SHORT LOAN

# Inventing the French Revolution

## Essays on French Political Culture in the Eighteenth Century

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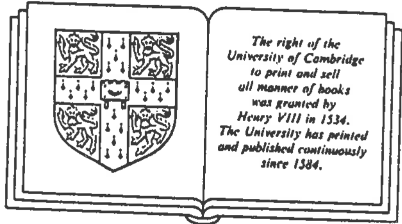


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# Science and politics at the end of the Old Regime

What is it that statesmen have generally wanted from science? They have not wanted admonitions or collaboration, much less interference, in the business of government, which is the exercise of power over persons, nor in the political maneuverings to secure and retain control over governments. From science, all the statesmen and politicians want are instrumentalities, powers but not power: weapons, techniques, information, communications, and so on. As for scientists, what have they wanted of governments? They have expressly not wished to be politicized. They have wanted support, in the obvious form of funds, but also in the shape of institutionalization and in the provision of authority for the legitimation of their community in its existence and in its activities, or in other words for its professional status.[1]

With these words, Charles Gillispie concluded his comprehensive study of the relationship between science and polity in France at the end of the Old Regime, the period in which that relationship "began to assume a form characteristic of the modern state and of modern science."[2] In doing so, he invited us to consider as characteristic – then as now – a pattern of instrumental interaction between science and polity, ordered as a mutually beneficial but strictly limited partnership between two clearly separate and occasionally intersecting domains of activity. This pattern, Gillispie argues, "inheres in the nature of science and of politics."[3] Since politics is by definition the exercise of power over persons, and science by definition the search for knowledge of things, a basic separation is clearly required to maintain the identity and integrity of the two activities. As a result, their interaction – no matter how regular and systematic it may appear – is in the strict sense only occasional and

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instrumental. From scientists, statesmen have sought the instruments provided by technical knowledge: "powers," in the sense of usable expertise, rather than "power" – presumably in the sense of scientistic legitimation of their authority. Governments, in other words, utilize the knowledge of scientists for specific purposes, but they do not appeal to science and its values as justification of their authority to command. Scientists, in their turn, accept mobilization by the state for work toward the solution of specific problems; but they do so not because they regard political and social questions as a matter of scientific concern per se, but because they receive financial support, institutional status and professional legitimation in exchange for their technical expertise.

Gillispie tells us that he first became aware of this basic pattern of interaction between science and government in his earlier study of the practice of science during the revolutionary and Napoleonic period. There he was struck by the fidelity with which the scientists provided the state with technical expertise, without any regard for the revolutionary turmoil of factional disputes, or for the charged distinctions between successive political regimes. Gillispie contends that this same pattern of partnership also obtained – and became systematically evident – in the last decades of the ancien régime. "So matters stood in Turgot's time and earlier. Science was not the source of a reform movement or of liberalism. Its role was to provide the monarchy with the services and knowledge of experts and in return to draw advantages from the state for the furthering of science."[4]

## Scientists in the service of the state

Gillispie has therefore traced back into the last decades of the ancien régime the emergence of a phenomenon that he first found characteristic of the revolutionary period – and, by extension, of the modern state as a whole. There is certainly abundant evidence to be found during this period for a mobilization of science and scientists in the service of the state, a tendency that erupted into a flurry of activity during the brief reforming ministry of Turgot. Almost everywhere one looks, in the last few years before the Revolution, scientists are found at work on issues of relevance to public utility and social policy: directing their research, on the one hand, to technical problems of the kind relevant to such questions as the production of munitions, the improvement of agricultural productivity, the building of canals, the reform of weights and measures; elaborating new domains of scientific expertise, on the other hand, in relation to such matters as the measurement of population and the calculation of life expectancies, the design of hospitals and prisons, the improvement of sanitation and water supplies, the control of epidemics



in populations both human and animal – in short to an entire range of issues bearing upon the rational organization and control of social life.

