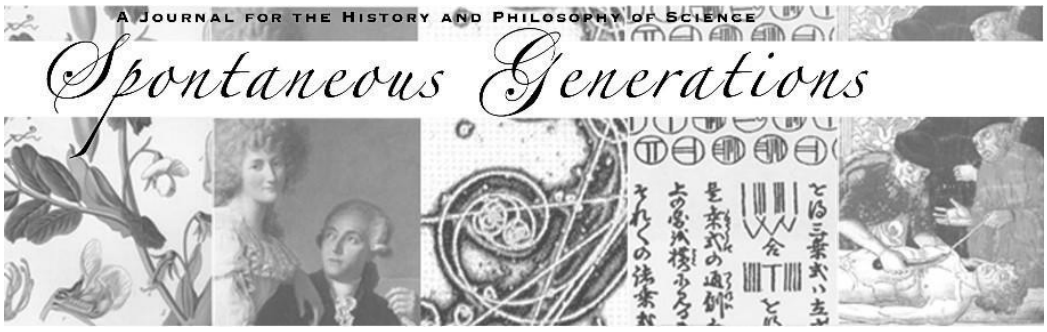

Experts, Managerialism, and Democratic Theory

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Experts, Managerialism, and Democratic Theory

Mott T. Greene

Abstract The revolt against expertise is a novel aspect of a larger and longer-standing discontent with the power of managerial elites within modern democracies. In the United States, scientific expertise is contested adversarially on the model of a public trial. In broadcast media, expert disagreement proceeds via staged debates with opposing sides (generally representing extremes of more complex debates) arguing scientific questions bearing on public policy. By the mid-20th century many observers agreed that this broadcast format had transformed the active 'public' – the target audience of these debates – into a passive 'mass society' that could listen to or view them, but had few or no means, outside of electoral politics, to engage with them. Two recent developments have challenged the traditional approach to public debates of scientific expertise, and challenged that expertise itself. The first is the rapid privatization of science since about 1980, changing public perception of scientists from disinterested servants of truth to spokespersons for government or economic interests. The second (since about 2007) is the combination of the universality of smartphones and direct access to internet discussion platforms not controlled by managerial elites, which have transformed the mute 'mass' into a highly vocal assortment of self-organizing publics (like those imagined in classical democratic theory) demanding to be heard *directly* on scientific questions. The matter of who now is a scientific expert, for whom, and under what circumstances, is a pressing question for historians, philosophers, and sociologists of science.

The concept of a "revolt against expertise" applies principally to the changing fortunes of scientific expertise in public debates within democratic societies on matters of policy. In a technological civilization like our own, it is hardly an exaggeration to claim that there are no longer any matters of policy which do not turn on scientific data. This being the case, a revolt against expertise might best be seen not as an independent or isolated phenomenon, but as an aspect of a revolt against the much larger and more complex structure — bureaucratic, managerial, political, and scientific — that controls and directs contemporary industrial and postindustrial societies. Historians, philosophers, and sociologists of science and technology, who until a few decades ago concentrated most of their energy on the study of the elites who produce science, have more and more turned their attention to those whose experience of science is that of a consumer, subject, or even victim -- either of the sciences' material realizations, or of the immaterial but consequential matter we call "expertise": the credentialed advice-giving on which, it appears, the entire political and economic structure depends.

If there is a revolt against expertise, then, it is not a revolt against fine woodworking, spot welding, tailoring, baking, excellence in professional sports, or against the production of many thousands of different consumable goods which pass through the hands of most members of this society at some point in their life course. It is a revolt against something entirely different than the expertise of doing, making, and using. It is, rather, a revolt against technocratic managerialism in government, industry, and life. It is a revolt against "productivity," efficiency, cost-cutting, job elimination, automation

of the workplace, regulation, regimentation and, in the hands of the state, bureaucratic indifference to individual needs along with perceived intrusive administrative control of both politics and industry. It is important to emphasize that since 1980, roughly the time when white-collar work began to be extensively automated, and managerial techniques of efficiency and cost-cutting were extended from the factory floor to the office desk, this revolt has made its presence known in every stratum of society, and at every educational level.

The revolt is not new. What is new, and what brings the revolt to our attention, is that this revolt now has a voice (or voices) not controlled or mediated by the organs of information-dissemination managed by the very elites against whom the revolt is aimed. The revolt against expertise, as an aspect of the revolt against technocratic management, has been given new life and new force by the communicative capacity conferred on ordinary individuals by the internet, personal computers, and above all by smartphones. Whatever the variety of its aims and means, the revolt against managerial (and thus also scientific) elites and their authority now proceeds in an increasingly organized fashion, with a capacity to recruit new members to anti-managerial organizations, movements, and causes, that could hardly have been dreamed of before about the year 2000.

In what follows, after a review of the history of managerial ideology and practice, especially in the 20th century, and its foundations in "elite theory" and the theory of "mass society, we shall examine the conditions under which expertise has traditionally been contested in the United States, and the adjustments and modifications made to it by managerial elites both in government and in the world of mass media. We will then turn to the transformations that sciences have undergone in recent decades, and the reasons why scientists may well be seen as members of a managerial elite, worthy of suspicion rather than trust. This will lead us finally to look at the way forward through the revolutionary structure of knowledge dissemination and social organization provided by the internet.

It is above all the rise of the Internet, and the communicative capacity of the entirety of the political collective to "talk back" to the institutions of management --political, industrial, intellectual, and social -- which defines the current situation in knowledge and expertise. While analyses of management are in large part descended from late 19th and early 20th century elite theory, these elites have historically been counterposed to a relatively undifferentiated social mass. As analysis of internet traffic reveals, this mass is not a mass at all, but a highly differentiated collection of "publics" on the model envisioned by Enlightenment thinkers, and later by Tocqueville in his analysis of American democracy -- each with its own concerns, and now with an unprecedented ability to express and communicate outside the channels of management-dominated mass media.

This development represents a fundamental challenge to the familiar strategies of management of complex technological societies and highlights the contradictions between technocratic administration and democratic institutions and participation, which contradictions are very much the basis of the perceived "revolt against expertise."

The Managerial "Revolution"

In 1941, James Burnham, a professor of philosophy at New York University, published a book entitled: *The Managerial Revolution: What is Happening in the World.* [1] Burnham was an experienced political infighter — and an ardent Trotskyite socialist —

[1] James Burnham, *The Managerial Revolution; What Is Happening in the World* (New York: John

in the left-wing politics of the 1930s in New York. He had viewed with alarm the rise of fascism in Europe, and with revulsion the accommodation of Soviet Russia to it, culminating in the Hitler-Stalin pact of 1939. By 1941 Burnham had begun a move to the right in politics that would eventually lead him to resign from NYU, join the CIA, and become a founding editor of the *National Review* with William Buckley.

