

# Using and Abusing Science



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*Science and Political Discourse  
from Burke's "French  
Revolution" to Obama's  
Science Fair*

Edited by

Véronique Molinari and Cyril Besson

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# TABLE OF CONTENTS

Introduction .....	vii
Cyril Besson and Véronique Molinari	

## **Part I: The Imagery of Science**

Scientific Imagery in Edmund Burke's <i>Reflections on the Revolution in France</i> (1790): Edmund Burke's Vindication of the British Scientific Tradition .....	3
Sarah Peyroux-Roblin	

Doctor Jekyll and Citizen Stevenson: Figures of Science as Forms of Political Discourse in the Work of Robert Louis Stevenson .....	17
Cyril Besson	

## **Part II: The Migration of Scientific Concepts**

Andrew Carnegie and Managerial Darwinism: From Scientific Discourse to Management Concepts at the Turn of the Twentieth Century.....	45
Christian Leblond	

'Equivocating upon Law and Science': Science, Politics, and the Migration of Humanitarianism in Nineteenth-Century America.....	61
Jeffrey Mullins	

'Who Is To Decide Who the Medical Charlatans Are?': Benjamin O. Flower, 'Medical Freedom' and Scientific Expertise in the USA in the 1910s.....	81
Jean-Louis Marin-Lamellet	

Science and Animal Ethics: Peter Singer's Utilitarian Approach.....	109
Émilie Dardenne	

### **Part III: The Rhetorical Power of Science**

Constructing Weakness: Scientific Rhetoric and Victorian Sensibilities ... Julie Homchick	129
‘The Eugenic Vote’: Eugenics and Suffrage Rhetoric in the Edwardian Period..... Véronique Molinari	147
Barack Obama’s Popularization of Science: A Political Strategy? ..... Grégory Benedetti	167
Was there an Alternative? Economic Science, Political Discourse and the Neoliberal Revolution..... Paul Auerbach, Gilles Christoph and Marc Lenormand	191
Bibliography.....	213
Contributors.....	239
Index.....	243

## INTRODUCTION

Over the last two centuries, as politics has evolved from the status of “amateurship” to that of profession, political discourse, its practices—the use of rhetoric among others—and their validity, have been increasingly questioned. Politicians, as illustrated by the low turnouts that have recently characterized general elections and a general lack of interest in politics throughout Western countries, enjoy less than ever the trust of the electorate; their discourse, as underlined by Christian le Bart, is now often criticized for being both hollow and untrustworthy, “predictable, coded, to the point of being potentially fraudulent, less interesting than self-interested” (2003, 1, 3). Conversely, by evolving from the status of enlightened amateur to that of expert, the figure of the scientist has, over the centuries, gained credibility with the general public. Even though, by presenting it as a form of discourse essentially aimed at convincing, Lyotard, in 1979, challenged its traditional view as the expression of reality (*La condition postmoderne*), science continues to be held in high regard and to be believed to provide a reliable form of knowledge. Summoning science has thus often been a way, in everyday life, advertisement and the popular media, to lend authority to a discourse, and imply that one’s claims are well-founded or beyond dispute. “The naming of some claim or line of reasoning or piece of research ‘scientific’”, Chalmers explains, is “intended to imply some kind of merit or special kind of reliability” (xix). That politicians should have occasionally been tempted to do the same and make up for the deficit of legitimacy of their discourse through the instrumentalisation of scientific arguments or participation in contemporaneous debates on scientific issues is, therefore, not surprising. The issue at stake in this volume is to examine how, and to what extent, this process may have been taking place in the past two centuries.

Defining political discourse is not a straightforward matter. A discourse may be considered as “political” because of its source (the professionals of politics), its contents (it refers to current issues faced by the government), its mode of transmission or its effects (its electoral impact for instance) (Le Bart, 1998, 6). At the same time, “the political” can be defined so broadly that any discourse may be considered as “political”. The choice, in this volume, has been not to limit political

discourse to the discourse of experts but to exclude, nevertheless, the “everyday discourse of politics” (Wilson, 411). Will be considered as political discourse, in this study, discourses concerned with formal or informal political contexts and political actors, aimed at achieving political goals and presenting a political case.