As they extended their activities in response to administrative demands and their own perception of social needs, scientists also found their position within the institutional order secured and expanded. The Paris Académie des sciences, admired and imitated throughout Europe as a model scientific institution in the service of an absolute state, enjoyed unprecedented prestige and authority in the last two decades of the ancien régime – advantages for which it was to pay dearly once the French Revolution came.[5] During this same prerevolutionary period, the constitution of the Académie was reorganized to reflect the increased specialization and growing professionalisation of its members, while the expertise of its committees and commissions was sought, and its judgments publicly delivered, on an expanding range of issues.[6] No less important, the Académie des sciences was joined in Paris by new scientific bodies formed according to the same basic model, and functioning in similar ways as institutions of the state linking the advancement of scientific knowledge with its application for the purposes of public utility. The Société royale de médecine, initiated by Turgot in 1775 as a commission to investigate and control the spread of epidemic and epizootic diseases, was given formal status as an academy in 1778. Working through the administrative apparatus provided by the Contrôle général, it established a vast network of corresponding physicians throughout France, drawing upon their observations to extend medical knowledge and directing their scientific interests toward the improvement of public health and the amelioration of social conditions through processes of rational control.[7]

The success of the Société royale de médecine, in its turn, doubtless inspired the efforts of Bertier de Sauvigny, intendant of the Paris region, to strengthen the scientific membership and institutional standing of the Paris Société d'agriculture, reorganized in 1785 and given letters patent as the Société royale d'agriculture three years later.[8] An even more technocratic version of the same impulse to link administrative action and scientific knowledge in the interest of rational social policy motivated the activities of the institutional rival of the Société d'agriculture, the short-lived Comité de l'administration de l'agriculture, also established in 1785.[9] The brief history of this committee, driven by Lavoisier from consideration of technical issues to proposals for measures of fiscal and social reform too radical for the administration to consider, suggests that the line between scientific expertise and matters of social policy was still far from fixed in the waning years of the ancien régime.[10]

Certainly there is evidence, then, for the appearance on the eve of the French Revolution of that regular and systematic exchange of scientific knowledge for support which Gillispie sees as characteristic of the rela-

tions between science and polity in the modern state. Nor were contemporaries left in ignorance of these developments. "There is no more need to tell princes that they have an interest in protecting the sciences, or the public that scientists have a right to their gratitude," announced Condorcet, speaking as permanent secretary of the Académie des sciences in 1786.[11] Reflecting upon the development of the scientific role, this official spokesman for science in France left no doubt regarding the status that scientists had achieved in the service of the state. Their occupation, he insisted in his account of the reorganization of the Académie a year earlier, had become "an honorable estate and almost a public function."[12]

How does one explain the rapid appearance, within little more than a decade, of such an impressive cluster of governmentally supported scientific institutions? Was this institutional intimacy between scientists and statesmen merely the logical culmination of a long and steady courtship, a stately marriage formalizing the necessity for an institutional exchange of scientific knowledge for official legitimation, of cognitive powers for governmental support? Or were there elements of a more sudden infatuation – of philosophical convergence, historical contingency, or political strategy – too easily obscured in Gillispie's picture of the maturation of a relationship inherent in the very nature of science and politics? By placing the term "polity" in the title of his book, Gillispie tells us, he meant to refer to one or both of the first two meanings of the term given in the *Oxford English Dictionary:* (1) "civil organization (as a condition); civil order", and (2) "administration of a state, civil government (as a process or cause of action)." But we cannot afford to neglect the third meaning of the term offered by the *OED:* the sense of "polity" as "a particular form of political organization, a form of government." We need to ask what political significance the purposes, practices, and values of science may have taken on in relation to the particular constellation of issues, tensions, and needs characterizing French government at the end of the Old Regime.

