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Science, Democracy, and the Right to Research

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Abstract Debates over the politicization of science have led some to claim that scientists have or should have a "right to research." This article examines the political meaning and implications of the right to research with respect to different historical conceptions of rights. The more common "liberal" view sees rights as protections against social and political interference. The "republican" view, in contrast, conceives rights as claims to civic membership. Building on the republican view of rights, this article conceives the right to research as embedding science more firmly and explicitly within society, rather than sheltering science from society. From this perspective, all citizens should enjoy a general right to free inquiry, but this right to inquiry does not necessarily encompass all scientific research. Because rights are most reliably protected when embedded within democratic culture and institutions, claims for a right to research should be considered in light of how the research in question contributes to democracy. By putting both research and rights in a social context, this article shows that the claim for a right to research is best understood, not as a guarantee for public support of science, but as a way to initiate public deliberation and debate about which sorts of inquiry deserve public support.

Keywords Right to research · Scientific freedom · Politicization · Science policy · Proposition 71

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The idea of a right to research has long played a role in debates over government regulation of science, most recently with regard to biomedical research. In November 2004, the voters of California passed Proposition 71, the California Stem Cell Research and Cures Initiative, which established $3 billion in public funding over 10 years for stem cell research and also proclaimed "a right to conduct stem cell research."[1] Other states have passed similar measures supporting stem cell research, while some states have passed restrictions. Since 2003 the U.S. House of Representatives has repeatedly passed a ban on human reproductive cloning, while the Senate has not approved the legislation due to disagreements over research cloning.[2] Such measures, and the rhetoric of rights that accompanies them, usually leave unclear what justifies a right to research and what the recognition of such a right would entail for science, science policy, and democratic politics. Those asserting a right to research seem to assume that it would provide a barrier against government interference with science. This assumption, however, may be quite mistaken.

The political meaning and implications of the notion that scientists have or should have a "right to research" merit careful examination. Rights claims often arise in contexts of political conflict over the content of alleged rights. It is thus useful to consider recent debates over the politicization of science, which have shaped the context in which advocates and critics of a right to research have staked their claims. Several recent constitutional analyses of claims for a right to research describe a privileged role for scientific research, but they stop short of declaring research a fundamental right. After sketching this political and constitutional context, this article examines the right to research in light of different historical conceptions of rights. The more common "liberal" view sees the right to research as a way to shelter science from social and political interference. The "republican" view, in contrast, conceives the right to research as embedding science more firmly and explicitly within society. From a republican perspective, all citizens should enjoy a general right to free inquiry, but this right does not necessarily encompass all scientific research. By putting both research and rights in a social context, this article shows that the claim for a right to research is best understood, not as an argument for public support of science, but as a way to initiate public deliberation and debate about which sorts of inquiry deserve public support. This view of the right to research promises greater public support for science than the standard liberal approach, because it links scientists' rights to corresponding obligations, and it highlights the potential contribution of science to democracy.

[1] "There is hereby established a right to conduct stem cell research which includes research involving adult stem cells, cord blood stem cells, pluripotent stem cells, and/or progenitor cells" (California Constitution, Art. 35, sec. 5). Available at http://www.leginfo.ca.gov/.const/.article_35 (last accessed April 13, 2009).

[2] The first such ban by the U.S. House of Representatives was the Human Cloning Prohibition Act of 2003 (H.R. 534). See also http://olpa.od.nih.gov/legislation/109/pendinglegislation/cloning.asp (last accessed April 13, 2009).

The Politicization of Science and the Right to Research

The approval of California's Proposition 71, with its assertion of a right to research, was framed by several years of controversy over allegations of a politicization of science by the administration of President George W. Bush. U.S. Representative Henry Waxman brought the issue to the public agenda by reporting on instances of the Bush administration's manipulating representation on federal advisory committees, changing the text of science policy reports, ignoring or misrepresenting established scientific opinion, and taking actions against government scientists whose advice conflicted with administration policy (U.S. House of Representatives 2003). The Union of Concerned Scientists expanded this inquiry and gave it a more neutral gloss by issuing a report and letter from a bi-partisan (but still left-leaning) group of scientists (Union of Concerned Scientists 2004a, b). The issue showed surprisingly sturdy legs, as it entered the 2004 Presidential campaign in the form of the debate over stem cells, and as the popular press picked it up from the scientific press (e.g., Alexander 2004; Bruck 2004; Foer 2004; Mooney 2005; Smith 2004, 2005).