The political and military developments of the 1930s led Burnham to a new view of politics and society. Rather than socialism, fascism, and capitalist democracy forming a series of sharply demarcated economic and political alternatives, they instead represented different forms of "managerial society." In Burnham's view, in the period after the First World War a new social class had risen to social power everywhere, irrespective of the political ideology proclaimed by the leaders of any given collective. The revolution in question was not the sudden appearance of management, it was the decisive realization, at least in Burnham's mind, that the traditional categories which had defined political struggle in Europe, Asia, and North America had been rendered nearly meaningless by this new form of social organization. In this new world, social power was held not by the owners of capital, or by the state directly, and certainly not by workers in a socialist collective, but by managers: executives, technicians, bureaucrats, functionaries, and planners.

Burnham contended that not only had this class risen to social power, but it had become conscious of itself; here his theorizing revealed its debt to his previous Marxist conceptions, in which sovereignty passes historically from one class to another as an emergent class comes to realize its social power and organizes to manifest that social power as political control. In the context of this new conception of historical change, and especially in his second book: *The Machiavellians: Defenders of Freedom* (1943), Burnham turned to the traditional "elite theory" of the late 19th and early 20th century, represented by the writings of the Italians Vilfredo Pareto, Gaetano Mosca, and Robert Michels. [2] Burnham was not indifferent to the survival of democracy and thought that some sort of quasi-or-apparently-democratic regime was markedly preferable to a despotic socialism like Russia, or a belligerently savage fascism, like Germany. Yet along with these earlier theorists who stressed the necessity for a scientifically trained elite to guide modern society through its complex course, he was convinced that the mass of citizens in a democracy like the United States were largely ignorant of the complex interconnections which make the modern world run, too easily persuaded by dangerous demagogues, technologically unsophisticated, and incapable (on their own) of coordinated and effective political action. The world, therefore, *had* to be led by scientifically trained elites. These elites, he argued, would best succeed in their aims by maintaining at least the illusion of traditional democracy: periodic elections with multiple parties, competitive partisan media (a free press), and a constant refreshing of the membership of the elites by recruitment from below. The outcome would be a social and economic system different than traditional capitalism and socialism, as control of the society and its functioning would belong neither to the workers or the owners, but the managers alone.

George Orwell, who had noted the appearance of *The Managerial Revolution* in 1941, returned to a consideration of Burnham's ideas in 1946 in an essay: 'Second Thoughts on James Burnham."[3] While he had had grave doubts about some of

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Day Co, 1941).

[2] James Burnham, *The Machiavellians, Defenders of Freedom* (New York: John Day, 1943).Robert A. Nye, *The Anti-Democratic Sources of Elite Theory: Pareto, Mosca, Michels*, Sage Professional Papers in Contemporary Political Sociology 06 (London; Beverly Hills: SAGE, 1977).

[3] George Orwell, “"James Burnham and the Managerial Revolution."[Second Thoughts on James

Burnham's prognostications (including Burnham's conviction that Germany would win the war), in 1946 Orwell found himself persuaded by Burnham' s view of the rise of the managerial elite, and the shape of the political future of the world:

> A I have said earlier, Burnham has probably been more right than wrong about the present and the immediate past. For quite 50 years past the general drift has almost certainly been towards oligarchy. The ever-increasing concentration of industrial and financial power; the diminishing importance of the individual capitalist or shareholder, and the growth of the new "managerial" class of scientists, technicians, and bureaucrats; the weakness of the proletariat against the centralized state; the increasing helplessness of small countries against big ones; the decay of representative institutions and the appearance of one-party regimes based on police terrorism, faked plebiscites, etc.: all these things seem to point in the same direction.[4]

Orwell also found much cogency in Burnham's prediction of the political consolidation of the world into three great managerial super-states: Eurasian, East Asian, and North American, in constant war or at least competition (just short of war) with one another, all ruled by managers for their own benefit, who would preside over a huge mass of semi-slave workers controlled and mollified by mythologies, appearances, and a modicum of creature comforts and distracting amusements, while the dominant managerial class directed and ruled everything from behind a screen. Orwell found this vision so frightening, and so persuasive, that he made Burnham's thesis the structural outline of his 1948 novel, *Nineteen Eighty-Four*.

Orwell was not the first or only commentator and theorist to understand the "gestalt switch" of transforming existing social and economic realities into a new theoretical structure, which made the traditional antithesis of socialism and capitalism not just outdated, but completely obsolescent. Both Max Weber and Emile Durkheim had perceived aspects of this transformation decades earlier. Both had argued *before* the First World War that from the standpoint of the industrial proletariat life would be nearly indistinguishable, whether the system under which it lived and worked was called socialism or capitalism, because both of these would be managerial entities driven towards production and profit-maximization by a distinct class of elite, techno-scientific managers.[5]

If the managerial revolution was news in 1941, the program of "scientific management" itself had been inaugurated decades earlier. This practical and ideological movement at the turn of the 20th century in the United States, attempted to bring to industrial enterprise a systematization and regimentation in which human workers could function in the same way as the machines, working as fast and as productively as possible without breaking down. The prophets of this movement, Frederick Winslow Taylor, and Charles and Lillian Gilbreth, created techniques for the analysis and reorganization of shop-floor operations in manufacturing, construction, and other aspects of industrial enterprise that were so successful and so promising that they were promoted by political progressives like Louis D. Brandeis , later a Supreme Court justice, and Theodore Roosevelt, both of whom wrote prefatory endorsements for the Gilbreth's *Primer of Scientific Management* praising the possibilities the scientific

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Burnham]," in *George Orwell. In Front of Your Nose (1946-1950)* 4 (1968): 160–181.

[4] Ibid: 176

[5] Alvin W. Gouldner, "Metaphysical Pathos and the Theory of Bureaucracy," *American Political Science Review* 49, no. 2 (June 1955): 496–507.

management approach offered for worker safety, decent wages, efficient production, and more intelligent and less wasteful management of natural resources.[6]

It cannot go without saying that while Taylorism (as it came to be called) was widely favored by owners and managers for its ability to increase efficiency, workers subjected to Taylorism generally responded to it as an attempt to sweat more out of them for the same money. Indeed, the promise of higher wages as a consequence of adopting the efficiencies of the Taylor system did not emerge, because managers generally used it, as workers and union leaders had predicted, as a way to get more work out of existing workers, without raising wages, and also to employee fewer workers.

Taylor 's system grew from a technique into an ideology and was explicitly anti-union, since the process of negotiation with unions was perceived to curtail the innovative freedom of the manager in rationalizing the process of production. In a historical analysis of the fortunes of the scientific management ideology in the United States, Europe and Russia through the 20th century, historian Judith Merkle concluded that: "the goal of Scientific Management ideology is the perfection of social efficiency through the elimination of politics."[7]

In his history of the managerial revolution in American business, *The Visible Hand* (1977), Alfred Chandler demonstrated convincingly that between 1870 and 1925 the "invisible hand" of the market in capitalist enterprise had been everywhere in the United States replaced by the "visible hand" of management, resulting in , among other things, an almost complete separation between the ownership of corporations, and the decision-making power within corporations.[8] He also noted that mobilization for war had twice accelerated the shift towards managerialism in US industry, visible both after the Civil War, and after the First World War.