## Science and administrative rationality

We might begin to consider this question by reflecting upon a simple example, the attempt to bring scientific expertise to the project of unifying weights and measures. Given his interest in the development of a truly integrated national economy, fostered by the free movement of goods and services, it is hardly surprising that Turgot was interested, as controller general, in the project of reducing the confusion of local weights and measures customary throughout France to a single standardized system. Nor is it remarkable that he charged his friend, the mathematician Condorcet, to bring available scientific expertise to bear upon this problem by pursuing the search for a natural and universal standard determined on the basis of geophysical measurement.[13] At first sight, there could hardly be a clearer example of the effort to use scientific knowledge to solve practical problems in which the state interested itself. There scarcely seems to be anything more complicated here than the development of technical knowledge in the service of utilitarian governmental purposes.



It is nevertheless worth asking why the unification of weights and measures was, in fact, defined by Turgot and Condorcet as a technical problem – a problem to which scientific knowledge could provide the requisite solution. In fact, there was no essential connection between the idea of unifying weights and measures, on the one hand, and the need to base a uniform system on a geophysical standard of measurement on the other. Since any system of weights and measures is essentially a matter of convention, it would have been entirely adequate to the project of unification to have extended to the entire territory of France any of the many conflicting regional systems then existing. This latter procedure would have comprised a purely political solution to a political problem: the creation of a single convention by an act of political authority. The difficulty facing Turgot, however, lay precisely in the fact that efforts to move toward the unification of weights and measures by purely administrative means were likely to founder, as they had foundered in the past, on the resistance of provincial customs and particularistic sentiments. By instituting a uniform system on the basis of a natural measure, scientifically established, Turgot was aiming to transform a political problem into a cognitive one, thereby invoking scientific knowledge in the exercise of political will. One of the great advantages of a natural measure, in other words, was that it seemed to possess the authority of a scientific solution to the essentially political problem of achieving consensus. By virtue of the authority of science, the conventions of power could be transformed into the apparent exercise of reason, and the constraints of political disagreement could be overcome by the authority of an ostensibly scientific solution.

In fact, little progress was made during Turgot's ministry on the observations and calculations necessary to establish a universal natural measure. Nor is it likely that he would have been able to overcome the forces of habit and vested interest that would have opposed its introduction. In this, as in many other respects, his project for reform was to await the political transformation brought about by the French Revolution, when the arguments for uniformity and utility could be reinforced by the more powerful principles of national unity and popular sovereignty. But this consideration in itself raises questions about the validity of an interpreta-

tion which sees the matter as the attempt by the government of a modern state to use knowledge merely as an instrument for political purposes.

Following Tocqueville, the modern state can be – and often has been – defined with the French Revolution in mind, on the basis either of its administrative organization or of its source of political legitimacy. With respect to its pattern of administrative organization, it may be defined as centralized, bureaucratically rationalized, and actively exploiting its own powers and the resources of society for purposes that include public utility and social welfare. Its political legitimacy rests in the principle of national sovereignty, which interprets state action as the expression of the popular will. But the monarchical state of the ancien régime, unlike the revolutionary and Napoleonic regimes that succeeded it, was not yet fully organized along rational bureaucratic lines, nor, of course, did it base its claims to legitimacy upon the doctrine of national sovereignty. These differences are of fundamental importance for an evaluation of the relationship between science and politics during this period. The revolutionary state did, indeed, need instruments – "powers . . . not power." It mobilized scientists in its bureaucratic service for the purposes of national defense and social utility, but it found its fundamental source of legitimation in the principle of national sovereignty. These conditions did not yet entirely exist, however, in the monarchical state of the ancien régime.

As Tocqueville emphasized, monarchical government in France had taken on an increasingly bureaucratic form, as administrative agents drawing the legitimacy of their authority from the will of the king had displaced the authority and assumed the functions of judicial officials whose duties derived from their ownership of offices in a corporate society of orders and estates. Certainly, too, this long-term development had been accompanied by a fundamental change in the nature and activities of the state itself, a change that can be briefly described as a shift from a passive to an active conception of the functions of government. In the traditional conception, government functioned to maintain good order and uphold traditional social relations; its activities and expenditures – and consequently the taxes required to support them – were necessary only within the limits of maintaining good order; the public welfare was a stable condition to be maintained, rather than a potential to be maximized. All this had changed with the growth of royal absolutism. Seventeenth-century conditions of warfare had required that governments increase their ability to raise taxes during a period of relative economic decline. Since taxation depended on taxability, the new administrative system, improvised to raise increased taxes, was also obliged to take a more active role in increasing the ability of the population to pay them. Economic prosperity and social welfare thereby became means to