These allegations of politicized science, while for the most part both factually correct and disturbing, often mistakenly suggested that science advice should somehow be kept free of political or social influences (Sarewitz 2006). Such suggestions are either naïve or themselves partisan. The uncertainty and interdisciplinarity of much policy-relevant science ensures that social and political values play a role not only in the application of expert knowledge but in its generation as well. More generally, modern politics and modern science have been intertwined from their very beginnings (Shapin and Schaffer 1985). Their relationship has often been a mutually productive one, as the liberal-democratic state and civil society have supported science materially and ideologically, just as science has supported liberalism materially and ideologically (Ezrahi 1990).

To be sure, there have been political abuses of science by illiberal regimes (Graham 1993; Macrakis 1993; Proctor 1988). But these examples have only reinforced the widespread belief in a fundamental compatibility between the norms of science and liberal democracy (Merton [1949] 1957), and to some, serve as an admonition against the intrusion of politics into the autonomy of science (Polanyi 1962; Gross and Levitt 1994). Yet this school of thought has a hard time confronting the conflicts between politics and science in liberal regimes. French author and statesman Alexis de Tocqueville thus observed that, although the applied and industrial arts and sciences flourished in the early American Republic, social equality fostered a practical turn of mind and a tendency toward social conformism, which threatened to suppress the spirit of inquiry for its own sake (Guston 1993). Later in the nineteenth century, as science began to professionalize, the state to bureaucratize, and the governing Progressive ideology found much in science to its liking, a "pure science ideal" became increasingly well established (Daniels 1971). Even after the post-World War II emergence of a full-fledged partnership between science and the American state—what some call the "social contract for science"—conflicts arose over the ideology, agenda, and accountability of science (Guston 2000). In particular, the early- and mid-1970s were a time of dispute akin to the

current one, with debates over the "limits of scientific inquiry" regarding human subjects research, recombinant DNA technologies, and race-based inquiries (Holton and Morison 1979).

More recently, as noted previously, some of the most contentious debates regarding the politics of science have been over the regulation or prohibition of stem cell research and human reproductive cloning. Religious conservatives concerned about the rights of embryos have faced off against scientists asserting a right to research, with those concerned about the social consequences of genetic technologies often stuck in the middle. In this context it is worth recalling the 1997 report on human cloning by the U.S. National Bioethics Advisory Commission (NBAC), which acknowledged the cultural and instrumental value of free scientific inquiry, while also pointing to the Nuremberg Code, the Declaration of Helsinki, and other widely accepted restrictions on scientific research designed to protect community safety, human subjects, and the welfare of animals (NBAC 1997, pp. 77–78). "Because science is both a public and social enterprise and its application can have profound impact," the report argued, "society recognizes that the freedom of scientific inquiry is not an absolute right and scientists are expected to conduct their research according to widely held ethical principles" (NBAC 1997, p. 6). The report further argued that if "restrictions on cloning and cloning technology are sufficiently important to the general well-being of individuals or society, such restrictions are likely to be upheld as legitimate, constitutional governmental actions, even if scientists were held to have a First Amendment right of scientific inquiry"(NBAC 1997, p. 78).

The point here is not to justify all forms of politicized science. Indeed, when politics is reduced to partisan one-upmanship, it poses a threat to both intelligent politics and socially and intellectually productive scientific inquiry. But when politics involves inclusive deliberation aimed at articulating diverse perspectives and seeking compromise in the public interest, then politicizing science becomes a means of ensuring that it serves public purposes. As theorists of democracy like Schattschneider (1960) have argued, the expansion of conflict—another term for politicization—is a democratic dynamic that helps break the hold of elites on particular issues. Indeed, the explicit politicization of social institutions once widely assumed to be outside of politics—such as the family and the workplace—has often been necessary to reveal suppressed politics and alleviate injustices (Warren 1999). If invoking a right to research removes contentious public issues from democratic decision making, it may hinder such beneficial forms of politicization.

