idea is that "there is only one monopoly profit"—so a rational monopolist will charge a profit-maximizing price for its input but happily allow competition in

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HARV. J.L. & TECH. 85 (2003) (discussing the role of internalizing complementary efficiencies in the regulation of platform technologies). In the case of certain platform technologies (for example, physical platforms like cable or logical platforms like Internet protocols), commentators have been concerned not only about the deployment of further technological improvements but also about the treatment of communication/content that is layered onto the platforms. *See, e.g.*, LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD 19–25 (2001) (introducing an analysis of the manner in which content is layered onto the Internet and its effect on innovation). Although content is not the focus of our Article, we consider issues of content to the extent that they have an impact on innovation. For example, if content providers are reluctant to license their content to particular innovators, or if content regulators decide to mandate particular technologies to deter copying, those issues are central to our analysis.

48 *See* Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479, 501 (1998) (noting that in the *Microsoft* case "[a]ll of the parties seemed to acknowledge the role network effects played in Microsoft's dominance of the operating systems market"); Gregory J. Werden, *Network Effects and Conditions of Entry: Lessons from the* Microsoft *Case*, 69 ANTITRUST L.J. 87, 93–95 (2001) (quoting the court in the *Microsoft* case as finding that "consumer demand for Windows enjoys positive network effects" because "[t]he fact that there is a multitude of people using Windows makes the product more attractive to users"); David S. Evans & Richard Schmalensee, *A Guide to the Antitrust Economics of Networks*, ANTITRUST, Spring 1996, at 36 (stating that network externalities can arise when increasing demand for a product "spurs the demand for and production of complementary products").

related markets.[49] On this understanding, transaction costs should be the only impediment to the platform owner's "doing good and doing well." Post-Chicago-school economics cautions, however, that there are other exceptions to this principle of "internalizing complementary externalities" upon which the Chicago school's optimistic vision relies.[50] The regulator will have to determine whether these other exceptions (or, for that matter, transaction costs) will pose a problem in any given case.

Third, assuming that the regulator is worried that the monopolist will not optimally deploy its platform, it will have to determine whether to act *ex ante*, before concrete problems have arisen, or *ex post*. Acting *ex ante* may turn out to be unnecessary. Worse, if mandated access fees are set at suboptimal levels, the monopolist's incentives to maintain or improve the platform (as well as incentives for future monopolists to create new platforms) may be diminished. Concerns about platform maintenance are less central when the platform is purely informational in nature. But when the platform has a physical component—for example, cable networks that support broadband access—the concern becomes more central. Mandated access may also mean that future innovators have less incentive to create alternative platforms, particularly if they fear suboptimal compensation.

Government officials confront issues like this with some regularity. A company or interest group petitions an agency, court, or Congress to regulate a technology in a particular way, and the relevant government entity chooses how to respond. The governmental response may be based on a host of considerations, with no explicit focus on innovation. But the government's response will affect the course of innovation, and thus constitutes, *inter alia*, innovation policy. The point of the review we are suggesting is that there be an explicit focus on innovation, with the sort of analysis we describe above. Either way, the government is going to make a decision that affects innovation. Our suggestion is that its decisionmaking process include careful, explicit attention to the effect of any decision on the course of innovation.

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49 *See* Richard A. Posner & Frank H. Easterbrook, Antitrust: Cases, Economic Notes and Other Materials 870 (2d ed. 1981).

50 *See* Farrell & Weiser, *supra* note 47, at 105–19 (providing a thorough discussion of such exceptions).

B. Current Pathologies

If a major substantive priority is innovation (as we argue it should be), then institutions whose actions can affect innovation should be acutely cognizant of the impact that they have. In that regard, the policy apparatus in agencies, Congress, and the courts leaves much to be desired.

Consider the patent system. Economists and legal analysts have long noted that patents can have both beneficial and deleterious effects on innovation.[51] While patents do provide incentives for innovation, they can also be used to block the efforts of follow-on innovators. Thus, on the standard account, the critical issue involves maintaining a delicate balance between what lies within, and outside, the patent system.

For much of its existence, the Federal Circuit has tended to ignore this standard account, as well as empirical data indicating that for large manufacturing firms patents are important for securing returns to innovation primarily in the chemical/pharmaceutical and medical equipment industries.[52] In fact, prior to the Supreme Court's recent interventions in the area of patents, the Federal Circuit had made defending a patent against charges of invalidity significantly easier.[53] The behavior of the Federal Circuit was arguably consistent with standard accounts of capture of regulatory processes by well-represented interest groups.[54] In this case, the most salient interest group is patent

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51 *See, e.g.*, Suzanne Scotchmer, *Standing on the Shoulders of Giants: Cumulative Research and the Patent Law*, 5 J. ECON. PERSP. 29, 37–39 (1991); FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY ch. 2, at 1–7, 17–36 (2003), *available at* www.ftc.gov/os/2003/10/innovationrpt.pdf.

52 *See* Cohen, Nelson & Walsh, *supra* note 3, at 9 (reporting survey results in which research and development managers stated that patents were effective in protecting over 50% of product innovations only in the drug and medical equipment industries). The study's data were limited to large manufacturing firms in the United States. *See id.* at 5. Patents may play a role in securing returns and venture capital investment for smaller firms in industries not related to medicine, but the data on this issue are sparse.

53 *See, e.g.*, Matthew D. Henry & John L. Turner, *The Court of Appeals for the Federal Circuit's Impact on Patent Litigation*, 35 J. LEGAL STUD. 85, 114–15 (2006); Glynn S. Lunney, *Patent Law, the Federal Circuit, and the Supreme Court: A Quiet Revolution*, 11 SUP. CT. ECON. REV. 1, 16 (2004). To be sure, these studies also suggest that the Federal Circuit may be more likely than its predecessors to read patents narrowly and hence find them not infringed in any given case. *See* Henry & Turner, *supra*, at 90; Lunney, *supra*, at 15–16. However, in contrast to a patent that is found invalid, a patent that is found not to be infringed in a particular case is not taken out of the system and can still be asserted against other parties.

54 *See generally* George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971) (providing an analysis of how the political process is used by certain small groups to improve their economic status).

lawyers—although patent lawyers do represent both patentees and alleged infringers, they have an obvious interest in the maintenance of a relatively robust patent system.[55]

As we have noted, the system's "pro-patent" tendencies have recently been mitigated through Supreme Court intervention in several important cases.[56] But such intervention is by nature selective. It remains to be seen whether the Supreme Court will provide a permanent safeguard against the tendency of the Federal Circuit to favor patents and to view patents as an exception to ordinary legal rules.

Perhaps even more problematic, particularly in the face of the broad, open-ended language of the patent statutes,[57] is the disavowal of explicit policy analysis by the Federal Circuit.[58] As a consequence of this disavowal, the patent system has embraced software patents of broad and often unclear scope without considering the patent thickets that such allowance would create for the highly cumulative process of software development.[59] In contrast, patent scope with respect to genes has been relatively narrow even though a broader scope would arguably be more aligned with development goals, at least with respect to genes that cover therapeutic proteins.[60]

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55 *See generally* ADAM B. JAFFE & JOSHUA LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT (2004).

56 *See* KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1740–41 (2007) (heightening the required showing for an invention to be "non-obvious" and therefore patentable); Medimmune, Inc. v. Genentech, Inc., 127 S. Ct. 764, 777 (2007) (holding that a licensee is not required to terminate its licensing agreement in order to have standing to challenge the validity of the patent upon which the agreement is based); eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 393–94 (2006) (holding that permanent injunctive relief is not always warranted even after a patent has been found valid and infringed).

57 *See, e.g.*, 35 U.S.C. § 101 (2006) (requiring that a patentable invention be "new and useful"); *id.* § 103 (requiring that a patentable invention be "nonobvious").

58 The historically "pro-patent" position of the Federal Circuit of course represented an implicit policy stance. However, this position almost always emerged from formal reasoning regarding what the patent statute purportedly "required." The Federal Circuit has stated that "public policy" arguments regarding the requirements of the patent system "are more appropriately directed to Congress as the legislative branch of government." *In re* Fisher, 421 F.3d 1365, 1378 (Fed. Cir. 2005). Meanwhile, the PTO (unlike the European Patent Office) has no economists or analysts with advanced training in social science on its staff. *Cf.* Letter from Edward J. Black, President & CEO, Computer & Commc'ns Indus. Ass'n, to Patrick J. Leahy, Chairman, U.S. Senate Comm. on the Judiciary (Feb. 14, 2008), *available at* http://www.ccianet.org/docs/patent/Patent-ltrLeahy.pdf (proposing to remedy this deficiency by establishing an Institute for Innovation, Economics, and Patent Policy within the PTO).

59 *See, e.g.*, Lemley & McGowan, *supra* note 48, at 524 n.195 and accompanying text; JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 187–214 (2008).

60 Rai, *supra* note 9, at 1072–73 & n.167 (arguing that narrow patent scope in this area

In addition to the PTO and the Federal Circuit, the Food and Drug Administration ("FDA") plays a very important role in the formulation of innovation policy with respect to drugs and therapeutic proteins.[61] There is reason to believe the FDA could do a better job. Important recent work on the FDA suggests that there may be considerable innovation advantages associated with drug safety reform that focuses not on increasing preapproval clinical testing requirements (the FDA's typical focus) but instead on improving manufacturers' postmarketing efforts to identify safety problems.[62]

Additionally, when they actually focus on innovation, government institutions like agencies and courts regulate innovation without having much awareness of what other institutions, faced with similar problems, have done.[63] Such awareness could be tremendously helpful. For example, the economic questions raised by platform-based innovation share tremendous similarities, no matter the science behind the platform or the specific application to which it is put. For any platform innovation, broad basic questions arise about how to ensure that the innovation arises and is disseminated, how the creators should be compensated, and whether creators of an innovation platform have the incentive and ability to dominate related markets.[64] All of these inquiries feed into the ultimate question of the degree to which the government should regulate and/or subsidize either the innovation or its related markets.

When, for example, the PTO or the Federal Circuit makes a decision regarding how to treat extremely broad claims in a patent on embryonic stem cells (a trio of such broad patents was granted and

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allows rivals to "invent around" a particular therapeutic protein patent, "severely undermin[ing] the patentee's return on its R&D investment"). It should be noted, though, that in the context of genes that cover therapeutic proteins, the narrow scope afforded gene patents has been mitigated by the reality that FDA approval represents a significant barrier to entry for those who would compete with patented proteins. As matters currently stand, there is no regime for making generic therapeutic proteins.

61 *See, e.g.*, Rebecca S. Eisenberg, *The Role of the FDA in Innovation Policy*, 13 MICH. TELECOMM. & TECH. L. Rev. 345, 347 (2007) ("FDA regulation has also become an important adjunct to the patent system in protecting innovating firms from competition in product markets.").

62 Shelby D. Reed, Robert M. Califf & Kevin A. Schulman, *How Changes in Drug-Safety Regulation Affect the Way Drug and Biotech Companies Invest in Innovation*, 25 HEALTH AFF. 1309, 1313 (2006).

63 *See infra* text accompanying notes 75–92.

64 *See generally* Farrell & Weiser, *supra* note 47 (discussing these issues); Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 J. ECON. PERSP. 93, 100–05 (1994) (discussing market responses to the problems of network effects).

subsequently challenged),[65] it might consider lessons learned by Federal Communications Commission ("FCC") regulators that have considered the issue of property rights over (or compelled access to) platforms. The debates about the viability and contours of an essential facilities doctrine could help to inform a decisionmaker at the National Institutes of Health ("NIH") faced with the question of whether to declare that no patent rights should be sought on a particular genome sequencing project.[66]

And platform technologies do not represent the only area where multiple agencies are likely to have important arguments that other agencies should be listening to. For example, the 2003 FTC report suggesting mechanisms for improvement of the patent system was motivated by the proposition that issues of competition policy and innovation policy overlap.[67] More fundamentally, every new area of technology represents another venue for deciding whether competition or quasi-monopoly rights is the best mechanism for promoting innovation.

At the same time we see convergence of economic analysis, we also see technological convergence. The so-called "minimal genome" that synthetic biologists seek to develop (and on which Craig Venter has recently sought a patent) could be used in a wide variety of industries, ranging from clean energy to pharmaceuticals.[68] Currently, in-

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65 Andrew Pollack, *Agency Agrees to Review Human Stem Cell Patents*, N.Y. TIMES, Oct. 4, 2006, at C3.

66 *See* Robert Pitofsky, Donna Patterson & Jonathan Hooks, *The Essential Facilities Doctrine Under U.S. Antitrust Law*, 70 ANTITRUST L.J. 443, 453 (2002) (arguing that there is no reason why the essential facilities doctrine could not apply to assets protected by intellectual property laws just as some courts have applied them to undisputed natural monopolies such as utilities); Simon Genevaz, *Against Immunity for Unilateral Refusals to Deal in Intellectual Property: Why Antitrust Law Should Not Distinguish Between IP and Other Property Rights*, 19 BERKELEY TECH. L.J. 741, 761–62 (2004) (suggesting that in the context of unilateral refusals to deal, the essential facilities doctrine should apply to intellectual property cases just as it does to tangible property cases). *See generally* Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398, 411 (2004) ("We have never recognized [an essential facilities] doctrine, and we find no need either to recognize it or to repudiate it here. It suffices for present purposes to note that the indispensable requirement for invoking the doctrine is the unavailability of access to the 'essential facilities;' where access exists, the doctrine serves no purpose.") (citations omitted); Abbott B. Lipsky, Jr. & J. Gregory Sidak, *Essential Facilities*, 51 STAN. L. REV. 1187 (1999) (arguing that there are relatively few situations in which the essential facilities doctrine makes sense); Brett Frischmann & Spencer Weber Waller, *Revitalizing Essential Facilities*, 75 ANTITRUST L.J. 1 (2008) (arguing, as the title suggests, for a revitalized essential facilities doctrine).

67 *See* FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY *passim* (2003).

68 *See generally* Jocelyn Kaiser, *Attempt to Patent Artificial Organism Draws a Protest*, 316

novation in energy and pharmaceuticals is regulated by a large number of different players, ranging from the NIH and the FDA (pharmaceuticals)[69] to the Department of Energy and the EPA (energy).[70]

Similarly, with the abolition of the Office of Technology Assessment ("OTA") in the mid-1990s, the ability of Congress to secure unbiased advice on questions of innovation policy is limited.[71] Even with such unbiased advice, moreover, it is not clear that Congress would be capable of acting in a systematic manner with respect to innovation.[72] The America COMPETES Act is a positive sign. On the other hand, the current stalemate over patent reform legislation—in which the range of possible options appears limited to those supported by large information technology players on the one hand and those supported by biopharmaceutical companies and patent lawyers on the other—represents a classic failure of collective action on the part of the many other constituencies that are also affected by the patent system.[73]

Additionally, government agencies often fail to coordinate innovation policy, resulting in incoherence and perhaps bald inconsistency. For example, the PTO has insinuated itself into the middle of complex questions involving the regulation of "Voice over Internet Protocol" ("VoIP") telephony by granting broad and possibly invalid patents over key elements of such telephony to a number of large incumbent providers, including Verizon, Sprint, and AT&T. The PTO almost assuredly had no particular intention to regulate the battle over VoIP. To the contrary, thinking about VoIP has been the province of the

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SCI. 1557 (2007) (discussing Venter's quest to patent an entirely synthetic free-living organism and the controversy it has stirred).

69 The FDA regulates the approval, labeling, and manufacture of pharmaceutical products, while the NIH funds biopharmaceutical research. *See* Sheila R. Shulman & Andrea Kuettel, *Drug Development and the Public Health Mission: Collaborative Challenges at the FDA, NIH, and Academic Medical Centers*, 53 BUFF. L. REV. 663, 664–91 (2005).

70 The Department of Energy directs and funds energy-related scientific research and regulates the nation's energy resources, infrastructure, and efficiency standards. *See* Department of Energy, Program Offices, http://www.energy.gov/organization/program_offices.htm (last visited Sept. 30, 2008). The EPA regulates the environmental effects of energy production and consumption. *See* Peter M. Crofton, *Emerging Issues Relating to the Burgeoning Hydrogen Economy*, 27 ENERGY L.J. 39, 51 (2006) (describing the EPA's role in the regulation of energy).

71 *See infra* text accompanying notes 190–97 (discussing the history of OTA).

72 *See infra* Part III.B.2.

73 Stuart Benjamin & Arti Rai, *A Tale of Two Bills: Good Innovation Policy Goes Beyond Interest Group Politics*, SCI. PROGRESS, Nov. 6, 2007, *available at* http://www.scienceprogress.org/2007/11/a-tale-of-two-bills/print/ (lamenting that "absent from the debate [about the Patent Reform Act of 2007] is any group that looks at the whole innovation ecosystem, with a view toward advancing overall social welfare").

FCC, which views it as a valuable alternative to local landline telephony.[74] But the PTO's issuance of broad patents has allowed Verizon and other incumbent providers to pursue via government-granted property rights what they have been unable to achieve via FCC regulation. They have filed patent suits that have called into serious question the survival of a much smaller start-up, Vonage, that has implemented VoIP successfully.[75]

To be sure, if the incumbents' patents are in fact valid,[76] then some payment to Verizon and other incumbents is appropriate. But the threatened remedy of injunctive relief (in the shadow of which VoIP providers have settled the various lawsuits for large sums of money) conflicts with FCC policy.[77]

While the PTO's intervention with respect to VoIP was largely inadvertent, in some situations the failure to coordinate some aspect of innovation policy flows from the agencies' conflicting agendas. This problem has arisen in spectrum policy. Although innovation in wireless services depends on the availability of radio frequencies, the management of these frequencies has been characterized by difficulties arising from the involvement of different agencies with competing goals. One might imagine that conflicts would arise between the FCC (which manages commercial spectrum) and the National Telecommunications and Information Administration ("NTIA") (which manages the spectrum assigned to the government). These two agencies have indeed differed on spectrum policy. But the conflicts between those two agencies and the Department of Defense (the largest government user of spectrum) have been more notable and pitched.[78] The Depart-

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74 *See* IP-Enabled Servs., 19 F.C.C.R. 4863, 4864–68 (2004) ("[T]he changes wrought by the rise of IP-enabled communications [including VoIP] promise to be revolutionary . . . to reduce the cost of communication and to spur innovation and individualization.").

75 *See Vonage Settles Suit by Verizon*, WASH. POST, Oct. 26, 2007, at D03 (discussing settlement between Vonage and Verizon estimated at $120 million); Laura M. Holson, *A Settlement by Vonage Over Patents*, N.Y. TIMES, Oct. 9, 2007, at C1 (same).

76 The issue of appropriate validity standards is itself, of course, a policy question. As discussed earlier, *see supra* text accompanying notes 52–57, the Federal Circuit's liberalization of validity standards has elicited much negative commentary and has prompted Supreme Court intervention.

77 A vast amount of economic literature documents how the potential for hold-up created by injunctive relief allows patent holders to extract more in licensing fees and/or settlements than the actual contribution made by their patents.

78 *See, e.g.*, Lynnette Luna, *Spectrum Quandary puts 3G at Risk*, TELEPHONY, July 23, 2001, at 10 (discussing tensions among the FCC, NTIA, and Department of Defense on spectrum policy); Kendra Wall, *Splitting the Spectrum*, UPSIDE, Sept. 2001, at 82 (same); BENJAMIN ET AL., TELECOMMUNICATIONS LAW AND POLICY 51–60 (2d ed. 2006) (discussing the FCC's and NTIA's roles in spectrum regulation).

ment of Defense resisted spectrum liberalization proposals put forward in the late-1990s and 2000, and it successfully thwarted attempts at revamping its spectrum allocations.[79] Top spectrum officials agree that "the FCC, NTIA and Congress have created a bureaucratic morass of [spectrum] regulations and oversight that impedes progress."[80]

Given the specific missions of each agency, it is not surprising that there are both regulatory overlaps and regulatory lacunae. Both phenomena can lead to lack of coordination and inefficiency, as agencies often take actions in tension with those of another agency (in the case of overlaps) or take actions that are outside their core area of expertise and in the process do a poor job. An example of the former is the multiple agency jurisdiction over telecommunications mergers, which are reviewed by the FCC as well as the DOJ Antitrust Division and the FTC. Those agencies often apply different standards and often reach differing results (for purposes of innovation and otherwise), leading to much wasted effort for regulators and the regulated parties.

An example of a regulatory lacuna is the FCC's attempt at protecting television producers' copyrights via "broadcast flags." Content owners expressed fears about unauthorized sharing of their programming once such programming became digital, and they lobbied the FCC to require devices capable of receiving digital television signals to recognize the copy-control mechanism (known as a "broadcast flag") created by content producers. The FCC had little background or expertise in matters of copyright and copy control, and indeed it had no obvious jurisdiction: Congress never saw fit to give the FCC authority over consumers' use of television receivers after the completion of a broadcast transmission.[81] But content producers correctly thought the FCC would be sympathetic to their concerns, and as a result, the FCC mandated the broadcast flag, resting not on any explicit grant of jurisdiction over copying or copyright but instead on its "ancillary jurisdiction."[82] The United States Court of Appeals for the D.C. Circuit vacated the FCC's order as beyond its jurisdiction, but beyond the jurisdictional problem there was good reason to doubt the

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79 *See, e.g.*, Kevin C. Darrenkamp, *The Military Battles for Electromagnetic Spectrum Superiority*, ARMY LAW., July 2000, at 34, 37–38 (discussing the battle between the Department of Defense and the NTIA and FCC, and fearing that "the NTIA and the FCC [will] attempt to reopen the DOD's old wounds" on spectrum).

80 Bob Brewin, *Cellular Carriers, DOD Debate Spectrum Needs*, COMPUTERWORLD, April 8, 2002, at 61.

81 Am. Library Ass'n v. FCC, 406 F.3d 689, 691–92 (D.C. Cir. 2005).

82 *See* Digital Broad. Content Prot., 18 F.C.C.R. 23,550, 23,563–64 (2003), *vacated in part, rev'd in part sub nom. Am. Library Ass'n*, 406 F.3d at 708.

wisdom of the FCC's approach.[83] The broadcast flag responded to a problem that had not yet arisen by imposing significant restrictions on the architecture of consumer equipment and thereby making legal copying and use more difficult. The FCC had regulated outside its area of core expertise at the behest of a politically powerful constituency who feared that otherwise their concerns would go unheeded, and the result was an unlawful and probably unwise regulatory venture.

In other cases, the organic statutes enacted by Congress explicitly create tensions between agencies. For example, as matters currently stand, patents are interpreted not simply by the PTO (and the courts that review the PTO) but also by the ITC. While the PTO interprets patent applications and patents under the Patent Act,[84] the ITC interprets patents in the context of its own organic statute, the Tariff Act.[85] Under section 1337 of the Tariff Act, the ITC can block imported articles that infringe U.S. patents held by domestic industries.[86] Moreover, according to the ITC, because it has a different source of statutory authority, it is not always bound by the patent interpretations that the PTO and the courts develop when they interpret the Patent Act.[87] To the contrary, the ITC claims it should receive *Chevron* deference even when its interpretations diverge from those that might be rendered under the Patent Act.[88] The ITC's argument has been accepted by the very court, the Federal Circuit, that reviews the PTO.[89]

Perhaps the most interesting part of the ITC argument is that, at least as a formal legal matter, it is plausible. As Sapna Kumar has argued, when Congress transformed the relatively weak Tariff Commission into the ITC as part of the Tariff Act revisions enunciated in

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83 *Am. Library Ass'n*, 406 F.3d at 708.