the end of effective warfare. In the more peaceful eighteenth century, however, the means became an end in itself, the essential function and legitimating purpose of a new system of administration. Public welfare and social utility were no longer conceived as inherently limited. On the contrary, they were regarded as indefinitely improvable through the activities of a state apparatus now conceived as an active instrument for the achievement of social progress.

However, this new administrative apparatus had been simply superimposed upon older governmental forms, with which it now coexisted in a state of tension that became the more intense as its members sought to reform traditional social practices incompatible with the goals of administrative efficiency and national prosperity. How were administrators to justify their policies? They could not do so in terms of the traditional judicial conception of government as preserving a constituted social order, for their reforms frequently threatened the principles of privilege and particularism upon which that social order rested. Nor could they do so simply by invoking the exercise of the royal will, for the appeal to mere will was increasingly equated by their critics with the assertion of despotic power. Nor could they do so by an appeal to national sovereignty, a doctrine obviously incompatible with their own status as royal servants. But they could do so in terms of a conception of rational social order, based on scientific principles. They could, in other words, call upon the authority of science to justify their exercise of power on rational grounds; they could legitimate their actions by referring to a source of authority grounded in superior knowledge. In this sense, then, science offered the statesmen of the ancien régime more than a repertory of technology derived from scientific knowledge. It also held out the potential for a new source of legitimacy, a system of authority resting on principles of reason and nature.

This was indeed the dream of Turgot, that most enlightened of royal administrators, whose brief and urgent ministry so powerfully epitomizes the relationship between science and polity in prerevolutionary France. As Gillispie argues, Turgot "drew upon science and systematic knowledge in formulating policies intended to rehabilitate the French monarchy."[14] And Gillispie describes in some detail the ramifications of Turgot's efforts to achieve "the impregnation of government with knowledge"[15] by bringing scientists into the service of administration. "The historian," he maintains, "has become used to seeing a movement from aristocracy toward liberalism and democracy in all these developments, whereas what needs to be perceived is a movement from bureaucracy toward technocracy."[16] But much depends here on how we understand the terms "bureaucracy" and "technocracy."

## Bureaucracy in the dock

Since Max Weber, "bureaucracy" has been a more or less neutral term for a system of administration based on general rules, the rational and predictable distribution of responsibilities, and a rational use of means for the attainment of ends set within the framework of law. It is important to recognize that these were not the connotations of the term when it gained currency in France toward the end of the ancien régime. *Bureaucratie* made its appearance in the context of increasingly bitter criticism of the complexity and arbitrariness of the administrative system of the ancien régime and increasingly vociferous demands for the introduction of arrangements to ensure its responsibility to the public. Although the evolution of the term during this period remains to be traced in detail, its negative connotations are already clear when it appears in Grimm's *Correspondance littéraire* for 1764. Celebrating the recent decision to introduce free trade in grain, the journalist invoked the sentiments of the reforming administrator, Gournay, whose ideas regarding rational administration shaped the thinking of a generation of younger administrators, Turgot among them. Gournay, Grimm reported, was given to denouncing as "bureaumania" the spirit of regulation afflicting French government.