The U.S. Constitution and the Right to Research

There are differing levels of legal protection for different types of scientific activities (Weinstein 2009). The U.S. Supreme Court has not yet explicitly addressed the question of a right to scientific research, but it has occasionally suggested that there may be a constitutional basis for such a right. In *Meyer v. Nebraska* (262 U.S. 390, 399 [1923]), for example, in which the court struck down a law banning the teaching of foreign languages to children, the court referred to a

right "to acquire useful knowledge" grounded in the liberty guarantee of the Fourteenth Amendment. In *Griswold v. Connecticut* (381 U.S. 479, 484 [1965]), the Court stated that the constitutional freedom of speech and the press includes "freedom of inquiry, freedom of thought, and freedom to teach… indeed the freedom of the entire university community." In *Henley v. Wise* the court invalidated an Indiana obscenity law that would have criminalized the work of researchers at the Kinsey Sex Institute at the University of Indiana. Referring to the *Griswold* case, the court argued that the state had violated "the right of scholars to do research and advance the state of man's knowledge," and that this "chilling effect" on research was "repugnant to the First Amendment" (*Henley v. Wise*, 303 F. Supp 62, 66 N.D. Ind. [1969]). In *Branzburg v. Hayes* (408 U.S. 665, 705 [1972]) the Court drew an analogy between the "informative function" performed by the press and that of "lecturers, political pollsters, novelists, academic researchers, and dramatists." Considering such rulings, several authors have concluded that freedom of speech and expression entails a freedom to conduct the research upon which such expression depends (Coleman 1996, p. 1387; Delgado and Millen 1978; Robertson 1977, pp. 1217–1218, 1222–1224, 1251–1253). A recommendation on scientific freedom by the American Bar Association is more cautious, stating that "the First Amendment Free Speech Clause and the Fourteenth Amendment Due Process Clause *may* safeguard" scientific inquiry (ABA 2002, p. 3, emphasis added).

Most justifications for a constitutional right to research conceive research as either an element of academic freedom, a precondition for free expression, or a form of expressive conduct (Keane 2006, pp. 523–525). The third approach seems to have the greatest plausibility, in part because it does not assert blanket protection for all the diverse activities that comprise scientific research. Indeed, many arguments for a right to research based on freedom of expression rely on the claim that experimentation is a form of expression. But scientists express themselves with regard to many things other than experiments, and experimentation often requires little direct communication or expression (Irwin 2005, pp. 1490–1491; Keane 2006, pp. 524–529). Moreover, the courts have repeatedly upheld legal restrictions on certain types of experiments, notably those involving animals, human subjects, and embryos (Andrews 1998). The First Amendment protects expressive conduct only when such conduct is either (a) symbolic speech, expressive in and of itself (e.g., picketing, flag burning, etc.), or (b) an "indispensable condition" of free expression. Symbolic speech must satisfy the test articulated in *Spence v. Washington*, which requires that "the conduct in question be (1) intended to communicate a message and (2) likely to be understood by its intended audience" (Irwin 2005, p. 1494). Conduct that merely "facilitates" free expression is not protected. Scientists often conduct experiments without intending that either the experiment itself or its results will express a particular message to anyone, so much science cannot be construed as symbolic speech. And although science arguably provides the preconditions for certain types of free expression, "absent very specific exceptions, the Court has never construed general noncommunicative preconditions of speech as indispensable conditions of free expression" (Irwin 2005, p. 1504).

It thus seems that even if the Supreme Court were to rule that scientific research is a form of constitutionally protected expression, it would still be subject to

government regulation (Keane 2006, pp. 39–40). Research is most likely to count as expressive conduct when scientists are intentionally responding to public disapproval. "For controversial science, such as human reproductive cloning, the very act of initiating research sends a message to the world that the importance of pursuing this line of scientific inquiry outweighs any moral or safety objection" (Keane 2006, p. 527). Even such research, however, is subject to government restrictions that satisfy the *O'Brien* test, which requires that restrictions on expression are (a) within the government's constitutional powers, (b) further a substantial government interest, (c) not primarily intended to suppress free expression, and (d) narrowly tailored to avoid restricting activity incidental to the government's purpose (Keane 2006, p. 533). A substantial government interest might relate to public health and safety, or more problematically, to public morality, as long as the moral principles in question are cast broadly as matters of "near-universal concern" (Keane 2006, pp. 541–543).

The relevant points here are two: first, there does seem to be some constitutional basis for a right to research; and second, the right to research is not absolute but is subject to varying degrees of scrutiny and the weighing of competing interests—in short, it is subject to politics. But regardless of whether or how a right to research could be constitutionally justified, what would it mean for democracy?