84 Patent Act of 1952, Pub. L. No. 593, 66 Stat. 792 (codified in scattered sections of 35 U.S.C.).

85 Tariff Act of 1930, ch. 497, 46 Stat. 590 (codified as amended at 19 U.S.C. §§ 1001–1654 (2006)).

86 19 U.S.C. § 1337 (2006).

87 *See* Kinik Co. v. Int'l Trade Comm'n, 362 F.3d 1359, 1361 (Fed. Cir. 2004) (noting the ITC's belief that recently enacted defenses to infringement in the Patent Act do not apply to infringement actions before the ITC).

88 *See id.* at 1363 (finding that the ITC is entitled to *Chevron* deference in its belief that certain defenses provided by the Patent Act are not available in infringement actions before the ITC).

89 *Id.*

the Trade Act of 1974,[90] it was motivated in part by a protectionist agenda that is distinct from the innovation-focused agenda of the Patent Act.[91] Under this agenda (and subsequent legislation that tends to reinforce this agenda), Congress has indicated that it wants issues such as defenses to patent infringement and the availability of injunctive relief to be viewed differently under the Tariff Act than they are under the Patent Act. As a policy matter, however, the unfortunate result is forum shopping and other attempts at gaming by domestic industry patentees.[92]

C. The Limitations of Current Efforts at Agency Review

To the many scholars who have studied the last twenty-five years of presidential efforts to exercise greater centralized control of agency action,[93] some of the pathologies discussed in the prior section will have a familiar ring. These efforts have typically been promoted as attempts to counter agency parochialism and to harmonize conflicts

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90 Trade Act of 1974, Pub. L. No. 93-618, § 171, 88 Stat. 1978, 2009 (codified at 19 U.S.C. § 2231 (2006)).

91 *See generally* Sapna Kumar, *Irreconcilable Differences: The Role of the ITC in Patent Decisions* (Duke Law Sch. Working Paper Series, Paper No. 107, 2008), *available at* http://lsr.nellco.org/duke/fs/papers/107/.

92 For example, Broadcom Corporation recently brought patent infringement claims against Qualcomm in both federal district court and before the ITC. *See Judge Sides with Broadcom in Qualcomm Patent Fight*, N.Y. Times, Aug. 11, 2007, *available at* http://www.nytimes.com/2007/08/11/business/11broadcom.html. The ITC found that Qualcomm had in fact infringed on Broadcom's patent for certain computer chips used in mobile phones, and granted Broadcom's requested relief of a ban on the importation of mobile phones using the most recent Qualcomm chips. *See id.* In contrast with the ITC, which must grant injunctive relief if it finds infringement of a valid patent, district courts may exercise discretion over whether to grant injunctive relief.

93 For generally favorable analyses, see, for example, Steven Croley, *White House Review of Agency Rulemaking: An Empirical Investigation*, 70 U. Chi. L. Rev. 821, 873–85 (2003) (finding, based on review of OIRA rulemaking documents, that White House does not favor narrow interests); Elena Kagan, *Presidential Administration*, 114 Harv. L. Rev. 2245, 2383–84 (2001) (arguing that an increased presidential role in regulation "both satisfies legal requirements and promotes the values of administrative accountability and effectiveness"); Lawrence Lessig & Cass R. Sunstein, *The President and the Administration*, 94 Colum. L. Rev. 1, 105–06 (1994) ("[B]ecause the President has a national constituency—unlike relevant members of Congress, who oversee independent agencies with often parochial agendas—it appears to operate as an important counterweight to factional influence over administration."); Christopher C. DeMuth & Douglas H. Ginsburg, *White House Review of Agency Rulemaking*, 99 Harv. L. Rev. 1075, 1076–82 (1986). For less favorable reviews, see, for example, Lisa Schultz Bressman & Michael P. Vanderbergh, *Inside the Administrative State: A Critical Look at the Practice of Presidential Control*, 105 Mich. L. Rev. 47, 48 (2006); William D. Araiza, *Judicial and Legislative Checks on Ex Parte OMB Influence over Rulemaking*, 54 Admin. L. Rev. 611, 613–15 (2002) (noting that OMB review has raised concern about "the executive acting as a confidential partner of and conduit for regulated parties seeking to influence agency action").

between agencies, particularly in the areas of health, safety, and environmental regulation.[94] To what extent could current mechanisms of centralized review provide a coordinated set of innovation-friendly policies (at least in those cases where the inconsistency is not created by Congress, and courts do not act at cross-purposes with such coordination)?

The most systematic mechanism through which greater presidential control has been pursued is a series of executive orders imposing the somewhat controversial requirement that agencies conduct cost-benefit analyses of major regulations. Centralized review of these analyses is then conducted by OIRA, an office within the OMB.[95] OIRA review began with the Reagan Administration and has continued in some form through the current Bush Administration.[96] The details of this review have varied somewhat depending on the administration—for example, the Clinton years introduced greater transparency into the OIRA process by requiring, *inter alia*, public disclosure of all communications between OIRA personnel and individuals not employed by the executive branch.[97] But the basic principles have remained the same. To the extent that OIRA finds a

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94 For a strong statement along these lines by two Reagan-era White House officials, see DeMuth & Ginsberg, *supra* note 93, at 1081 ("Centralized review of proposed regulations . . . by an office that has no program responsibilities and is accountable only to the president, is an appropriate response to the failings of regulation [because it] encourages policy coordination, greater political accountability, and more balanced regulatory decisions."). Although the DeMuth and Ginsberg article is nonempirical in nature, a number of prominent empirical studies have argued that agency regulation in the area of health, safety, and the environment is haphazard and inconsistent, and routinely fails to maximize net benefits. *See, e.g.*, Tammy O. Tengs & John D. Graham, *The Opportunity Costs of Haphazard Social Investments in Life-Saving*, *in* RISKS, COSTS, AND LIVES SAVED 167, 167–68 (Robert W. Hahn ed., 1996). *But see* Richard Parker, *Grading the Government*, 70 U. CHI. L. REV. 1345, 1350–57 (2003) (criticizing the study done by Tengs and Graham, among others, as being full of methodological flaws).

95 *See* Exec. Order No. 12,291 § 2, 3 C.F.R. 127, 128 (1981), *reprinted in* 5 U.S.C. § 601 (1988), *revoked by* Exec. Order No. 12,866, 3 C.F.R. 638, 649 (1993), *reprinted as amended in* 5 U.S.C. § 601 (2000); Exec. Order No. 12,498 pmbl., 3 C.F.R. 638 (1985), *reprinted in* 5 U.S.C. § 601 (1988), *revoked by* Exec. Order No. 12,866, 3 C.F.R. 638 (1993), *reprinted in* 5 U.S.C. § 601 (2000). The executive orders specify, however, that their requirements cannot be inconsistent with any obligations in the organic statute. Thus, in the relatively unusual case where the organic statute forbids cost-benefit analysis, such analysis is not required.

For general background on OIRA, see Curtis W. Copeland, *The Role of the Office of Information and Regulatory Affairs in Federal Rulemaking*, 33 FORDHAM URB. L.J. 1257, 1257 (2006); Office of Management and Budget, OMB Organization Chart, http://www.whitehouse.gov/omb/omb_org_chart.pdf (last visited Oct. 19, 2008).

96 *See* Exec. Order No. 12,498, 3 C.F.R. 638, 638 (1985); Exec. Order No. 13,422, 72 Fed. Reg. 2763, 2763–65 (Jan. 18, 2007).

97 Exec. Order No. 12,866 § 6(b)(4)(B)–(C), 58 Fed. Reg. 51,735 (Sept. 30, 1993).

"significant" regulation[98] inconsistent with its cost-benefit analysis, it can return the regulation to the agency (which can then revise or withdraw it). Although OIRA's analysis does not always trump that of the agency, it does dominate. Lower-level disputes between OIRA staff and staff at the rulemaking agency are resolved by the OIRA Administrator.[99] Only if an agency head disagrees with the Administrator of OIRA is there a real fight—in that case, the OMB Director or the agency head brings the dispute to the attention of the President, who is responsible for its resolution.[100] OIRA is staffed by career policy analysts with various types of social science expertise.[101] Its only political appointee is the OIRA Administrator.[102]

Proponents of OIRA review might argue innovation-related benefits and costs can, and should, be addressed as part of the more general cost-benefit review done by OIRA. In support of this argument, they might note that although existing executive orders require agencies to engage in a variety of specialized analyses (addressing, *inter alia*, the impact of their regulations on the environment and on small businesses),[103] agencies often fail to perform those analyses.[104] They might further contend that putting innovation into the global cost-benefit analysis is not only more parsimonious but also quite possibly preferable as a normative matter: specifically, because innovation is not the only value that regulation may seek to promote, putting inno-

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98 Significant regulations include regulations that have an annual effect on the economy of more than $100 million or that create inconsistencies with the work of other agencies. *Id.* § 3. In January 2007, the Bush Administration extended OIRA's purview to include not just rulemaking but also "guidance documents"—manuals, memoranda, interpretive documents and the like. Exec. Order No. 13,422, 72 Fed. Reg. 2763 (Jan. 18, 2007). However, OIRA's analysis of these guidance documents (even "significant" guidance documents that have an estimated impact of $100 million or more on the economy) is much more limited than its analysis of regulations.

99 *See* Exec. Order No. 12,866, 3 C.F.R. 638, 648 (1993).

100 Exec. Order No. 12,866 § 7, 58 Fed. Reg. 51,735 (Sept. 30, 1993), *amended by* Exec. Order No. 13,258, 67 Fed. Reg. 9385 (Feb. 26, 2002).

101 *See* Office of Management and Budget, The Staff of the Office of Management and Budget, http://www.whitehouse.gov/omb/recruitment/staff.html (last visited Sept. 30, 2008) ("Over ninety percent of the [OMB] staff hold career, rather than political, appointments. Over seventy percent of the staff are professionals, most with graduate degrees in economics, business and accounting, public administration and policy, law, engineering, and other disciplines.").

102 *See* Croley, *supra* note 93, at 873–74.

103 *See* Office of Mgmt. & Budget, Circular A-4, Regulatory Analysis 43–44 (Sept. 17, 2003), *available at* http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf [hereinafter Circular A-4] (discussing statutes and executive orders that require these specialized analyses).

104 *See* Nina A. Mendelson, Chevron *and Preemption*, 102 MICH. L. REV. 737, 782–86 (2004) (discussing agencies' failure to engage in the analysis of their rules' impact on federalism as required by executive order); *see also infra* text accompanying notes 237–38, 245–47.

vation into the larger context of an overall cost-benefit analysis is affirmatively desirable.

We agree that innovation-related impacts can, and should, ultimately be folded into a larger cost-benefit analysis.[105] But that does not necessarily mean that analysts within OIRA itself are best suited for providing guidance about, or reviewing, the "innovation module" of the larger cost-benefit analysis. Nor does it mean that OIRA analysts will be sufficiently motivated to prompt agencies to think about innovation impacts or to rationalize conflicting policies on innovation.

Assessing the suitability of OIRA for promoting coherent innovation policy requires an initial assessment of whether OIRA has, in general, promoted regulatory coherence (as its proponents argue) or, instead, has been secretive, biased against regulation, and subject to its own interest groups and political pressures (as its detractors contend). Qualitative arguments for and against OIRA review have recently been supplemented by more systematic empirical analysis. Steven Croley argues, based upon an analysis of OIRA decisionmaking focused largely on the Clinton years, that "White House review appears to be at least partially technocratic and at any rate not *ad hoc*."[106] Croley further concludes that although OIRA meetings on rules (which can be requested by an interested party) do tend to be attended by narrowly focused interest groups, the type of interest group in attendance at a meeting did not predict whether a rule was changed.[107]

Although Croley's study provides some empirical insight, it is limited by the fact that it cannot take into account the magnitude or direction of rule change. In the OIRA coding scheme, even stylistic modifications appear as a rule change. Lisa Bressman and Michael Vanderbergh's recent survey of top EPA officials in the George H.W. Bush and Clinton Administrations suggests a less sanguine picture.[108]

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105 Defending cost-benefit analysis itself is beyond the scope of this Article. Suffice it to say that we are persuaded by those who argue that, despite its limitations and potential for improvement (particularly with respect to addressing distributional concerns and commensurating diverse costs and benefits), cost-benefit analysis is the most promising tool for rational analysis of regulatory action. For helpful discussions of how cost-benefit analysis works, and how it could be improved, see generally, for example, MATTHEW D. ADLER & ERIC A. POSNER, NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS (2006); see also Robert W. Hahn & Cass R. Sunstein, *A New Executive Order for Improving Federal Regulation?: Deeper and Wider Cost-Benefit Analysis*, 150 U. PA. L. REV. 1489, 1522–23 (2002).

106 Croley, *supra* note 93, at 873.

107 *Id.* at 874.

108 Bressman & Vanderbergh, *supra* note 93, at 75. The Bressman and Vanderbergh survey asked EPA officials questions not only about OIRA but also about the involvement of White

EPA officials in both Administrations reported that OIRA's selection of regulations for close scrutiny was in fact somewhat *ad hoc*, even with respect to those economically significant rulemakings with impacts of $100 million or more that both the Reagan/Bush- and Clinton-era executive orders single out as a focus for OIRA.[109] Additionally, according to EPA officials, OIRA was often subject to influence by other White House offices, particularly in cases involving "high-profile or high-stakes issues."[110] According to Bressman and Vandenbergh, OIRA also focused "almost exclusively on the cost side of the cost-benefit analysis" and "consistently sought changes that relaxed burdens on regulated entities."[111]

A 2003 study by the Government Accountability Office ("GAO") (highlighted in a recent critique of OIRA by Nicholas Bagley and Richard Revesz) also suggests an antiregulatory tilt, at least in the early years of the George W. Bush Administration.[112] This report investigated eighty-five economically significant health, safety, or environmental rules that OIRA had caused to be changed, returned, or withdrawn during the period from July 2001 through June 2002.[113] The GAO determined that twenty-five of these rules had been substantially affected by the OIRA process—seventeen had been "significantly changed," seven returned to the agency for reconsideration, and one withdrawn at OIRA's request.[114] Fourteen of the seventeen rules that were significantly changed came from the EPA.[115] In six of the fourteen cases, the primary effect was to delay or eliminate regulation.[116] In four others, OIRA suggestions led the agency to adopt "more flexible and/or less costly compliance options to regulated entities."[117]

House offices other than OIRA. *Id.* at 76. For purposes of our discussion, only the specific questions about OIRA are directly relevant.

109 *See id.* at 67.

110 *Id.* at 69.

111 *Id.* at 74–75.

112 *See* Nicholas Bagley & Richard L. Revesz, *OMB and the Centralized Review of Regulation*, 106 COLUM. L. REV. 1260, 1269–70 (2006).

113 U.S. GEN. ACCOUNTING OFFICE, RULEMAKING: OMB'S ROLE IN REVIEWS OF AGENCIES' DRAFT RULES AND THE TRANSPARENCY OF THOSE REVIEWS 5 (2003) [hereinafter GAO REPORT]. These eighty-five, which represented a subset of about 400 draft rules that had been changed, returned, or withdrawn during that period, had been submitted by the nine health, safety, or environmental agencies with five or more such rules. *Id.*

114 *Id.* at 69.

115 *Id.* at 74.

116 *Id.* at 76.

117 *See id.* at 77; *see also* David M. Driesen, *Is Cost-Benefit Analysis Neutral?*, 77 U. COLO. L. REV. 335, 379–80 (2006) (reviewing the GAO report and arguing that OIRA review "never

The GAO report also suggests that OIRA was influenced by, or at least reached conclusions consistent with, arguments made by outside parties, primarily regulated entities. In eleven of the twenty-five cases where regulations were substantially affected, outside parties had requested a meeting.[118] In seven of the eleven cases, the changes made to the regulations were similar to those suggested by the outside parties.[119]

Of course, it may be that the health, safety, and environmental agencies in question (and particularly the EPA, which is known for its "mission focus")[120] considered cost to regulated entities insufficiently and that OIRA provided a useful counterweight.[121] Moreover, in the Bressman and Vanderbergh survey, the EPA respondents did give OIRA generally good marks on interagency coordination.[122]

However, even proponents of OIRA do not claim it has fully achieved a system in which net regulatory benefits are maximized.[123] In part, this is because OIRA has tended to be reactive and has generally failed to use cost-benefit analysis to spur agency action.[124]

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moved in the direction of encouraging more stringent regulation than the agency would adopt on its own, even when benefits outweighed costs").

118 GAO REPORT, *supra* note 113, at 89.

119 *Id.* at 90.

120 *See* Sally Katzen, *A Reality Check on an Empirical Study: Comments on "Inside the Administrative State,"* 105 MICH. L. REV. 1497, 1499 (2007). Katzen was the OIRA administrator for much of the Clinton Administration.

121 *Id.* at 1505, 1507.

122 *Id.* at 1506.

123 *See, e.g.*, *id.* at 1502 (an article by the Clinton-Administration OIRA administrator defending OIRA involvement in rulemaking, but also acknowledging that it "could work better").

124 *See* Hahn & Sunstein, *supra* note 105, at 1522 ("One of our primary concerns is that no institution in government has yet vindicated the hopes of those who believed that cost-benefit analysis could be used to help promote better priority-setting, block senseless rules, and spur agency action when justified."); *see also* Bagley & Revesz, *supra* note 112, at 1277–80 (arguing that, under the George W. Bush Administration, OIRA's issuance of "prompt letters" urging agencies to take action was infrequent, not the focus of its attention, and did not reflect "consistent attempts to push agencies to implement costly but beneficial regulations").

Some recent work by John Graham, the OIRA administrator from 2001–2006, emphasizes four "pro-regulatory" initiatives with which OIRA was involved. John D. Graham, Paul R. Noe & Elizabeth L. Branch, *Managing the Regulatory State: The Experience of the Bush Administration*, 33 FORDHAM URB. L.J. 953, 995–96 (2006) (discussing FDA labeling of food for trans-fat content; Department of Transportation standards for improving light-truck fuel economy; and EPA regulations on controlling engine exhaust and reducing air pollution from coal-fired power plants). Aspects of the coal pollution regulations, however, have been quite controversial; in any event, the regulations have been struck down on statutory grounds by the D.C. Circuit. Perhaps more notably for purposes of the OIRA evaluation process, the Department of Transportation standards have been struck down by the Ninth Circuit as "arbitrary and capricious" because the cost-benefit analysis on which they were based failed to take into account benefits from reduc-

At a minimum, then, the verdict on OIRA is mixed. It is not an office so well respected for its neutrality, thoroughness, and transparency that it should necessarily perform the innovation component of the cost-benefit calculation. In fact, current OIRA staff may be particularly ill-equipped to look at innovation impacts. In the Bressman and Vanderbergh survey, EPA officials emphasized that the OIRA staff focused on *short-term* costs and benefits.[125] Almost by definition, a focus on the short term is unlikely to incorporate innovation-related costs and benefits. Such benefits and costs are likely to be quite important in the many cases where regulation—such as performance standards capping the emission of pollutants or emission taxes—will foster innovation in technologies that limit emissions.[126]

Similarly, although Circular A-4 (OIRA's most recent guidance to regulatory agencies on how to do cost-benefit analysis) does mention estimating regulatory benefits and costs "based on credible changes in technology over time,"[127] its discussion of this issue is very sparse. For example, Circular A-4 does not give any sense of how "credibility" should be gauged given the existing state of the technological art. The lack of guidance is striking given the substantial literature that models the economic effects of technical change, both under the assumption that it is exogenous and that it is policy-induced.[128]

Nor does Circular A-4 discuss with any sophistication the costs and benefits of alternative regulatory mechanisms for stimulating innovation. Its major contribution in this regard is a statement that regulatory performance standards are generally superior to engineering or design standards because they "give regulated parties the flexibility to achieve regulatory objectives in the most cost-effective way."[129] Al-

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tions in greenhouse-gas emissions. *See* Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1181–82 (9th Cir. 2008).

125 Bressman & Vanderbergh, *supra* note 93, at 73.

126 For example, Clean Air Act regulation led to the development of catalytic conversion technology. *See generally* David Gerard & Lester B. Lave, *Implementing Technology-Forcing Policies: The 1970 Clean Air Act Amendments and the Introduction of Advanced Automotive Emissions Controls in the United States*, 72 TECHNOLOGICAL FORECASTING & SOC. CHANGE 761 (2005) (arguing that the Clean Air Act spurred technological change in the area of automotive emissions controls).

127 Circular A-4, *supra* note 103, at 37.

128 For example, one recent study finds that if we were limited to technologies available in 2005, the present-value cost of achieving stabilization of carbon dioxide at 550 parts per million would be over $20 trillion greater than with expected developments in energy efficiency, hydrogen energy technologies, advanced bioenergy, and wind and solar technologies. J.A. Edmonds et al., *Global Energy Technology Strategy: Addressing Climate Change*, College Park, MD: Joint Global Change Research Institute (on file with authors).

129 Circular A-4, *supra* note 103, at 8; *see also id.* at 16 ("Within a command-and-control

though this statement is correct as far as it goes, it does not make the obvious point that performance standards are also superior because they have the capacity to stimulate innovation. The failure to mention this point may reflect a larger lack of concern with long-term innovation effects.

Finally, OIRA's organizational role, which is limited to cost-benefit analysis of major proposed regulations, is ill-suited for the more varied roles that we would envision for our innovation regulator. Many of the major government actors whose actions affect innovation act primarily through adjudication (whether internal agency adjudication or judicial adjudication) rather than rulemaking. So while OIRA could be a part of the centralized focus on innovation that we envision, it is by no means the only option, nor is it the best one.

III. Congress Versus Courts Versus Agencies

As our discussion in Part II has shown, inattention to innovation has been a pervasive problem for all government institutions. The obvious next question is whether, and how, these institutions could most usefully be improved for purposes of generating better innovation policy.

At the outset, three important points bear brief mention. First, the inquiry is necessarily a comparative one. Absolute competence (or at least competence relative to unregulated markets) is relevant in determining whether we want any government institution regulating in a given area. But once we have decided that government regulation makes sense and/or is necessary, the relevant question is a choice among institutions. Second, and relatedly, in conducting comparative institutional analysis there is little benefit in positing a platonic decisionmaker. Theorizing about an idealized institution that has an extremely low likelihood of ever materializing does not give us much information about how we actually want to structure our government decisions. It makes sense then to consider institutions that exist and that realistically could exist—improved versions of existing institutions or new institutions that have a real chance of being created. Third, this institutional analysis should take into account the costs of change. We are not writing on a blank slate. There are existing institutions, and changing existing relationships entails costs. This does not mean that we must limit ourselves to small-bore changes. It

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regulatory program, performance-based standards generally offer advantages over standards specifying design, behavior, or manner of compliance.").

merely means that we must balance costs versus benefits, and be realistic about what is achievable.