Back in 1946, George Orwell, referring to the “lack of precision” of writers and their inability to express properly what they meant, wrote:

The writer either has a meaning and cannot express it, or he inadvertently says something else, or he is almost indifferent as to whether his words mean anything or not. This mixture of vagueness and sheer incompetence is the most marked characteristic of modern English prose, and especially of any kind of political writing. As soon as certain topics are raised, the concrete melts into the abstract and no one seems able to think of turns of speech that are not hackneyed: prose consists less and less of *words* chosen for the sake of their meaning, and more and more of *phrases* tacked together like the sections of a prefabricated hen-house. [...] In our time, political speech and writing are largely the defence of the indefensible. Things like the continuance of British rule in India, the Russian purges and deportations, the dropping of the atom bombs on Japan, can indeed be defended, but only by arguments which are too brutal for most people to face, and which do not square with the professed aims of the political parties. Thus political language has to consist largely of euphemism, question-begging and sheer cloudy vagueness (1969).

The issue of manipulation and the aim of such manipulation for political goals, which were at the core of Orwell's comments, have been recurrent in works on political discourse, but with perhaps different levels of emphasis and analysis (Wilson, 400). In Fairclough's view, for example, political discourse is criticized as a “form of social practice with a malign social purpose” (in Wilson, 401). Instrumentalizing science, selecting scientific theories, not on the basis of objective criteria but on the basis of how helpfully they will serve their (political) goal, seizing upon scientific models or ideas so as to nurture and support their arguments on the assumption that science cannot be questioned and therefore one's discourse cannot be questioned—all these certainly pertain to such strategies of manipulation.

It is undoubtedly true that this misappropriation of science is made easier by a certain vagueness that seems to rest in the concept's DNA, if we consider its etymological meaning, as *scientia* is in Latin no different from the notion of knowledge itself. Through time, the term's breadth narrowed to something akin to a “body of knowledge organized in a systematic manner” (dictionary definition) and in a more modern usage



still, “science” came to refer to a way of pursuing knowledge, not only knowledge itself. In the extra-linguistic world, this evolution could be seen as indiscernible from a no less gradual division (one feels tempted to say, “break”) between an abstract form of philosophy (increasingly removed from the material world), with its claim to a universal understanding of “it all” (almost *a priori*, in the mind of the thinker), and a branch more grounded in the scrutiny of phenomena, no less ambitious perhaps but planning to achieve its ultimate goal, the explanation of everything, through different means. The method used requested a systematic study of the nature and behaviour of the material and physical universe, based on observation, experiment, and measurement, putting forward the formulation of *laws* to describe these facts in general terms.<sup>1</sup> Thus was born, or at least formalised, natural philosophy, the basis for what we now understand to be “science.” The 17<sup>th</sup> and 18<sup>th</sup> centuries, especially, were a turning point, in that they publicized knowledge as increasingly formulated in terms of these “laws of nature.” Consequently, in the course of the 19<sup>th</sup> century, the word “science” became increasingly associated with the scientific *method* itself to study the natural world, leading to a growing specialization of various disciplines (including physics, chemistry, geology and biology) that shared an awareness that different domains had to be approached in different ways, making their respective objects more manageable. It is also in the 19<sup>th</sup> century that the term scientist was first coined and increasingly replaced the expression “natural philosopher,” signalling the consummation of the differentiation between philosophy and science, and the eventual advent of an autonomous scientific field. The latter, however, is to this day far from being unified, despite attempts to bring these “innumerable and endlessly diverse topics” that compose science under one formula.<sup>2</sup>