> Sometimes he made it a fourth or fifth form of government, under the title of *bureaucracy*. What good are so many offices, so many clerks, so many secretaries, so many *subdélégués*, so many *maîtres de requêtes* so many *intendants*, so many *conseillers d'Etat*, if the machine runs automatically and there remains no regulation to make, no poor little formality to observe? It's easy to understand that for all these people the freedom of the grain trade must be a monstrous abomination. In every country, reason establishes itself only over the long term and after having vanquished all the monsters and phantoms of prejudice and pedantry.[17]

Thus the discussion of "bureaucracy" in the *Correspondance littéraire* suggests its association with the views of reforming circles within the royal administration eager to simplify the apparatus of government in the light of a more rational understanding of the nature and necessities of the social order. The definition offered by Louis-Sébastien Mercier some two decades later, in contrast, gives the term a more directly political and popular cast. Directed against "the prodigious influence of the ministerial *bureaus*, so well known, and so generally resented, that the people has created a new term to depict it,"[18] the article that appeared under the title "Bureaucratie" in the *Tableau de Paris* in 1788 located the term squarely in the context of the increasingly vociferous public campaign against administrative despotism that culminated in the calling of the Estates General in 1789. For Mercier, the term belonged to "the people," not to a reforming administrative elite. It was "a word created in



our time to designate in a concise and energetic manner the extensive power of mere clerks, who, in the various offices of the ministry, give effect to a multitude of projects which they forge for themselves, or more often find in the dust of the offices, and which they favor out of personal taste or madness."[19] The power of these functionaries was all the greater in that it remained hidden, and all the more arbitrary in that their conduct was insulated, by its secrecy, from the scrutiny and assessment of the public. As a result, Mercier maintained, "they act according to their prejudices and their passions and obtain neither glory for the good they do, nor shame for the evil." In such conditions, human nature itself dictated that "the taste for absolute authority must naturally spring up in the so-called bureau."[20]

In the political language reported by Mercier, then, "bureaucracy" referred to the despotism exercised by ministers, and by their anonymous agents in Versailles, who had no constitutional position in the state and no legal accountability. It was secret, irresponsible government, carried out in the name of the king by persons who could not be brought to public account. This eighteenth-century meaning of the term is found ably summarized in the entry found for it in the section of the *Encyclopédie méthodique* devoted to matters of public administration (or *police*), and published in 1789 on the very eve of the meeting of the Estates General. There "bureaucracy" is defined as "government, administration, command by bureaus," and described as "that *abuse* [which] presents itself to the attentive observer every day."[21] The passage elaborating on this definition is worth quoting at some length:

> It is government when, by an abuse of bureaus created to play a subordinate role – an abuse as bizarre as it is unbelievable – [bureaucracy] assumes the functions of a magistrate, exempting one or another individual from submission to the laws, and subjecting citizens to obligations that the laws disavow; it is administration when stupid or corrupt clerks set themselves up as ministers, make the public fortune the object of their personal speculations, change, reform, or alter the best regulations, suspend or abolish useful establishments, etc. It is command when, above all, the agents of sovereign power accept orders from men incompetent to give them, either in relation to military operations or to the execution of arbitrary orders. This last kind of abuse prevails from the most important bureaus of the state down to those of the police, which are the epitome and, one might say, the very soul of the despotic system that has governed us for so long.[22]

In eighteenth-century French political discourse, therefore, "bureaucracy" meant the very opposite of the legal-rational authority discussed under that rubric by Max Weber. Bureaucracy meant unaccountability and inaccessibility to public scrutiny: the secret domination exercised by men shielded from public view. It meant irresponsibility: government by men who could not be called to account, because they lacked any formal

standing within the juridical order of the ancien régime. It meant ar-
bitrariness: the capricious application of laws and regulations. In a word,
it meant a hydra-headed despotism, the subversion of all lawful authority
by the tyrannical power of petty wills. Denunciations of bureaucracy
therefore underlined the problematic status of the new system of admin-
istrative authority that had grown up within the traditional institutional
system of the ancien régime, and the increasingly vociferous demands
that this system be made responsible to the public for its actions. They
expressed the process of political contestation by which critics of the
absolute monarchy – led by its more traditional judicial agents, the
magistrates of the parlements – placed the newer administrative system
on trial before the court of public opinion.[23] Indeed, the idea of "public
opinion" itself emerged, in the course of this same process, as the very
antithesis of – and the necessary remedy for – the secrecy and ar-
bitrariness of the administrative despotism represented by the term
"bureaucracy."[24]