A. Congress Versus Courts Versus Agencies—General Considerations

A fair amount has been written on the relative strengths and weaknesses of administrative agencies, Congress, and federal courts.[130] In broad outline, agencies and Congress generally have a nontrivial advantage over courts in terms of the ability to draw upon technical expertise. As to the former, one of the central rationales for creating administrative agencies was that they would have greater expertise and focus than generalist legislatures or courts.[131] The idea was to create expert agencies that would concentrate on a particular area, and thereby bring technocratic rigor to the decisionmaking process.[132] Even if the head (or heads) of an agency is not an expert,

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130 A major recent commentator on such comparative institutional analysis is Neil Komesar. *See generally* NEIL K. KOMESAR, IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY (1994). His work does not focus on administrative agencies, but he includes them among the institutions he considers. Others have focused more specifically on legislatures versus courts. *See generally* GUIDO CALABRESI, A COMMON LAW FOR THE AGE OF STATUTES (1982); HENRY M. HART, JR. & ALBERT M. SACKS, THE LEGAL PROCESS: BASIC PROBLEMS IN THE MAKING AND APPLICATION OF LAW (William N. Eskridge, Jr. & Philip P. Frickey eds., 1994) (comparing the capacities and role of legislatures and courts); *see also* DONALD L. HOROWITZ, THE COURTS AND SOCIAL POLICY 22–67 (1977) (exploring areas of judicial incapacity to illuminate the performance of the courts when they undertake the making of social policy); Stuart Minor Benjamin, *Proactive Legislation and the First Amendment*, 99 MICH. L. REV. 281, 332–43 (2000) (engaging in a comparative analysis of the legislature and the judiciary to determine what role deference should play for the courts in adjudicating disputes); Christopher L. Eisgruber, *The Most Competent Branches*, 83 GEO. L.J. 347, 348 (1994) (arguing that when legislatures and courts both interpret the Constitution, the principle of comparative institutional competence should determine how much deference to give the other branch); Edward L. Rubin, *The New Legal Process, The Synthesis of Discourse, and the Microanalysis of Institutions*, 109 HARV. L. REV. 1393, 1424–33 (1996) (discussing how academic theory is coalescing around fine-grained comparative analyses of institutions); Cass R. Sunstein & Adrian Vermeule, *Interpretation and Institutions*, 101 MICH. L. REV. 885, 886 (2003) (arguing for a method of judicial interpretation that accounts for institutional capacities).

131 *See, e.g.*, Felix Frankfurter, *The Task of Administrative Law*, 75 U. PA. L. REV. 614, 621 (1927) ("[T]he inquirer [into administrative law] must have a sympathetic understanding of the major causes which led to the emergence of modern administrative law, and must be able to move freely in the world of social and economic facts with which administrative law is largely concerned.").

132 *See, e.g.*, JAMES M. LANDIS, THE ADMINISTRATIVE PROCESS 23 (1938) ("With the rise of regulation, the need for expertness became dominant; for the art of regulating an industry requires knowledge of the details of its operation, ability to shift requirements as the condition of the industry may dictate, the pursuit of energetic measures upon the appearance of an emergency, and the power through enforcement to realize conclusions as to policy."); Louis L. Jaffe, *James Landis and the Administrative Process*, 78 HARV. L. REV. 319, 320–22 (1964) (agreeing

agencies usually have large staffs and significant research capabilities.[133] And agencies can request information from third parties (for example, think tanks and academic societies) to supplement their internal expertise. Congress, similarly, has quite significant research capabilities and the ability to request information from informed third parties. But Congress's staff is smaller than that of most significant agencies, so it needs to rely on third parties more than agencies do. And, of course, the members of Congress are generalists who are usually not steeped in any of the fields that they regulate.

These points—in particular, the smaller staffs in Congress and the limited time members can devote to any given issue—give agencies an advantage over Congress in terms of technical expertise. An even bigger contrast is between agencies and Congress, on one hand, and courts, on the other. Courts have small staffs, and the vast majority of the information judges receive is from self-selected interested parties.[134] As one of us has previously noted, "[j]udges can seek information from disinterested parties, but such procedures are ad hoc and, in part for that reason, fairly cumbersome."[135] Agencies (and, to a lesser extent, Congress) thus generally have a greater ability than courts to amass expertise and make decisions on complex, data-intensive matters.[136]

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with Landis that specialization is a virtue of the administrative agency); Cass R. Sunstein, *Law and Administration After* Chevron, 90 COLUM. L. REV. 2071, 2079 (1990) ("All this was changed by the creation in the twentieth century of a massive administrative apparatus, which was of course a self-conscious repudiation of regulation through the judiciary. For the twentieth century reformers, courts lacked the flexibility, powers of coordination, initiative, democratic accountability, and expertise necessary to deal with complex social problems.").

133 For example, the EPA operates more than a dozen research labs and employs more than 8500 scientists, engineers, and policy analysts. *See* U.S. Environmental Protection Agency, About EPA, http://www.epa.gov/epahome/aboutepa.htm#whoweare (last visited Sept. 30, 2008). And the Department of Energy operates more than twenty research labs and employs more than 30,000 scientists and engineers. U.S. Department of Energy, Labs & Technology Centers, http://www.doe.gov/organization/labs-techcenters.htm (last visited Sept. 30, 2008).

134 *See* Frederick K. Beutel, *Some Implications of Experimental Jurisprudence*, 48 HARV. L. REV. 169, 180–81 (1934) ("[E]ven granting equality of counsel and intelligent presentation of interests, the fact-finding equipment of the courts is woefully inadequate."); Kenneth Culp Davis, *Judicial, Legislative, and Administrative Lawmaking: A Proposed Research Service for the Supreme Court*, 71 MINN. L. REV. 1, 10–17 (1987) (arguing that the Supreme Court is often inadequately staffed to develop the legislative facts needed to make its decisions).

135 *See* Benjamin, *supra* note 130, at 333–34.

136 *See* Thomas W. Merrill, *Judicial Deference to Executive Precedent*, 101 YALE L.J. 969, 972–75 (1992) ("[C]ourts are generalists, whereas agencies are specialists. Specialists usually have a better grasp of technical terms or the practical consequences of a decision, and thus their views should be given deference by generalists.").

Advantages in competence that flow to agencies from specialization may, however, have other drawbacks. The agency might be so narrowly focused that it develops tunnel vision—that is, it focuses on benefiting its own sector of the economy even though the costs imposed on society more broadly may outweigh those benefits.[137] More disturbingly, it may be biased, as a result of capture by narrow interests. This latter concern flows in significant part from the logic of collective action[138]—the idea that small groups of players with concentrated interests will have an easier time organizing, and influencing decisionmakers, than will large, diffuse groups. Concentrated costs (or benefits) make for more effective action than do diffuse costs (or benefits).[139]

Although many early capture theorists saw agencies as particularly prone to capture by narrow interests, the rise of public choice theory—which assumes that all government actors maximize, at least in part, private goals to which narrow interests can cater—extends concerns about the power of narrow interests to all government actors.[140] The idea is that powerful interests will do a good job of supplying whatever it is that government actors seek, and so we would expect those interests to prevail in whatever forum they appear. On this theory, all government actors will be subject to capture, at least to some degree.[141]

Indeed, notwithstanding its origins in the study of agency behavior, capture appears particularly relevant for Congress. Classic quid pro quo capture requires that the captured government actor wants

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137 *See, e.g.*, STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION 11 (1994) ("Tunnel vision, a classic administrative disease, arises when an agency so organizes or subdivides its tasks that each employee's individual conscientious performance effectively carries single-minded pursuit of a single goal too far, to the point where it brings about more harm than good.").

138 The phrase "collective action" comes from the book of the same title. *See generally* MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (1965).

139 *Id.* at 53–57, 132–34.

140 Some suggest that public actors are motivated solely (or at least very heavily) by their private interests. *See, e.g.*, Terry M. Moe, *The Positive Theory of Public Bureaucracy*, *in* PERSPECTIVES ON PUBLIC CHOICE: A HANDBOOK 455, 456–58 (Dennis C. Mueller ed., 1997) ("[B]ureaucracy can be well understood and a powerful theory someday constructed by assuming bureaucrats are rational actors largely motivated by self-interest."); Roger G. Noll, *Economic Perspectives on the Politics of Regulation*, *in* 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 1253, 1262–63 (Richard Schmalensee & Robert D. Willig eds., 1989) (arguing that in the absence of adequate monitoring and enforcement mechanisms, public actors carry out policies that do not reflect the interests of citizens).

141 *See* Noll, *supra* note 140, at 1264–66.

something from the powerful interest that she is regulating, but it is not obvious what that would be for an agency head: commentators have suggested bigger budgets (but the rewards to the agency head from a bigger budget may be more psychological than material), or promises of jobs in the future with the relevant industry (but agency heads will often have good job prospects simply by virtue of their service as agency head, whether or not they cater to the interests of the powerful), or some form of compensation (but there is relatively little legal compensation that agency heads can accept, and illegal compensation creates the risk of jail time).[142] With respect to members of Congress, though, the quid pro quo is fairly straightforward: elected officials want campaign contributions, and powerful interests are in a position to help deliver them. And, not surprisingly, many commentators now believe that Congress is particularly subject to quid pro quo influence by powerful incumbent interests.[143]

On the other hand, as the work of Neil Komesar and others illustrates, concerns about government actors being captured by narrow interests are not limited to those who accept the motivational presuppositions of public choice.[144] Even for those who are agnostic about motivation, or believe that government actors pursue public-regarding objectives,[145] the problem of "informational capture" is relevant.

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142 *Compare* WILLIAM A. NISKANEN, JR., BUREAUCRACY AND REPRESENTATIVE GOVERNMENT 114 (1971) ("[T]he coterminous relation of a bureaucrat's rewards and his position implies that a bureaucrat will maximize the total budget of his bureau . . . ."), *with* KENNETH J. MEIER, REGULATION: POLITICS, BUREAUCRACY, AND ECONOMICS 14 (1985) (arguing that agency officials are not driven by simple desire to maximize their incomes, because their incomes would generally be higher in the private sector), *and* JAMES Q. WILSON, BUREAUCRACY: WHAT GOVERNMENT AGENCIES DO AND WHY THEY DO IT 118 (1989) ("One wonders why Niskanen thinks bureaucrats are so desirous of maximizing their budgets if they can enjoy so few of the fruits."), *and* Daryl J. Levinson, *Empire-Building Government in Constitutional Law*, 118 HARV. L. REV. 915, 932 (2005) ("Even if most bureaucrats were primarily interested in lining their own pockets, the relationship between a larger agency budget and higher salaries or cushier working conditions is empirically tenuous.").

143 *See* Brian Galle & Mark Seidenfeld, *Administrative Law's Federalism: Preemption, Delegation, and Agencies at the Edge of Federal Power*, 57 DUKE L.J. 1933, 1974 n.170 (2008) (stating that Congress is more likely to be captured by focused interest groups than are agencies); Laura I. Langbein & Mark A. Lotwis, *The Political Efficacy of Lobbying and Money: Gun Control in the U.S. House, 1986*, 15 LEGIS. STUD. Q. 413, 433–34 (1990) (concluding in a study of how lobbyist groups affected congressional decisions on gun control that "campaign contributions appeared to affect members' votes"); ELIZABETH DREW, POLITICS AND MONEY: THE NEW ROAD TO CORRUPTION 1–5, 38, 41, 45–46, 49–52, 79–82, 84 (1983) (discussing the acknowledgment of members of Congress that campaign contributions affect their votes); PHILIP M. STERN, STILL THE BEST CONGRESS MONEY CAN BUY 69–82 (1992) (detailing the attempts of outside interest groups to court influential members of Congress).

144 *See* KOMESAR, *supra* note 130, at 54–58, 172–73, 192.

145 *See* Cynthia R. Farina & Jeffrey J. Rachlinski, *Foreword: Post-Public Choice?*, 87 COR-

Even public-regarding agency regulators may act in favor of narrow interests if these interests have the resources to be the most vigorous suppliers of relevant information.

The remaining question is how the capture analysis applies to courts. Although a few commentators have suggested that courts are more easily controlled by factions than are agencies,[146] the more widely held view is that courts are less likely to be captured.[147] It may be that repeat players with the strongest interest in the precedential or preclusive effects of a case will have a significant advantage in judicial proceedings.[148] But just as the degree of competence is a comparative one between courts and agencies, so too is the likelihood of bias (in the form of capture). Saying that courts may be subject to capture does not mean that the danger of capture is as great for courts as it is for agencies or Congress. And the danger seems somewhat lower for courts. This conclusion flows in significant part from the fact that judges have life tenure and thus less concern about their future employment, have salaries and budgets that are largely free from congressional meddling, and may have a greater desire for prestige (which powerful interest groups cannot easily provide).[149]

NELL L. REV. 267, 268–70 (2002) (noting that behavioral research portrays people as less self-centered than public choice suggests); *cf.* Jerry L. Mashaw, *The Economics of Politics and the Understanding of Public Law*, 65 CHI.-KENT L. REV. 123, 146 (1989) (noting that critics of public choice have shown only that ideology plays some role in legislative behavior and "merely limit[ ] the appropriate claims that can be made for an economic theory of politics").

146 *See* Frank B. Cross, *Shattering the Fragile Case for Judicial Review of Rulemaking*, 85 VA. L. REV. 1243, 1322–23 (1999) (suggesting that agencies are less likely to be controlled by factions because they are guided by the President, and "the President's broad and heterogeneous constituency renders the Executive relatively less vulnerable [to capture] and creates greater concern for the broad public interest").

147 *See* Robert D. Cooter, *The Objectives of Private and Public Judges*, 41 PUB. CHOICE 107, 129 (1983) (suggesting that judges tend to seek to maximize their prestige among litigants and thus are less subject to capture). *See generally* KOMESAR, *supra* note 130, at 9–10 (arguing that the courts have some comparative advantages when compared to other institutions).

148 *See* Marc Galanter, *Why the "Haves" Come Out Ahead: Speculations on the Limits of Legal Change*, 9 LAW & SOC'Y REV. 95, 97–104 (1974) (explaining how "repeat players" have advantages that give them a greater chance of success in an adjudication than "one-shotters"); Daniel Kessler, Thomas Meites & Geoffrey Miller, *Explaining Deviations from the Fifty-Percent Rule: A Multimodal Approach to the Selection of Cases for Litigation*, 25 J. LEGAL STUD. 233, 237, 242 (1996) (discussing studies showing that parties with the greatest stake in the outcome have an advantage in a given litigation).

149 *See* RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 530–31 (6th ed. 2003) (noting the value of judges' "aloof disinterest" in the outcome of cases). This does not necessarily mean that judges are insulated from their private interests. Rather, it means that their private interests may more closely comport with interests of the public. Assuming, for example, that their private interest is in their reputation and esteem among their colleagues and litigants, those interests might be fairly closely aligned with the public interest.

It thus seems that, as a comparative matter, Congress fares least well. It has more competence than courts but less than agencies, and it is the most likely of all the institutions to be subject to the blandishments of well-funded interest groups. Agencies fare the best on competence but may also be subject to capture, including informational capture. That said, courts' advantage on the capture axis does not seem great enough to compensate for their limited fact-gathering capacity. If we had reason to believe that agencies were utterly beholden to powerful interests and courts utterly independent of them, then the structural limitations of courts would not be enough to outweigh this advantage. But that seems a quite implausible description of the difference between agencies (or, for that matter, Congress), on the one hand, and courts, on the other, as the next Section highlights.

B. Congress Versus Courts Versus Agencies in the Innovation Context

Now that we have laid out the broad principles above, it makes sense to look at the history of the various institutions to see how they have measured up in the context of innovation-related inquiries. The events of the past do not exhaust the range of the realistic, and it would be a mistake to limit ourselves to what has been implemented in the past. But looking at the past provides a valuable form of grounding. By examining failed and successful experiments, we can gain a better sense of what is realistic.[150]

1. Courts

We will start with courts. With the important exception of the Federal Circuit's monopoly over patent appeals, innovation-related cases currently arise in district and appellate courts all over the country. The D.C. Circuit has had a disproportionate share of such cases, but nothing close to a majority of them and too much variability in its behavior to allow for much in the way of useful conclusions. The Supreme Court, meanwhile, has simply taken too few cases to yield a complete picture.[151] And it is not clear why any given judge or court

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150 *See* William W. Buzbee, *Sprawl's Dynamics: A Comparative Institutional Analysis Critique*, 35 WAKE FOREST L. REV. 509, 518 (2000) (in conducting comparative institutional analysis "one must also assess a wider set of contextual variables, in particular historical allocations of power and stakeholders' and institutions' past experience and expertise. . . . In the policy arena, preceding experiences and status quo legal structures will necessarily influence the course of policy debates.").

151 As we noted earlier, *see supra* note 56 and accompanying text, the Court has, in the last few years, taken some key cases that have mitigated the pro-patent tendencies of the Federal

employee would focus on innovation, given the broad array of cases each judge sees and the dispersion of innovation-related cases among courts. The result is that judges lack the staff or focus that would seem necessary to oversee innovation policy.

One obvious response, indeed the one that Congress adopted in 1982 in the context of patents, might be centralization. The Federal Circuit was set up by Congress as the exclusive court for patent appeals, and it has therefore necessarily played a central role in an important aspect of innovation policy. As we have already noted, however,[152] its history has not been encouraging. Empirical studies suggest that it is likely to be biased in favor of patentees, at least on questions of validity.[153] Additionally, it has disavowed any desire explicitly to formulate innovation policy (as contrasted with the ways it formulates innovation policy implicitly through formalistic decisions with a pro-patent bias), notwithstanding the many interpretive choices required by the broad and open-ended language of the patent statute.[154]

Some might argue that the lesson to be learned from the Federal Circuit is not that courts are defective, but that there is a happy medium between the extreme decentralization of regional appellate courts and the extreme centralization of a single court. At this intermediate point, we would have the type of intercircuit competition that tends to improve the quality of judicial decisionmaking.[155]

But the problems with the Federal Circuit are hardly limited to lack of competition—rather, many, if not most, of these problems stem from the reality that courts have systematic limitations in their ability to formulate policy, particularly policy on the complex scientific and economic issues presented in innovation-related cases. Laying out principles of innovation policy at a very high level of abstraction does not necessarily require any particular expertise. The difficulty comes in implementation—making choices among competing proposals regarding, say, the most efficient uses of spectrum, or

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Circuit. The trend, however, has been too recent, and the number of cases too small, to yield any clear conclusions.

152 *See supra* text accompanying notes 52–60.

153 *See supra* note 53 (citing studies).

154 *See* Rai, *supra* note 9, at 1102–22 (explaining the Federal Circuit's formalism as a manifestation of its refusal to engage in policymaking).

155 Craig Nard and John Duffy suggest a version of this argument when they argue that the Federal Circuit review should be replaced by review of patent cases by a few appellate courts that focus on patents. *See* Craig Allen Nard & John Duffy, *Rethinking Patent Law's Uniformity Principle*, 101 Nw. U. L. Rev. 1619, 1623–24 (2007).

the regulatory mechanisms through which new drugs should be allowed on the market. Such decisions could be made by laypeople, but we would have much more confidence if they were made by individuals who fully understood the scientific and economic tradeoffs involved. Effective judicial regulation would thus entail hiring a sizable staff of people with expertise.[156] We would also want the heads of these judicial regulators to focus on innovation-related cases, so that they could build up their own stores of knowledge.

Once we had done all that, however, we would simply have created a variant of the agency structure that we currently have. To put the point differently, we could overcome the problems with judges as innovation regulators only by turning them into rough approximations of agency heads. The difference would be that these "judicial agency" heads would have life tenure and relatively little accountability. It makes more sense to modify agencies as we see fit rather than try to fit judges into that model.

With respect to innovation policy, there is a related advantage for agencies and Congress that bears emphasis: while courts' power to act is limited to *ex post* intervention in individual cases, agencies and Congress can act *ex ante*, enacting legislative rules before any concrete issue or problem arises.[157] Courts can issue injunctions, of course, but only in the context of a particular dispute. This makes courts ill-suited to engage in the sort of forward-looking policy planning that should be the hallmark of innovation policy.

2. Congress

Turning to Congress, the problem of capture by well-organized and well-funded interest groups has applied with particular vigor in

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156 Some commentators have argued in favor of judges who are trained in disciplines other than law, *see* Adrian Vermuele, *Should We Have Lay Justices*, 59 STAN. L. REV. 1569, 1570 (2007) (arguing that the optimal number of "lay" Supreme Court Justices trained in other disciplines may be greater than zero), or in favor of judges who wear "two hats"—that is, they are trained in both law and another discipline, *see* Scott Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 YALE L.J. 1535, 1681 (1998). Even assuming that judges who fell into these categories could be found, they could not do all of the relevant work themselves. Rather, they would still have to rely on technically trained staffs. In that case, as discussed in the text, we would simply have replicated the structure of an agency.

157 "Legislative rule" is a term of art in administrative law. *See, e.g.*, Thomas W. Merrill & Kathryn Tongue Watts, *Agency Rules with the Force of Law: The Original Convention*, 116 HARV. L. REV. 467, 576–78 (2002) (discussing the meaning of the term). To be sure, in the context of innovation, the theoretical ability of agencies to act *ex ante* is limited by the reality that several salient agencies (e.g., the PTO, the FTC) have relatively limited rulemaking authority. *See supra* note 21.

the area of innovation. Indeed, it is hard to identify any recent innovation-related legislation with identifiable winners and losers in which capture has not been a central dynamic. The Digital Millennium Copyright Act ("DMCA") of 1998,[158] which placed significant restrictions on the extent to which technology developers and users could circumvent digital "fences" around both copyrighted and uncopyrighted materials,[159] was heavily tilted toward copyright holders.[160] A major reason was that copyright holders were well-funded and well-organized on Capitol Hill, while technology developers were not.[161]

In recent years Congress has also debated patent reform legislation.[162] But as it has progressed, legislation has been reshaped, and distorted, by the short-term concerns of powerful interests.[163] For life sciences firms, "innovation" is about the type of highly patent-dependent work that they currently do.[164] For large information technology firms, "innovation" requires being free from immediate problems created by patent "thickets" and "trolls."[165] Each interest group focuses on its own short-term problems and ignores legitimate claims on the other side.[166] Thus far, the major congressional responses have been relatively crude attempts at splitting the difference between the vari-

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158 Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified as amended in scattered sections of 5, 17, 28, and 35 U.S.C.).

159 *See* 17 U.S.C. § 1201 (2006).

160 *See, e.g.*, Pamela Samuelson, *Intellectual Property and the Digital Economy: Why the Anti-Circumvention Regulations Need to Be Revised*, 14 BERKELEY TECH. L.J. 519, 538 (1999) ("The structure of the final DMCA anti-circumvention provision and its complexity resulted from the maximalist position with which the [Clinton] Administration and its major copyright industry allies began the legislative struggle.").

161 *See id.* at 523 (noting that "by colorful use of high rhetoric and forceful lobbying, Hollywood and its allies were successful in persuading Congress to adopt the broad anti-circumvention legislation they favored" as embodied by the DMCA); Ruth Okediji, *Givers, Takers, and Other Kinds of Users: A Fair Use Doctrine for Cyberspace*, 53 FLA. L. REV. 107, 111 (2001) (saying of the DMCA and the Copyright Term Extension Act that "[these] legislative enactments—both the process by which they came to fruition as well as their substantive provisions—give reason to pause over Congress' commitment to the public interest or, at the very least, its understanding of the implications of the expansion of copyright law"). Perhaps not surprisingly, because Internet service providers ("ISPs") were well represented in Congress, the DMCA struck a better balance in designing a scheme for secondary copyright infringement liability on the part of ISPs. *See* 17 U.S.C § 512.