Given the topic of this book, it is of course not “science” as such that is to be examined in the following pages, but rather the *representation* of science, an image that rarely has much to do with the real thing, its inner workings or ultimate goals. Nor will we be concerned with the so-called “hard” sciences only, although they will be prevalent in this volume, as the symbolic weight they carry undoubtedly bestows more rhetorical power to those who wield the “scientific argument” than other—less undisputed—disciplines. Other sciences discussed in the following pages will include the so-called “social” sciences, such as economic science (even though its epistemic status is sometimes contested), as well as a flurry of others, some so discreditable for the common image of science as to be labelled “pseudo-sciences”,<sup>3</sup> such as eugenics or phrenology. Even though the object here is not to enter this controversy, one can note that in this

segregation, the central question is that of objectivity. For all intents and purposes, science is seen as objective, even objectivity itself, which posits it in the common imagination as at odds with politics, typically associated, as has been said earlier, with ideology. It is true that the two fields do not share the same goals: politics is concerned with the state of society and, even for conservatives, with a project, yet unrealized, but presumably oriented towards the improvement of this society. In this respect, referring to science enables the practitioner of politics to anchor his or her “unsubstantiated” discourse in something non transient, a field that has to do with facts and the reality of how the world works. Science is perceived as capable of abstracting itself from the world in the name of observation, refraining itself from all value-judgments or ideological leanings, and constituting a community whose inner conflicts bear little resemblance to polemics as expressed in the more aggressive realm of human affairs, the political arena. Thus, for some time, decision-making—at least in the Western world—has regularly been resorting to statistical science as a tool for guiding action and policies, conferring to them the authority of rationality.

Science appears, then, as a powerful, all-purpose argument. The difference between science itself and the way it is used is the claim to omnipotence that is made in the case of its exploitation for political purposes. Seen from within, what characterizes science is precisely the emphasis it places on the limits of its authority: the founders of modern philosophy of science especially, including Sir Karl Popper and members of the Vienna Circle like Otto Neurath, saw it as part of their role to explain the authority of science in terms of what falls within its bounds and which objects, on the other hand, elude its scrutiny. The corollary is that not everything will be explained one day.

While the progress of science, its ideas and its findings, can be an object of study in themselves, this volume, by examining the use of scientific arguments in political discourse, rather seeks to add to its cultural history, understood as the way it relates to society and is accommodated by culture. This link between political discourse and science will be examined, in its various forms, over a time-span covering a little more than two centuries, starting in late 18<sup>th</sup> century Britain and ending in the United States of the early 21<sup>st</sup> century. If we choose to consider this connection as a gradient, then three stages can be distinguished, from an indirect use of science as imagery to its direct integration—and the exploitation of its rhetorical power—in political texts and speeches.

The first example of a use of scientific imagery to serve a political discourse in this volume is drawn from the Revolutionary years, a time, according to Charles Coulston Gillispie, “when the density of the intersections [between politics and science] increased to a degree that is characteristic of modern polity in general” (2004, 1). The “scientific revolution”, which is usually held to have begun with Copernicus (1473-1543) and ended with Isaac Newton (1642-1727),<sup>4</sup> had seen a core transformation, which had begun in cosmology and astronomy and then shifted to physics. For some historians, these changes in “natural philosophy”, considered as the precursor of “natural sciences” or empirical science, had brought about important transformations in both ontology and epistemology (or how Europeans justified their claims to knowledge) (Hatch). Science, which was now dominated by scientific societies and academies as centres of research and development, played a leading role in Enlightenment discourse and thought. Parallel to the political upheavals of the French Revolution, remarkable scientific achievements took place and Paris became a vital centre for new scientific thought. Yet, as shown by Sarah Peyroux, for Edmund Burke, British statesman and political philosopher, the French Revolution was drawing on perverted scientific principles, which he opposed to the British scientific tradition—the basic seventeenth-century Baconian and Newtonian empirical philosophical and scientific methodology. The link between this essentially inductive scientific method and Burke’s political philosophy, as illustrated by the author, is in fact the underlying reason for his thunderous denunciation of the French Revolution with its—almost *ex nihilo*—tendency to reconstruct the whole of French politics and administration on the basis of abstract—and essential deductive—reasoning. Burke himself traces his lineage to Bacon and the British empirical tradition when he compares the political observer to the chemist waiting for his preparation to become stable before drawing conclusions from his lab-experiment. In *Reflections on the Revolution in France*, one of the best-known intellectual attacks against the French Revolution, which Burke published in 1790, science however does not only apply to the philosophical basis of its author’s thought. It is also part and parcel, through scientific similes, of the ‘imagery’ of his vituperative linguistic expression, which makes Burke, in addition to a philosopher, a powerful and effective polemicist.

