Introduction

Relating Science and Democracy

For a full century, from the 1860s to the 1960s, American intellectual life took its central dynamic from a powerful impulse to build up the scientific disciplines. What accounted for this enormous investment of energy in science? Some interpreters invoke professional or class interests, arguing that the proponents of science sought to increase the status of their disciplines or of the professional middle class more generally. Others view the period's scientific advocacy in religious terms, as an outgrowth of either a theologically liberal form of Protestantism or a thoroughly secular worldview. This book augments and in many respects challenges such interpretations by offering a broadly political reading of the push to make America scientific. It excavates one of the most important and least examined dynamics in American intellectual and political history: a massive effort to mobilize science, so successful in its industrial applications, as a resource for strengthening American democratic practices. The book traces the origin of the campaign to turn the science-centered university into a tool for building a new culture. It explores where and how this project unfolded and explains why it largely failed to achieve its political goals, even as it powerfully aided the growth of scientific authority in general.

The campaign to bring science to bear on American public culture initially aimed at inspiring citizens to protect their autonomy from the state, but it soon became aligned with an emerging Progressive or "social liberal" attempt to strengthen the state as a counterpoint to big business. Many of science's advocates concluded that every modern society would feature both massive corporations and a regulatory apparatus to tame their ill effects. They then turned to the creation of citizens who could bring business and the state into line with their collective needs. These figures believed that science, properly understood and internalized, could protect Americans from a stultifying existence in the German theorist Max Weber's "iron cage" of bureaucracy.

Of course, Weber himself was responding to the longstanding claim of many European thinkers that the spread of science among the public would make possible the modes of self-government endorsed by republicans, liberals,

and democrats. This political hope has constituted a central strand of Western thought since the Scientific Revolution, although it has come under fire in many precincts of the academic left since the 1960s. A century earlier, in the 1860s, a broad, science-centered political vision became a major component of American thought as well. Yet American political culture featured an egalitarian, populist edge that rarely registered among intellectual elites in other Western nations. In the post-Civil War United States, more than anywhere else, the advocates of a scientific culture felt obliged to actively reconcile the claims of scientific research with the requirement of democratic legitimacy. Never doubting that science and democracy would prove harmonious and even mutually reinforcing, they worked to transform European conceptions of science in keeping with American understandings of politics.

That work of intellectual reconciliation, undertaken during a crucial period in American economic, social, and political development, provides the subject matter for this book. The chapters trace the diverse and ever-shifting formulations of the commonly heard assertion that science embodied and inculcated a set of personal virtues, skills, beliefs, and values that could ground a modern, democratic public culture. They highlight the impact of this broad discourse about science and democracy on the career choices and knowledge claims of scores of scholars as it wound its way through American intellectual life from the creation of the modern universities in the 1860s to the postwar era.

To be sure, few advocates of science in this period thought it offered a comprehensive worldview equivalent to that of Protestant Christianity, which in one form or another had grounded American public culture since the Revolution. In fact, the late nineteenth century brought vigorous efforts to distance science from "ultimate" questions of theology and metaphysics. But even many of the thinkers who banished such ultimates still deemed science sufficiently robust *ethically* to take over from religious authorities the crucial political role of forming democratic citizens. In their view, science could largely replace what historians call the "pan-Protestant establishment": that cluster of mainlinc Protestant denominations whose leaders controlled the nation's major cultural institutions and acted as an informal religious establishment in the mid-nineteenth century.

After the Civil War, many advocates of science began to claim that it offered not only practical techniques, and thus material plenty, but also the cultural and political benefits that flowed from mainline Protestantism, without the divisive theological claims and metaphysical baggage. The expectation that science would provide civic resources as well as technical knowledge shaped not only descriptions of scientific inquiry, but also the direction and results of research programs in a wide range of fields. Much intellectual work of the late nineteenth and early twentieth centuries took its shape from a desire to demonstrate that a scientifically grounded democracy could work – that human beings were constituted such that they could bring their institutions into line with their needs, and thus sustain self-governance, without converging on a shared Protestant worldview.

As a number of historians have shown, the resulting understandings of science had a great deal in common with the liberalized forms of "low church" Protestantism they claimed to transcend.[1] Less frequently noticed is the fact that many of science's leading advocates and practitioners consciously sought to take over from Protestant leaders not only the interpretation of physical and biological nature, but also the core social function of cultural reproduction – the very formation of individuals. In the wake of the Civil War, a new generation of educational reformers began to argue that science could make ethical citizens. It is unclear how many ordinary Americans agreed that science carried with it an ethical orientation suited to democratic citizenship. But an ethical and ultimately political reading of science strongly conditioned the rise of the scientific disciplines and the modern research universities.