162 *See* Benjamin & Rai, *supra* note 73 (discussing events surrounding the proposed Patent Reform Act of 2007).

163 *See id.* (noting that in the case of the Patent Reform Act of 2007 "various interest groups are fighting vigorously over specific aspects of the bill").

164 *Id.*

165 *Id.*

166 *Id.*

ous interest group positions.[167] Largely absent from the legislative debate have been proposals for long-term reform that could accommodate the legitimate interests of all industries, existing and future, with a view towards advancing overall social welfare.[168]

Some might argue that battles among interested groups should not trouble us when the groups serve as proxies (usually not intentionally) for the public interest. A legislative battle between, say, steel producers and steel purchasers might roughly reflect the public interest by balancing the interests of steelworkers versus consumers of steel products. A major problem for legislative battles involving innovation is that future industries and innovators do not have a seat at the lobbying table, as they either do not exist or exist in only nascent form.

The clearer it is who the winners and losers will be, the more intense the lobbying and the greater danger of legislation emerging that caters to the interests of powerful incumbents. Thus legislation at a higher level of generality may be less subject to capture—but it just pushes the lobbying battle down to the entity that makes the difficult choices.[169]

The capture problem faced by Congress is exacerbated by (and may in part be caused by) the inability of members of Congress to be experts in the area of innovation. Although Congress has a staff of almost 32,000 congressional staffers, most work in constituent services.[170] The staff available for in-depth research and analysis is fairly

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167 *See generally* Arti K. Rai, The Story of Congressional Patent Reform: When Mancur Olson Happens to Good Ideas (unpublished manuscript, on file with authors) (discussing congressional attempts at compromise over post-grant opposition proceedings).

168 *See id.* One proposal along these lines was recently made by the Computer and Communications Industry Association ("CCIA"). In a letter to Senator Leahy, CCIA proposed the creation of an "Institute for Innovation, Economics, and Public Policy," housed within the PTO. *See* Letter from Edward J. Black to Patrick J. Leahy, *supra* note 58. This proposal emerged, however, after the legislation was already moribund. In contrast, some recent Supreme Court cases have adopted patent standards that may do a reasonable job of accommodating the legitimate interests of different industries, existing and future. *See* Arti K. Rai, *Building a Better Innovation System: Combining Facially Neutral Patent Standards with Therapeutics Regulation*, 45 HOUS. L. REV. (forthcoming 2008).

169 *See* Mathew D. McCubbins & Thomas Schwartz, *Congressional Oversight Overlooked: Police Patrols Versus Fire Alarms*, 28 AM. J. POL. SCI. 165, 172 (1984) (arguing that "fire alarm" oversight of executive actions by Congress that allows citizens the opportunity to alert Congress to possible violations "emphasizes the interests of individuals and interest groups more than those of the public at large"). *See generally* Robert P. Inman & Michael A. Fitts, *Political Institutions and Fiscal Policy: Evidence from the U.S. Historical Record*, 6 J.L. ECON. & ORG. (SPECIAL ISSUE) 79 (1990).

170 *See* P.J. Meitl, *The Perjury Paradox: The Amazing Under-Enforcement of the Laws Regarding Lying to Congress*, 25 QUINNIPIAC L. REV. 547, 564 (2007).

small—especially so given the breadth of subjects that Congress touches. Congress's oversight covers everything within the purview of any agency, leaving the relatively small congressional staff spread fairly thinly over any given subject.[171] Absent a significant increase in congressional staff and focus on innovation, it seems implausible to expect detailed congressional oversight of innovation policy.[172]

Congress has made some attempts to bolster its expertise. Specifically, it has created three entities within the congressional branch to serve as expert advisers to Congress: the Congressional Research Service ("CRS"), a part of the Library of Congress that provides research to members of Congress on a wide range of subjects;[173] the Congressional Budget Office ("CBO"), which provides budget information to members;[174] and the GAO, which oversees the behavior of agencies and issues reports evaluating various aspects of agencies' behavior.[175] All three are designed to be nonpartisan.[176]

CRS is the broadest of the three, employing 450 researchers[177] to answer over 500,000 questions annually from members of Congress.[178] The questions can be on virtually any topic, so their range is enormous,[179] and the huge number of questions combined with the exigencies of the legislative process means that speed is a huge priority and depth less so. As one commentator has put it, CRS "serves mainly as a reference librarian and staff aide to legislators, providing facts and

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171 *See* Galle & Seidenfeld, *supra* note 143, at 1966 (noting that in Congress "[n]either members nor their staff develop expertise about programmatic details" and that staff members who deal with a large set of regulatory matters "generally do not come from professions that could help inform them about the options for and the implications of regulatory decisions").

172 *See* WALTER J. OLESZEK, CONGRESSIONAL PROCEDURES AND THE POLICY PROCESS 187–88 (4th ed. 1996) ("It is nearly impossible for a member to be fully informed on every issue before the House.").

173 *See* Congressional Research Service, About CRS, http://www.loc.gov/crsinfo/aboutcrs.html (last visited Oct. 19, 2008).

174 *See* Congressional Budget Office, About CBO, http://www.cbo.gov/aboutcbo/ (last visited Oct. 19, 2008).

175 *See* U.S. Government Accountability Office, About GAO, http://www.gao.gov/about/ (last visited Oct. 19, 2008).

176 *See* sources cited *supra* notes 173–75.

177 *See* Congressional Research Service, About CRS, http://www.loc.gov/crsinfo/aboutcrs.html (last visited Oct. 19, 2008).

178 *See id.*

179 CONG. RESEARCH SERV., ANNUAL REPORT FISCAL YEAR 2007, at 8–37, *available at* http://www.loc.gov/crsinfo/CRS07_AnnRpt.pdf [hereinafter CRS ANNUAL REPORT 2007] (highlighting various projects, covering a broad array of subject matter, that the CRS undertook at the behest of Congress in 2007).

figures, assisting with speechwriting, and so on."[180] The GAO is larger, with over 3000 employees, and focuses on assisting congressional oversight of federal spending. Specifically, it evaluates how well government policies and programs are working; audits agency operations to determine whether federal funds are being spent efficiently, effectively, and appropriately; investigates allegations of illegal and improper activities; and sometimes issues legal decisions and opinions on these matters.[181] Finally, the CBO has 230 employees and a much tighter focus: it makes estimates of current and future budgets and it analyzes the effects of fiscal proposals on the budget.[182]

A few points about these organizations are particularly relevant for our purposes. First, CRS and the CBO abjure policy recommendations. They issue reports laying out data, but they refuse to recommend or propose policies, or even to take positions on policy questions.[183] The GAO, by contrast, does make policy recommendations in the context of its evaluations of federal agencies, although even here the recommendations are usually that agencies take specific actions, rather than that Congress pass particular legislation.[184]

Notably, even with all of the restrictions under which the GAO, CRS, and the CBO operate, these entities have been subject to accusations of partisanship. Such complaints have frequently been lodged against the CBO and the GAO.[185] CRS has largely avoided such accusations, but in so doing has demonstrated the lengths to which it be-

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180 BRUCE BIMBER, THE POLITICS OF EXPERTISE IN CONGRESS: THE RISE AND FALL OF THE OFFICE OF TECHNOLOGY ASSESSMENT 79 (1996).

181 *See* U.S. Government Accountability Office, Our Workforce, http://www.gao.gov/about/workforce (last visited Oct. 19, 2008); U.S. Government Accountability Office, About GAO, http://www.gao.gov/about/ (last visited Oct. 19, 2008).

182 *See* Congressional Budget Office, CBO Fact Sheet, http://www.cbo.gov/aboutcbo/factsheet.shtml (last visited Oct. 19, 2008).

183 *See* CRS ANNUAL REPORT 2007, *supra* note 179, at 27 ("At CRS, we conduct our analysis in an objective manner and do not try to convince anyone of a particular point of view. We'll lay out the arguments for and against and may come to some conclusions, but we would never make recommendations." (quoting Charles Hanrahan, Senior Specialist in Agricultural Policy)); Congressional Budget Office, CBO's Role in the Budget Process, http://www.cbo.gov/aboutcbo/budgetprocess.shtml (last visited Oct. 19, 2008) ("In accordance with the CBO's mandate to provide objective and impartial analysis, CBO's reports contain no policy recommendations.").

184 *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, TELECOMMUNICATIONS: BROADBAND DEPLOYMENT IS EXTENSIVE THROUGHOUT THE UNITED STATES, BUT IT IS DIFFICULT TO ASSESS THE EXTENT OF DEPLOYMENT GAPS IN RURAL AREAS 38–39 (2006), *available at* http://www.gao.gov/new.items/d06426.pdf (recommending that the FCC investigate options for improving the information available on broadband deployment).

185 AM. ENTER. INST. & THE BROOKINGS INST., A SECOND REPORT OF THE RENEWING CONGRESS PROJECT 73–76 (1993) [hereinafter SECOND REPORT OF THE RENEWING CONGRESS PROJECT] (noting that the CBO and GAO have been accused of bias); BIMBER, *supra* note 180,

lieves it needs to go in order to avoid any taint of partisanship. Not only does CRS scrupulously avoid any recommendations, but also it has an internal office whose only job is to review all outgoing reports for balance and objectivity.[186]

Second, and relatedly, none of these agencies executes any laws. Whether or not Congress might want to give these entities such powers, it cannot do so under prevailing Supreme Court case law. *Bowsher v. Synar*[187] and *Metropolitan Washington Airports Authority v. Citizens for the Abatement of Airport Noise, Inc.*[188] held that Congress could not delegate executive powers to a person that Congress controls.[189] Executive powers include the execution or implementation of laws—actions that have direct legal consequences. The result is that these congressional agencies gather data and, in one case, make recommendations, but they cannot actually block, amend, or implement any regulations.

Third, each of these entities is a large organization that does important work, but none of them has a focus on innovation or technology. There was a congressional entity with a focus on technology—OTA. And therein lies a tale illustrating both the possibility and the limits of congressional leadership on innovation policy.

OTA was created in 1972 as a nonpartisan entity that would provide Congress with comprehensive research studies on a wide range of scientific issues.[190] The idea was for Congress to be able to rely on a cadre of scientific experts who could serve as neutral technology advisers. It was overseen by a board of directors composed of members of both parties, in an effort to ensure its nonpartisanship.[191]

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at 83–87, 91–92 (describing the various charges of bias and partisanship lodged against the CBO and GAO).

186 BIMBER, *supra* note 180, at 82.

187 Bowsher v. Synar, 478 U.S. 714 (1986).

188 Metro. Wash. Airports Auth. v. Citizens for the Abatement of Airport Noise, Inc., 501 U.S. 252 (1991).

189 *See infra* notes 231–33 and accompanying text.

190 *See* STAFF OF S. COMM. ON RULES & ADMIN., 92D CONG., TECHNOLOGY ASSESSMENT FOR THE CONGRESS 26–27 (Comm. Print 1972).

191 *See* DAVID FAIGMAN, LEGAL ALCHEMY: THE USE AND MISUSE OF SCIENCE IN THE LAW 126 (2000) (stating that the OTA "operated essentially free of political influence and was controlled by a bipartisan board of directors").

OTA's studies were generally highly regarded.[192] But it issued only about thirty studies per year,[193] and thus its reports did not cover many important technology issues. Moreover, like CRS and the CBO, it never made any policy recommendations, formally abjuring such a role in an effort to make it politically viable.[194] Even with the prohibition on policy recommendations, however, over the years many members of Congress (usually Republicans) criticized OTA as partisan.[195] And when Republicans gained control of both Houses of Congress in 1994 for the first time in forty years, one of their first acts was to abolish OTA.[196] So even with its modest portfolio and refusal to make recommendations, OTA was still ripe for abolition when the political winds changed.

OTA's story—and that of the CRS, the GAO, and the CBO—should not surprise us. Lots of nonpartisan entities give advice to Congress. Having an expert advisor inside the legislative branch rather than outside it might be comforting to those who are allowed to choose its leaders. But those who do not choose its leaders may feel that they have no more reason to trust it than they do a nonpartisan expert advisor outside of Congress (e.g., the National Academies). Indeed, they probably have less reason to trust a congressionally created entity, if they believe that the leaders of the congressional entity were chosen by Representatives or Senators who do not share their political goals.[197]

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192 *See* SECOND REPORT OF THE RENEWING CONGRESS PROJECT, *supra* note 185, at 74 (stating in 1993 that the OTA "is considered highly credible by members of both parties and is well regarded by its technical competence").

193 *See* BIMBER, *supra* note 180, at 71.

194 *See* Technology Assessment Act of 1972, Pub. L. No. 92-484, 86 Stat. 797 (codified as amended at 2 U.S.C. §§ 471–481 (2006)); S. REP. NO. 92-1123, at 19 app. (1972), *reprinted in* 1972 U.S.C.C.A.N. 3568, 3584 ("The OTA would not be empowered to make recommendations for legislative action, or to render advice on courses of action, nor would it possess any kind of regulatory powers."); Robert M. Margolis & David H. Guston, *The Origins, Accomplishments, and Demise of the Office of Technology Assessment*, *in* SCIENCE AND TECHNOLOGY ADVICE FOR CONGRESS 53, 64 (M. Granger Morgan & Jon M. Peha eds., 2003) (discussing "OTA's inability to make policy recommendations").

195 *See generally* MICHAEL S. WARNER, HERITAGE FOUND., REASSESSING THE OFFICE OF TECHNOLOGY ASSESSMENT (1984), http://www.heritage.org/Research/GovernmentReform/upload/91208_1.pdf (discussing Republican criticism of the OTA during the early 1980s).

196 *See* BIMBER, *supra* note 180, at 69 (explaining that the OTA "came to an abrupt end in 1995" as a result of being "caught up in the 'Republican Revolution' . . . that followed the election of 1994").

197 The traditional problem with congressional entities is that their leaders are chosen by the majority party (for example, the majority chooses the head of the CBO). *See* Congressional Budget Office, CBO Fact Sheet, http://www.cbo.gov/aboutcbo/factsheet.shtml (last visited Oct. 19, 2008) (stating that the director of the CBO is jointly appointed by the Speaker of the House

3. Agencies

The range of administrative agencies is of course huge, but some loom particularly large for purposes of innovation policy. Perhaps the two most obvious are the PTO and the FCC, as each regulates an area that is subject to innovation (by definition, in the case of the PTO) and that, in reality, has seen an enormous amount of change. For better or worse, the PTO does not engage in substantive rulemaking, and it does not have a staff of experts whose responsibility is making innovation-related policy.[198] Rather, when the PTO makes substantive policy decisions, it typically does so through the ordinary processes it uses to grant, deny, or reexamine patent applications. The FCC, by contrast, does have substantive rulemaking authority (and issues many rules), and it has hundreds of engineers, economists, and lawyers whose job is to help inform the rulemaking process and decisions that the FCC's commissioners make.[199]

In light of its status as a full-fledged agency, the FCC is the most appropriate agency to evaluate for purposes of determining the relative merits of having (and, more importantly, attempting to improve upon) an administrative model in innovation policy.

Perhaps the two most noticeable themes in FCC history have been its catering to powerful interests and, quite relatedly, its thwarting of the deployment of new technologies.[200] The powerful interests

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of Representatives and the President pro tempore of the Senate). The creators of the OTA tried to overcome this problem by creating a bipartisan board that oversaw it. *See supra* note 191 and accompanying text. Even with respect to the OTA, though, many Republicans saw the OTA as guided by Democrats. Chris Mooney, *Requiem for an Office*, BULL. ATOMIC SCIENTISTS, Sept.–Oct. 2005, at 40 ("conservatives suspected the office of being a 'happy hunting ground of [leading sponsor Ted] Kennedy apparatchiks' and 'liberal technocrats'"). Republican members of the board overseeing the OTA defended it, but other Republicans dismissed those defenses. Marcia Gelbart, *Senate Appropriators Decide to Eliminate OTA, but Spare the GAO*, THE HILL, May 31, 1995 ("In spite of appearances on behalf of the 21-year-old agency by Sens. Edward Kennedy (D-Mass.), Charles Grassley (R-Iowa), and Orrin Hatch (R-Utah), [Republican Chairman Connie] Mack still resolved to carry through with plans to scrap OTA.").

198 *See* United States Patent and Trademark Office, USPTO Organizational Structure, http://www.uspto.gov/web/menu/offices.html (last visited Oct. 19, 2008) (failing to include in its listed organizational structure any position focusing on innovation policy).

199 *See* FED. COMMC'NS COMM'N, 2007 ANNUAL FCC EMPLOYEE SURVEY RESPONSES tbl.2 (2007), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-280549A1.pdf (reporting what percentage of FCC employees belong to various occupation groups, including attorney, economist, and engineer).

200 *See, e.g.*, Thomas Hazlett, *The Wireless Craze, the Unlimited Bandwidth Myth, the Spectrum Auction Faux Pas, and the Punchline to Ronald Coase's "Big Joke": An Essay on Airwave Allocation Policy*, 14 HARV. J.L. & TECH. 335, 405–51 (2001) (discussing several examples of how capture by incumbent interests thwarted the development of new technology in the FCC's allocation of spectrum rights).

have often been incumbent industries that the FCC regulates—most prominently broadcasters.[201] And one issue that unites incumbents is the desirability of barriers to entry for potential new competitors—particularly disruptive competitors—so it is not surprising that the FCC's responsiveness to incumbents has entailed hostility to disruptive innovations and innovators.

A prominent example of both hostility to new technologies and responsiveness to powerful incumbents is the early history of FCC regulation of cable television. Broadcasters saw the competition that cable represented as a threat, and they persuaded the FCC to view the matter similarly.[202] The result was that the FCC promulgated both explicit and implicit limits on the growth of cable.[203] Examples of the latter included: tight restrictions on cable operators' ability to import signals from other markets,[204] rules ensuring that broadcasters alone could show certain movies and sports events,[205] and a requirement that cable operators carry all local broadcast stations.[206] Broadcasters

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201 *See, e.g.*, *id.* at 415–22 (discussing how network broadcasters used the FCC to block the expansion of cable television).

202 *See id.*

203 *See* Stanley M. Besen & Robert W. Crandall, *The Deregulation of Cable Television*, 44 LAW & CONTEMP. PROBS. 77, 81–91 (1981) (noting FCC actions that limited growth of cable in an attempt to protect local broadcast stations); Laurence H. Winer, *The Signal Cable Sends—Part I: Why Can't Cable Be More Like Broadcasting?*, 46 MD. L. REV. 212, 263–64 (1987) ("The history of cable regulation largely reflects the FCC's concern over cable's competitive impact on broadcasting and the potential harm to the Commission's basic policy of fostering and protecting local broadcasters who serve local community needs."); *see also* Amendment of Subpart L, Part 91, To Adopt Rules and Regulations to Govern the Grant of Authorizations in the Bus. Radio Serv. for Microwave Stations to Relay Television Signals to Cmty. Antenna Sys., 2 F.C.C.2d 725, 774–78 (1966) (placing limits on the growth of cable, in light of concerns about local UHF broadcasters).

204 *See* Amendment of Part 74, Subpart K, of the Comm'n's Rules and Regulations Relative to Cmty. Antenna Television Sys.; and Inquiry into the Dev. of Commc'ns Tech. and Servs. to Formulate Regulatory Policy and Rulemaking and/or Legislative Proposals, 36 F.C.C.2d 143, 167 (1972); *Amendment of Subpart L*, 2 F.C.C.2d at 782; Amendment of Subpart L, Part 11, To Adopt Rules and Regulations to Govern the Grant of Authorizations in the Bus. Radio Serv. for Microwave Stations to Relay Television Signals to Cmty. Antenna Sys., 38 F.C.C. 683, 690–701 (1965).

205 *See* Amendment of Part 74, Subpart K, of the Comm'n's Rules and Regulations Relative to Cmty. Antenna Television Sys.; and Inquiry into the Dev. of Commc'ns Tech. and Servs. to Formulate Regulatory Policy and Rulemaking and/or Legislative Proposals, 23 F.C.C.2d 825 app. A (1970). Commentators have argued the rules "were designed to protect broadcasting from the perceived threat presented by early cable television but ended up stifling cable's development for no good reason." Jonathan Weinberg, *Broadcasting and Speech*, 81 CAL. L. REV. 1103, 1196 (1993). In 1977, the D.C. Circuit Court of Appeals struck down the rules as outside the FCC's authority. Home Box Office, Inc. v. FCC, 567 F.2d 9, 31–34 (D.C. Cir. 1977).

206 *See* 47 U.S.C. § 534(a) (2006) ("Each cable operator shall carry, on the cable system of that operator, the signals of local commercial television stations and qualified low power stations

sought all of these rules, and the FCC obligingly imposed them.[207] As the FCC Chairman frankly noted in 1971, the FCC interpreted its public interest mandate to include "protectionism for over-the-air broadcasting."[208] Similarly, the FCC frequently supported AT&T's effort to prevent innovators from entering its markets, agreeing with AT&T that it could ban a metal device that snapped on to the end of AT&T's phones to muffle outside noises[209] and later preventing the nascent MCI from directly competing with AT&T.[210] In each case, the competitor was allowed into the market, but only because the courts invalidated the restrictions that the FCC had imposed on competition.[211]

Then there are examples of lengthy delays by the FCC that hindered the development of new technologies. A prominent example (among many) is cellular telephony. Cellular telephony was developed and ready for deployment by the late 1960s.[212] The FCC initi-

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as provided by this section."); *see also* Turner Broad. Sys., Inc. v. FCC, 520 U.S. 180, 185 (1997) (upholding legislation under intermediate scrutiny because the record supported "Congress' predictive judgment that the must-carry provisions further important governmental interests").

207 *See* Amendment of Part C, Part 91, To Adopt Rules and Regulations to Govern the Grant of Authorizations in the Bus. Radio Serv. for Microwave Stations to Relay Television Signals to Cmty. Antenna Sys., 2 F.C.C.2d 725, 736 (1966) ("[T]hese requirements were necessary to ameliorate the risk that a burgeoning [cable] industry would have a future adverse impact on television broadcast service, both existing and potential."); *see also* Jonathan Weinberg, *Broadcasting and the Administrative Process in Japan and the United States*, 39 BUFF. L. REV. 615, 700 (1991) (concluding that in the early regulation of cable, the FCC "sought to preserve the market position of the over-the-air broadcasters, its long-term clients").

208 *Cable Antenna Television (CATV): Hearing Before the Subcomm. on Communications and Power of the H. Comm. on Interstate and Foreign Commerce*, 92d Cong. 34 (1971) (statement of Dean Burch, Chairman, FCC).

209 *See* Hush-A-Phone Corp., 20 F.C.C. 391, 397 (1955) (disallowing the Hush-A-Phone on the rationale that such a "foreign attachment" could harm AT&T's network).