What James Burnham was principally responding to in the 1940s was not, however, the spread managerial practice and ideology in private, corporate enterprise but its further spread to operations and concerns of governments, something that he associated with Franklin D Roosevelt's "New Deal," in the United States — though he acknowledged that this was less ideologically pursued, less advanced, and less pervasive than Russian communism's enthusiasm for Taylorist work discipline, and Ford-style mass production. Alfred Chandler's history, coming about 30 years after Burnham's work, seemed to ratify a sense of inevitability in this transformation – management was here to stay, and was driven by a desire for efficiency, which produced profits and results for governments and firms through the management of modern technologies, in a way that markets simply could not match.

The Second World War vastly and rapidly expanded the range and sophistication of managerial techniques, including the recruitment and deployment of scientific workers on all sides of the conflict, and on an unprecedented scale, to produce better weapons, produce them more rapidly and efficiently, and distribute them more abundantly. Victory in World War II by the United States and its allies has often been interpreted in terms of technical sophistication: whether it was the breaking of German and Japanese codes by information scientists, the development of radar to see enemy bombers, and servo-mechanical antiaircraft fire to shoot them down, sonar to locate submarines, or the countless other -- and not necessarily weapons-related -- technological improvements in production, supply, and distribution of goods. The outstanding

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[6] Charles Gilbreth and Lillian Gilbreth, *Primer of Scientific Management* (New York: D. van Nostrand, 1912).

[7] Judith A. Merkle, *Management and Ideology: The Legacy of the International Scientific Management Movement* (Berkeley: University of California Press, 1980).

[8] Alfred Chandler, *The Visible Hand* (Cambridge MA.: Harvard University Press, 1977).

example of this, much studied by historians of technology has been the integrated and rapid scientific, technical, and productive effort to produce the atomic bomb: The Manhattan Project. The histories that have been written of all of these technological achievements are largely managerial in character and have, along the way, done much to highlight the ability of governments, in time of war or the threat of war, to risk capital expenditures on speculative ventures and innovations that private enterprise would never have undertaken. [9]

A steady flow of sociological and political science treatises in the years following the Second World War went deeply into the impact of management on all areas of political, economic, and social life. C. Wright Mills, in *The Power Elite* (1956), Milovan Djilas, in his book on the eclipse of socialism by managerialism in Yugoslavia: *The New Class* (1957), John Kenneth Galbraith in *The New Industrial State* (1967) and Daniel Bell in *The Coming of Post-Industrial Society* (1973) all generally followed Burnham's analysis, with particular attention to the antidemocratic character of management.[10] As theorists of managerial elites — increasingly scientific and technical in character — most of these writers continued to treat the antithesis of a managing elite as "the mass of society," stressing the incapacity of the latter to keep the wheels of a complex economy turning effectively, but also more and more expressing a realization of the necessary contradictions between a managed society and a democratic one. In so doing they tended to assume, as had Pareto, Mosca, and Michels in Italy at the turn of the 20th century, an unbridgeable gap between the skills and capacities of elites and those of the mass of society, which must preclude direct democratic governance of affairs. Most of the above books are no longer read, perhaps because of the gendered language of their arguments ("the leading *men* of today) but perhaps more importantly because their framing often involves historical circumstances and predictions now known to be erroneous; Daniel Bell in 1973 assumed that the Soviet Union would go on indefinitely as the principal antagonist of the United States and framed his argument in this way. Yet in their perceptions of a growing contradiction and antagonism between technocratic managerialism on the one hand, and the aspirations for a democratic society on the other, they are in no sense dated.

A Brief Excursus into Words and their Wordy Relations

A sense of the antagonism, if not the contradictions, between management of a society by elites of "scientific" experts and society in general, at least in the English-speaking world, can be traced in the shifts of meaning of these words. However old-fashioned it may seem to proceed etymologically, specifying the denotation and connotation of the terms matches up surprisingly well with the written history of the rise of the managers and of a concomitant increase in resistance to their expertise -- both in its character and content.

The etymology of "elite." The word came into English in the 14th century from the French, and "elite" meant "elect," or "chosen," and referred originally to the choice of a bishop (a usage now obsolete) and was derived from the Latin "electio" (eligo+tio) —

[9] Mariana Mazzucato, *The Entrepreneurial State: Debunking Public vs. Private Sector* Myths, rev. ed., Anthem Frontiers of Global Political Economy (London ; New York: Anthem Press, 2014).

[10] Charles Wright Mills, *The Power Elite* (New York: Oxford University Press, 1956). Milovan Djilas, *The New Class: An Analysis of the Communist System* (New York: Praeger, 1957). John Kenneth Galbraith, *The New Industrial State* (Boston: Houghton Mifflin, 1967). Daniel Bell, *The Coming of Post-Industrial Society: A Venture in Social Forecasting*, Harper Colophon Books (New York: Basic Books, 1976).

to choose, or to select the choice or best part.[11] By the early 19th century the term had come to mean the "choice part or flower of society, or of any body or class of persons."[12] Its cousins, elitism and elitist, are of much more recent vintage, first used in the 1930s — the former indicating advocacy of the dominance of an elite in society, and the latter a person who supports the view that some society or system should be led by an elite. By the 1950s the meaning of both words had become clearly depreciative, with elitism construed as "the belief that one belongs to an elite and is superior to others; snobbery, superciliousness" with an elitist being someone who imagines such a thing. The use of the word "elitist" as an adjective (rather than a substantive) began as a merely descriptive usage, but by the 1960s had become a pejorative indicating someone smug, superior, conceited. This carried the clear connotation that an "elitist's" claim to specialness was not based on any obvious accomplishment or the judgment of a group of peers, but was self-imposed and spurious: "their smug, elitist posture and their assumption that they were born to lead." [13]

The dates in the changing connotations of the above-linked terms are suggestive of the fortunes of this class of persons, from ecclesiastical usage in the late Middle Ages, to a secular and general acceptance in the 19th century that society had groups of persons who were in some dimension of existence "better", to an ideological stance in the early 20th century that this choice part should constitute the leadership of society even in democratic settings, and finally a depreciative and even antagonistic stance after the middle of the 20th century, spilling into clear distrust, by the 1960s of the claims to be better, and suggesting an emergent manifest distrust of elites *per se*.

In contrast, the shifting notions of the meaning of "expert" do not seem to slide along the same approbative/ pejorative axis as "elite," yet they still map an important transformation.

The etymology of "expert." The word "expert" came into English from old French in the 14th century and appears in Chaucer and elsewhere. It was an adjective meaning "experienced" With the added connotation of "skillful," and "trained by experience or practice."[14] It is derived from Latin "expertus" the past participle of the verb experiri — to attempt, to try, to learn from experience — with a sense of something well proven, tested or shown to be true.[15] The use of the word "expert" as a substantive to designate "One whose special knowledge or skill causes him to be regarded as an authority; a specialist" was adopted from modern French usage and came into wide currency in English in the middle of the 19th century.[16] The term "expertise" also came into use in English in the latter 19th century, indicating "expert opinion or knowledge, often obtained through the action of submitting a matter to, and its consideration by, experts;

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[11] *Oxford English Dictionary. A Corrected Reissue with an Introd., Supplement, and Bibliography. In 12 Vols. and Supplement* 3 (1933): 90.