This understanding of science had a particularly profound effect on the growth of the human sciences.[2] But it is easy to miss the ethical and political impulses that animated so many figures in those disciplines. In fact, a burgeoning literature on the American human sciences after 1870 suggests that their practitioners systematically disengaged from public culture. According to the usual story, human scientists retreated institutionally from the public sphere and spoke only to other specialists, while building a high intellectual wall around their disciplines by sharply differentiating science and values. This line of argument holds that professionalism and "scientism" – an epistemological and methodological approach in which investigators aim at value-neutrality by rigidly suppressing their emotions and normative commitments – held sway in the human sciences by the 1920s.

Many interpreters argue further that the ostensible disengagement of science-minded scholars from public concerns actually had powerful political effects. The advocates of science, this account asserts, "naturalized" the beliefs and values of an emerging managerial elite by reading them into reality itself and selling the resulting forms of knowledge back to the mushrooming groups of professional administrators who ran increasingly bureaucratic organizations in the private sector, the philanthropic world, and the state apparatus. In short, the advocates of value-neutral professionalism enlisted on the side of the new managerial class against its radical, populist, egalitarian, and democratic challengers. Thus, the human sciences, despite – or rather, because of – their professed neutrality, became the ideological bulwark of a powerful new structure of social hierarchy.[3]

[1] See especially George M. Marsden, *The Soul of the American University: From Protestant Establishment to Established Nonbelief* (New York: Oxford University Press, 1994) and Julie A. Reuben, *The Making of the Modern University: Intellectual Transformation and the Marginalization of Morality* (Chicago: University of Chicago Press, 1996).

[2] I use this term – more familiar to European scholars than their American counterparts – to encompass the social sciences, philosophy, and closely related fields of natural science and the humanities.

[3] These interpreters often assert that the social sciences, and the universities centered on them, arose precisely to fill the knowledge needs of industrial capitalism and the administrative state. This

Such an approach to the historical study of science and American politics – what we might call the "disengagement thesis" – reflects a strong tendency among critical scholars since the 1960s to doubt that science can be a progressive force in society. Organization, administration, rationalization, bureaucracy, materialism: these are the social phenomena with which many commentators today habitually associate science. This critique, which echoes Weber's more radical interpreters, treats science as synonymous with an instrumental rationality that buttresses the rule of the dominant elite by claiming to offer only technical means to externally determined ends. The recent flourishing of critical theory, interpretivism, and poststructuralism has fueled an outpouring of critical histories of the human sciences, as dissident practitioners have joined with professional historians to rewrite each discipline's twentieth-century career as a story of defeat and alienation at the hands of professionalizers and value-neutralists.

But the story of value-neutrality's ascent, however well told, is not a substitute for a full-fledged political history of scientific thought in the United States. The value-neutrality narrative does not include the whole range of claims about science's political meaning. This book challenges the preoccupation with professionalism and scientism that characterizes so many recent studies, finding instead that the ideal of engagement with public discourse and normative questions remained central in the human sciences until the 1940s. To be sure, many scholars at the time honored that ideal only in the breach or, more typically, pursued it by taking up interpretive questions whose relevance to public concerns is difficult to grasp without a keen understanding of the specific disciplinary contexts. Still, even those figures who embraced normative engagement more clearly in theory than in practice believed that science found its true

analysis treats science and "corporate liberalism" – an expertly managed form of capitalism – as two sides of the same coin: e.g., Stanley Aronowitz, *Science as Power: Discourse as Ideology in Modern Society* (Minneapolis: University of Minnesota Press, 1988); Clyde W. Barrow, *Universities and the Capitalist State: Corporate Liberalism and the Reconstruction of American Higher Education, 1894–1928* (Madison: University of Wisconsin Press, 1990). See also the essays in George Steinmetz, ed., *The Politics of Method in the Human Sciences: Positivism and Its Epistemological Others* (Durham: Duke University Press, 2005). A slightly softer version of this analysis appears in John M. Jordan, *Machine-Age Ideology: Social Engineering and American Liberalism, 1911–1939* (Chapel Hill: University of North Carolina Press, 1994). A related body of work identifies modern science's naturalism – its elimination of theological commitments – as the source of its value-neutrality: Edward A. Purcell Jr., *The Crisis of Democratic Theory: Scientific Naturalism & the Problem of Value* (Lexington: University Press of Kentucky, 1973); Marsden, *The Soul of the American University*; Reuben, *The Making of the Modern University*; Jon H. Roberts and James Turner, *The Sacred and the Secular University* (Princeton: Princeton University Press, 2000); Christian Smith, ed., *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life* (Berkeley: University of California Press, 2003). In many of the latter group of texts, the desired alternative to modern, naturalistic science is a religiously committed science that takes God's existence as its starting point. By contrast, most critics of value-neutrality look instead to moral commitments drawn from nontranscendent sources: the arts and literature, for example, or shared cultural or subcultural identities, or established traditions of moral reasoning or hermeneutic interpretation.