210 *See* MCI Telecomms. Corp. v. FCC, 561 F.2d 365, 380 (D.C. Cir. 1977) (concluding that the FCC's granting of a *de jure* monopoly to AT&T in the telecommunications industry was against the public interest); MCI Telecomms. Corp. v. FCC, 580 F.2d 590 (D.C. Cir. 1978) (rebuking a challenge by the FCC and AT&T to the previous ruling allowing competition in the telecommunications industry).

211 The federal government eventually brought a lawsuit to break up AT&T, leading to the separation of long-distance from local service. This is widely regarded as one of the most successful implementations of antitrust principles to foster competition in services that could be competitive but were dominated by a single company. AT&T had leveraged its market power in local telephony into dominance in other markets, and the breakup of AT&T ended that leverage. But the litigation against AT&T was brought by the DOJ, not the FCC. This was probably the most successful telecommunications regulatory initiative of the last half century, and it was not done by the FCC.

212 *See* John W. Berresford, *The Impact of Law and Regulation on Technology: The Case History of Cellular Radio*, 44 BUS. LAW. 721, 721 (1989) (stating that cellular radio technology was invented in the late 1960s).

ated proceedings on the dedication of spectrum for cellular telephony in 1968.[213] These proceedings extended over six years, and a decision to set aside spectrum for cellular telephony did not emerge until 1974.[214] The FCC then took another seven years to actually authorize cellular service (in 1981).[215] In 1982 the FCC finally started issuing licenses to cellular providers, and in 1983 the first cellular providers began offering service—fifteen years after the FCC began its proceedings on cellular.[216] The FCC's lengthy processes delayed the introduction of cellular telephony by at least ten years, which reduced economic welfare by hundreds of billions of dollars in today's dollars.[217]

The cellular telephony example is an instance of a larger problem with respect to spectrum rights—namely, that the FCC moved very slowly to open up this precious resource to new uses. In many situations, the FCC was slow to remove incumbents despite strong evidence (which proved correct, once the spectrum's use did change) that new uses would be more valuable than those that they would replace. The FCC kept spectrum devoted to, for example, instructional televi-

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213 *See id.* at 724 ("In 1968, the FCC, noting 'serious congestion' on the frequencies that were then available, showed interest for the first time in a 'truly efficient high capacity' mobile telephone service."); Hazlett, *supra* note 200, at 512–13 (noting that FCC proceedings concerning cellular telephony were initiated in 1968).

214 *See* An Inquiry Relative to the Future Use of the Frequency Band 806–960 MHz; and Amendment of Parts 2, 18, 21, 73, 74, 89, 91, and 93 of the Rules Relative to Operations in the Land Mobile Serv. Between 806 and 960 MHz, 46 F.C.C.2d 752, 756–57 (1974) (allocating, for the first time, spectrum for cellular service).

215 *See* An Inquiry Into the Use of Bands 825–845 MHz and 870–890 MHz for Cellular Commc'ns Sys.; and Amendment of Parts 2 and 22 of the Comm'n's Rules Relative to Cellular Commc'ns Sys., 86 F.C.C.2d 469, 470 (1981) (authorizing the assignment of spectrum for cellular communication systems on a commercial basis), *modified*, 89 F.C.C.2d 58 (1982) (Memorandum Opinion and Order on Reconsideration), *further modified*, 90 F.C.C.2d 571 (1982) (Further Reconsideration Order); Bundling of Cellular Customer Premises Equipment and Cellular Service, 7 F.C.C.R. 4028, 4028 ¶ 3 (1992) (noting that in 1981 the FCC first authorized commercial cellular service).

216 *See* Certain Cellular Rural Service Area Applications, 14 F.C.C.R. 4619, 4619 (1999) (noting that the FCC began awarding cellular licenses in 1982); *Mobile Radio*, *in* 11 McGraw-Hill Encyclopedia of Science and Technology 289, 290 (1987) (noting that the first commercial cellular service began on October 13, 1983, in Chicago, Illinois).

217 *See* Jerry A. Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, *in* Brookings Papers on Economic Activity: Microeconomics 1, 22–23 (Martin Nell Bailey et al. eds., 1997) (estimating consumer welfare losses of $33.5 billion per year in 1994 dollars due to the FCC's delay in authorizing cellular services); Jeffrey H. Rohlfs et al., Nat'l Econ. Res. Assocs., Inc., Estimate of the Loss to the United States Caused by the FCC's Delay in Licensing Cellular Telecommunications 1 (1999) (estimating that the FCC's delay in authorizing cellular telephone service reduced economic welfare by more than $86 billion in 1990 dollars).

sion fixed service, low-power television, and fixed microwave services long after it became clear that these services were not very valuable and that other uses of the spectrum would be much more valuable.[218] In other situations, the FCC's spectrum policies have kept some spectrum underutilized or unutilized, which serves the interests of incumbents who do not want competition but freezes out new potential services.[219]

The common theme running through all these examples is protection of incumbents at the expense of new technologies. It may be that some of these new technologies were not, in fact, worth accommodating. But it is remarkable how frequently the FCC sided with incumbents, which indicates that there is much room for improvement in agency decisionmaking.

There is, however, more to the story. In the last two decades the ideological divide between Republican and Democratic commissioners on the FCC has been relatively clear and consistent with respect to most issues: Democrats have been more sympathetic to regulations designed to mandate salutary programming, to use funds to subsidize service for underserved communities, to limit the market power of any given entity and to ensure both citizens' and competitors' access to incumbents' networks, and more generally to require "open access" provisions.[220] Republicans have generally taken the opposite positions, believing that market solutions will be preferable. Examples include mandates of children's television (which a Republican FCC rejected and a Democratic FCC implemented), funding for universal service programs, and proposals for dedicated airtime for political issues and candidates.[221] Similarly, the battle lines were clear in the FCC's massive media ownership review and resulting order (which passed on a three-to-two vote[222]), with Republicans favoring a relaxation of the FCC's media-specific *ex ante* ownership restrictions and more reliance on general antitrust principles, and Democrats favoring

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218 *See* Stuart Minor Benjamin, *The Logic of Scarcity: Idle Spectrum as a First Amendment Violation*, 52 DUKE L.J. 1, 11–25 (2002).

219 *See id.* at 18 (discussing the FCC's decision to set aside spectrum for ultra-high-frequency television that was seldom used due to lack of interest from broadcasters despite the fact that such spectrum could have been put to other uses).

220 *See generally* BENJAMIN ET AL., *supra* note 78; Adam Candeub & Keith Brown, *What Do Commissioners Want? Estimating Regulator Preferences at the Federal Communications Commission* (forthcoming 2008) (manuscript on file with authors).

221 *Id.*

222 2002 Biennial Regulatory Review—Review of the Comm'n's Broad. Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecomms. Act of 1996, 18 F.C.C.R. 13,620, 13,620 (2003).

the FCC keeping its restrictions.[223] Democratic commissioners have also supported provisions designed to open cable networks both to competing channels (e.g., the requirement that cable operators carry local stations and provide leased access to competitors) and to citizens and local governments (e.g., mandating public, educational, and governmental cable channels), while Republicans have generally opposed them.[224]

Thus, when the Telecommunications Act of 1996[225] was enacted in a Democratic administration, it was not surprising that the FCC (usually by three-to-two votes) moved fairly aggressively to unbundle the incumbent local exchange carriers' networks, giving potential local competitors maximum flexibility to pick the elements of the incumbents' network that they wanted to use and implementing a pricing scheme favorable to new entrants.[226] This served as a counter-example to the FCC's historical support for the position of incumbents.

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223 *See, e.g.*, *infra* note 300 (quoting Democratic Commissioner Copps's impassioned dissent after a three-to-two vote in favor of relaxed media ownership rules).

224 *See generally* BENJAMIN ET AL., *supra* note 78.

225 Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (codified as amended in scattered sections of 47 U.S.C.).

226 *See* William R. Drexel, *Telecom Public Policy Schizophrenia: Schumpeterian Destruction Versus Managed Competition*, 9 VA. J.L. & TECH. 5, 11–16 (2004) (describing the steps taken by the FCC to implement the unbundling required by the Telecommunications Act of 1996). The Telecommunications Act of 1996 provided for competition in the local exchange (also known as the local loop) by, *inter alia*, giving new entrants access to elements of the incumbents' network on an unbundled basis. If an element was necessary for a competitor, and if the competitor would be impaired without such access, then the competitor would have access to it. *See* AT&T Corp. v. Iowa Utils. Bd., 525 U.S. 366, 387–88 (1999). Under Democratic leadership, the FCC was much more sympathetic to the arguments of the new entrants, and concomitantly much less sympathetic to the arguments of the incumbents, than the courts proved to be. *See* BENJAMIN ET AL., *supra* note 78, at 810–25; U.S. Telecom Ass'n v. FCC, 359 F.3d 554, 594–95 (D.C. Cir. 2004); U.S. Telecom Ass'n v. FCC, 290 F.3d 415, 417 (D.C. Cir. 2002). Beyond this comparison, it seems fair to say that, in an absolute sense, the FCC's position was very favorable to the new entrants. The Commission allowed the new entrants to bundle together all the elements of the incumbents' networks necessary to provide service. That is, via unbundling, a new entrant could put together a competing service without contributing any physical elements on its own. This is particularly striking because the statute already allowed new entrants to resell, at wholesale prices, the incumbent's local telephone service. Allowing new entrants to combine the unbundled elements into a complete package thus provided an alternative to resale. *See* BENJAMIN ET AL., *supra* note 78, at 772–74, 805–10. The Commission's pricing methodology was advocated by new entrants and despised by incumbents. It priced the elements based on what a hypothetically efficient network would cost to build, and the fact that the actual network might have cost much more (given that prices for computing power have steadily decreased for decades) was of no import. The pricing methodology meant that the new entrants could get access to unbundled elements at fairly low prices. It also meant that combining unbundled elements into a complete package was likely to be much cheaper than resale. *Id.* at 825–42; *see also* Verizon Commc'ns, Inc. v. FCC, 535 U.S. 467, 549–50 (2002).

But it reflected, and reinforced, the prevailing ideological split among the commissioners. And, for better or worse, the FCC's regulations aimed at mandating access to the incumbents' networks were repeatedly rejected by the D.C. Circuit as inconsistent with the Telecommunications Act.[227] This produced a back-and-forth between the D.C. Circuit and the FCC that ended only in 2004, more than eight years after passage of the 1996 Telecommunications Act, when the FCC finally promulgated regulations that the D.C. Circuit found consistent with the Telecommunications Act's language.[228]

We have more than anecdotes on these matters. Daniel Ho recently compiled the largest dataset ever assembled of FCC adjudications and rulemakings, covering 1965 to 2006 and containing 94,693 votes by 46 commissioners in 17,879 rulemakings and adjudications.[229] After careful examination of the voting patterns, Ho found that "the effect of commissioner ideology on voting is profound. Commissioner partisan affiliation exhibits robust and large predictive power over votes, even holding constant the party of the appointing president."[230] Ho's findings strongly corroborate the theory that partisan requirements genuinely constrain presidents and contradict the notion that expertise exclusively drives decisionmaking.

The relevance of this ideological split for purposes of our concern with innovation is twofold. First, it is clear that ideology sometimes drives FCC commissioners to advance redistributional or other nonmarket values in their actions. As we discuss further below, ideological efforts to advance values other than innovation are consistent with our vision of an innovation regulator. The innovation regulator's analysis would feed into the larger cost-benefit analysis, within which distributional questions could be addressed. The innovation regulator would also play a role in ensuring that such values were advanced in a manner that was least damaging to innovation. On the other hand, as the example of the Telecommunications Act makes clear, Democratic and Republican commissioners may simply take different (and per-

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227 *See U.S. Telecom Ass'n*, 359 F.3d at 594–95 (D.C. Cir. 2004) (rejecting certain elements used by the FCC for impairment determinations for purposes of unbundling networks); *U.S. Telecom Ass'n*, 290 F.3d at 417 (D.C. Cir. 2002) (finding that the FCC did not adequately consider the dictates of the Telecommunications Act of 1996 in establishing national rules for the unbundling of networks).

228 *See* BENJAMIN ET AL., *supra* note 78, at 823.

229 Daniel E. Ho, *Congressional Agency Control: The Impact of Statutory Partisan Requirements on Regulation* (forthcoming 2008) (manuscript at 3, *available at* http://dho.stanford.edu/research/partisan.pdf).

230 *Id.* at 4.

haps uninformed) positions on the extent to which mandated access to a platform is necessary to promote innovation. Because this question is a recurrent theme in innovation economics, an innovation regulator would be particularly well-suited to provide input. Ideally, its input on the issue would serve the useful function of reducing the role of ideology in a social science debate that is subject to empirical testing.

C. Implications for the Location of the Innovation Regulator

The foregoing discussion of the specific features of the various institutions that currently formulate innovation policy has significant implications for the location of our proposed innovation regulator.

Creating a more centralized innovation regulator in the judicial branch does not make much sense. The most plausible version of such a regulator would be a court (or perhaps a few courts) that had an "innovation mission" and oversaw all innovation-related cases. Even with greater centralization, however, it is difficult to imagine courts with the expertise necessary to serve as innovation regulators. And even if that level of expertise could somehow be achieved, Article III still stands in the way of any federal court acting as the *ex ante* regulator that would be desirable in at least some cases.

As a policy matter, an innovation regulator that improved congressional decisionmaking would appear quite attractive. Congress has a tremendous amount of influence in shaping innovation policy, and it is quite likely to exercise that influence poorly. A requirement that the regulator have actual power, however, eliminates the possibility of a congressionally controlled regulator. As noted earlier, *Bowsher v. Synar*[231] and *Metropolitan Washington Airports Authority v. Citizens for the Abatement of Airport Noise, Inc.*[232] held that Congress could not delegate the power to execute laws to a person that Congress controls. As the Court stated in *Metropolitan Washington Airports Authority*:

> If the power is executive, the Constitution does not permit an agent of Congress to exercise it. If the power is legislative, Congress must exercise it in conformity with the bicameralism and presentment requirements of Art. I, § 7. In short, when Congress "'[takes] action that ha[s] the purpose and effect of altering the legal rights, duties, and relations of persons . . . outside the Legislative Branch,'" it must take

231 Bowsher v. Synar, 478 U.S. 714 (1986).

232 Metro. Wash. Airports Auth. v. Citizens for the Abatement of Aircraft Noise, Inc., 501 U.S. 252 (1991).

> that action by the procedures authorized in the Constitution.[233]

The result of these cases is a flat prohibition on Congress delegating authority to modify or delay laws to entities that it controls. Congress can exercise such authority itself or delegate it to an executive agency, but Congress cannot give it to a legislative entity.

Congress could promise to take up an entity's recommendation, perhaps even creating a precommitment device for ensuring that the recommendation is introduced in the House and Senate. But introduction is not passage, and what matters is passage. And if there are enough votes to enact the recommendation, it will not matter whether Congress precommitted to consider the recommendation. There is no getting around the fact that the recommendation will have only as much force as Congress chooses to give it. The recommendation may persuade some members of Congress (as may anyone else's recommendation), but that is a far cry from a decision that has real teeth. The recommendation will merely be hortatory.

In order to ameliorate the very significant problem of capture faced by Congress (and to avoid creating situations where agencies' organic statutes force them to act in contradictory ways[234]), Congress still can and should have its own entity (perhaps a revived OTA) making recommendations. Such input could be valuable in persuading members of Congress as well as the general public, even if its legal impact were fairly modest. But the broader role of innovation regulator cannot be played by an entity that Congress controls.

That leaves the executive branch as the most plausible home for an innovation regulator. Although an executive branch regulator

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233 *Id.* at 276 (quoting INS v. Chadha, 462 U.S. 919, 952 (1983)); *see also id.* at 272 ("Congress itself can formulate the details, or it can enact general standards and assign to the Executive Branch the responsibility for making necessary managerial decisions in conformance with those standards."). As Brad Clark put it:

> *Metropolitan Washington Airports Authority* confirms that *Chadha* and *Bowsher* recognize "two basic and related [constitutional] constraints on the Congress." Although it is sometimes difficult to characterize broad policymaking discretion as either executive or legislative power in the abstract, the identity of the actor exercising such power largely determines its constitutionality. If such power is assigned to an executive officer, then the power is presumptively "executive," and its exercise raises only a question under the nondelegation doctrine. If, on the other hand, such power is retained by Congress or assigned to one of its agents, then the power is presumptively "legislative," and the actor in question "must follow the 'single, finely wrought and exhaustively considered, procedures' specified in Article I."

Bradford R. Clark, *Separation of Powers as a Safeguard of Federalism*, 79 TEX. L. REV. 1321, 1385–86 (2001) (quoting *Metro. Wash. Airports Auth.*, 501 U.S. at 274).

234 *See supra* text accompanying notes 75–92.

would not be able to resolve problems created by the plain language of statutes, it could aim to coordinate and promote a pro-innovation agenda that operates within the realm of agencies' delegated authority. Additionally, as we discuss further in Part IV, we would explicitly design our innovation regulator so as to avoid unnecessary proliferation of executive branch offices and (relatedly) agency obligations.

IV. Our Proposal—An Office of Innovation Policy

Having resolved the question of where the innovation regulator should be located, we now turn to the specifics of its operation within the executive branch: first, should the innovation regulator be centralized or decentralized; second, precisely how much legal authority should it have; third, what sort of analysis should it undertake; and fourth, how should it be created? These questions are closely related, and the answers to some depend on answers to others. But all are necessary to flesh out what a desirable executive branch innovation regulator would look like.

A. Degree of Centralization

We begin with the question of centralization. Specifically, should each agency (say, by executive order) be required to take innovation into account, or should we have a regulator that employs a more centralized analysis? The trade-offs between centralized and decentralized regulators are well-known.[235] To oversimplify greatly, centralization allows for efficiency and clarity, but at the possible cost of bad decisionmaking (whether due to capture or otherwise). The centralized regulator might make a bad decision and adhere to it without ever squarely (or perhaps fairly) confronting alternatives. Decentralization allows for experimentation and thus the opportunity to see real alternatives in action. But it achieves experimentation at the cost of disuniformity, lack of focus on the regulatory objective, potentially significant transaction costs for regulated entities subject to a welter of different regimes, and significant government costs arising from so many regulators covering similar ground. We do not seek to rehash that debate here. Our point is simply one of balance: innovation regulation within the executive branch (and outside of it) is currently at one end of the spectrum. Even the centralized appeals court for patent cases sees only a small portion of innovation-related issues (with

235 *See generally* Daniel Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570, 599–613 (1996) (discussing the arguments for and against both centralization and decentralization in the context of environmental regulation).

the perhaps predictable result that its vision of innovation has historically been one in which patents are preeminent).[236] There is no expert entity that looks at innovation generally. The system is entirely piecemeal. Even for those who advocate a decentralized approach, this is extreme. Moreover, as we have noted, the costs of such radical decentralization seem particularly high with respect to innovation. Simply stated, it seems folly to continue with a haphazard regime in which congressional legislation, agency action, and court decisions look at only one particular industry or innovation incentive, and none looks more broadly at innovation policy.

A striking example of the difficulties entailed by decentralization is agencies' response to an executive order that requires them to analyze the impact of their decisions on federalism values.[237] As both the GAO and Nina Mendelson have found, agencies have largely ignored this requirement. Specifically, each found federalism impact statements in less than one percent of rulemakings, despite the fact that a much higher percentage of agency rules would seem to call for federalism analyses under the guidelines set forth in the executive order.[238]

This does not necessarily mean that agencies act in bad faith. The problem may well be that agencies are unfamiliar with federalism analysis and deem the resources entailed in acquiring the relevant expertise prohibitive.[239] The point is simply that asking the existing agencies to take on new, overarching analyses—whether federalism or innovation—is a tall order, and one that may not be filled very well by the wide range of existing agencies.

What about the possibility of moving to the other extreme, and having complete centralization? For example, Congress could replace agencies that currently regulate innovation (whether by design or by default) with a new entity that would do their jobs and focus entirely

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236 *See supra* text accompanying note 53–56.

237 *See* Exec. Order No. 13,132, 64 Fed. Reg. 43,255, 43,255–56 (Aug. 4, 1999). For earlier executive orders similarly requiring agencies to perform federalism impact analyses, see Exec. Order No. 12,612, 52 Fed. Reg. 41,685 (Oct. 26, 1987) and Exec. Order No. 12,372, 47 Fed. Reg. 30,959 (July 14, 1982).

238 *See* U.S. GEN. ACCOUNTING OFFICE, FEDERALISM: IMPLEMENTATION OF EXECUTIVE ORDER 12612 IN THE RULEMAKING PROCESS 4 (1999), *available at* http://www.gao.gov/archive/1999/gg99093t.pdf (finding that only five federalism impact assessments had been prepared for the over 11,000 final rules agencies issued between April 1996 and December 1998); Mendelson, *supra* note 104, at 783 (finding five published federalism impact statements among 600 proposed and final rules during one quarter of 2003).

239 *See* Mendelson, *supra* note 104, at 786 ("Agency lack of expertise might be explained by lack of resources. Training employees in implementing the agency's national programs may be sufficient to exhaust agency resources.").

on innovation. That is, Congress could eliminate agencies with a narrow focus on a particular industry or innovation incentive and replace them with a "Department of Innovation."

Complete centralization would, however, represent a massive, very costly change—the dislocation and transition costs would be great. In part because of those costs, complete centralization is very unlikely. It is difficult to imagine any realistic state of affairs in which Congress decided to abandon administrative agencies that have spent decades building up their own institutional knowledge, not to mention abandoning Congress's own familiarity with the agencies.

Moreover, there are considerable advantages in having agencies with specialized knowledge. Regulation of areas like the environment, telecommunications, and drug safety is enormously complex. Thus it is unlikely that a regulator with expertise in innovation generally (as opposed to, say, environmental issues specifically) would ever understand the intricacies of environmental regulation with sufficient depth to make the very finely calibrated decisions that implementation of environmental statutes requires.

Most importantly, many of the agencies that currently regulate innovation also pursue other, equally important regulatory objectives. For example, as we discussed in Part III, the FCC's Democratic commissioners have often viewed its "public interest" mission as including redistribution and the promotion of salutary programming.[240] Although these objectives could conceivably be pursued outside an industry-specific context (for example, we might have an agency with the mission of "promoting redistribution"), such a reorientation is difficult to imagine and seems undesirable.

We are left then with some advantages to a horizontal regulator (that is, a regulator in charge of innovation, wherever it may arise) and other advantages to vertical regulators (like the FCC, which considers innovation alongside other goals as it regulates telecommunications, or the patent system, which considers innovation—to the extent it considers innovation at all—only in the context of that innovation incentive). Vertical (or sector-specific) regulation allows for greater expertise, but also for tunnel vision and a failure to encourage innovation. Horizontal regulation encourages innovation but at the cost of sector-specific expertise and a focus on other goals.

Even if we reject complete centralization (and complete decentralization), that still leaves a range of possibilities. Fruitful discussion

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240 *See supra* note 220 and accompanying text.

of these possibilities is inextricably linked to a decision about how much authority the regulator should have in the first instance. We turn next to this question.