By the time Turgot came to power, this trial of the administrative
regime had been continuing with a growing ferocity for some twenty
years. It reached a climax in the bitter political crisis of 1770–1, when, in
its efforts to put an end to the steadily escalating conflict, the govern-
ment virtually abolished the parlements by an act of arbitrary authority
that brought France close to revolution. When Turgot became controller
general three years later, in 1774, it was at the behest of a new monarch
anxious to avoid a resurgence of the bitter conflicts that had troubled his
predecessor's reign, on the one hand, and eager to assert his royal au-
thority in the name of enlightened service to the public good, on the
other. From this perspective, the new controller general's efforts to
achieve "the impregnation of government with knowledge" take on an
interesting political dimension. For the reforming minister who was the
servant of a monarchical regime, the fundamental problem was to free
administration from the taint of arbitrary despotism without at the same
time subjecting its power to maximize the public good to the political
claims of corporate interests invoking the rights of the nation. To do so
required the deployment of a new system of authority, according to
which the exercise of power was subject neither to the hidden tyranny of
arbitrary will, on the one hand, nor to the open, but uncontrolled, work-
ings of public opinion on the other.

As we have seen, Turgot developed radical plans for administrative
reform that would have made government more open and accountable to
an informed and enlightened public, under conditions that ensured the
rationality of political decision making.[25] As Condorcet explained in his
*Vie de M. Turgot,* the complex electoral and deliberative arrangements
the minister envisaged for the hierarchy of assemblies he proposed to



introduce for this purpose were ultimately intended to substitute a ra-
tional expression of the national interest for "that public opinion [which
is] a kind of obstacle common to all absolute governments in the conduct
of affairs, the resistance of which is less constant, but also less tranquil,
often as powerful, sometimes harmful, and always dangerous."[26] Fur-
thermore, to ensure that it would present no threat to the enlightened
exercise of monarchical authority, Turgot proposed that this hierarchy of
assemblies stop short of the national level until the habits of rational
participation in the conduct of affairs had "subjugated public opinion"[27]
and created the conditions for informed consent. As a reforming minis-
ter he was disinclined to abandon prematurely the principal advantage of
a monarchy: the capacity of a monarch to act in accordance with the
views of enlightened men without waiting for the general opinion to
catch up with them.[28]

## Science as social reason

Thus Turgot aimed, in effect, to open up an intermediate sphere be-
tween administrative power and popular will: the sphere of open and
rational discussion of the public good. In this context, science offered
more than a source of instrumental knowledge. It also offered the in-
spiration and potential source for a rational system of authority that
would be, at one and the same time, a remedy for the abuses of "bureau-
cracy" in its eighteenth-century manifestation and a control over the
public to which the critics of monarchical government had so effectively
appealed. Where bureaucracy was secret, science was open: It offered
objective knowledge, reached through the exercise of open discussion,
yet free from the fickleness and instability inherent in the rule of mere
opinion. Where bureaucracy was irresponsible, science was guaranteed
to the public, without being subject to it. Where bureaucracy was arbi-
trary, science was natural and universal: the open rule of reason, rather
than the hidden domination of will. From this perspective, then, the
"movement from bureaucracy toward technocracy" described by
Gillispie suggests the efforts of administrators to legitimate and reform,
by an appeal to the order disclosed by superior scientific knowledge, an
authority increasingly regarded as arbitrary and irresponsible.[29] This was
a matter not simply of practical instrumental knowledge and technical
powers but of the justification of power and authority by a superior
knowledge of nature. Government deployment of scientific knowledge
promised to do more than serve immediate practical needs; it also fos-
tered a more general ideological transformation of power through its
identification with scientific reason. Turgot's "impregnation of govern-
ment with knowledge" offered a scientistic reinterpretation of a tradi-

tional distinction long fundamental to monarchical government in France: that between arbitrary authority and absolute authority, between a government based on mere will and a government subject to reason, responsible for the public good, and open to informed processes of decision making.