raison d'être in reshaping the public mind, not in providing the knowledge base for rationalized state administration or industrial production.[4]

This revised account of science's desired political effects suggests new interpretations of its actual political impact in the twentieth century. Political historians now stress the contingent, contested, and internally fractured character of the "New Deal order" that appeared so robust to the critics of the 1960s and 1970s, even as it began to crumble under their feet.[5] Intellectual historians, however, have not yet interrogated the longstanding assumption that scientism and a technocratic, managerial liberalism were hegemonic in the mid-twentieth century. In fact, of the leading cultural elements that mobilized and divided Americans in the twentieth century, divergent beliefs about the character of the natural and human worlds have been by far the least well integrated into scholarly understandings of American politics. Historians know a great deal about racial divisions and class identities, and even more about changing views of the relationship between the state and the economy – views that largely structure the American party system today. But the other key element of today's party system – namely, widespread disagreement on foundational scientific claims about natural and social phenomena – continues to be poorly understood. Anti-statism and evangelical Protestantism appear everywhere in the new histories of twentieth-century America, but debates over the personal qualities required of democratic citizens and the relative capacities of science and religion to produce those qualities have been largely ignored.[6]

[4] A number of important books have paved the way by adopting a broadly political approach, although their interpretations differ from mine: James T. Kloppenberg, *Uncertain Victory: Social Democracy and Progressivism in European and American Thought, 1870–1920* (New York: Oxford University Press, 1986); Dorothy Ross, *The Origins of American Social Science* (New York: Cambridge University Press, 1991); Jeffrey P. Sklansky, *The Soul's Economy: Market Society and Selfhood in American Thought, 1820–1920* (Chapel Hill: University of North Carolina Press, 2002); and Howard Brick, *Transcending Capitalism: Visions of a New Society in Modern American Thought* (Ithaca: Cornell University Press, 2006). Several essays in David A. Hollinger's *In the American Province: Studies in the History and Historiography of Ideas* (Baltimore: Johns Hopkins University Press, 1985) and *Science, Jews, and Secular Culture: Studies in Mid-Twentieth-Century American Intellectual History* (Princeton: Princeton University Press, 1996) highlight the cultural and political ambitions of scientific thinkers.

[5] A good summary is Jefferson Cowie and Nick Salvatore, "The Long Exception: Rethinking the Place of the New Deal in American History," *International Labor and Working-Class History* 74, no. 1 (2008): 3–32.

[6] Theoretically, my account is indebted to work in the overlapping fields of history of science and science and technology studies (STS), work that has opened the possibility of understanding science's intersection with political commitments very differently. Scholars in these fields have come to view science in a thoroughly historicist manner, recognizing that "science" is a linguistic category, not a preexisting natural object. As such, its meaning is essentially fluid, contingent, and contested across all of its domains of application. To be sure, historians of science, like their counterparts elsewhere, have generally assumed that the story of objectivity claims and their impact is *the* story of science and politics in the twentieth century. Revealingly, the leading long-range histories of objectivity and quantification ignore American developments before World War II, whereas Cold War America often appears as the culmination of the political transformations associated with modern science: e.g., Robert N. Proctor, *Value-Free Science? Purity and Power in*

Although the visage of the philosopher John Dewey graces the cover of this book, the attentive reader will note that Dewey's own writings play a relatively small role in the narrative. But as the leading theorist of the push to make America scientific and a universally recognized symbol of that cultural project, Dewey casts a powerful shadow over the narrative. Historians' treatment of Dewey neatly encapsulates recent interpretive tendencies in the history of the human sciences. In 1968, when the United States Postal Service issued the stamp from which the cover image is taken, heterodox philosophers had begun to rehabilitate Dewey's reputation in their field as part of a broader attack on the highly specialized, technical approaches dominating it. So, too, had critical social scientists frustrated with the political quiescence of their own disciplines. Meanwhile, Dewey's writings on school reform had inspired a new generation of progressive educators to focus on the whole child. And student activists had recaptured Dewey's political ideal of a democracy centered on vigorous political participation by ordinary citizens.