Polemics is not what comes to mind first when one thinks of the work of Robert Louis Stevenson; yet he, too, famously brought into relief the bad uses of science in what can be considered a cautionary tale, *The Strange Case of Dr. Jekyll and Mr. Hyde* (1886). However, the 19<sup>th</sup> century Scottish writer does more than propose a simplistic charge against

science gone wrong. In the novella, as in other fictional texts, he uses the *figure* of the doctor to reflect, in both senses of the word, on that profession, the way it was structuring itself at the time, and the mechanisms of control it exerted on the practitioners as well as the patients. Stevenson's doctor is the living embodiment of the ambivalent views of what the transformations of the medical profession entailed not just for physicians, but also for society, in terms of the distribution of social power. As attested by Jekyll's literally split personality, the Scotsman seems to have been, like his contemporaries, of two minds on the matter, a fact further demonstrated if one considers that the figure of the doctor in his fiction is counterbalanced by that of the engineer in his biographical writing. If the former is a nexus of uncertainties and ambiguities, where the individual is at every step faced with the demands of his profession to conform to his class, the latter comes closer to a secular saint, "naturally" aligned with the orthodox view of his vocation. His civic virtues, more than his expertise (perhaps because the former presume the latter) justify, or at least *should* justify, in the context of work, absolute authority at all levels, from the political microcosm of interpersonal relationships to the macrocosm of the alliance of nations, as the international fame of Stevenson's father is taken to indicate in the eulogy written by his son. Through those figures of the middle class professional, what is discussed in Stevenson's work is the rightful social place, in this sense political, not so much of science as of the *practitioner* of science, and where that leaves the society he operates in. Thus, science is shown to have practical uses, not just in its order (theoretical science does appear in his work, but his focus is much more on applied science), but also in that its concrete *praxis* translates into social and political modes of organization that Stevenson does not necessarily challenge, but with which he at least defamiliarizes his reader.

Philosophy and literature can construe science as part of their discourse on politics and society, but they often do so somewhat superficially. Science in Burke's and Stevenson's work certainly feels more like a mirror they use to envisage themselves and their surroundings than a concern to deal with "the real thing." Other fields will claim to have a more concrete approach to science, and maintain that by virtue of employing methods seen as scientific, they are truly a form of applied science, in a pragmatic approach. In the wake of social Darwinism, and especially the work of Spencer, there happened a dramatic "migration of scientific concepts to the field of human governance and political discourse" (Leblond) and, one might add, to the social field. The proponents of this migration undoubtedly saw themselves as promoters of

the “genuine article,” though arguably, they were no less in a figurative relationship to science as such, than those acknowledging a looser connection. Perhaps an operative distinction between “science of” and “science for” should be made at this point, between a science that observes, conservative of the world *as it is*, and one aimed at change, for which understanding is the prelude to the modification of the world by human agents. Scientific status, and the symbolic capital thereof, is what the agents of the social and political realities exposed in this second part claim for themselves, and with these agents, science is no longer defined as observation of the world, but as *action*.

With Andrew Carnegie, we move from one figure of cultural and social excellence (the scientist) to another (the successful capitalist). As Christian Leblond establishes, the American industrialist/ philanthropist certainly tried to appropriate the symbolic capital and the authority bestowed by science, seemingly unaware of, or perhaps unwilling to consider, the many differences between his field and biology. Whether a *pro domo* argument from someone who “could easily be dismissed as a purely opportunistic predator whose sense of ethics was primitive” or one in total earnest, Carnegie’s use of the survival-of-the-fittest scenario, “building on the scientific discourse of Darwin and its subsequent transposition to human societies by Herbert Spencer,” is of paramount importance for a correct understanding of his principles of management, later so influential with others of his class, translating into a new form of human organization spurred by the corporate world.