Rights in the Context of Research

The word "right" derives from the Latin *rectus*, meaning "straight." Historians disagree about the precise origins of the concept of rights, but it seems clear that until the early modern period the term appeared primarily with reference to an objective standard of conduct. To do something "rightly" meant to do it according to such a standard. By the seventeenth century, however, the term's meaning had changed. It referred not to something *being* right but to the notion that people *have* rights (Dagger 1989). The idea of doing something that *is* right changed into the idea of doing something because one *has* a right to do it. What is "right" referred not to conformity with an order of things external to the individual but to a notion of property in oneself that offers protection from the social order. The idea of self-possession was taken to imply rights to life, liberty, bodily safety, speech, religion, and so on—without which the fundamental idea of property in oneself would be meaningless. This shift in the concept of rights retained elements of the older view, insofar as rights were conceived as natural and, hence, existing prior to society and politics.

The notion of rights as natural, pre-political, individual protections against society and the state played a key role in the struggle against absolutism and the rise of liberal democracy in the seventeenth and eighteenth centuries. It has also come to be nearly synonymous with "liberalism" as usually conceived, even though some prominent liberals, such as Jeremy Bentham and John Stuart Mill, did not share the idea of rights as prior to politics (Dagger 1997, p. 12). Indeed, the liberal view of individual rights as defenses against society and the state has long coexisted with a "republican" conception of rights as claims to civic membership. The republican

view emphasizes the link between individual rights and human equality, which is arguably what gives rights claims their moral force. My claim to have a right to something is only persuasive if I recognize that you are entitled to make the same claim. Masters do not demand that slaves recognize their rights, and slaves who demand rights assert their equality with the masters. In this respect, the phrase "equal rights" is redundant (Barber 2000, p. 83).

In practice, of course, early rights claims were only recognized for an elite, and it is instructive to consider the process whereby civil and political rights in the United States were extended beyond the initial circle of propertied white males. It required more than recognizing that women, blacks, and other excluded groups belonged to the category of "human beings," because even when elites considered members of excluded groups "human" they often still found it acceptable to deny them the rights with which all humans were supposedly endowed. The rights of excluded groups were gradually realized, rather, as part of their acquiring the status of equal citizenship (Shklar 1991). The 14th Amendment to the U.S. Constitution thus offered a universal guarantee of due process and equal protection of the law, but its promise was only realized by the particularistic language of the 15th and 19th Amendments, which forbade the denial of voting rights on the basis of race and sex, respectively (Barber 2000, pp. 60–78). Although rights have often been conceived as "universal" and "natural" protections of individual liberty, in practice they have acquired their force only as a result of concrete struggles for social equality. When such struggles are successful, they embed rights claims in political culture and institutions (Dahl 1989, pp. 172–173).

Nonetheless, recent claims for a "right to research" have usually been phrased in the individualist-protective language of pre-political natural rights. The sponsors of California's Proposition 71, for example, with its declaration of a "right to conduct stem cell research," explicitly presented the proposition as part of a larger effort to depoliticize stem cell research. "One of our goals," the proposition's chief sponsor and advocate, Robert Klein, stated, "is to take politics out of medicine" (Bruck 2004). Proposition 71 thus exempted the California Institute for Regenerative Medicine (created by the proposition) from conflict-of-interest and open meetings laws, and it stipulated that the proposition's provisions could not be changed by the State Legislature for 3 years, and then only by a 70% vote in both houses. The institute is governed by a poorly named Independent Citizens Oversight Committee, which thus far includes scientists, patient advocates, and representatives of research universities and biotech companies, but no public interest groups (Center for Genetics and Society 2006).

As soon as it passed, Proposition 71 was challenged by two lawsuits (later decided in favor of the stem cell institute), and the Institute for Regenerative Medicine was accused of cronyism and the misuse of public funds. There has also been strong public support for state legislation requiring greater transparency and accountability at the stem cell institute. In short, Proposition 71 has itself become a political issue. This failure of the proposition's depoliticization strategy indicates that California's right to research has gone wrong. Part of the reason may reside in the liberal-protective conception of rights with which proponents of a right to research have defended their claims.