As they unfolded through the 1970s and 1980s, these overlapping "Dewey revivals" rescued Dewey from the charges of critics such as Clarence Karier and R. Jeffrey Lustig who deemed him a consummate representative of "corporate liberalism." Like his fellow Progressives, Karier and Lustig contended, Dewey sought to build up a strong administrative state and an accompanying network of bureaucratic "parastate" organizations that would stave off radical challenges to capitalism by using social-scientific expertise to mitigate the most disruptive effects of the boom-and-bust cycle.[7] By contrast, Dewey's new champions recognized that he was a lifelong critic of corporate liberalism, a radical democrat who sought to put power back into the hands of the people rather than simply transferring it from business tycoons to social scientists, managers, and other middle-class experts. Turning afresh to Dewey's epistemological and political claims in the light of their own era's challenges to the liberal mainstream, these interpreters portrayed Dewey as a forceful but increasingly isolated advocate of a mode of Progressive thought that called for participation by citizens and normative public engagement by intellectuals, rather than administration by scientific experts.[8]

Modern Knowledge (Cambridge: Harvard University Press, 1991); Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton: Princeton University Press, 1995); Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007). The same focus on objectivity characterizes a newer body of literature centered on the emotions, scientific selfhood, and modes of personal discipline: e.g., Rebecca M. Herzig, *Suffering for Science: Reason and Sacrifice in Modern America* (New Brunswick: Rutgers University Press, 2005).

[7] Clarence Karier, "Making the World Safe for Democracy: An Historical Critique of John Dewey's Pragmatic Liberal Philosophy in the Warfare State," *Educational Theory* 27 (1977): 12–47; R. Jeffrey Lustig, *Corporate Liberalism: The Origins of Modern American Political Theory, 1890–1920* (Berkeley: University of California Press, 1982).

[8] Robert B. Westbrook's authoritative intellectual biography represented the culmination of the new approach to the study of Dewey: *John Dewey and American Democracy* (Ithaca: Cornell University Press, 1991).

But crucial insights were lost in this otherwise salutary interpretive shift, because it sheared away two central features of Dewey's life and work. First, his new champions tended to ignore or downplay one of the central organizing principles of Dewey's thought, namely his deep confidence that modern science contained within itself the seeds of an egalitarian, democratic culture, if only its reach could be extended into the realm of human behavior. Second, these treatments of Dewey have left the impression that he was virtually alone in carrying his brand of Progressivism forward into the 1920s and 1930s. After World War I, this literature suggests, Dewey was a kind of democratic lone wolf, holding out bravely against the tidal surge of corporate liberalism.[9]

Thus, the new body of historical writing on Dewey has profoundly altered our understanding of his thought, along with that of a few other Progressives rediscovered as democratic heroes, most notably William James, Jane Addams, and W. E. B. Du Bois. But Dewey's new champions have left the background picture of his interwar milieu largely untouched, essentially as the theorists of corporate liberalism rendered it. Having plucked Dewey and a few others from the political swamp, these interpreters write off the rest of the interwar intelligentsia as "managerial liberals" or "administrative progressives" who viewed science as value-neutral and sought to make it the centerpiece of a technocratic polity.[10]

In truth, however, a great many of Dewey's contemporaries shared his broad view of science's cultural promise and social role, even though few could match his firm commitment to deliberative democracy. This book shines a powerful light on both Dewey and his time by reconstructing a forgotten

[9] Westbrook codified this image of a heroic, embattled figure at odds with interwar American thought. On the one hand, according to Westbrook, Dewey was the saving remnant of the golden age of normatively grounded public participation in the late nineteenth and early twentieth centuries. On the other, he was a forefather to the rebirth of participatory democracy and associated modes of teaching and philosophizing in the 1960s. Westbrook attributes to most twentieth-century liberals the theory that ordinary citizens cannot and must not play a significant role in public decision-making. Thus, he writes, Dewey's participatory, democratic vision made him a "deviant" from the "liberal-realist" stance that dominated American thought from World War I onward. To be sure, Westbrook, unlike many of Dewey's recent champions, takes stock of Dewey's democratically tinged view of science. "The literature on Dewey's social thought," he notes, "is plagued by a failure to give such key terms as 'scientific intelligence,' 'social control,' and 'adaptation' the meanings he intended." In a pivotal section of the biography, Westbrook demolishes the assumption that Dewey embraced a narrow, value-neutral understanding of scientific inquiry. Yet he does not apply the same interpretive lens to Dewey's equally science-minded counterparts in the interwar period. *John Dewey and American Democracy*, xiii–xvi, 120–147. Earlier in his career, Westbrook had followed the corporate-liberal line on Dewey (558).