As C. Leblond’s chapter attests, the prevalence of science in society and political discourse is not a given; a rhetorical appropriation is necessary before the claim to “being scientific” can be turned into social force by those who want to be seen as apt to wield science for the good of society and even the human race. Contrary to what we might think today, the “scientific argument” has not been seen as valid from time immemorial. Its history can be traced to a number of fundamental clashes between visions of the modes of regulation of society; the narrative that holds continuous, if sometimes uneven, progress for the place of science in social and political discourse, is a retrospective form of mythmaking disproved by many instances where discord, not agreement, was the norm. As J. Mullins shows, such a nodal conflict is exemplified by the controversies surrounding the 1846 Freeman case in the United States—a country where the supposed dominance of science is sometimes naturalized as an extension of the very Enlightenment principles upon which the nation was originally founded. Not so when one looks closely at the arguments developed during the trial by a number of prominent

political figures, J. Van Buren and W. Seward among them, denoting a partisan rift among the American political class. Their tacit views on the relationship between science and politics had to be openly and publicly assumed before the bar, compelling the participants in the conflict “to give clear articulations of their social views and epistemological assumptions”: the Whigs’ reform project relied on the authority of science while the Democrats’ views construed expertise as a confiscation of true democracy and egalitarianism, testifying to their differing views about the definition of a good society and ultimately, the meaning of freedom. In the end, the outcome of the trial led to something of a tie, for “if John Van Buren and the Democrats secured the legal victory, William Seward and the Whigs arguably won a moral victory”.

The same preoccupations lie at the core of journalist and editor Benjamin O. Flower’s crusade for “medical freedom” in the 1910s, advocating for the constitutional (in both senses of the word) right of Americans to choose from a whole array of medical practices not limited to conventional, or “allopathic”, medicine. He did so in the name of individual freedom, but also as a defense of the integrity of American society. Using Herbert Spencer’s evolutionary rhetoric to support his vision of progress, but also turning to the science of his day, Flower disputed the authority of normative, “state-sponsored” science, as part of an effort to regenerate and modernize the country. Curing the nation entailed the purification of society from the artificial barriers imposed by a restrictive medical legislation (the main manifestation of the bureaucratic order, a form of “class tyranny”) to ensure a return to the natural, free circulation of men and ideas so as to restore the essence of America. This is transparent whenever this struggle is presented as a reenactment of the key episodes of American history, be it the Revolutionary War (the National League for Medical Freedom represented the “spirit of 1776” and “patriots” had a duty to defend American principles) or the role played in the construction of America by slavery, when early twentieth-century America is presented as divided between “medical slave states” and “medical free states.” This raised a troubling epistemological and political question: who naturally held both the intellectual and political authority to decide and impose who the legitimate representatives of “science” were? Although Flower’s reasoning is imbued with “the Protestant tradition of an unmediated relationship between the individual and his spiritual, and here physical, welfare” (so that Flower’s crusade sometimes feels like “the Reformation redux” in Marin-Lamellet’s felicitous phrasing), it would be too easy to discard his endeavour on grounds of religious and libertarian zealotry. In criticizing scientists’ hubris, he developed a sense of what

Karl Popper would later call falsifiability, the fact that the scientific character of a concept resides in its refutability, sharing with the Pragmatists the idea that knowledge was tentative and collective, as well as an anti-elitist belief.

This concern for science's role in the freedom and welfare of human beings can be extended to other creatures than just the political animal, as the debates around the notion of animal rights illustrate. As E. Dardenne explains, for philosopher and ethicist Peter Singer, science enlightens us as to the sentience of animals, and their place in the ecological balance. It thus enables us to "better implement the values we have," while those moral premises are beyond the field of science itself, which cannot dictate a moral stance. His final goal is not scientific, however, or even truly philosophical for that matter, but practical: in the end, in his work, science-based statements of fact are connected with reasons for acting, not with moral judgments. Considering "the rights of orangutans" is then, contrary to Renan's argument, not absurd,<sup>5</sup> but political, although unconventionally so. Coming up with guidelines for a fair treatment of animals through a collective agreement would reconfigure the function and scope of politics. If "there might not be anything so distinctive about humanity that humans should have moral status and nonhumans should not," the field could then be dislodged from an anthropocentric position to one where all living creatures are accounted for. The end result of this could, if we follow Rolston, overcome even pathocentrism and lead to "a biocentric position, extending the scope of human responsibility to all living things," the *polis* now encompassing the whole of *Gaia*. Science would be a tool in the advent of this new ethic, leading to a dramatically enlarged view of the political.