To some extent, of course, it makes perfect sense to frame a right to research as a "liberty" or "negative right" against state inference rather than a "positive right" to the social and material means that such research requires (Dagger 1997, pp. 21–22; Robertson 1977). Positive rights impose obligations on others to ensure the conditions required for the fulfillment of those rights: for example, people only have effective enjoyment of their right to vote if they also have transportation to the polls and their votes are accurately counted. The right to emigrate, in contrast, does not oblige the government to subsidize citizens' trips abroad, although it may require the government to ensure a basic level of material welfare (Waldron 1993, pp. 9–10). Some zealous advocates of science may criticize any limits on government funding as an attack on the rights of researchers, and critics of government regulation often imply that scientists alone should determine what to do with whatever public funds they receive (Polanyi 1962). Nonetheless, even if government arguably has a positive duty to promote scientific research in general, most commentators recognize that government cannot fund all promising research (Wilholt 2006). In this respect, the issue is a matter of what government may prevent rather than what it must promote.[3] Nonetheless, even when conceived in the limited sense of a protected liberty or negative right, the right to research is not properly conceived as a *fundamental* right, such as the right to free expression or the free exercise of religion, because it is not entailed by the principle of human equality. Equal human dignity does not require an effective opportunity to conduct scientific research. Nor is conducting research plausibly conceived as a necessary component of human fulfillment, a notion which underlies recent developments in the concept of "human rights" (Dagger 1997, p. 22). The United Nations Universal Declaration of Human Rights, for example, specifies rights to basic education, fairly paid work, a standard of living adequate for health and well-being, and even rest and leisure—but not scientific research. Rather than recognizing a right to research, Article 27 of the UN Declaration recognizes a right to the moral and material benefits resulting from a person's scientific, literary, or artistic production (i.e., copyright protection), as well as a right "to enjoy the arts and to share in scientific advancement and its benefits" (United Nations 1948). A right to enjoy the products of science is not the same as a right to produce it.[4]

Similarly, the Universal Declaration on the Human Genome and Human Rights, adopted by the United Nations Educational, Scientific and Cultural Organization (UNESCO), notes the many potential social benefits of genetic research, but it also states that "such research should fully respect human dignity, freedom and human rights, as well as the prohibition of all forms of discrimination based on genetic

[3] "The government routinely refrains from funding activities it otherwise permits, or even guards as constitutionally protected rights. A line of Supreme Court decisions stretching from 1977 to 1991, dealing with abortion and government funding, established the principle that the Constitution does not require government to fund even those activities that the Constitution protects" (President's Council on Bioethics 2003).

[4] Note that the argument here has little to do with the basic human rights of scientists (i.e., the rights scientists share with all people), the protection of which has long been the admirable mission of the Science and Human Rights Program of the American Association for the Advancement of Science. See http://shr.aaas.org (last accessed April 13, 2009).

characteristics" (UNESCO 1997). Article 12(b) states, "Freedom of research, which is necessary for the progress of knowledge, is part of freedom of thought," and Article 14 and 15 both encourage governments to promote scientific research. But these same articles also make clear that governments should "consider the ethical, legal, social and economic implications of such research," and that research is to be conducted "with due regard for the principles set out in this Declaration, in order to safeguard respect for human rights, fundamental freedoms and human dignity and to protect public health."

It seems appropriate to conclude that the right to conduct scientific research is not a fundamental human right. Just as most seventeenth-century defenders of private property rights meant not a general "right to property" but rather the rights of the propertied, proponents of research rights seem to be thinking not of a general "right to do research" but primarily of the rights of researchers. Not everyone is capable, even in principle, of doing the sort of advanced laboratory research that proponents of a right to research seek to defend. This limited generalizability of the claim for a right to research limits its moral force.

There may be a more persuasive way, however, to think about a right to research. Here it is useful to consider: Just what is the question to which a right to do research is the answer? One question is about the proper relation between science and politics, and between scientists and other citizens. A right to research conceived as an individual protection answers this question by drawing a philosophical boundary between science and politics. It asserts a quasi-private sphere within which the political community has no jurisdiction. If a right to research were conceived on the social or "republican" model discussed above, however, rather than the individualist-protective or "liberal" model, a right to research might be conceived as a claim for the inclusion of science—and the intellectual and practical aspirations of scientists—within the political community. The fact that not everyone is a scientist poses less of an obstacle for this model, because it conceives the right to research as a particular instance of a more general right to inquiry enjoyed by all citizens. Non-scientists are also more likely to accept the notion of a right to do research if it is explicitly coupled with an acknowledgment that the preservation of this right depends on scientists fulfilling its corresponding obligations. Unless scientists begin to see themselves more explicitly as part of society, and their rights claims as claims to membership in that society, non-scientists have little reason to grant them the autonomy (and public funding) they desire.