B. What Authority Should It Have?

As an initial matter, it bears emphasis that, even in situations where the innovation regulator did not have legal authority, its input could be significant. For example, given its expertise it should be the primary executive branch entity responsible for filing amicus briefs in the large number of cases (before the Federal Circuit, the D.C. Circuit, and otherwise) that raise questions of innovation policy. Although a range of agencies (e.g., the PTO and the FTC) sometimes play this role, none is particularly well-suited to doing so. The PTO lacks any social science expertise, and the FTC's mission encompasses many issues other than innovation. In relevant cases before the Supreme Court, an Office of Innovation Policy could assist the Justice Department's Solicitor General in cases where the government is either a party or the Supreme Court asks the Solicitor General for its views.

However, as we have already suggested in the context of OTA, a hortatory role is insufficient. Thus we devote the bulk of our analysis to what legal authority our proposed regulator would have.

1. A First Cut on Power—Rejecting the Extremes

With respect to legal authority, some salient options include: authority to create and promulgate regulations; to amend regulations proposed by existing agencies (or, in the case of agencies like the PTO that act primarily via adjudication, other agency actions); to block proposed agency actions; to remand (but not permanently block) proposed actions for further consideration; to delay proposed actions for further review; and/or to review proposed actions with no authority to take any further action. The innovation regulator's authority could also be enhanced via standards of judicial review—for example, making its decisions unreviewable, placing a presumption behind its recommendations, forcing the substantive agency to justify its action if the innovation regulator disapproved of it, or asking whether the agency took a hard look at the innovation regulator's contrary suggestions.

We begin with a first cut: In our view, the extremes are unattractive. Giving an innovation regulator the authority unilaterally to block or promulgate regulations or adjudications arguably places in-

novation above all other goals that administrative agencies have and, for that matter, turns administrative agencies into mere recommenders to the innovation entity. Such concentration of power in one entity, and the concomitant privileging of innovation above other goals, is excessive. As we have emphasized in this Article, innovation is tremendously important, and we think that fostering innovation should be made an explicit goal of regulatory policy.[241] But *a* goal does not mean *the* goal. Agencies (as directed by Congress) have lots of other important goals—for example, distributional concerns, health and safety protection, and the like. Nothing in this Article is meant to suggest that innovation should replace or overwhelm such other goals, and indeed we do not adhere to such a position. The burden of demonstrating that innovation should trump all other considerations is a very great one, and we do not believe that innovation—or any other single consideration—can meet it. The government rightly has a broad range of sometimes competing goals, and it is hard to imagine a persuasive argument for picking one that would overwhelm all the others. For similar reasons, such a proposal is so politically unpalatable that its chances of passage are slim to none. It will not happen, and for good reason.

At the other end of the spectrum, as we have already noted in the context of our discussion of OTA and Congress, an innovation regulator that made recommendations with no legal consequences whatsoever also seems unattractive, as it would be too easy to ignore.[242] There are many entities—governmental and otherwise—that can and do make recommendations to Congress and to administrative agencies. Without the backing provided by some enforcement mechanism,

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241 *See supra* Part I.A.

242 Like the former OTA, an existing office that has congressional authorization to do interagency work that overlaps significantly with innovation policy—the Office of Science and Technology Policy—is not authorized to issue recommendations with clear legal significance. Thus it appears to have limited power. *Compare* Steve Merrill, *Organizing the White House for Science, Technology, and Innovation Policy* (working paper 2008) (on file with authors) (noting that the Office of Science and Technology Policy is a relatively weak office but attributing that weakness to the fact that it has narrower jurisdiction than other executive offices do).

Similarly, the White House Intellectual Property Enforcement Coordinator, recently created by Congress as part of its 2008 Prioritizing Resources and Organization for Intellectual Property Act, Pub. L. No. 110-403, 122 Stat. 4256 (2008), is authorized to coordinate intellectual property enforcement across agencies but does not appear to have the authority to override individual agencies. In the case of the Intellectual Property Enforcement Coordinator, however, possible weakness may be salutary. As discussed above, *see supra* text accompanying note 51, although intellectual property rights (particularly patent rights) can be important for innovation, they can also impede innovation.

those recommendations often have little weight.[243] Merely making recommendations might make sense in those situations in which the recommender is bringing forward information that was entirely unknown to the relevant decisionmaker and the decisionmaker does not have a vested interest in ignoring that information. But in a significant number of regulatory contexts, including the innovation context, the initial decisionmaker will often have chosen her path with some awareness of information and arguments that would lead in a different direction. The problem, as the previous Part highlights, is that the decisionmaker may suffer from tunnel vision or capture, or more generally be unduly influenced by interests relevant to its mission that are not consonant with the public interest.[244] In those situations, unenforceable recommendations will likely produce very little. If we want our governing structure to take innovation policy seriously, it needs some actual power—some ability to alter the course of proposed regulations.

Once again, agencies' failure to implement the federalism executive order is instructive.[245] Although the executive order requires federalism impact analyses, this requirement is not enforceable in court.[246] With no backup enforcement mechanism to discipline agencies that fail to undertake the federalism analysis, the executive order has been widely ignored.[247] For agencies with no expertise in federalism—or innovation—even a "requirement" in an executive order likely will not be sufficient to prod them to do the analysis at all, much less well.

2. Fleshing Out Its Power

Having made some broad determinations about an innovation regulator—it should have some power and it should be in the executive branch—we now turn to a more fine-grained discussion. We ultimately propose that the President (or Congress, if Congress is willing) create an Office of Innovation Policy ("OIP") that would draw upon, and feed into, existing regulatory review processes but would have the specific mission of being the "innovation champion" within these

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243 *See supra* text at p. 55.

244 *See supra* Part III.B.3.

245 *See supra* text accompanying notes 237–38.

246 *See* Exec. Order No. 13,132, 64 Fed. Reg. 43,255, 43,259 (Aug. 10, 1999) ("This order is intended only to improve the internal management of the executive branch, and is not intended to create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any person.").

247 *See supra* note 149–50 and accompanying text.

processes. We choose the OIP moniker as a matter of convenience, and to highlight its role. OIP need not be a new freestanding entity. It could also be folded into an existing one—for instance, the Office of Science and Technology Policy, which Congress established in 1976 to focus, *inter alia*, on developing "sound science and technology policies and budgets."[248] What matters more than nomenclature and exact location in the alphabet soup of executive branch entities is the power it exercises and the substantive analysis it undertakes.

We begin by returning to the question of how much power our innovation regulator should have. Our earlier discussion rejecting the extremes of power (ability to block agency action versus hortatory power only) leaves a range of options. How do we choose among them? This question of how much power to give to a regulator is a perennial one in institutional design, and it implicates a broad range of considerations that, depending on their weighting, can yield different answers. We do not believe that there is only one possible answer here—indeed, it would be folly to claim that there was. But we think that two axes are of particular importance, and thinking of the proposed innovation regulator in the context of these axes does a fair amount of work.

The first axis is the likelihood of recalcitrance on the part of the executive branch decisionmakers who would respond to the innovation regulator. The discussion so far suggests that the innovation regulator will propose better innovation policies than other decisionmakers will. The question is the level of resistance we should expect from other decisionmakers. Insofar as they will—either out of bad faith or sincere but misplaced concerns—resist the innovation regulator's policies, that would counsel in favor of increased power for the innovation regulator.

This is a basic concern that arises whenever a government wants to reorient existing behavior. If the government wants to push agency officials to do something they were only marginally disinclined to do, a mere recommendation, or a recommendation backed by a very mild sanction, likely would be sufficient to overcome the officials' resistance. A request that officials wear a security badge, or wash their hands after using the bathroom, might fall into this category. If, instead, there is reason to expect strong resistance on the part of agency officials, a bigger club (in the form of greater power) might be neces-

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248 National Science and Technology Policy, Organization, and Priorities Act, Pub. L. No. 94-282, 90 Stat. 459 (1976). For a commentary that makes a suggestion along these lines, see Merrill, *supra* note 242.

sary. Effective integration of a previously segregated environment (like the U.S. armed services before 1948), for example, might require an integration enforcer with considerable powers to overcome recalcitrant agency officials.[249]

The second axis addresses the same general concern with respect to the innovation regulator: to what extent is the regulator likely to be overeager, pushing broader regulatory solutions than would be ideal? As with the question regarding agency officials, this is a question about the likelihood of error compared with an ideal regulatory model that will never be obtained in reality. We know that there will be deviations from an ideal regulatory path, but in some cases the danger of regulatory overzealousness—whether in seeking to add regulations or block them—will be greater than in others. Insofar as that danger increases, it serves as an argument for reduced powers for the innovation regulator.

As we have discussed, we do not favor giving our proposed OIP blocking power. Once the possibility of OIP blocking agency action is off the table, the danger posed by an overeager regulator is greatly reduced. If, as we propose, OIP cannot permanently block agency action, it—along with interest groups—will know that. As a result, interest groups will have less incentive to try to capture OIP than they would if OIP could block regulations. The benefit to controlling an entity flows in significant part from the powers that the entity has. Interest groups currently focus on persuading the agencies that create regulations, and their focus would largely remain there. The absence of a blocking power obviously means that OIP cannot altogether remake government policy in a fundamental way, but it also means that it cannot deliver regulatory gains to interest groups, and that means the danger of OIP overzealousness—and in particular overzealousness in seeking to implement the wishes of interest groups—is diminished.

Turning back to the first axis, we expect some resistance to OIP's ideas. Agencies are familiar with the interests of those they regulate. By and large, they have not focused on innovation *per se*, and have not looked at effects of their actions on the economy as a whole (as opposed to their slice of it). This is not surprising—indeed, it is part of the design of agencies—but their lack of familiarity with the analysis we are proposing likely will create hesitation about adopting it.

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249 *See* Exec. Order No. 9981, 13 Fed. Reg. 4313 (1948) (ordering that "there shall be equality of treatment and opportunity for all persons in the armed services without regard to race, color, religion or national origin").

That said, we do not expect utter recalcitrance. The reason is that the empirical evidence does not support the extreme vision of some public choice theorists—that government officials will always do the bidding of powerful interests who supply them with money, clout, or whatever they maximize.[250] Well-funded groups have a great deal of influence—indeed, that influence is part of the reason that we do not propose that existing entities do the innovation analysis on their own—but influence is not control.

Still, the possibility of recalcitrance either in good faith (e.g., tunnel vision) or bad faith (e.g., capture) cannot be dismissed, and that leads us to propose a mechanism through which OIP's position would be public, and the executive branch official would be obliged to respond to it publicly, even though the official would not be obliged to implement it.

Specifically, in the case of major regulations that are currently subject to cost-benefit review by OIRA, OIP could provide the innovation "module" of the analysis. It could provide this analysis *ex post*, as part of the OIRA review, and also *ex ante*, through guidelines to agencies that supplemented the current, largely static analysis in OIRA's Circular A-4. In other contexts, where OIRA is not involved, OIP could also issue guidelines for thinking about innovation impact. Moreover, it could both propose new agency action and respond to existing agency action. Agencies would be subject to a requirement that they consider and respond to OIP's analysis. OIP's input could not force the agency to take any particular action. Rather, the agency would be required to consider OIP's analysis carefully, and to articulate a reasoned response. This response would become part of the record to which a court would look in the event of a judicial challenge.[251]

At its core, our proposal is for a form of review that is quite common in administrative law—"hard look" review, in which a court con-

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250 *See supra* notes 149–50.

251 With respect to OIRA itself, the question is slightly more difficult as the executive order that currently governs OIRA states that it does not grant judicial review of OIRA's actions (and, relatedly, suggests that OIRA's review is not part of the record before the reviewing court). *See* Exec. Order No. 12,866, § 10, 58 Fed. Reg. 51,735 (Sept. 30, 1993) ("Nothing in this Executive order shall affect any otherwise available judicial review of agency action. This Executive order is intended only to improve the internal management of the Federal Government and does not create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person."). So unless that order is changed, or a court finds that it can review OIRA's actions despite the executive order, OIRA actions are not subject to judicial review.

siders whether an agency took a hard look at all the significant arguments and data, including those that did not support its position, in making its policy decisions.[252] If a reviewing court finds that an agency failed to take such a hard look at an important argument or set of data, the court rejects the agency action and remands it to the agency for such consideration.[253] The agency can adhere to its original position, but it must respond to the countervailing materials.

Our proposal is that OIP's input would be submitted to the agency and become part of the record before the agency. OIP's submissions would thus qualify as material at which the agency should take a hard look, and to which the agency would be required to respond. The agency could reject OIP's position, but it could not do so without demonstrating that it had considered OIP's ideas and analysis. And a reviewing court would play the familiar role that it plays in hard-look review—determining whether the agency took a hard look at OIP's submissions to the agency and thus effectively requiring the agency to show that it considered them.[254]

This is not a guarantee, of course, that the agency will in fact sincerely consider OIP's input, rather than merely pay lip service to it. But that is always the danger of any system that does not mandate particular outcomes. And we believe the public nature of OIP's input would be helpful. The fact that an innovation regulator was publicly

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252 *See* Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Ins. Co., 463 U.S. 29, 43 (1983) (adopting hard look review); El Conejo Americano of Tex., Inc. v. Dep't of Transp., 278 F.3d 17, 19–20 (D.C. Cir. 2002) (applying hard look review); Greater Boston Television Corp. v. FCC, 444 F.2d 841, 851 (D.C. Cir. 1970) ("Its supervisory function calls on the court to intervene not merely in case of procedural inadequacies, or bypassing of the mandate in the legislative charter, but more broadly if the court becomes aware, especially from a combination of danger signals, that the agency has not really taken a 'hard look' at the salient problems, and has not genuinely engaged in reasoned decision-making." (footnote omitted)).

253 *See, e.g.*, *State Farm*, 463 U.S. at 57 (remanding the matter to the NHTSA).

254 A court could provide a similar review of an agency's refusal to adopt an OIP proposal. *See* Massachusetts v. EPA, 127 S. Ct. 1438, 1459 (2007) (stating that "[r]efusals to promulgate rules are thus susceptible to judicial review"). It is not clear that such review is any more deferential than the "arbitrary [or] capricious" review of agency actions under which courts engage in hard look review. *See* 5 U.S.C. § 706(2)(A) (2006) ("[T]he reviewing court shall . . . (2) hold unlawful and set aside agency action, findings, and conclusions found to be—(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law . . . ."); Eric Biber, *The Importance of Resource Allocation in Administrative Law*, 60 ADMIN. L. REV. 1, 34 (2008) ("agency inaction is subject to the same general scheme of judicial review—including deference on issues such as expertise—as the rest of agency decisionmaking"); Dru Stevenson, *Special Solicitude for State Standing:* Massachusetts v. EPA, 112 PENN ST. L. REV. 1, 56 (2007) (stating that in *Massachusetts v. EPA*, "the Court is using stricter scrutiny than it usually would in 'hard look' cases"). In any event, the difference between the two forms of review does not seem to be very great.

questioning an agency's course of action would change the regulatory dynamic. The agency would have to articulate why the analysis put forward by OIP was unpersuasive, and we expect that such a requirement would have a disciplining effect and render some arguments harder to make.

The prospect of hard-look review by a court should be sufficient to require agencies to take OIP's input seriously. But we also propose an additional backstop against agency recalcitrance in the form of remand of agency actions that ignore OIP's input. This backstop would also be the relevant "stick" in cases where OIRA was involved—as we noted above, OIRA's actions might not themselves be subject to judicial hard-look review.[255] In effect, OIP would be able to conduct its own hard-look review, asking whether the agency (or OIRA) responded to its arguments and remanding the action if the agency failed to do so. OIP would be able to remand only once, so that a truly recalcitrant entity could ignore OIP's original submission and its remand, and then promulgate its action as it saw fit (subject, of course, to the danger of a court saying that it failed to take a hard look at OIP's input). But that seems quite unlikely, given that the agency could avoid all the time, energy, and litigation risk entailed in the strategy above by demonstrating that it seriously considered and responded to OIP's analysis.[256]

In this regard, the empirical analysis we have done (discussed further below) of some recent, innovation-related FCC rulemakings is instructive.[257] The FCC was persuaded by the expert submissions of another governmental entity that addresses telecommunications policy—the NTIA—even without a formalized role for the NTIA in the FCC's rulemaking process. Creating a formal role for OIP in agencies' decisionmaking processes, complete with a requirement that agencies take a hard look at OIP's input, will make it only more likely that agencies will take OIP's submissions very seriously.

The example of the NTIA's comments highlights another aspect of OIP's involvement. Like OIRA, it would participate in the rulemaking process, rather than waiting until an agency's rulemaking process was complete in order to give its input. Requiring OIP to wait

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255 *See supra* note 251.

256 Indeed, we suspect that OIP would rarely have to invoke its authority to remand a regulation for consideration of its arguments: the risk created by judicial hard look review, combined with the additional risk created by the prospect of OIP remand, should be more than sufficient to persuade an agency that the costs of compliance are smaller than the costs of noncompliance.

257 *See infra* text accompanying notes 278–82; *see also infra* Appendix.

(as a court must) until an agency completes its rulemaking process might entail significant delays in the already lengthy rulemaking process. And insofar as the agency was persuaded to change its rulemaking, some of the agency's earlier work would have been for naught. Having OIP give its input during the formation of the agency's rule would allow for much more efficiency, and reduce the chances of OIP's analysis adding a lengthy delay in the rulemaking process.

C. What Sort of Analysis Should OIP Undertake, and What Procedures Should It Use?

The discussion so far in this Article gives shape to the sort of analysis OIP would undertake. The primary bases upon which OIP might criticize proposed agency action would be twofold. First, OIP might find that the agency action in question was aimed at promoting innovation, but it did so in a manner that was flawed or at cross-purposes with the actions of other agencies. Second, OIP might find that the action in question aimed to achieve a goal other than innovation, but it could achieve that goal in a manner less damaging to innovation. OIP would also have the important role of providing the innovation component to OIRA's cost-benefit analysis of major regulation.

The principles that OIP would use for its analysis would be quite parsimonious, which should also help to avoid undue delay. Again, the idea would be not so much that individual agencies *could not* use the principles, but that they would not necessarily have the motivation and expertise to use them appropriately. The most important principle (which might, in certain cases, represent the entirety of OIP analysis) would simply be whether, on balance, the proposed regulatory action maximized the sum of innovation incentives for all innovators, both current and future. For example, a compulsory access regime for a particular platform technology might address blockages to optimal improvement caused by one of the many exceptions to the "one monopoly profit"/"internalizing complementary externalities" principle.[258] To that extent, it would improve incentives for future innovators. On the other hand, to the extent that the compulsory scheme undercompensated the platform innovator, it might decrease incentives for future platform innovators (including innovators that might come up with alternative platforms). More immediately, if the platform were not purely a knowledge platform (for example, if it

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258 *See supra* note 50 and accompanying text.

were a physical platform such as broadband cable), compulsory access might decrease incentives to maintain or improve the platform.

OIP's mandate would be to cast the widest possible net in terms of gathering information relevant to application of its decision principles. OIP would seek input from other agencies—both regulatory and funding agencies. It could also learn from nongovernment actors, including familiar sources like think tanks and academics, along with less familiar ones like prediction markets and other means of harnessing the wisdom of crowds.[259]

Turning to the procedures OIP should use, in the context of OIRA much ink has been spilled over the extent to which the applicable transparency requirements are sufficiently rigorous. Relatedly, we might ask whether administrative law requirements that are intended to secure public input (in particular, public comments) should apply to OIP.

With respect to transparency, the answer is clear. At a minimum, transparency requirements similar to those imposed on OIRA during the Clinton Administration should apply. And as we noted above, OIP's input would be part of the record before the agency and thus would be publicly disclosed. There is of course the question of compliance. In the context of OIRA, commentators have complained that its compliance with transparency obligations has been incomplete.[260] OIP would presumably have a greater interest in transparency than does OIRA, however: Unlike OIRA, OIP would not be able to block agency action, so its authority would flow from the degree to which it could persuade others to accept its views. Because it would have somewhat less inherent power than OIRA, OIP would need to make greater use of the "bully pulpit."

Implicit in the discussion above are basic elements of OIP's procedures—gathering information, conducting analysis, and communicating its ideas. These are the core aspects of almost any decisionmaking process for any entity. The real question is whether OIP's processes would include the central distinctive element of the informal rulemaking process under the Administrative Procedure Act ("APA")[261]: the requirement of a process pursuant to which members

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259 *See generally* MICHAEL ABRAMOWICZ, PREDICTOCRACY: MARKET MECHANISMS FOR PUBLIC AND PRIVATE DECISIONMAKING (2008); JAMES SUROWIECKI, THE WISDOM OF CROWDS (2004).

260 Bressman & Vanderbergh, *supra* note 93, at 92–93; Bagley & Revesz, *supra* note 112, at 1309–10.

261 Administrative Procedure Act, 5 U.S.C. §§ 550–596 (2006).

of the public can comment on proposed regulations.[262] Neither agency decisionmaking nor judicial review of agency actions requires a comment process,[263] so its costs and benefits in the context of innovation regulation are worth careful consideration.

There is a longstanding debate among commentators about the benefits of the comment process. Kenneth Culp Davis, for instance, praised the notice-and-comment process as "one of the greatest inventions of modern government," because it allows citizens to participate in the lawmaking process.[264] Other commentators have argued that the influential communications to agencies occur outside the rulemaking process, reducing the comment process to a sideshow. Don Elliott famously stated that "[n]otice-and-comment rulemaking is to public participation as Japanese Kabuki theater is to human passions—a highly stylized process for displaying in a formal way the essence of something which in real life takes place in other venues."[265] More recently, David Barron and Elena Kagan have suggested that "notice and comment often functions as charade" and that "notice-and-comment rulemaking today tends to promote a conception of the regulatory process as a forum for competition among interest groups, rather than a means to further the public interest."[266] Thus, some commentators have suggested that the costs of the comment process exceed its benefits.[267]

The central cost of the comment process is straightforward: the agency's time in reading, assessing, and, when appropriate, responding

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262 Under the APA, the comment process is triggered after the agency publishes a notice of proposed rulemaking, at which point "the agency shall give interested persons an opportunity to participate in the rule making through submission of written data, views, or arguments." 5 U.S.C. § 553(c).

263 The notice-and-comment process is important to other considerations—perhaps most notably for determining whether *Chevron* deference is available under *Mead*—but there is no necessary importance, as a matter of logic or governance, to having a comment process.

264 KENNETH CULP DAVIS, ADMINISTRATIVE LAW TREATISE § 6.15, at 283 (1st ed. Supp. 1970); *see also* Ernest Gellhorn, *Public Participation in Administrative Proceedings*, 81 YALE L.J. 359, 380–81, 403 (1972) ("[I]t is not persuasive for agency staffs to argue that their presence in a proceeding assures representation of the public interest. Since the public interest is multi-faceted, separate representation of identifiable views will promote awareness of the complexities of an issue and its potential impact.").

265 E. Donald Elliott, Comment, *Re-Inventing Rulemaking*, 41 DUKE L.J. 1490, 1492 (1992).

266 David Barron & Elena Kagan, Chevron*'s Nondelegation Doctrine*, 2001 SUP. CT. REV. 201, 231–32 (2001); *see also* Edward Rubin, *It's Time to Make the Administrative Procedure Act Administrative*, 89 CORNELL L. REV. 95, 101–03 (2003) (arguing that party participation under the APA is selective and reactive).