[12] *Oxford English Dictionary. A Corrected Reissue with an Introd., Supplement, and Bibliography. In 12 Vols. and Supplement*. loc. cit.

[13] *Oxford English Dictionary* (Oxford, England: Oxford University Press, 2000). Accessed March 19, 2021.

[14] *Oxford English Dictionary. A Corrected Reissue with an Introd., Supplement, and Bibliography. In 12 Vols. and Supplement* 3 (1933): 432.

[15] P. G. W. Glare, *Oxford Latin Dictionary* (Oxford [Oxfordshire]: New York: Clarendon Press; Oxford University Press, 1982): 649.

[16] *Oxford English Dictionary. A Corrected Reissue with an Introd., Supplement, and Bibliography. In 12 Vols. and Supplement* 3 (1933): 432.

an expert's appraisal, valuation, or report."[17] It is notable that the word "expertise" does not exist as a main entry in the 2nd edition of the OED from 1933 and has increasingly (1950s through 1970s) come to imply highly specialized knowledge in a very restricted field, usually of science or medicine.

The trajectory of the English word "expert" remained constant as "skillful and experienced," (usually in the sense of the acquisition of skill via empirical knowledge and practice) for almost 500 years, and only in the 19th century attained to the notion that an expert was a specialist *authority*. The word "expertise" does not appear to have developed any depreciative or pejorative sense, as was the case with "elite." It has retained the notion of authority, though perhaps in the last part of the 20th century with the sense that this authority belongs to a restricted realm of knowledge and was not general.

If the word "elite" has moved from approval to disapproval, and the notion of "expert" and "expertise" has remained steadily descriptive with a slight lean towards approval, the word "manager," and the idea of management, seem to have moved from disapprobation to neutrality and even approbation in the first half of the 20th century, with a shift once again toward disapprobation in recent decades.

The etymology of "manager." The notion of a social role of a manager came into English in the late 16th century, once again from the French. Its original sense was someone who could "handle, train or direct a horse in his paces."[18] This was in turn derived from Latin "manus" (hand) as in the colloquial phrase of "handling a horse." The word rapidly expanded its range to include the control and direction of the affairs of some collective enterprise: a theater, a bank, factory, mine, household, an institution, or a state. Notably, by the late 17th and early 18th century, the substantive "management" had acquired the denotation of "the use of contrivance, prudence, or ingenuity for effecting some purpose; often in unfavorable sense, implying deceit or trickery."[19] This connotation was not universal, but very much to the point in our discussions of the "management" of affairs by elites and experts. It appears that there was a suspicion of "manager" and "management," applied to anything but horse training, as both words acquired a patina of distrust from the time they entered the language in the late 17th and early 18th centuries. The notion that a manager was an expert in breaking a horse from its natural gaits into a series of movements of use to humans, suggests perhaps the notion of manipulation in the direction of subservience to control and command, which might be read unfavorably when referred to the management of one human being by another. By the 1990s (usage of this term has not been updated in the OED since 1996) "management" has come more specifically to mean the leadership of an organization, management as opposed to labor within such an organization, or management as an organized body or panel of people within organizations, having discretionary authority.[20]

Elites and Mass Society

[17] *Oxford English Dictionary* (Oxford, England: Oxford University Press, 2000) accessed March 19, 2021.

[18] *Oxford English Dictionary, A Corrected Reissue with an Introd., Supplement, and Bibliography. In 12 Vols. and Supplement* 6 (1933): 104-106.

[19] Ibid: 106.

[20] *Oxford English Dictionary* (Oxford, England: Oxford University Press, 2000) accessed April 25, 2021.

Historian Robert Nye pointed out more than 40 years ago that elite theory had, for highly contingent historical reasons, issued from anti-democratic sources, particularly the Italians: Pareto, Mosca, and Michels. These men, disappointed in the failure of Italian unification to overcome the power of local traditional elites and the corruption of government officialdom, put the blame not on the elites and the officials, but on the mass of voters, who were apparently too unsophisticated, uncaring, or unintelligent on the one hand, or too likely to intervene destructively and violently on the other, to provide a sound basis for a long-term economic and political stability for Italy. The failures of the elites were blamed on the intellectual inadequacy and psychological dispositions of "the masses."[21]

This theme of the likelihood of destructive intervention by the masses, and their lack of intellect and capacity, was picked up by Jose Ortega y Gasset in his profoundly influential *The Revolt of the Masses* (1930, English translation 1932).[22] Ortega argued that the rise of "mass man" and mass society was a direct consequence of democracy, which emphasized the right to political participation and opinion without any specific qualification. He argued that the masses were "vertical barbarians," and unlike the great civilizations of the past which had been destroyed by barbarians from without, it was the peculiar genius of modernity to destroy itself by growing its own barbarians within its borders. Scientists, by the way, were not exempted from this analysis. Ortega coined the phrase: "barbarism of specialization," whereby experts in some narrow scientific field would not confine their sense that they were expert to the particular concerns of their expertise but would attempt to act as experts in every area of social and political life. Turning again to the masses, Ortega mocked the extension of the notion of freedom of speech, to a freedom to be heard, and even of a "right to be right." Once again what could easily be construed as failure of elites to include or educate the public as a whole, or an elite's failure to function ethically on its own, is referred to the impulsive ignorance of the "mass."

In the period after the Second World War, elite theorists thought became attuned to a different body of theory — Weber, Simmel, Freud, and Frankfurt School, particularly Adorno ("the authoritarian personality") — once again uniformly blamed the masses for their inability to govern themselves responsibly, this time "focusing on the social sources of the collective insecurity and psychological alienation characteristic of industrialized societies" and arguing that the "sense of powerlessness endemic to this condition of alienation promotes a compensatory psychological dependence on strong paternalistic leaders, who in turn manipulate the unconscious fears and insecurities of the masses for their personal or ideological ends."[23] In general, whatever the timing and whatever the particular circumstances that motivated the construction of elite theory at the beginning of the 20th century and it's reconstruction a half-century later the common conclusion of elite theorists has been that the reason we have bad leaders is because we have bad masses.

Even though, as Robert Nye has argued, "the proper heirs of the central interpretations of elite theory are the theorists of mass society," those few sociologists and social psychologist who turned their attention to the character of mass society after the 2nd world war seemed to have failed to build a sociology that did not also resort to the negative and psychologistic explanations that characterized mass behavior in elite

[21] Nye, *The Anti-Democratic Sources of Elite Theory,* 14-15.

[22] José Ortega y Gasset, *The Revolt of the Masses*, 25th anniversary ed. (New York: WW Norton & Co, 1957).