Research in the Context of Rights

Robert Dahl provides a starting point for developing a theory of research in the context of rights. He writes that "we can probably agree that fundamental political rights would include the right to vote, to free speech, to free inquiry; the right to seek and hold public office, and to free, fair, and moderately frequent elections; and the right to form political associations" (Dahl 1985, pp. 21–22). There are two relevant questions here: What is a fundamental political right? And what does a right to free inquiry entail?

Dahl views "fundamental political rights as comprising all the rights *necessary to* the democratic process." Indeed, "the right to self-government through the democratic process is itself one of the most fundamental rights that a person can possess." Dahl further explains that "if people are entitled to govern themselves, then citizens are also entitled to all the rights that are necessary in order for them to govern themselves" (Dahl 1985, p. 25; see also Dahl 1989, pp. 169–170). Dahl contrasts this view with the standard liberal theory of prior rights, mentioned above, which holds that rights are anterior to politics and, therefore, provide a brake on what democracies can rightfully do. The theory of prior rights is closely associated with the idea that rights derive from natural law or God's law and, as such, are not influenced by human law. In standard liberal theory, rights are to be used "*against* the democratic process" rather than in support of it (Dahl 1985, p. 25, original emphasis). Similarly, as noted previously, the claim for a right to research has usually been portrayed as a right against the democratic process rather than necessary to it.

Although there is clear precedent for understanding fundamental political rights in the American context as prior to democracy—for example, the influence of natural rights thinkers on the Founders, or the language in the Declaration of Independence that such rights are an endowment from a Creator—the Constitution offers no such sense of their priority. Nor does the balance of the history of their interpretation by U.S. courts. Indeed, the history of widely varying interpretations of the Bill of Rights shows that rights are a distinctly political concept and, as such, not amenable to conclusive philosophical definition. Moreover, even the American Founders arguably conceived rights in distinctly political terms, emphasizing not the philosophical justification for natural rights but their political recognition by a particular community, as suggested by the Declaration's phrase, "*We hold* these truths to be self-evident" (emphasis added; see Arendt 1968, p. 246). As the Declaration's lead author Thomas Jefferson recounted the year before his death, the Declaration "was intended to be an expression of the American mind, and to give to that expression the proper tone and spirit called for by the occasion. All its authority rests then on the harmonizing sentiments of the day."[5] The then-emerging American political community constituted its very identity in part through the recognition of "natural rights," so to assume that these rights were somehow prior to the political community puts the cart before the horse. The point is not that natural rights are either philosophically incoherent or dangerously abstract, as Bentham and Edmund Burke both argued (Dagger 1997, pp. 19–21). Rather, the point is that belief in "natural rights" is itself a matter of convention. Because conventions vary according to national and cultural context, claims for a right to research should always be understood with reference to particular political traditions.

At this point it may be helpful to distinguish between three sorts of rights: (1) "political rights" that are integral to the democratic process (e.g., freedom of speech and assembly); (2) "social rights" that are external to the democratic process but may be a precondition for it (e.g., basic education, health insurance, satisfaction of basic material needs); and (3) "civil rights" that are external to the democratic

[5] Thomas Jefferson to Henry Lee, 8 May 1825 (Jefferson 1984, p. 1501).

process but entailed by human equality, and hence, supportive of the type of moral culture that democracy requires (e.g., religious liberty, property, privacy). These rights are not mutually exclusive (e.g., freedom of speech is both a civil and political right), and people's views on the content of each category vary by time and place. But each category has a distinct relationship to democracy (see Dahl 1989, pp. 89, 167; Waldron 1993, pp. 271ff.). The third type of rights—civil rights—are arguably more subject to restriction than the first two types, because the first two types of rights are part of the political process required for citizens to negotiate disagreements about the meaning and scope of all rights. Moreover, any restrictions on the first two sorts of rights are difficult to revise, since such restrictions limit the process of revision itself (Dahl 1989, pp. 182–183). This is not to say that the only justification for civil rights resides in their instrumental contribution to democracy. But other justifications—for example, justifications based on philosophical speculation or constitutional interpretation—remain abstract and powerless until they have been enacted through a democratic process and incorporated into democratic culture (Habermas 1996, pp. 118–131).