[10] Philosophers interested in recovering American naturalism as a full-fledged movement have connected Dewey to his closest philosophical interlocutors, but have provided little sense of his engagements across disciplinary lines. John Ryder, ed., *American Philosophic Naturalism in the Twentieth Century* (Amherst, NY: Prometheus, 1994); Victorino Tejera, *American Modern, The Path Not Taken: Aesthetics, Metaphysics, and Intellectual History in Classic American Philosophy* (Lanham, MD: Rowman & Littlefield, 1996); John P. Anton, *American Naturalism and Greek Philosophy* (Amherst, NY: Prometheus, 2005).

tradition of thinking about the democratic possibilities of modern science that dated back to the Civil War and extended forward to the Cold War. It restores science to its proper place at the center of Dewey's thought, and at the same time identifies him as merely one among the innumerable American thinkers who sought to weave a modern culture out of scientific materials. The narrative situates Dewey in a rich academic milieu whose leading figures shared both his commitment to a scientific public culture and his expectation of its eventual emergence as a result of scholarly efforts. Although Dewey shaped that discourse more powerfully than any other single participant, he was hardly the sole contributor.

This book thus offers a new and relatively comprehensive – though hardly exhaustive – account of the relationship between the growth of scientific authority and changes in American political culture during the late nineteenth and early twentieth centuries. It draws on a wide range of literatures, pulling together an institutionally fractured and decentralized discourse on science and American politics that has taken what coherence it musters from the widespread assumption that objectivity is the main story, rather than from sustained cross-disciplinary dialogue. At the same time, the book turns away from the focus on objectivity, proposing a new center of coherence by exploring the arguments of a heterogeneous group of American thinkers who shared a sense that science could meet the cultural needs of democratic citizens.

To tell a new story about science and politics from the Civil War to the Cold War is also to rewrite much of the wider narrative of American intellectual life during that era. The question of science's political meaning engaged some of the most influential and original thinkers of the day and ran through many well-known intellectual episodes: the founding of the modern American universities by reformers such as Andrew Dickson White, Daniel Coit Gilman, and Charles W. Eliot; the innovations of "ethical economists" such as Richard T. Ely and John Bates Clark; the early development of pragmatism by Charles S. Peirce, William James, and Dewey; the pioneering sociological accounts of Edward A. Ross and Charles Horton Cooley; the formulation of new modes of liberalism by the *New Republic* theorists Herbert Croly, Walter Weyl, and Walter Lippmann; the articulation of cultural relativism by the anthropologists Franz Boas, Margaret Mead, and Ruth Benedict; the creation of the "New History" by James Harvey Robinson and Charles Beard; the debate between Dewey and Lippmann on the prospects for democracy in an age of propaganda; the struggle between William F. Ogburn and his sociological critics over the possibility of value-neutrality; the rise of the "culture and personality" school of anthropologists, psychologists, and psychiatrists; and, of course, the emergence of the national security state and associated forms of postwar liberalism. This book casts each of these oft-studied phenomena in a new light, showing the remarkable power of a belief that science found its highest purpose in changing the normative commitments of the American people.

Moreover, it also shows that these episodes were simply the most visible outcroppings of a much more extensive series of debates over science and

politics that gave American academic thought much of its distinctive energy and flavor for nearly a century. The question of science's place in the modern democratic project preoccupied vast numbers of American scholars, including many who figured prominently in the cultural discourses of their time but have since been forgotten. The book restores to their proper place in the story a series of important intellectual phenomena – including the partial professionalization of philosophy, emergent evolutionism, philosophical naturalism, contextual histories of science, and many others – that figured centrally at the time but are now remembered only by a few scattered specialists in precincts far beyond intellectual history.