This, I would suggest, is the broadest implication of Condorcet's assertion that Turgot "was convinced that the truths of the moral and political sciences are susceptible of the same certainty as those forming the system of the physical sciences, even those branches of these sciences which, like astronomy, seem to approach mathematical certainty."[30] Such a conviction went beyond a willingness to treat knowledge as an instrument provided by scientific experts in the service of the public good. It implied that politics itself was to be subjected to scientific rule; that natural reason, rather than political will, was to be the source of order and authority in political affairs. "Why should politics, founded like all the other sciences on observation and reasoning, not be perfected to the degree that greater refinement and exactness are brought to its observations, greater precision, profundity and correctness to its reasoning?", Condorcet asked in the *Vie de M. Turgot*, explaining his mentor's philosophical creed.[31] In such a view, scientific advance fused with social progress, the growth of knowledge with the expansion of human welfare, the conduct of public policy with the advancement of rational powers of cognition and control regarding the social and physical universe. Turgot "was not afraid of consulting savants," Condorcet insisted, "because he did not fear the truth."[32] "Far from believing knowledge to be harmful to the human race, M. Turgot regarded the ability to acquire it as the only remedy for its ills and as the true justification of the order, imperfect in our eyes but constantly tending toward perfection, which he observed in human affairs, and in the universe considered in relationship to us."[33]

Implicit in this argument is the fundamental deflection of political action from the volitive to the cognitive domain, the shift from the assertion of will to the progressive implementation of reason, that seemed to become so powerful an impulse within French government during the last years of the ancien régime. "To know the truth, in order to bring the social order into conformity with it, this is the sole source of public happiness," was Turgot's political creed.[34] For such a conception of politics, the authority of science offered a powerful support. In the physical sciences, Condorcet argued in explaining the minister's views, ignorance is readily acknowledged, and authority is accorded to the most knowledgeable. However, in the sciences bearing on social life – political economy was here the specific example – it is quite the opposite. "Everyone regards himself as judge; no one imagines that a science



employing the terminology of everyday language needs to be learned; the social right to have an opinion on social matters is confused with the right to pronounce on the truth of a proposition, which enlightenment alone can give. One wants to judge, and one is mistaken."[35]

Thus the most intriguing aspect of Turgot's political philosophy, as Condorcet presented it, lies precisely in the manner in which it sought simultaneously to acknowledge the claims of the public, while limiting and constraining those claims by instituting processes that would lead to rational social decisions. This, indeed, was the fundamental problem underlying the mathematical theory of collective choice that Condorcet himself undertook to develop in the *Essai sur l'application de l'analyse à la probabilité des décisions rendues à la pluralité des voix*. That work was intended to demonstrate mathematically the possibility of rationality in collective decision making in a society where the great majority of voters was at least enlightened enough to choose its representatives among a rationally competent elite, provided questions were posed to these representatives in a logically exact form, their deliberation being subject to precise procedural rules and to the requirement of majorities varying in proportion to the enlightenment of the assembly and the importance of the issue to be decided.[36]

In referring to the *Essai sur l'application de l'analyse* in this context, I should acknowledge that Gillispie and I have had a long-standing difference of opinion regarding its significance. Gillispie insists that Condorcet diffused and misused his talents to such a degree that his principal scientific work had little intrinsic merit, and he judges the latter's efforts to develop the calculus of probabilities harshly in comparison with those of Laplace, whose interest in the subject overlapped with that of his older contemporary. There is no doubt that Laplace's mathematical achievements in creating the classic calculus of probabilities far surpassed those of Condorcet in this field. But it seems clear that Gillispie's negative evaluation of Condorcet's achievements goes beyond the issue of scientific merit and has to do more fundamentally with that of scientific role. "Laplace's interest in the social application of mathematics," he argues, "was of a different order from that of Condorcet. In the case of Laplace, the motivation was mathematical and professional, and the phenomena only happened to arise in political and civil realms, grist to the mill. In the case of Condorcet, the emphasis was reversed. His motivation was sociopolitical, and mathematics was the instrumentality."[37] Another way of stating this comparison between the two figures would be to say that Laplace's concern with the social application of mathematics was purely technical: He was interested in social phenomena only insofar as they served his scientific interests. "Ever quite indifferent" to politics, "except for its bearing on his own career,"[38] Laplace seems to fit Gillispie's

conception of what the natural relationship between science and politics is – and therefore should be at the end of the Old Regime.