This point can be clarified by considering that minority groups (in this case, scientists) who seek to assert their rights against a majority often assume the majority is driven by narrow self-interest. Defending the minority's rights thus appears to protect the interests of minorities against those of majorities. This assumption, however, neglects the possibility that majority decisions may be justified with reference, not to majority interests, but to the majority's opinion about the public interest. Indeed, the majority may have already considered the rights defended by the minority, and it may have determined that the rights defended by the minority are outweighed by those defended by the majority—not merely because they are the rights of the minority, but because they do not (in the majority opinion) support the public interest (Waldron 1993, pp. 392ff.). It often happens, of course, that majorities rule on the basis of their narrow self-interest. But insofar as the liberal-protective language of rights reinforces a view of individual interests as prior to politics, it actually increases the likelihood of this sort of majority tyranny. By insisting on a protective right to research, scientists may actually reinforce the majority's tendency to embrace a politics of narrow self-interest, which is what threatens their minority interests in the first place.

At the same time, however, there are several reasons for including "inquiry"—as distinct from the more narrow category of "scientific research"—in the scope of fundamental (not prior) political rights that are integral to the democratic process. Democracy requires a citizenry informed about any number of topics, including those related to understanding political decisions (e.g., who are my representatives and what actions have they taken on my behalf?), the formation of preferences (e.g., what conditions exist in the world and how do other people feel and reason about them?), and the substantive outcomes of government policies (e.g., what is the connection between my preferences and the actions my representatives have taken on my behalf?). If citizens were not free to conduct such inquiries, then fundamental political activities—the act of voting, for example—would be rendered as useless as if there were only one candidate on the ballot.

The rule of law is also dependent upon the right to inquiry. For example, although the concept of "notice" is embedded in the common understanding of due process—that is, laws and their sanctions must be publicly available to those who may be held to their strictures—the state expects that citizens will make reasonable inquiries into the existence of such laws that may pertain to them. In the liberal image of democracy associated with modern science, where the citizen is a "modest witness" analogous to the laboratory experimentalist, as well as in common parlance, ignorance of the law is no excuse (Ezrahi 1990, pp. 87–89). Similarly, the concept of *discovery* is embedded in the general understanding of criminal and civil law. In the former, defendants have the right to inquire about the nature of the charges and the evidence against them and to conduct independent investigations into the charges and evidence. In the United States after the *Gideon* decision (*Gideon v. Wainwright*, 372 U.S. 335 [1963]), this right is construed such that it is even incumbent upon the state to provide expert legal counsel to make such inquiries.

This discussion suggests that there is good reason to include a right to inquiry in any list of fundamental civil and political rights, and that such a right is plausible in the contemporary understanding of rights in the United States. But it does not speak to the extent or content of the right to inquiry, that is, what activities must be included in free inquiry, what the boundaries are of such activities, and what priority inquiry has when it runs up against other rights. Although the state may have an obligation to protect and even support a citizen's right to inquiry when the citizen is accused of a crime or requires information about the actions of public officials, does the state have an obligation to protect or support inquiry regarding, for example, the origins of the universe, the efficacy of anti-ballistic missiles, or the functions of stem cells? Answering this question may be facilitated by distinguishing among the various sorts of inquiries that citizens actually conduct.

If rights are best understood from a "republican" perspective, as argued previously, and if the right to inquiry is important in part because of the ways that it supports democratic governance, then it follows that those inquiries that best support democratic goals have the strongest claim to protection and support. That is, the right to inquiry is stronger when the inquiry makes a distinct contribution to democratic processes than when it does not. This view is supported by prevailing interpretations of the U.S. Constitution's First Amendment protection for freedom of the press, which hold that a free press is crucial for many of the informational processes necessary to democracy. Indeed, the Supreme Court's rulings against various efforts to restrict the work of journalists may be the paradigmatic example of a right to inquiry being given priority because of its civic dimension (Lewis 1991). Because the constitutional right to inquiry is predicated on the importance of inquiry for democratic governance, the extent of the right to inquiry is measured by democracy's yardstick.

From this perspective, inquiries that help resolve political questions would have the strongest claim to protection. This is not to say that other inquiries are without merit or should go without protection or support; rather, it is to acknowledge what the courts have tended to do with freedom of speech and the press anyway, that is, to create a hierarchy which, for example, prefers political speech and publication to commercial speech and publication, and both to pornography. This line of argument

leads to the perhaps surprising conclusion that in some cases the social sciences may have a stronger claim than the natural sciences to a right to research. To the extent that natural scientific and engineering inquiries produce knowledge useful for democratic governance, they would have greater protection as well. There are many areas of inquiry that seem fundamental to the democratic process and should therefore be protected as such. Social-scientific knowledge may be used in the design of democratic procedures, for example, and natural scientific knowledge may provide vital information for effectively addressing social problems. Indeed, if democracy is conceived as a mode of collective problem solving, then some areas of scientific research might be deemed integral to democracy. Particularly in combination with other fundamental rights like association, the right to inquiry allows groups of people to understand how they may pursue their own interests or visions of the good in society.