As readers listen to the many hundreds of voices presented in the book, they will repeatedly encounter unfamiliar uses of the charged terms "science" and "scientific." Although it is impossible to fully avoid projecting today's concerns onto historical actors, the process of coming to grips with past arguments requires not only learning new information but also forgetting, or at least bracketing, the contemporary meanings of key terms of art. To grapple constructively with such texts, one must look closely at the conceptual vocabularies of those who created them and keep in mind that the linguistic categories now used to carve up the world of experience are contingent and fluid rather than fixed and given. As the later chapters show, the current equation of the term science with a strictly value-neutral conception of knowledge, along with the narrowing of its boundaries to include only the natural sciences and related technological pursuits, stem from mid-twentieth-century intellectual transformations. But that is not the science that most earlier thinkers had in mind when they set out to make America scientific.

Throughout this book, I apply the label "scientific democrats" to the large and varied group of American thinkers who contended that science, as they understood it, offered the basis for a cohesive and fulfilling modern culture. By using that label, I do not mean to suggest that the figures in question concentrated on expanding the circle of suffrage to include women, African-Americans, and other excluded groups. Nor do I mean "democratic" in the even stricter sense of those contemporary theorists who call for direct participation by citizens in decision-making.[11] In fact, scientific democrats thought surprisingly little about the formal mechanisms of governance. Simply assuming that public opinion mattered centrally in American governance, they focused on making an impact on the minds of citizens. Thus, my invocation of democracy is relatively colloquial, echoing the vernacular connotation of a polity defined by popular sovereignty – a polity in which the will of the people reigns supreme, in general if

[11] Today's democratic theorists also attend carefully to how public opinion is formed, counseling extreme caution about claims to authority in the spheres of knowledge and culture. By that measure, hardly anyone in the late nineteenth and early twentieth centuries qualified as a democrat. Most scientific democrats, like most religious leaders and cultural critics at the time – or, indeed, today – hoped to see a particular set of ideas and their spokespersons granted considerable authority by the public.

not in every detail.[12] Like so many other Americans, then and since, scientific democrats assumed that the nation's policies reflected the beliefs, opinions, values, and virtues of the people. They sought to change those policies by changing the underlying cultural substrate.

In other words, when I speak of scientific democrats my emphasis is on the "scientific" side of the phrase. The label is not designed to mark off a group of thinkers committed to maximizing political participation from others we would now consider technocrats. Instead, it serves to differentiate those who saw science's social effects largely in terms of its capacity to improve the process of formulating the public will from another group of far better studied figures who focused on science's capacity to generate instrumentally useful knowledge. Scientific democrats claimed that science could dramatically improve democratic practice not only by fostering technological growth, improving administrative techniques (both inside and outside of government), and giving citizens the technical information needed to participate constructively in policy debates, but also, and more importantly, by shaping their moral character, normative commitments, and discursive practices.[13]

Science, in short, promised thoroughgoing cultural change, rather than simply the augmentation of the nation's knowledge base. In this understanding, science denoted a personal orientation, not just a body of knowledge or a set of institutions. Being scientific meant much more than simply using empirical methods; it meant behaving in accordance with specific ethical tenets or exhibiting particular ethical virtues. It entailed a mode of speaking, a form of interpersonal relations, even a comprehensive way of life. Scientific democrats portrayed the scientific enterprise – the whole complex of practices, institutions, knowledge claims, and persons – as a concrete manifestation of an underlying ethical orientation that was perfectly suited to the needs of a modern democracy.[14]

Dewey and thousands of other leading scholars thus sought to expand science's authority because they believed it offered moral as well as cognitive

[12] I have otherwise largely avoided using common terms whose meaning is implicitly or explicitly contested – Enlightenment, technocratic, scientism, and the like – as shorthand descriptors for the figures and ideas treated herein. Likewise, I have eschewed the adjectival references to landmark theorists (Weberian, Habermasian) that dot many works of intellectual history. Using such labels saves innumerable words, but at the steep cost of eliding crucial meanings.

[13] Of course, virtually all of science's champions in the late nineteenth and early twentieth centuries employed multiple strategies for justifying and validating it in public debate. But those I call scientific democrats consistently emphasized the cultural influence of science above all.

[14] On its technocratic end, scientific democracy shaded off into the view that the needed cultural orientation among citizens entailed simply deference to the authority of scientific experts. Beyond that line, a few genuine technocrats sought to use state power to enforce scientific findings from the top down. These rare calls for an efficient, functionally oriented polity run directly by experts resolved tensions between scientific authority and democratic participation by simply eliminating the latter. See William Akin, *Technocracy and the American Dream: The Technocrat Movement, 1900–1941* (Berkeley: University of California Press, 1977) and Jordan, *Machine-Age Ideology*.