[23] Nye, *The Anti-Democratic Sources of Elite Theory*, 40.

theory from its early 20th century origins.[24]

One of the very few mid-20th century social scientists and social theorists to escape this stricture was the Columbia University sociologist, left-wing activist, translator of Max Weber, and student of the American class system, C. Wright Mills (1916-1962). Mills parlayed his World War II "field experience" as a sociologist looking at the class dynamics and power structures of middle sized, Middle Western American cities (to evaluate likely places for war production) into a sweeping analysis of the history of the American "new middle-class" and its probable political future, in: *White Collar: The American Middle Classes* (1951).[25] He followed this with a further structural analysis: *The Power Elite* (1956), of the military-corporate-government triumvirate coming to power in the United States in the postwar world, warning of the potentially disastrous consequences for democracy of the convergence of aims of these three groups of elites into a single, consolidated elite.[26] His dire analysis assumes a less radical complexion in the context of president Dwight D. Eisenhower's 1961 speech, warning of the dangers of the emerging of a "military-industrial complex," pursuing power structures and aims quite divergent from those of traditional American democracy and its norms. Eisenhower's influence in this regard was great, given his career as a five-star general, his leadership of the American war against Germany in Europe, and his presidency of Columbia University.

While *The Power Elite* charted the rise of the same managerial transformation we have seen described in contemporary histories and theoretical works and was completely informed by knowledge of the elite theory that underpinned the work of Burnham and others, Mills parted company from previous theorists in two substantial ways. In *White Collar* he had already argued that Burnham had been mistaken in thinking that the technological indispensability of this new managerial "middle-class" made their rise to political power inevitable, and called out Burnham's error by reference back to Marx's same error with regard to the working class.[27] In *The Power Elite* he made a much more substantial and novel contribution: rather than emphasizing the way that the technological transformation of American society in the first part of the 20th century had made managers inevitable, he ventured a history of a technological process whereby the "public" of public opinion in the United States was being transformed into a muted mass society, cut off from a voice in democratic governance.

Mills was among the very first to make his description of the character of a mass society an indispensable part of his theory of the rise of a certain kind of elite. He had already, working with Hans Gerth just after World War II, authored a series of translations of the works of Max Weber (*From Max Weber: Essays in Sociology* (1946) in which he and Gerth tried to produce translations of Weber and Weber's key terms, which could more neutrally be employed to describe American society, without reflecting Weber's reference to the historical experiences of his own lifetime and place — especially the long 19th century in which the German bourgeoisie was politically disenfranchised and was forced to express its economic power in the sphere of high culture rather than politics, something fundamentally alien to the American experience.

Mills's sense that European sociology, and European elite theory were being systematically misapplied to the United States, to a historical, political-economic system

[24] Ibid: 7.

[25] Charles Wright Mills, *White Collar; the American Middle Classes.* (New York: Oxford University Press, 1951).

[26] Mills, *The Power Elite,* 28.

[27] Mills, *White Collar,* 298.

to which they did not correspond and could not accurately describe, led him in *The Power Elite* to describe a social transformation, nascent but not complete, of the Great American Public (the capital letters are his) into a mute and subordinate mass, through the agency of, above all, "mass media," by which he meant national magazines, but increasingly in the 1920s and thereafter the radio, and in the 1950s the television.

Mills's argument, taking up the entire Chapter 13 of *The Power Elite*, "The Mass Society," is worth some examination. Mills noted that in "official life as in popular folklore" the public was "held to be the very balance wheel of democratic power."[28] The democratic ideal was based on something very similar to what the sociobiologist E. O. Wilson would describe decades later as the process by which science proceeds: "the consilience of inductions", though Mills ascribed it to the parallels between the ideal of the contests of public opinion, with the economic ideal of the market of the free economy. Innumerable "discussion circles" organized into "associations and parties, each representing a set of viewpoints", would grow in size and consolidate as they move up towards the Congress, where debate would continue among fewer and fewer alternatives, until a course of action was decided upon.

> Such are the images of the public of classic democracy which are still used as the working justifications of power in American society. But now we must recognize this description as a set of images out of a fairytale: they are not adequate even as an approximate model of how the American system of power works. The issues that now shape man's fate are neither raised nor decided by the public at large. The idea of the community of publics is not a description of fact, but an assertion of an ideal, an assertion of a legitimation masquerading — as legitimations are now apt to do — as fact. [29]

Mills referred his argument back to the Enlightenment ideal that autonomous reason was a faculty possessed by all whereby the truth will out, public opinion will be right, and public opinion will prevail. This conviction, which also informed the thought and politics of 19th century political theorists (all of whom lived in worlds of restricted political franchise, which kept the right to vote in the hands of relatively better educated people and owners of property) had now been shown to be a fantasy. Social life was not a harmony of interests but a struggle of classes and pressures; rational discussions were undermined by expert decisions, by the interested bias of vested positions, and perhaps above all by the "discovery of the effectiveness of irrational appeals to the citizen."[30]

Here, said Mills, is the reality we face in the 20th century. The traditional idea of a public was based on several assumptions. The first of these is that in a *public* (italics are his) virtually as many people express opinions as receive them, and communication is organized such that there is a chance to "immediately and effectively answer back any opinion expressed." The next assumption is that opinions formed in the discussion "readily finds an outlet in effective action, even against — if necessary — the prevailing system of authority." Finally, this model assumes that authoritative institutions do not penetrate the public which is "thus more or less autonomous in its operations." This, said Mills, is one extreme of a political spectrum.

At the other end of the political spectrum from the traditional idea of a public, is a *mass* (italics are again those of Mills). Here, fewer people express opinions then receive them, "for the community of publics becomes an abstract collection of individuals who

[28] Mills, *The Power Elite,* 298.

[29] Ibid: 299.

[30] Ibid: 301-304.

receive impressions from the mass media."[31] Communication is organized so that it is "difficult or impossible for the individual to answer back immediately or with any effect." Any realization of opinion and action will be controlled by authorities, who shape and channel such action, and the authorities thoroughly penetrate the mass "reducing any autonomy they may have in the formation of opinion by discussion."[32] In a mass society, "the dominant type of communication is the formal media and the publics become mere *media markets*: all those exposed to the contents of given mass media." A consequence of this, a fateful consequence from the standpoint of Mills, is that public opinion, rather than the active work of associations and groups of like-minded people, becomes "a collectivity of individuals each rather passively exposed to the mass media and rather helplessly opened up to the suggestions and manipulations that flow from those media. "[33]

The centrality of media in this analysis cannot be emphasized too strongly. Mills was among the first to acknowledge (though certainly preceded by the work of Walter Lippman on public opinion) that mass media were already, by the 1950s "so pervasive and subtle that they cannot be caught by the means of social research now available." He pointed out that "Very little of what we think we know of the social realities of the world have we found out firsthand. Most of the "pictures in our heads" we have gained from these media — even to the point where we often do not really believe what we see before us "until we read about it in the paper or hear about it on the radio."[34] The ways in which we read about it and hear about it must, then, be consequential as well, and it is to this topic we now turn.