267 *See, e.g.*, Jim Rossi, *Participation Run Amok: The Costs of Mass Participation for Deliberative Agency Decisionmaking*, 92 Nw. U. L. REV. 173, 178 (1997).

to the various comments. Even if comments turn out to add little, the agency has to read and assess them in order to make that determination.[268] That alone is a substantial use of agency resources. Then there is the time and energy required to demonstrate that the agency has taken a hard look at whichever arguments and data in the comments a court may later find significant and thus require an agency response.[269]

The more difficult issue involves evaluating the benefits of comments. A number of researchers have looked at this question. In a recent examination of comments submitted in three rulemakings (a Treasury Department proposal on law enforcement use of financial data, a Nuclear Regulatory Commission proposal on changing the licensing of nuclear plants, and a Federal Election Commission proposal on financing political campaigns and party conventions), Tino Cuéllar found that individuals' comments were less likely to be incorporated into the final regulation than comments made by administrative attorneys.[270] Individual comments were relevant to the agencies' legal mandates[271] but, crucially, those comments lacked the technical sophistication to be seriously considered by the agency.[272] Even so, Cuéllar did find that individuals' comments had some effect on the agency's ultimate rulemaking.[273] Other researchers who have extensively sampled individuals' comments are less sanguine than Cuéllar: they have found that such comments overwhelmingly comprise form letters and exhibit little deliberative quality.[274]

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268 *See* Beth Simone Noveck, *The Electronic Revolution in Rulemaking*, 53 EMORY L.J. 433, 436 (2004) (noting that the comment process is "hopelessly time-consuming for agency officials").

269 *See* Stuart Minor Benjamin, *Evaluating E-Rulemaking: Public Participation and Political Institutions*, 55 DUKE L.J. 893, 919 (2006) (discussing these costs and noting that "[i]t is one thing to hire more comment-readers, and another entirely to require the agency officials who are crafting the regulation to show that they have taken a hard look at the raft of arguments and data").

270 Mariano-Florentino Cuéllar, *Rethinking Regulatory Democracy*, 57 ADMIN. L. REV. 411, 417 (2005) (stating that the current system "leaves rulemaking almost entirely to agencies, their political superiors, organizational players, and those interested parties who can write sophisticated comments").

271 *Id.* at 414 (stating that "laypeople nearly always raise concerns that are relevant to the agency's legal mandate").

272 *See id.* at 479–82 (noting that "dramatic differences exist in the extent of specialized knowledge and technical sophistication reflected in comments from organized interests versus those from individual members of the public" and that "the sophistication with which a comment is written seems to affect the probability that the agency will accept suggestions in that comment").

273 *See id.* at 444 tbl.1, 458–59 tbl.3 (finding that some comments by individuals influenced agencies concerning the financial privacy and nuclear regulation proposals).

274 *See* Cary Coglianese, *Citizen Participation in Rulemaking: Past, Present, and Future*, 55

For our purposes, what is important is not the comment process generally, but its value in the context of innovation. Accordingly, we took a close look at the comment process in three recent FCC proceedings relating to innovation, to see what role it played there.

Commentators have subjected the FCC comment process to a fair amount of criticism. For instance, one study found that 99.8% of indecency complaints originated with a single group (the Parents Television Council).[275] Others have noted the presence of comments that are humorously fraudulent (unless one believes that Joseph Stalin, Jesus Christ, and Paris Hilton are submitting comments to the FCC[276]) and less humorously fraudulent, in the form of form-letter comments

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DUKE L.J. 943, 951 (2006) (noting that a study of significant EPA hazardous waste rules from 1989 to 1991 showed that a small percentage of comments submitted were from individuals and of those comments that were from individuals "most were only the briefest of letters"); David Schlosberg et al., 'To Submit a Form or Not to Submit a Form, That Is the (Real) Question': Deliberation and Mass Participation in U.S. Regulatory Rulemaking 15 (May 5, 2005) (unpublished manuscript, *available at* http://www.online-deliberation.net/conf2005/viewabstract.php?id=14); Stuart W. Shulman, *Whither Deliberation? Mass E-Mail Campaigns and U.S. Regulatory Rulemaking*, 3 J. E-GOV'T 41, 45 (2006) (noting that individuals have overwhelmingly sent form letters, or form letters with an additional sentence or two that adds no new rationales, data, or arguments that the agency would not have already received, and stating that "the emergence of first generation electronic rulemaking has had the singular effect of increasing the flood of duplicative, often insubstantial, mass mailing campaigns"); J. Woody Stanley & Christopher Weare, *The Effects of Internet Use on Political Participation: Evidence from an Agency Online Discussion Forum*, 36 ADMIN. & SOC. 503, 517 (2004) (finding in a study of an agency's rulemakings that most comments posted were in the mold of form letters); Jerry Brito & Jerry Ellig, *Net Neutrality: Where's the Beef?*, TCS DAILY, July 24, 2007, http://www.tcsdaily.com/printArticle.aspx?ID=071807K (noting that in a proceeding asking for evidence discrimination by broadband Internet companies, "[c]lose to 10,000 comments were submitted to the FCC, yet all but 143 were what the FCC calls 'brief text comments,' many of which were form letters generated at the behest of advocacy groups. Of the 143 more extensive comments, only 66 are longer than two pages.").

In fact, agencies often note as much in their discussion of comments. *See, e.g.*, Manufactured Home Construction and Safety Standards on Wind Standards, 59 Fed. Reg. 2456, 2460 (Jan. 14, 1994) (to be codified at 24 C.F.R. pt. 3280, 3282) ("The great majority of the comments were duplicative or identical form letters (of the 1116 total comments, only 75 to 100 included distinctive comments)."); Drawbridge Operation Regulations; Chincoteague Channel, Chincoteague, VA, 71 Fed. Reg. 66,669, 66,671 (Nov. 16, 2006) (to be codified at 33 C.F.R. pt. 117) ("The comments included 540 letters, one petition, two e-mail comments, and 14 oral remarks presented at the public meeting. The vast majority of the letters (471) were mass-produced form letters signed by residents.").

275 *See* Todd Shields, *Activists Dominate Content Complaints*, MEDIAWEEK.COM, Dec. 6, 2004, *available at* http://www.mediaweek.com/mw/esearch/article_display.jsp?vnu_content_id=1000731871.

276 *See* Matthew Lasar, *Faux Celebrity FCC Filings on the Rise*, LASAR'S LETTER ON THE FCC (LLFCC), Dec. 10, 2007, http://www.lasarletter.net/drupal/node/522 (noting comments from those three, plus Donald Trump, who discussed his hairpiece, Leon Trotsky, signed as "Leon Trotsky, 6 feet under," President George Bush, and "Mr. or Ms. 'Fuck the FCC,' who wrote to express outrage at having his/her first name banned from radio and television").

written by powerful incumbents and submitted in the name of individuals who, when contacted by a reporter, said they had no involvement with the comments sent in their names.[277]

We went beyond these critiques and focused on the comment process in rulemakings involving: media ownership rules; proposals for broadband Internet services over power lines; and the use of "white spaces" in the broadcast spectrum (frequencies used as buffers and thus not occupied by transmitters) by new services.[278] All three of these proceedings attracted significant public interest and large numbers of comments from individual citizens. We chose them on the theory that the increased amount of public comment was likely to present the strongest case of individuals' impact on the rulemaking process. Many commentators over the years have noted that the vast majority of rulemakings attract few or no individual comments, and that the comment process is thus dominated by insiders.[279] We chose rulemakings where this "insider" phenomenon was least evident, because

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277 Jeffrey H. Birnbaum & Kim Hart, *Constituents' E-Mail on XM Deal Not Well Received*, WASH. POST, Nov. 22, 2007, at D1 ("A check by The Washington Post of 60 people whose names were attached to identical, anti-merger e-mails instigated by the National Association of Broadcasters, a major opponent of the [XM and Sirius] merger, produced mostly unanswered phone calls and recordings saying the phones were disconnected. Of the 10 people reached, nine said they never sent anything to the FCC, and only one said she remembered filling out something about Sirius but did not recall taking a position on a merger.").

This concern is not limited to agencies. A 2005 poll of 350 congressional staffers found that half of them believed that form-letter messages were sent without the knowledge or approval of constituents. *Id.* This poll also showed that:

> House and Senate offices last year received 318 million electronic messages, up from 200 million e-mails and postal letters in 2004. A large number of those e-mails were produced through interest group Web sites, a standard lobbying practice. Lawmakers are so frustrated with the volume of missives thrown off by those sites that many are placing obstacles in the way of e-mails not written personally by constituents. Barriers include requiring e-mailers to fill out a special form on lawmakers' Web sites and to complete a simple math problem to get their e-mails through.

Id.

278 *See* Unlicensed Operation in the TV Broad. Bands, 21 F.C.C.R. 12,266 (2006); Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Sys., 19 F.C.C.R. 21,265 (2004); 2002 Biennial Regulatory Review—Review of the Comm'n's Broad. Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecomms. Act of 1996, 18 F.C.C.R. 13,620 (2003). All public comments associated with all three rulemakings are accessible via the FCC's Web site. *See* FCC, Electronic Comment Filing System (ECFS), http://www.fcc.gov/cgb/ecfs/ (last visited Oct. 19, 2008). *See infra* note 297 for more details on the proceedings.

279 *See* Coglianese, *supra* note 274, at 951–59 (discussing multiple studies finding few if any comments by individuals in sampled agency proceedings).

members of the public indeed submitted comments in significant numbers.

As to each proceeding, we examined who submitted comments to the FCC; how often those comments were inconsistent with the economic interests of the commenters; how often the comments contained arguments or information that was not contained in earlier comments; whose comments the FCC responded to in its resulting order; and whose comments the FCC agreed with in its resulting order.[280]

The details of our results are set out in the Appendix. But our conclusions are not encouraging. We found that comments were submitted disproportionately by well-organized groups. These included lobbyists for corporations, public interest groups, and groups of like-minded citizens. This last category was sometimes quite significant numerically. There were more than 1000 (out of roughly 6000) comments against broadband-over-power-lines by members of the American Radio Relay League, who opposed the new service because they thought it would interfere with their ham radio communications. There were also hundreds of thousands of comments against the proposed media ownership rules by citizens, the vast majority of whom were responding to organized email campaigns.

None of the comments was against the economic interests of the relevant commenters. This is not surprising—why would we expect commenters to go to the trouble of commenting if they would be pushing a result that was not in their interest?—but it does highlight the potentially limited value of many comments, unless they introduce new information.

And that leads to our next finding, which is that the vast majority of comments from private and public interest groups, and virtually all the comments from private citizens (which were mainly form letters), were duplicative of comments that had already been submitted.[281] In

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280 The first three variables represent a measure of the quality of the submissions. The last two variables speak to their influence in the FCC process. Quality is of course distinct from influence—for example, it may be that comment quality is very high but the agency (hampered by tunnel vision, capture, or some other reason) nonetheless chooses to ignore such high-quality comments. Even so, it is worth measuring influence, if only because it gives us some sense of whether a realistic regulator (as opposed to an idealized one) is likely to be influenced by notice and comment.

281 Of the roughly 6000 comments submitted in the broadband-over-power-line proceeding, more than 5000 were submitted by ham radio operators (many organized by the American Radio Relay League), virtually all of which simply reiterated complaints that broadband over power lines would create interference. Of the more than one million comments submitted in the media ownership proceeding, more than 99% were short statements of opposition that contained

contrast to the literal duplication entailed in form letters, the comments from organized interest groups used different words and different phrasing. But when we looked closely at the substance of the points that commenters made, we found a very high degree of duplication. The words differed, but the arguments did not.[282]

We discuss the FCC's response to the comments at some length in the Appendix. Here we present the bottom line from our examination of the comments and the FCC's response to them: With the notable exception of input by the NTIA, the comment process yielded little more than we might expect from a bare-bones lobbying process. The ideas and information that seemed important (both to us in reading the comments and to the FCC in responding to them) could be

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no new arguments (and often no meaningful arguments at all, but instead a statement of opposition).

This was not a surprise with respect to the comments submitted by individuals. As we noted earlier, *see supra* note 274 and accompanying text, studies examining individual comments submitted in rulemaking proceedings as a whole have found that the vast majority are simple form letters. Similarly, examinations of individuals' comments specifically on the media ownership rules have found that they were quite general, picking up on points made repeatedly by others, and that a huge number were form letters. *See* Michael A. McGregor, *When the "Public Interest" Is Not What Interests the Public*, 11 COMM. L. & POL'Y 207, 222–23 (2006) (observing in a review of the same comments submitted in the same media ownership proceeding that "[m]uch of the information provided in these comments was quite general" and that there were a "large number of form comments filed"); Stuart Minor Benjamin, *Evaluating the Federal Communications Commission's National Television Ownership Cap: What's Bad for Broadcasting Is Good for the Country*, 46 WM. & MARY L. REV. 439, 461 (2004) (noting in a study of the same comments that "there were over 750,000 comments submitted to the FCC, but most of these were short form letters that did not discuss any of the limits in detail"). In its media ownership order, the FCC stated that it "received more than 500,000 brief comments and form letters from individual citizens" that simply "expressed general concerns about the potential consequences of media consolidation." *In re* 2002 Biennial Regulatory Review—Review of the Commission's Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996, 18 F.C.C.R. 13,620, 13,624 (2003).

282 For example, in both the white-spaces and broadband-over-power-line proceedings many commenters claimed that allowing the proposed services would create significant and therefore unacceptable levels of interference. For instance, virtually all of the 5000 comments by ham radio operators in the broadband-over-power-line proceeding made this point. Some of these comments presented specific data about interference, but many others simply stated that interference would arise and would cause problems. This is not surprising, as a fear of interference is the most commonly cited concern for existing users of the spectrum who want to argue against allowing a new use. They know that asking for relief from competition will not be treated as a public-regarding argument, but that a concern about interference will. Accordingly, incumbents almost always express concerns about interference. The result is that a fear of interference is stated and restated, even if the additional statements add nothing to the original point. This is not to say that the duplicative comments had no value, but instead that whatever value they had was not in the form of putting forth new ideas.

expected to be made by any given lobbyist on a particular side of the issue. All the other comments on the same side added little.

The results of the available theoretical and empirical work, including our own, strongly suggest that an APA-style comment process is not essential, or even particularly helpful, for purposes of improving innovation regulation.[283]

D. How Would It Be Created?

One big advantage of our proposal over other possible mechanisms for improving innovation policy is that it can be implemented by executive order. The President can (and often does) create new offices via executive order, and giving a new office the authority to submit materials to agencies raises no constitutional issues.[284] Executive orders do not ordinarily include language about judicial hard-look review. An executive order creating OIP could include such language, but it would not need to. Courts apply hard-look review to all substantial and important arguments and data supplied to an agency, and it seems quite likely that courts would treat comments from a government office focusing on innovation as material and deserving of hard-look review, whether or not there was an executive order (or, for that matter legislation) containing a hard-look mandate.[285]

The only constitutional concern raised by an OIP created through executive order would involve the President's ability to authorize OIP to remand regulations back to independent agencies. Some executive orders on federal regulation have refrained from giving entities like

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283 Some have argued that the value of comments in the rulemaking process could be increased via various changes to the process. Proposed changes might allow for collaboration among commenters (perhaps like *Wikipedia*) and/or ratings of comments (perhaps like *Slashdot*, in which users rate the quality of others' submissions, and the raters themselves are rated for the quality of their ratings). One of us focused on these questions in a different article and came to the conclusion that such an increase in the value of comments is unlikely, for several reasons—perhaps most notably that collaboration and ratings systems do not work well in contexts where policy preferences loom large. *See* Benjamin, *supra* note 269, at 924–32. The other of us believes that these "open source"-type approaches to improving notice and comment may have value, but that it would be premature to impose even potentially improved notice and comment procedures on an OIP before their value had been proved in other, more conventional rulemaking contexts.

284 Indeed, the EPA, Reorganization Plan No. 3 of 1970, 40 C.F.R. § 1.1 (2008), *reprinted in* 84 Stat. 2086 (1970), and a host of other entities were created via executive order.

285 Legislation specifying that agencies must give a hard look to OIP submissions would make an agency's failure to take a hard look an independent statutory violation. But courts already require agency hard-look review as a matter of statutory construction (specifically, the Administrative Procedure Act's prohibition on "arbitrary [or] capricious" agency action), *see* 5 U.S.C. § 706(2)(A) (2006), so specific congressional legislation would be redundant.

OIRA the ability to block regulations issued by independent agencies, authorizing such power only with respect to executive agency regulations.[286] However, there is no case law holding that giving an entity created by executive order the power to block independent agencies' regulations would be unconstitutional.[287] In any event, we are not proposing a veto (which OIRA effectively has), but instead what amounts to a delay. Recall that OIP can remand only once and cannot force the agency to do anything, so an agency that refused even to read OIP's input would be subject only to a delay in promulgating its regulation.[288] The weight of commentary indicates that such a procedure would not violate the separation of powers, and we agree.[289] So

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286 *See* Michele Estrin Gilman, *If at First You Don't Succeed, Sign an Executive Order: President Bush and the Expansion of Charitable Choice*, 15 WM. & MARY BILL RTS. J. 1103, 1154 (2007) (noting that Reagan's regulatory-review executive order did not apply to independent agencies, whereas Clinton's executive order applied the procedural, but not the substantive, review requirements to independent agencies).

287 *See* HAROLD H. BRUFF, BALANCE OF FORCES: SEPARATION OF POWERS LAW IN THE ADMINISTRATIVE STATE 167–97 (2006).

288 Such a regulation would likely flunk a court's hard-look review, but that would be the judiciary, not the executive, effectively blocking the agency's action.

289 Full discussion of the issues bound up in this question would require a separate law review article, and in fact the subject has already occupied many law review articles. Some commentators have argued that the best understanding of the President's powers is that he has the same (great) control over independent agencies that he has over executive agencies, and others have argued with equal conviction that the President has quite limited authority over independent agencies, and still others have occupied virtually every position in between. *See* BRUFF, *supra* note 287, at 412–59 (discussing this debate). We will not attempt to canvass the matter here, but rather will simply note that the arguments put forward by most recent commentators appear to endorse the permissibility of the fairly modest authority we propose—that there are no constitutional impediments to executive orders that require agencies, including independent agencies, to seriously consider policies that the President deems important. *See* Administrative Conference of the United States, Recommendation No. 88-9, Presidential Review of Agency Rulemaking, 1 C.F.R. § 305.88-9 n.3 (1993) (articulating presidential review as "a program of systematic executive oversight and dialogue that involves coordinating agency actions where conflicts exist, and in all cases probing the agency's fact and policy judgments, with the purpose of ensuring that the agency considers factors of importance to the President's policies to the extent permitted by law"); James F. Blumstein, *Regulatory Review by the Executive Office of the President: An Overview and Policy Analysis of Current Issues*, 51 DUKE L.J. 851, 853 (2001); Kagan, *supra* note 93, at 2383–84 (arguing that an increased presidential role in regulation "both satisfies legal requirements and promotes the values of administrative accountability and effectiveness"); Christopher S. Yoo, Steven G. Calabresi & Anthony J. Colangelo, *The Unitary Executive in the Modern Era, 1945–2004*, 90 IOWA L. REV. 601, 730 (2005) (noting that "every president between 1945 and 2004 defended the unitariness of the executive branch with sufficient ardor to rebuff any claims that institutions such as independent counsels and independent agencies have been sanctioned as a matter of constitutional custom or history"); *cf.* Cynthia R. Farina, *The Consent of the Governed: Against Simple Rules for a Complex World*, 72 CHI.-KENT L. REV. 987, 987–89 (1997) (arguing that the increased regulatory role of the President that has emerged since the 1980s is "fatally flawed"); Peter L. Strauss, *Presidential Rulemaking*, 72 CHI.-

although Congress could eliminate any question by passing legislation giving this power to OIP, we do not believe that would be necessary.

The advantage of having an OIP that can be created by executive order is quite significant. Indeed, creation through executive order makes it much more likely that an effective OIP will in fact be created. First, there is the simple fact that it is easier to persuade the President to promulgate a policy than to persuade veto-proof majorities in the House and Senate, and is *a fortiori* easier to persuade the President than to persuade non-veto-proof majorities of the House and Senate plus the President.

Second, there is widespread agreement that the President is more politically accountable to the national public than Congress. Political accountability flows from the fact that the President is elected by a national electorate and Congress is not: small, powerful interests likely will have disproportionate influence in individual districts and states, but are more likely to cancel each other out at the national level.[290] Relatedly, the President has greater reason to be concerned

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KENT L. REV. 965, 968 (1997) (contending that President Clinton's significant role in rulemaking "insufficiently respects the tension inherent in the Constitution between Congress's power to create the instruments of government and allocate authority among them and the fact of a single chief executive at the head of the agencies thus created, with intended and inevitable political relationships with all").

290 *See* JERRY L. MASHAW, GREED, CHAOS, AND GOVERNANCE 152 (1997) ("[T]he voter chooses a representative for that representative's effectiveness in supplying governmental goods to the local district . . . . The president has no particular constituency to which he or she has special responsibility to deliver benefits."); Steven G. Calabresi, *Some Normative Arguments for the Unitary Executive*, 48 ARK. L. REV. 23, 35 (1995) ("Representing as he does a national electoral college majority, the President at least has an incentive to steer national resources toward the 51% of the nation that last supported him (and that might support him again), thereby mitigating the bad distributional incentives faced by members of Congress."); Kagan, *supra* note 93, at 2260, 2331–37 (arguing that the President is more broadly representative and that congressional oversight is reactive because triggered by party complaints; "because the President has a national constituency, he is likely to consider, in setting the direction of administrative policy on an ongoing basis, the preferences of the general public, rather than merely parochial interests"); Lessig & Sunstein, *supra* note 93, at 105–06 ("[B]ecause the President has a national constituency—unlike relevant members of Congress, who oversee independent agencies with often parochial agendas—it appears to operate as an important counterweight to factional influence over administration."); DeMuth & Ginsburg, *supra* note 93, at 1081 (stating that centralized executive branch review "encourages policy coordination, greater political accountability, and more balanced regulatory decisions").

Jide Nzelibe has argued that this conventional wisdom is overstated, because the Electoral College opens the door to a President subject to faction. Jide Nzelibe, *The Fable of the Nationalist President and the Parochial Congress*, 53 UCLA L. REV. 1217, 1231–46 (2006). But even Nzelibe does not argue that Congress is less subject to capture by narrow interests than the President is. Rather, he simply argues that the President may be no better than Congress in resisting "faction." In any event, we believe that because innovation costs and benefits are particularly likely to be geographically concentrated (because centers of innovation are often clus-

about the overall health of the national economy than do members of Congress, given their narrower constituencies.[291] And the innovation with which we are concerned may well negatively affect some regions of the country even as it helps others (the costs and benefits of innovation often are geographically lumpy). Simply stated, we agree with the predominant view that the President's broader electoral constituency makes him more responsive to majoritarian preferences than Congress. The President can be captured by narrow interests, of course, but as we have noted the question is a comparative one among different institutional actors.[292] And in comparison Congress fares much worse. As a result, creation of an innovation regulator via executive order is the most attractive, and feasible, path.