Condorcet, on the contrary, does not, precisely because he was interested in the application of mathematics to social affairs not simply as the expression of a technical problem but as the basis of a comprehensive project to transform social action into rational choice. For Gillispie, this means that Condorcet was more interested in politics than he was in science; since he got his priorities wrong, it is only appropriate that he accomplished little of scientific value. But Condorcet was scarcely alone, in this age of scientific enlightenment, in failing to distinguish purely scientific from purely social or political aspects of his endeavors. The same might be said, for example, of Vicq d'Azyr in his program for the penetration of the entire social order by medical science, of Lavoisier in his researches toward a more scientific agriculture, of Tenon in his famous plans for hospital design. Many of the savants and statesmen who came together in this great age of scientific academies shared an impulse to bring the world of social action within the domain of scientific reason. Bailly expressed their common creed in describing the work of the academic commission investigating the scientific and social disorders associated with mesmerism: "It is a fine use of authority to spread enlightenment! Members of the commission have hastened to accede to the views of the administration and to respond to the honor conferred by its choice."[39]

In concentrating on the relationship between science and polity as it was expressed in the thought and action of Turgot and Condorcet, I do not wish to suggest that Turgot's ambition to redeem administrative authority by appealing to the principles and practices of scientific reason is typical of all royal administrators at the end of the ancien régime, or that Condorcet's ambition to subject social and political action to scientific measure is characteristic of all scientists. I do argue, however, that this intellectual and political collaboration between the minister whose brief tenure of power so dramatically fostered the growing interaction between science and the state in prerevolutionary France, and the academician who was the official spokesman for the scientific community in France during its most brilliant and powerful years, reveals a more complex relationship than the mere exchange of expertise for government support. Like the enhanced authority of the central scientific institutions supported and created by the absolute monarchy in the last years of the ancien régime, this collaboration was a response to a crisis of legitimation that afflicted French government during that period – a crisis ultimately resolved, in 1789, only by the assertion of a revolutionary political will more immediately compelling than the appeal to the authority of scientific knowledge.

# 8

# Public opinion as political invention

The theme of this essay can be presented quite simply. Turn to the eleventh volume of the *Encyclopédie,* published in 1765. Look up the article "Opinion." There you will find the traditional rationalist distinction between rational knowledge and uncertain opinion vividly illustrated by a metaphor contrasting the full, clear light of the midday sun with the flickering, feeble glow of a torch in the darkness. "Rational knowledge [*la science*] is a full and entire light, which reveals things clearly, shedding demonstrable certainty upon them; opinion is but a feeble and imperfect light, which reveals things only by conjecture and leaves them always in uncertainty and doubt."[1] Appearing as it does in a work constructed along the fault lines in the rationalist theory of knowledge upon which the traditional distinction between knowledge and opinion depended, this article surprises only by its utter conventionality. In fact, its conception of opinion is precisely the same as that underlying the vast compendium of conventional wisdom on the matter compiled in 1735 by the marquis de Saint Aubin under the title *Traité de l'opinion, ou Mémoires pour servir à l'histoire de l'esprit humain,* a treatise which concludes its contemplation of the variability of opinion, predictably enough, with a Hobbesian argument for absolute monarchy.[2]

The matter becomes more interesting, though, if one turns to the *Encyclopédie méthodique* and again looks up the term *opinion.* The first thing one finds is that the original article has simply disappeared. There is no entry at all for *opinion* in the section entitled "Logique, métaphysique & morale," nor is it to be found in the section entitled "Philosophie." Instead, the term shows up not in the philosophical sections of the

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