Scientific Debate, Adversarial Jurisprudence, and the Fairness Doctrine

Public scientific controversy in the United States proceeds on the model of adversarial jurisprudence. In a criminal proceeding with a jury trial, a charge is presented, and opposing counsel representing the two sides of the question present evidence before a jury in a procedure moderated by an impartial judge. It is the responsibility of the jury of peers to listen to the testimony and decide on the truth or falsity of one side or another of the question. There are three outcomes possible: conviction, acquittal, or a "hung jury" in which the jury cannot decide, and the case must be retried.

Historian of science and professor of law Edward Larson, in his Pulitzer prize-winning book on the "Scopes trial": *Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion* (1997) brought into high relief the way in which all scientific controversy in the United States tends to be modeled on the jury trial: "adversarial jurisprudence."[35] There are other systems of jurisprudence (such as that in France) where the judge and the prosecutor are the same person, and still other legal systems where there are panels of magistrates, and both defense and prosecuting attorneys, but no juries. American jurisprudence, however, is thoroughly adversarial, and to the extent that this influences scientific debate, it *always* forces the reduction of a broad spectrum of opinion on a question into a simple, and often manifestly distorting,

[31] Ibid: 304.

[32] Ibid: loc. cit.

[33] Ibid: 311.

[34] Ibid: 311.

[35] Edward J. Edward, John Larson, *Summer for the Gods: The Scopes Trial and America's Continuing Debate over Science and Religion*, ATLA Special Series (New York: Basic Books, 1997).

duality.

Larson's central insight has been extended and generalized by Sheila Jasanoff into what she calls the comparative study of "civic epistemology." In her 2005 work, *Designs on Nature*, she compared the way scientific debates on biotechnology have recently been conducted in the United States, Great Britain, and Germany.[36] Without going into her full typology, she characterizes "civic epistemology" in the United States, and the way scientific questions are contested publicly, as contentious, distrustful, and adversarial: "The U.S. accountability system owes its special flavor to the extraordinarily prevalence of litigation. In scientific as in other areas of policy disputation, the adversary process remains the dominant route for establishing credibility. Truth, in this template, emerges only from aggressive testing in a competitive forum." [37]

Enter the fairness doctrine. In 1949, the Federal Communications Commission in the United States proposed a new licensing regulation for all broadcast media. This regulation was the result of previous litigation concerning editorializing in these media. While broadcast licensees had always been required to serve "the public interest," this new doctrine mandated that all issues of public importance should be covered, and that there should be a fair representation of opposing views.[38] Not only should opposing views be "fairly represented" but citizens were allowed to petition the FCC to force stations to provide "reply time" if they could demonstrate that opposing views were not being fairly represented. This doctrine, which remained in force in various forms between 1949 and 1987, (when it was repealed) profoundly shaped the character of scientific debate in broadcast media in a way that continues today, decades after its repeal.

In responding to their responsibilities under the "fairness doctrine," the broadcast media, quite unsurprisingly, adopted the civic epistemological model of public debate in the United States: adversarial jurisprudence. If a claim was made on one side of a question, someone had to be found on the other side of the question who would agree to appear on air, or on-screen. These persons, perhaps representatives of institutions, perhaps recognized experts in some area of the question under discussion, did not have to appear on air or on screen at the same time, but both [*sic*] views had to be represented.

There are settings in which this worked tolerably well, and settings in which it failed to represent fairly, or to characterize correctly what the opposing views were. It also left opaque the decision of how to find appropriate spokespersons for "opposing views," or in fact what these "opposing views" even were: *a decision left entirely to the broadcasters.* Beyond these problems, which might be characteristic of any such system, there was an underlying and fundamental failure: the structural inability of the format to reach or approach consensus or to even to suggest means and avenues of resolution. Here we come to a major disparity between the adversarial style practiced by TV experts in debate, and the point of the system of jurisprudential fact-finding leading to a verdict in the system of law on which it is based. On television, we may have a debate with a moderator, some question of public importance, and two opposing viewpoints presented. Between 1949 and 1987, the time in which this doctrine was in place, the jury was assumed to be the listeners or the viewers, the general public - and this was

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[36] Sheila Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States* (Princeton, N.J.; Woodstock: Princeton University Press, 2007): 247-271

[37] Ibid: 262.

[38] For a complete history see: Donald J. Jung, *The Federal Communications Commission, the Broadcast Industry, and the Fairness Doctrine, 1981-1987* (Lanham, Md.: University Press of America, 1996).

the entire point of the fairness doctrine. Yet that jury, as C. Wright Mills pointed out, was mute. It could hear opinions, but it could not respond directly or immediately, nor did forming an opinion lead directly to action. Moreover, while the fairness doctrine mandated opposing views, it did not specify *how many* opposing views, nor did it specify that these views need represent a consensus of expert opinion in the question under review. It did not specify where on the spectrum of debate (among all existing positions) these positions should be located. The fairness doctrine did make provision for citizens to protest a lack of fairness and to ask for time, but this procedure was cumbersome, expensive, and often fruitless, as the time for reply often ended up being provided long after the debate had passed from newsworthiness. Little wonder then, that the fairness doctrine was revoked, as it manifestly could not, for under the circumstances of mass media addressing mass society, accomplish its aim.

Yet decades after its revocation, the fairness doctrine continues to control, or guide, and provide a template for public scientific debate in the United States, especially in broadcast media. Perhaps the most important lesson taught by the history of the fairness doctrine is that, pretensions notwithstanding, every single significant participant *across the entire spectrum* of debate in a scientific question in a media setting is invariably a member of the managerial elite of experts, against which there is, at least conjecturally, a revolt. The next step, then, is to see how and when scientists became both part of and subject to the "managerial revolution," and from the standpoint of the "revolt against expertise, " became part of the problem rather than part of the solution.

The Managerial Revolution in Science Since 1980

Historians of economics, and economists themselves, often refer to the period 1945-1975 as the "30 glorious years," following the French "*trentes glorieuses*," a period of extraordinary economic growth above 3% per year in the decades following World War II. Of course, one only knows that the number of glorious years is "thirty" when they come to an end, and so it was in the later 1970s. In the United States this thirty-year period of time had been marked not only by rapid economic growth and rising wages, but by progressive social and environmental legislation — the Voting Rights Act, the desegregation of schools nationwide, the Great Society programs, the inauguration of Medicare (1965), the Clean Air Act, and the Clean Water Act, and a massive expansion of the size and scope of higher education, with particular attention to scientific and technical education. All of these endeavors were fueled by rising federal expenditures, in turn based on rising tax revenues, these in turn based on economic growth and rising wages.

The notable slowing of economic growth in the period 1975 to 1980 was perceived across in the United States and in Great Britain as a crisis and anomaly which needed fixing, although the French economist Thomas Piketty in his book: *Capital in the Twenty-First Century* (2014) has since demonstrated convincingly that the high growth rates 1945-1975 were the anomaly, and had to do with postwar reconstruction of leveled economies. Such growth rates were not a long-term trend over the two centuries preceding, or the forty years following this thirty year period.[39]

The year 1980 stands out particularly as a marker, because it was the year in which the Bayh-Dole Act (The Patent and Trademark Amendments Law) was passed in the

[39] Thomas Piketty, *Capital in the Twenty-First Century* (Cambridge Massachusetts: The Belknap Press of Harvard University Press, 2014): 74-109.