It also bears noting both that our proposed OIP should face less danger of capture than other institutions and that the absolute danger of such capture would be reasonably low. We have already noted two reasons for this: it will not be able to block regulations, and it will have both an obligation and an incentive to operate transparently.[293] But another reason is significant as well: OIP's broad scope will make capture more difficult, and therefore less likely. The classic case of capture arises when an agency (or congressional committee) covers one or two industries. The major incumbents from those industries can band together and exert a huge amount of influence. That is the story, for instance, with respect to broadcasters' decades-long influence at the FCC. An entity that takes a cross-cutting approach to all regulation is less subject to the power of a few major stakeholders precisely because there will not be a few major stakeholders. Some of the entities affected by OIP will of course be powerful, but they will also be diffuse and they will not be repeat players, making it less likely

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tered in particular areas, and the industries they reshape or displace are often similarly clustered), the concerns about Congress's parochialism are particularly salient. *See generally* G. Pascal Zachary, *When It Comes to Innovation, Geography Is Destiny*, N.Y. TIMES, Feb. 11, 2007, *available at* http://www.nytimes.com/2007/02/11/business/yourmoney/11ping.html?_r=1&scp=1&sq=Zachary,%20When%20it%20Comes%20to%20Innovation&st=cse&oref=slogin (on clustering of innovation industries); KAREN G. MILLS, ELISABETH B. REYNOLDS & ANDREW REAMER, CLUSTERS AND COMPETITIVENESS: A NEW FEDERAL ROLE FOR STIMULATING REGIONAL ECONOMIES (2008) (identifying and discussing the centrality of clusters, involving innovation as well as other industries).

291 *See* John O. McGinnis, *Presidential Review as Constitutional Restoration*, 51 DUKE L.J. 901, 922–23 (2001) (noting that the President has more reason to care about the national economy than do members of Congress, because of his electorate and the imperatives created by public interest in the national economy in an election year).

292 *See supra* Part III.A.

293 *See supra* text accompanying note 260.

that they will find it worth their time and energy to organize themselves much better than citizens' groups are organized. Thus the logic of collective action should not produce the results that we see with more narrowly focused regulators.

Conclusion

In this Article we address a perennial question of considerable significance: what are the best strategies for modifying existing institutional arrangements so that they produce a greater focus on a significant issue that is likely to be slighted by ordinary political processes? We consider that question in the innovation context, because we think that answering the question in the abstract is of limited usefulness, and because we think innovation and its regulation are particularly important. Different policy goals will call for different considerations, but the tools of analysis will be similar no matter the policy goal. Thus our focus is on innovation, but we believe that our Article sheds light on the analysis that any commentator should undertake when considering how to modify government structures.

There is no perfect answer. Having Congress pass legislation making innovation the paramount goal of relevant agencies—or setting up a single agency focused on innovation that would subsume existing agencies—would be undesirable. Innovation is an important consideration but should not be the only one. In any event, any proposal that entails legislation changing a group of organic acts is unrealistic. Once Congress begins tinkering with specific language in organic statutes, powerful interests will work hard to shape specific language to suit their goals. Every powerful interest will push for specific language with respect to a given agency that suits its interests.

In contrast to the undesirability (and slim chance) of Congress enacting legislation, it seems realistic to posit the creation of an OIP via executive order. As we noted at the end of the last Part, persuading the President is easier than persuading Congress, and the President is less subject to capture than is Congress.

When we turn to the amount of power to grant to OIP, there are no easy answers. There is a range of power and authority that the President could confer on OIP. The more power the President gives, the greater the changes OIP can make, for good or ill. There is no ineluctable level of power for OIP, but our guiding principle is to give OIP enough authority to be able to have a significant positive impact on innovation policy without giving it so much power that it can run roughshod over the other agencies.

We believe that our proposed structure for innovation policy is more likely than any other to produce desirable results, and we believe that OIP will in fact produce such results. But we also recognize that there is a danger that OIP, like any other human institution, can go seriously awry, and end up doing more harm than good. We believe this is an unlikely result, but we cannot rule it out. This possibility leads us to err on the side of modest powers for OIP, in a spirit of experimentation. We want to give OIP sufficient power to have the experiment be meaningful, and to be able to continue indefinitely if it works out well.[294] But we are wary about giving it broad powers beyond that, in light of the possibility that our prediction of its value proves wrong. It is this spirit of humility and experimentation, combined with our measured confidence about the value of OIP, that leads us to our proposal.

Some might question the significance of our proposal. Isn't creating OIP a fairly small change to the system? Certainly, adding OIP to the existing mix is a smaller change than jettisoning the existing substantive agencies in favor of a new agency with authority to regulate, and increase, innovation in all fields. But we believe our proposal will significantly change the regulatory environment. First, an entity focused on innovation would add an important new voice to the regulatory conversation. There would now be an entity speaking clearly and forthrightly on the centrality of innovation. Second, and more important, OIP would not merely have a voice: it would be able to remand agency actions that harm innovation. It would also have as part of its mission proposing regulation that benefits innovation. This is no small matter. Indeed, it would change the regulatory playing field overnight.

To those who might oppose an OIP on the grounds that making predictions about the future is very difficult—and experts are often wrong when they make such predictions—our response is straightforward: Agencies are *already* making predictions about the future (whether consciously or not) when they make laws that affect innovation. They are simply doing so in a manner that is unsystematic, haphazard, and subject to undue influence by well-funded incumbents. We can do better.

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294 If our confidence in OIP were lower, we would propose a time limit, with a sunset provision to shut down OIP after a given number of years (unless it was renewed).

Appendix

An important part of our analysis, and the most difficult to quantify, involves the FCC's response to comments. The ideal result would demonstrate the persuasive power of certain comments as opposed to others. To prove that a given comment pushed the agency from its initial position to a different one—not merely that the FCC relied on a comment to support a position it had reached independently, but that the comment's persuasive power actually caused the FCC to change its position—would be enormously significant. It is also impossible. Until we can administer a reliable truth serum to agency decisionmakers, we will never know what actually persuaded them.

But there are data short of a truth serum that shed light on the agency's processes. We know: who submitted comments in given proceedings, the contents of the comments, which comments the FCC responded to, and how the FCC responded.

As we noted in the text, we conducted a careful examination of three innovation-related rulemakings that generated large numbers of public comments, involving media ownership rules, broadband-services-over-power-lines, and new uses for "white spaces" in the broadcast spectrum.[295] In the text, we discuss our findings with respect to who submitted comments (largely organized groups and individuals loosely affiliated with such groups), whether the comments were con-

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[295] *See* sources cited *supra* note 278. The "White Spaces" proceeding (formally "Unlicensed Operation in the TV Broadcast Bands") involved the use of spectrum between licensed television stations. The benefits included the capability of long-distance wireless Internet broadcasts and the possibility of enhanced services from traditional television broadcasters. The debate in the comments centered on the possibility of increased interference, with television networks and broadcasters lobbying for the avoidance of the use of white-space spectrum during the digital television transition.

The "broadband over power line" proceeding involved the transmission of broadband Internet signals over traditional power lines. The ability to transmit these signals over traditional, or even slightly modified, power lines would have eliminated the need for the extensive telecommunications infrastructure commonly found in urban areas. This lessened need for a fiber-optic "backbone" would have facilitated the use of broadband-over-power-line technology in rural areas, which generally lag behind urban areas in telecommunications services, leading to the "digital divide." Amateur radio operators, who were already exposed to interference from power lines, claimed here that by their licensed status they were entitled to protection from the additional interference that may result from this additional use of power lines.

The media ownership proceeding entailed a broad review of media ownership rules. It resulted in the promulgation of rules to permit certain combinations of cross-ownership for television stations, radio stations, and newspapers; to relax the limits on ownership of local television stations; to slightly tighten the rules on local radio ownership; and to increase the national television station ownership limit. *See* 2002 Biennial Regulatory Review—Review of the Comm'n's Broad. Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecomms. Act of 1996, 18 F.C.C.R. 13,620, 13,668, 13,711–13, 13,747, 13,814–15 (2003).

sistent with the interests of the commenters (they always were), and whose comments did or did not contain original ideas (the comments from organized groups tended to contain such ideas, while the comments from individuals were near-universally duplicative of other comments).[296]

Here we present in detail our findings regarding whose comments the FCC responded to, whose arguments the FCC accepted, and whose arguments the FCC rejected. For the broadband and white spaces proceedings, we conducted detailed counts of who submitted comments, whose comments the FCC responded to, and whose arguments the FCC accepted and rejected.[297] The data are summarized below:

	Total comments	Arguments accepted	Arguments noted/rejected
Broadband over power lines proceeding			
Individuals	7151	0	7
Citizens' groups	71	3	30
Business/professional interests	175	23	90
Government entities	28	18	14
Other	6	0	0
White spaces proceeding			
Individuals	11,046	0	0
Citizens' groups	23	0	4
Business/professional interests	381	20	81
Government entities	17	3	3
Other	3	0	0

Our data yield several useful insights. First, nothing in the FCC's orders indicated that *individuals'* comments had any impact on the FCC's conclusions. While proving a negative is difficult, the absence of evidence of any form of impact of individuals' comments is striking. Commission orders routinely specify arguments made in comments and then either accept or reject those arguments. Dozens of comments are identified in this way in any given order. In all three of the proceedings we studied, individuals submitted many comments: 7151 in the broadband proceeding, 11,046 in the white-spaces proceeding, and more than 500,000 in the media ownership proceeding. In the

296 *See supra* text accompanying notes 278–83.

297 The extremely large number of comments submitted in the media ownership proceeding (upwards of 500,000 from individuals alone) made tabulating counts for that proceeding impractical.

white-spaces proceeding, the dominant portion of individual commenters advocated the continued protection of broadcast television. In its order, the Commission referred to similar arguments made by broadcasters but never mentioned comments by any individuals or gave any appearance of being affected by them. In the broadband-over-power-lines proceeding, the dominant portion of individual commenters comprised amateur radio operators. The good news for these individual commenters was that the FCC's order did not entirely ignore them: it did briefly note the comments of some amateur radio operators.[298] The bad news was that the FCC rejected their arguments.[299]

Perhaps most striking, however, was the FCC's reaction to individuals' comments in the media ownership proceeding, 99.9 percent of which opposed the proposed rules.[300] The order's only reference to those comments was as follows:

> We received more than 500,000 brief comments and form letters from individual citizens. These individual commenters

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298 The entirety of the order's reference to individuals' comments appeared at the end of a paragraph discussing concerns raised by the American Radio Relay League. The order stated that "[t]his concern is echoed in filings from individual Amateur operators" and appended a footnote saying, "See, e.g., comments of David Garnier; Edwin S. Toal; John E. Matz; Richard E. Polivka; Thomas D. Cox, etc." Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Sys., 19 F.C.C.R. 21,265, 21,309 & n.213 (2004). In the Notice of Proposed Rulemaking for the broadband-over-power-lines proceeding (which was preceded by a Notice of Inquiry, producing comments to the FCC before it issued its Notice of Proposed Rulemaking), the FCC actually quoted the arguments of two individual commenters before rejecting them. *See* Carrier Current Systems, Including Broadband over Power Line Sys., 19 F.C.C.R. 3335, 3342 (2004).

299 *See* Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Sys., 19 F.C.C.R. 21,265, 21,310 (2004); Carrier Current Systems, Including Broadband over Power Line Sys., 19 F.C.C.R. 3335, 3336, 3347–48 (2004).

300 *See* Prometheus Radio Project v. FCC, 373 F.3d 372, 386 (3d Cir. 2004) ("[N]early two million people weighed in by letters, postcards, e-mails, and petitions to oppose further relaxation of the [media ownership] rules."). As Commissioner Copps stated in his dissent to the Commission's order (when the comments had not yet topped the one-million mark):

> This proceeding has generated three-quarters of a million comments now—more than any other proceeding that I am aware of in the history of the FCC. Of those comments, all but a few hundred are from individual citizens. And of those, nearly every one opposes increased media consolidation—over 99.9 percent!

2002 Biennial Regulatory Review—Review of the Comm'n's Broad. Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecomms. Act of 1996, 18 F.C.C.R. 13,620, 13,951 (2003) (Copps, Michael J., Comm'r, dissenting), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-235047A9.pdf; *see also* Jennifer 8. Lee, *Comments Showed Solid Opposition*, N.Y. TIMES, June 3, 2003, at C8 ("More than 520,000 comments on the proceeding were sent in by citizens. . . . [N]early all of them were against relaxing the media ownership rules.").

> expressed general concerns about the potential consequences of media consolidation, including concerns that such consolidation would result in a significant loss of viewpoint diversity and affect competition. We share the concerns of these commenters that our ownership rules protect our critical diversity and competition goals, as they are designed to do, and we believe that the rules adopted herein serve our public interest goals, take account of and protect the vibrant media marketplace, and comply with our statutory responsibilities and limits.[301]

The references to "brief comments and form letters" and to the "general concerns" they contained indicate fairly little FCC regard for those comments, a conclusion reinforced by the FCC's actions in the proceeding: the Commission promulgated its media ownership rules largely in the form it had proposed, by precisely the three-to-two vote everyone expected.[302] The overwhelming sentiment against the rules in the comments submitted by individuals—and the specific points made in those comments—appears to have had no effect.[303]

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301 2002 Biennial Regulatory Review—Review of the Comm'n's Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecomms. Act of 1996, 18 F.C.C.R. 13,620, 13,624 (2003).

302 *See* Benjamin, *supra* note 269, at 908.

303 A study of the FCC's public hearings regarding its recent reconsideration of its media ownership rules found a similar pattern. *See* Jonathan A. Obar & Amit M. Schejter, Inclusion or Illusion?: An Analysis of the FCC's Public Hearings on Media Ownership 2006–2007, at 2 (Mar. 4, 2008) (unpublished manuscript, *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1102764) (analyzing all 732 comments at the FCC's 2006 and 2007 hearings reconsidering its ownership rules and finding that 52.6 percent were against media consolidation and/or deregulation, while only 1.4 percent were in support, and noting that the public seems to have had little impact: in the resulting Report & Order "hardly any reference is made to public comment from the hearings").

A more recent example is also notable. The transition to digital television opened up 108 megahertz of "beachfront spectrum" (i.e., frequencies with very desirable propagation characteristics)—an amount of valuable spectrum that might never be freed up again. This led to an enormous interest in the regulatory regime that the FCC would create, leading to more than 250,000 comments filed by individuals in the FCC's rulemaking proceeding on the regulations it would adopt. Service Rules for the 698–746, 747–762 and 777–792 MHz Bands, 22 F.C.C.R. 15,289, 15,359 n.434, 15,483 app. A (2007). The entirety of the FCC's acknowledgment of and response to those comments was contained in two places: First, in footnote 434, after a string cite, the order stated, "In addition, approximately 250,000 individual citizens filed brief comments both during and after the formal comment periods asking the Commission to ensure that large corporations will not stifle competition and innovation in Internet markets over U.S. airwaves, and to set aside at least 30 MHz of spectrum for open and non-discriminatory Internet access." *Id.* at 15,359 n.434. And second, in Appendix A to the order, listing the commenters, the order stated: "This is a list of parties who filed comments and reply comments within the designated comment periods in the proceeding. This list does not include approximately 250,000 individual citizens who filed brief comments both during and after the formal comment periods.

The FCC's failure to respond to individuals' comments (other than to dismiss or reject them) may reflect the point we made in the text—namely, that there was nothing substantively new in any of them. It bears emphasis, though, that the Commission seems to have been completely unmoved by the simple fact that so many individuals took the time to comment on the issue—and indeed, that such a large majority of those individuals supported the same side in the rulemaking. Simply stated, the role of individuals' comments in shaping the agency's rulemaking appears to be somewhere between trivial and nil.[304]

A second notable insight from our data is that the FCC's response to the comments submitted by individuals stands in contrast to its response to comments submitted by parties other than individuals. The FCC's orders often noted information or arguments advanced in non-individuals' comments; and when it did so it responded to them,

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Of these 250,000 comments, approximately 225,000 were compiled and filed as reply comments by MoveOn.org Civic Action. Approximately 25,000 others were filed as 'Email Comments' to the Commission." *Id.* at 15,483 app. A. So, the more than 250,000 comments by individuals did not even merit their own footnote in the order—just the latter part of a footnote containing citations to other arguments. *Id.* And nowhere in the order does the Commission suggest that it took any particular notice of those comments. *Id.*

304 There are reasonable bases for the Commission's reaction. First, independent agencies were designed to be run by technocrats who were guided by their expertise and insulated from political considerations and popular pressure. *See* LANDIS, *supra* note 132, at 28. The desirability of an agency acting in this technocratic manner has long been the subject of debate among commentators, but it certainly seems reasonable (though not compelled) for an expert agency like the FCC to make decisions on that basis. *Compare id.*, *with* Gellhorn, *supra* note 264, at 403 (arguing for greater citizen involvement in agency decisionmaking because the singular focus of each agency does not adequately represent the public interest as a whole), *and* Arthur Earl Bonfield, *Public Participation in Federal Rulemaking Relating to Public Property, Loans, Grants, Benefits, or Contracts*, 118 U. PA. L. REV. 540, 541 (1970) (discussing the value of public influence over the rulemaking process as a way of informing agencies and providing adequate safeguards for private interests). Congress can always countermand the agency if there is widespread public opposition.

Second, even assuming that individuals' reactions were an important consideration, it is not at all clear what category of individuals should be counted for this purpose. Should it be the public as a whole, or only those who care about the issue? If the answer is the former, then broad-based polls would seem to better reflect the relevant constituency than would the comments by those who took the time and trouble to submit their views.

Third, even assuming that the focus was on those who cared about the issue, it is still not clear that individual commenters are a good proxy, because a large percentage of individual comments are prompted (if not scripted) by campaigns launched by interest groups, and it would be quite surprising if the ability and energy required to organize such campaigns was distributed among interest groups in such a way as to reflect the proportions of concerned individuals who are on each side of an issue. *See* Benjamin, *supra* note 269, at 903–08, 933–35 (discussing how the advent of e-rulemaking merely resulted in a larger quantity of comments advocating the same viewpoints).

accepting or rejecting them, often explicitly.[305] In the broadband-over-power-lines proceeding, the Commission specifically addressed 178 arguments advanced in 274 comments submitted on behalf of business organizations, trade associations, well-organized citizens' groups, professional associations, and federal, state, and local government entities. And in the white-spaces proceeding, the Commission addressed 111 arguments advanced in 421 such comments.

What is perhaps most interesting about the FCC's response to the various parties' comments is that the FCC did not consistently favor one position, or one set of parties. There were powerful interest groups on both sides of each of the matters at issue in these three proceedings, and in none of them did any group get everything it wanted, or even close to it. The outcome in each proceeding did please one side more than the other. This is particularly true of the media ownership proceeding, where the FCC sided with the interests of large media companies much more than it did with their opponents.[306] But in each of the three orders, including the media ownership order, the Commission was careful to use language indicating that it rejected some arguments made by each side.[307]

A final notable point from our study involves the FCC's treatment of the comments submitted by one particular group: the NTIA. The NTIA and the FCC have a somewhat awkward relationship, in that, although they work together to determine what parts of the spectrum will be reserved for federal government use, the NTIA manages all the spectrum assigned to the government, leaving no role for the FCC in that arena.[308] The NTIA also bears principal responsibility for determining presidential policy on telecommunication issues, which it often communicates to the FCC.[309] Thus they are in some ways collaborators and in some ways administrative rivals.

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305 *See, e.g.*, source cited *infra* note 313.

306 The order, relaxing a series of longstanding restrictions on concentration in media ownership, was largely opposed by small media outlets and the public, and was supported by many of the nation's largest newspaper companies and television networks. *See, e.g.*, Stephen Labaton, *Regulators Ease Rules Governing Media Ownership*, N.Y. TIMES, June 3, 2003, at A1; Ben Scott, *The Politics and Policy of Media Ownership*, 53 AM. U. L. REV. 645, 645–59 (2004).

307 As our earlier discussion indicates, the "side" to which the FCC responded was represented by organized groups. Individuals' comments were almost always ignored.

308 *See* 47 U.S.C. § 902(2)(A)–(B) (2006) (providing the NTIA with the authority to assign spectrum frequencies belonging to the United States); BENJAMIN ET AL., *supra* note 78, at 57.

309 *See* 47 U.S.C. § 902(2)(D) (directing the NTIA to "serve as the President's principal adviser on telecommunications policies pertaining to the Nation's economic and technological advancement and to the regulation of the telecommunications industry").

In the broadband-over-power-lines proceeding, the NTIA was the one and only participant whose position was almost wholly adopted by the FCC. The NTIA submitted comments to the FCC, and much of the substance of the resulting order came directly from the NTIA's recommendations. Indeed, the FCC adopted the recommendations of the NTIA even when they came too late for others to respond to, or covered the same ground that other commenters covered. With regard to the former, the NTIA proposed that the FCC require broadband-over-power-line operators to disclose thirty days in advance of their operations the frequencies they would be using.[310] Many commenters complained that this was not proposed in the FCC's Notice of Proposed Rule Making, and they were therefore not given a chance to comment on it.[311] The FCC responded by adhering to the NTIA's recommendation.

As to the latter, many commenters submitted proposed models and engineering studies.[312] After all were submitted, the FCC used the NTIA's study to develop measurement procedures for broadband over power lines. In adopting NTIA's recommendation (flowing from an NTIA study), the FCC explicitly said that it did so in "deference to NTIA's extensive work."[313]

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310 *See* Comments of the National Telecommunications and Information Administration, *In re* Carrier Current Systems, Including Broadband over Power Line Systems 10–11 (June 4, 2004), *available at* http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516212608 (recommending a 30-day advance notice requirement).

311 *See, e.g.*, Petition for Reconsideration of the United Power Line Council, *In re* Carrier Current Systems, Including Broadband over Power Line Systems 3–4 (Feb. 7, 2005), *available at* http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6517182250 ("The 30-day advance notice requirement for the BPL database was not proposed in the [Notice of Proposed Rulemaking], and it was only raised in comments by NTIA among others. Consequently, there was inadequate opportunity to comment . . . ." (footnote omitted)).

312 Indeed, almost every corporation opposing the plan to open white spaces to other uses submitted an engineering study that it claimed supported its position.

313 Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband over Power Line Systems, 19 F.C.C.R. 21,265, 21,310 (2004). Note that the Commission was not stating that it owed legal deference to the NTIA, and indeed administrative law does not entail any legal deference to the NTIA's recommendations. Several commenters objected to such reliance on the NTIA, arguing that its dual role corrupted its position. These commenters claimed that the NTIA has a duty to objectively test issues such as those before the Commission, yet it also must support the telecommunications goals of the executive branch. And, more generally, these commenters noted that they, too, had engaged in extensive work to which they would appreciate deference. But these complaints were to no avail, and the FCC adhered to its reliance on the NTIA. *See, e.g.*, Reply Comments of the ARRL, the National Association for Amateur Radio, *In re* Carrier Current Systems, Including Broadband over Power Line Systems 12 (June 22, 2004), *available at* http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6516214645 (making this argument about the NTIA's dual role as tester and upholder of the executive branch's position).

Thus, the FCC treated the NTIA differently from the other commenters, and this was a difference in kind, not merely degree. The FCC did not suggest anything close to this level of deference to any other commenter, and it did not, in fact, adopt the position of any commenter other than the NTIA.