There are also many types of scientific inquiry that are not integral to the democratic process but contribute to its material preconditions (e.g., economic growth, scientific literacy, health, physical security), a point recognized in the patent clause of the U.S. Constitution. And there are types of scientific inquiry that support democratic culture, broadly conceived, simply by satisfying intellectual curiosity or offering aesthetic pleasure. In this sense, scientific inquiry as a social activity contributes to a robust and pluralistic civil society. These types of inquiry deserve some degree of protection, but according to the scheme laid out above, they merit commensurably less protection than inquiries integral to the democratic process. Scientific research pursued primarily for curiosity's sake, for example, may deserve some degree of protection as a civil right, analogous to freedom of religion or the right to private property, but it may not deserve the stronger protection afforded to research conceived as a political or social right. Of course, given the unpredictability of science, the social and epistemic significance of research often changes over time, in which case its claim to protection changes as well.

Finally, it is worth noting that much scientific research has far greater power to transform society than other forms of inquiry. Efforts to defend a right to research tend to emphasize the capacity of science to convey information, neglecting its material and cultural dimensions, such as its capacity to transform social relations and shape the natural and built environment. Scientific ideas become socially established not only through inquiry and discussion but through becoming embodied in technologies and material structures, educational curricula, and future research that builds upon them. In this sense, science and technology are forms of legislation (Winner 1977, p. 323). To think of science as a form of legislation does not entail that it should be created in the same way as conventional legislation—i.e., through majority vote by elected representatives—but it does suggest that its creation should be subject to some democratic rules and that the burden of proof for a right to scientific research is higher than for other types of inquiry.

In this respect, one might distinguish among different kinds of scientific inquiry based on their relative degrees of sociality, materiality, and communication. Thought experiments, for example, are relatively asocial, require little or no material resources, and can produce insights with little or no direct communication. Scientific inquiries that require a moderate level of sociality, materiality, and

communication include field observations and data collection (in either the natural or social sciences). Laboratory experiments and clinical trials incorporate these social and material dimensions to a still greater degree. The *prima facie* case for a right to research is strongest at the lowest levels of sociality and materiality, because research of that sort tends to have fewer social impacts.

Conclusion

This article has set out a preliminary argument about a right to research. The two primary conclusions are, first, that claims such as that of California's Proposition 71 to a right to research are inappropriately framed as rights against the democratic process rather than in support of it. Second, although a right to inquiry is defensible as a fundamental political right, much of its moral force, and its priority relative to other rights, depends on the civic dimension of the inquiry. If this argument seems to discount concerns about recent government restrictions on scientific research, two points are worth noting: First, although asserting a right to research may help shield scientists from public interference in a decision about whether to pursue a particular line of research, it does not establish that the research in question is in fact worth pursuing. Rights protect choices; they do not guide choices (Waldron 1993, pp. 72–73, 85). It may be a violation of the right to research, as well as counterproductive, to ban some types of research—for example, research attempting to discern a biological basis for race differences in IQ—but such research may still be unwise for reasons scientific, ethical, or both (Kitcher 2001, pp. 93–108). In this respect, asserting a right to research should be understood as a way of initiating rather than concluding public deliberation and debate on what types of research government should restrict or promote (Brown 2006).

Second, rights claims are neither the only nor the most effective barrier to public restrictions on science. There are many other ways of restraining misguided politicians besides making claims about rights. James Madison argued, for example, that the U.S. Constitution's system of checks and balances and the separation of powers would provide far more protection for minorities than a Bill of Rights. The latter he derided as "a mere demarcation on parchment" (Madison [1788] 1961, p. 313). Similarly, John Stuart Mill believed minority rights would never be safe "unless a strong barrier of moral conviction can be raised against the mischief" (Mill [1859] 1978, p. 13, see also 71; Waldron 1993, pp. 404–405). Rights claims are most effective when their proponents eschew the temptation to avoid politics, attempting instead to combine talk about rights with efforts to generate the institutional and popular support that give rights their real power.

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