United States. The law was passed, not least, in the hope of spurring innovation, which could rekindle levels of economic growth seen in the preceding decades. Brushing away the many complexities, the core of this act was that inventions produced in universities and private firms operating under government contracts and funding, could remain the property of the inventors and the institutions which produced them, while granting the federal government certain licensing rights. This was in sharp contrast to the previous regime where the government took title to all such inventions. While, as Paula Stephan has pointed out in her book: *How Economics Shapes Science* (2012), attributing the shift in the intellectual property regime from public to private to this act alone is too simplistic, nevertheless the act itself, and the litigation concerning it over the next 20 years, makes it a landmark in the privatization of science in the United States.[40] It was a landmark, not least, although this is not often mentioned, because it not only *allowed* institutions sponsoring inventors with government funds and (faculty) inventors themselves to patent and possess their novelties jointly, but actually *required* that they do so, under penalty of losing all intellectual property rights if they did not.

The transformation wrought, in the aftermath of this change in intellectual property rights, on the structure and aims of scientific research has been enormous. In effect, and without question, the former firewall between for-profit firms, and non-profit organizations has vanished. Large research universities are in every way, on the side of scientific research, indistinguishable from large for-profit firms conducting research and development. There has been an explosion of a managerial level in universities of offices and managers which barely existed before the Second World War, but now in numbers and influence that generally matches or even exceeds that of the faculty and other supported researchers themselves. This transformation has been extensively chronicled and instantiated by Stephan (above, 2012) by Philip Mirowski and Esther-Mirjam Sent in *Science Bought and Sold* (2002), In Mirowski's: *Science-Mart. Privatizing American Science* (2011), by Daniel Greenberg's *Science for Sale* (2007), and there is no need to repeat the evidence here; it is a "done deal."[41]

Among the most striking changes have been those in the norms of science. The norms of scientific practice formulated by Robert Merton as CUDOS — communal, universal, disinterested, organized skepticism — are now in conflict with a new set of norms which one might formulate as SLICK — secret, local, interested, confirmation-biased knowledge. The pervasive commercialization of science, especially since the Bayh-Dole Act of 1980, has brought a new and distinctly unfavorable view of science – now often seen as a generator of expensive products that are marketed to policy makers and the public by profit-oriented techno-scientific elites. This recent development adds to familiar challenges in the public presentation of scientific debate. Research scientists are now not simply allowed but required to participate in the exploitation of inventions rather than the exploration alone which created them, and commitments to secrecy, noncompete agreements, withholding of data, and other practices that seem anomalous in the context of the ideology of scientific research taught students at the secondary and college level, are now the rule rather than the exception.

A second striking change in practice of university science, has been the appearance

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[40] Paula Stephan, *How Economics Shapes Science* (Cambridge, MA: Harvard University Press, 2012): 46.

[41] Philip Mirowski and Esther-Mirjam Sent, *Science Bought and Sold: Essays in the Economics of Science* (Chicago: University of Chicago Press, 2002). Philip Mirowski, *Science-Mart: Privatizing American Science* (Cambridge, Mass: Harvard University Press, 2011). Daniel S. Greenberg, *Science for Sale: The Perils, Rewards, and Delusions of Campus Capitalism* (Chicago: University of Chicago Press, 2007).

of an "audit culture" which attempts to quantify and commodify the value of scientific and other advances produced by faculty, and make budget allocations, hiring, and promotion decisions dependent on these metrics. Most of us are now familiar with impact factors, impact journals, and other metrical devices which attempt to shepherd research university scientists into rapid publication, and publication on matters with exploitable significance. This does not rule out all kinds of science, including many kinds of science which have no apparent commercial implications, but the audit culture that began in the exploitable part of the scientific part of the University has now become a managerial revolution in every corner and at every level of scientific work.

In brief, then, to the extent that scientists are now seen to be part of the managerial elite, the "revolt against expertise," characterized at the beginning of this article as an aspect of the revolt against management now falls into place. That this has been able to happen, and has happened, is the result of yet another profound revolution, without which this change in the perception of scientific practice could not have happened or might never have been noticed by mass society: the sudden appearance of the desktop computer, the internet, and the smartphone – and, in consequence, the equally sudden and entirely unanticipated the reappearance of *publics with voices*.

The New Media Landscape and the Return of the Public(s)

The rapid introduction of desktop computers into offices, government agencies, retail businesses, universities, and homes, coincides almost exactly in time (1980) with the revolutionary commercialization of science through the extension of the managerial revolution into university research. These two events are so intertwined that it will take a generation of careful historical study to tease them apart and understand the relationships, and this is certainly one of the most interesting tasks that faces the history and philosophy of science in the near future, since there are no aspects of life left untouched by this development.

It is unquestionably true that some of the most onerous office tasks and aspects of "knowledge work" were made redundant by these machines, and anyone who did not work to create a spreadsheet of costs, or develop a production timeline, or change a variable in an experimental calculation *before* the widespread dissemination of reliable and inexpensive spreadsheet and project management software can simply not imagine (though they can surely understand) how welcome this development was. But with this joyfully welcomed improvement came an unexpected and, for many workers, highly unpleasant consequence, one which emerged almost immediately and spread rapidly beginning in the middle 1990s: the experience of the automation and routinization of office and knowledge work, and the use of machine efficiency to reduce office staffs.

Within a decade or so of the introduction to the desktop computer, many office workers found themselves largely in the position of "machine minders," doing tasks that perhaps 2 or 3 other employees would have been required to do before automation. In addition, "white collar" workers began to experience what it meant to be managed closely and in every aspect of their daily labor — as had manual workers 70 years before them. It is not that there were not office managers before, but new efficiency calculations were possible based on output metrics per workstation, which allowed corporations to monitor, and speed up office work.

Almost overnight, "departmental secretaries," disappeared, and faculty found themselves typing their own letters, doing their own filing, and filling out their own reports. In HMOs and large hospitals, doctors suddenly found themselves chained to desktop computers during office visits with patients, as they were required to spend the bulk of the office visit turning the patient's self-report of problems into an electronic medical record, rather than looking at the patient. One need not multiply examples

endlessly to make the point that the discontent at being managed implicated in the "revolt against expertise" has migrated rapidly upward in the last 20 to 30 years, and created an anti-managerial public, paradoxically enough, within the that segment of workers which might, by others, be thoroughly identified with the managerial stratum -- including professionals of all kinds right up to the highest levels of universities, business,, social service, and government.

While one can see the desktop computer as an extension of the reach of the managerial revolution, it is difficult to characterize the Internet and the smartphone in the same way, as these appear to have very much the opposite sign. That is, they provide profoundly influential vehicles for anti-managerial agitation. The phenomenon of the Internet, and especially the Internet as mediated through the wirelessly connected smartphone, is so ubiquitous that life seems unimaginable without it, and is yet so recent that its social impact has yet to be understood, so rapid has been its evolution. Consider the following list of dates:

Google 1998
Wikipedia 2001
Safari 2003
Firefox 2004
Facebook 2004
Gmail 2004
Reddit 2005
Twitter 2006
iPhone 2007
Android phone 2008
Chrome 2008

These dates mark only the introduction of the fundamental software and hardware of these platforms and devices, not their almost inconceivably rapid proliferation, sophistication, and reach. Taken together they create the technological and sociological conditions for the sudden reappearance into political and social life of identifiable publics on the model of classical democratic theory, and provide a basis for rejecting the notion that, counterposed to a well-organized managerial of knowledge workers, is a relatively homogeneous "mass society." In the place of the mute mass society, many tens of thousands of readily identifiable publics, and they, above all, want to *speak*, and to say everything that they think, to anyone who will agree to listen: unmistakably the ideal of representative democracy.

To get an idea of how this works concretely, one might point to one of hundreds of smartphone-mediated internet utilities: Reddit. Reddit doesn't "do" anything, except provide a platform for groups of like-minded people to gather together and discuss whatever they wish to talk about, to moderate discussion, decide on limits of acceptable speech, and motivate action. As with most such applications, the business model is either "free" with commercials, or subscription with no commercials. Within the Reddit universe are more than 100,000 "subreddit" groups currently active, not only do these groups exist, but they have discernible overlapping memberships which lead to larger publics and cross communication — the next hierarchical step in the democratic ideal outlined by C. Wright Mills in *The Power Elite*. These groups fulfill each of his stipulations for the existence of a democratic public: there should be as many speakers as hearers, they should have the ability to respond immediately, possess the ability to turn speech into action almost immediately, and while it is possible that "authoritative institutions" may penetrate these publics (and this is certainly the case in China, and quite likely in Europe and the United States as well), these groups are, so far at least, apparently more

or less autonomous in their operations. As Mills said in 1956: "When these conditions prevail, we have the working model of a community of publics, and this model fits closely the several assumptions of classic democratic theory."[42]

One profound difference between the classical democratic model and these publics, however, is that they are almost entirely horizontal, with no structure of vertical integration, as imagined in democratic theory. The gap between the managerial class, and the publics is there still, and one might argue that it is even widening. While these publics can mobilize on their own and have done so in a variety of settings that have had a profound political impact, one interesting aspect of this new media landscape is that the traditional managerial elites are forced to listen to the publics, and to try, sometimes successfully, and often desperately, to capture their attention, and perhaps their votes and allegiance. It was clear from the beginning of the presidency of Donald Trump, that he would wield his power not exclusively through the regular organs of government, but through the perpetual mass mobilization of his 38 million Twitter followers. Now out of office, as of this writing in mid-2021, he maintains his grip on the Republican Party through his domination of aspects of this new media landscape. While he no longer has a Twitter account, again (as of this writing) he is struggling to build his own media platforms, realizing that the necessary access is no longer to a mass but to a set of publics.

The study of the social networks created by these new media is still in its infancy. As Charles Kadushin pointed out in 2012, in his *Understanding Social Networks*:

> The motivations to engage in the types of social networks described are thus crucial to network analysis, and yet, network theorists have by and large been un-interested in psychological foundations, believing that networks themselves produce motivation. While that is true, motivations also produce and sustain networks. Cultural and social differences in these motivations are under-researched. The role of motivations and sustaining and creating networks and the human cognitive limitations and handling networks, even in the era of Facebook and Twitter, are areas where much more research is needed.[43]

In any case, it is important to recognize that the phenomena at hand are a matter of the sociology of knowledge — the way groups coalesce into shared knowledge networks — rather than a sociological *theory* of knowledge, which is a matter of a special epistemology of valid knowledge claims. It may be that here, as C. Wright Mills said of the mass media 1956, that the functions and implications of these electronic publics are so pervasive and subtle that "they cannot be caught by the means of social research now available."[44] But if historians and philosophers and sociologists of science are to take as a central concern the social role of scientific expertise, then the matter of who is seen as an expert, by whom, and under what circumstances, is something that probably should be discovered at the earliest possible moment. In so doing we should recall that the fundamental model of scientific debate in the United States is that of adversarial jurisprudence. The current moment makes it quite evident that the two sides of the debate are no longer expert vs. expert, as much as the experts vs. the various publics, a very different sort of problem and a very pressing one.

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[42] Mills, *The Power Elite,* 304.

[43] Charles Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings* (New York: Oxford University Press, 2012): 73.

[44] Mills, *The Power Elite,* 311.

The examination of the phenomenon of these vocal publics and their resistance to management, whether by economic, political, or scientific and technical elites, requires some self-examination as well. Each of the disciplines of science studies – history, philosophy, sociology – has a slightly different approach to and interest in the material. The history of science has tended to be investigative, the sociology of science ameliorative, and the philosophy of science normative. In recent years, the history of (recent) science has joined sociology in being ameliorative – trying to provide some sort of positive (however construed) change in the phenomena being studied. The effort towards the establishment of racial and gender equity in historical subjects of investigation, and the unmasking of prejudiced attitudes in previous historical efforts has been quite vigorous in the last decades; surely this qualifies as ameliorative. The normative function of the philosophy of science has aimed its efforts not at general social norms, but specific practical and epistemological norms within the realm of natural scientific theory and practice. Yet to pursue this new subject matter of vocal publics, philosophy would have to broaden its investigation to consider the epistemological norms of the publics, as well as those of the experts.

Such self-examination by science studies experts is likely to reveal, even at a first pass, a variety of groups within these disciplines, each with a further discriminated aim in approaching the subject matter. The work of sorting these aims out is not difficult, empirically speaking, but it is often painful. For instance, the question arises whether a "revolt against expertise" is even a problem. A problem for whom? Certainly, a problem for experts, but to approach the subject matter from this angle – rejection of expertise is a problem – is probably already to identify oneself as a member of an expert elite of some sort, and it would be surprising if the attitude of such investigators were not ameliorative: how can we get them to listen to us again? A thoroughly investigative approach would require a dedicated inquiry into the aims and concerns of these various publics, not just the aims and concerns of the experts who attempt to advise them. It would also tend to highlight the difference between what the managerial elites desire for the publics (formerly known as "the mass of people") and what these publics desire for themselves; this difference is often gigantic.

There are many other questions. The lack of training in working with big datasets, as well as the statistical and computerized literacy required to study this material, may not pose a problem for sociologists, but certainly will for historians and philosophers. Moreover, the tendency for the pertinent data to be held secret as proprietary capital assets by the companies that have collected them will stand as a major obstacle in the way of understanding "what's going on." But among the many questions that this "revolt against expertise" raises, probably the most pressing and the most piercing is whether the investigator in question would rather live in a society ruled democratically, or in a society apparently democratic, but ruled by elites?

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