The third part of this book will be devoted to the rhetorical power of science. "As a general rule", Auerbach, Christoph and Lenormand remark in the very last chapter, "the uses of science in politics tend to be *instrumental*—they are a means to an end." This aim is the accumulation of symbolic capital, what Bourdieu refers to as "the acquisition of a reputation for competence and an image of respectability and honourability..." (2013, 285). "Such indeed is the respect paid to science", Clerk Maxwell pointed out in 1871, "that the most absurd opinions may become current, provided they are expressed in language, the sound of which recalls some well-known scientific phrase" (quoted in Homchick). Science, because of the authority that is attributed to it, has therefore often been seized upon to advance political arguments and give more weight to a discourse, be it to contribute to the construction of women's domestic roles in 19<sup>th</sup> century

England or, conversely, to justify women's claim to political emancipation in the early 20<sup>th</sup> century.

The first contribution thus illustrates how, through the rhetoric and authority of science, Victorian scientific and pseudo-scientific texts could contribute to reinforce existing conceptions of gender in terms of physicality and intellect, particularly by underscoring the traits of female inferiority and domesticity. The works of Gall, Fowler, Galton, Pearson, Chambers and Darwin, Julie Homchick shows, all reveal the presence of ideological notions of female inferiority and domesticity. Interestingly while authors in phrenology and eugenics—two more overtly socially and politically-driven scientific theories—use scientific prose to promote a “separate sphere” agenda, Chambers' and Darwin's works, which appear much more descriptive than prescriptive, are imbued with similar messages regarding gender norms. Presented as scientific, the realm of the domestic sphere and traits of femininity could then be normalized and sanitized as part of the natural order of the sexes.

The women's movement that emerged in the late 19<sup>th</sup> century in Britain, while not necessarily questioning the existence of natural, or essential, differences between men and women such as those emphasized in the previous chapter, increasingly pressed for equal opportunities and equal rights in the field of education, employment and politics. The campaign for women's suffrage, among these, was to prove a long and difficult process, which lasted for more than half a century and culminated in the famous suffragette campaign of the early 1910s. The fact that, at this particularly tense period, an increasing number of militants should have felt it useful to put forward eugenic arguments to justify their claims for women's participation to parliamentary politics is yet another example of an instrumentalisation of science for political aims. The eugenic movement, which flourished in Britain at the turn of the century, can in itself be considered as a re-appropriation of scientific ideas which, mixed with a set of social theories, were to be applied to social policies. In this respect, the Darwinist and utilitarian origins of its arguments and, later, claims of statistical evidence, by giving it an appearance of scientific and pragmatic authority, undoubtedly contributed to its popularity at a time when concern for the future of the British “race” ran high. Even though it is usually considered today as a pseudo-science, eugenics was then presented as “the science which deals with all influences that improve the inborn qualities of a race” and its methods as “scientific.” Considering the emphasis it put on motherhood at the expense of women's emancipation and the limits it consequently sought to impose to women's access to higher education and political rights, that some suffragists should have



adopted such discourse may seem for the least surprising. To understand this process, and to determine whether the adoption of eugenic arguments in suffrage rhetoric stemmed from genuine adherence to eugenic concerns or corresponded to a process of instrumentalisation, Véronique Molinari takes a closer look at eugenic arguments and, more particularly, at the points of convergence with the feminist movement which made this reappropriation process possible. Taking the political background into account, she also tries to determine to what extent this argument of a “eugenic vote”, put forward in a suffragist publication, stemmed from genuine eugenic concerns or was an attempt to instrumentalize the increasingly popular eugenic discourse and follow the Liberal government’s concerns for national efficiency.

If political actors can use science with a view of advancing a political agenda, they can also contribute to shed light on science by putting in the limelight scientific issues that are often isolated in the anonymous world of their experts. Politicians, in particular, thanks to their status, can use their position of authority to promote science. One such example is provided by Barack Obama who, during his two terms in office, entertained, as shown by Gregory Benedetti, a bilateral relation of cooperation with the world of science. Not only did the 44<sup>th</sup> President of the United States, through his speeches, seek to offer the image of a politician who was supportive of the scientific community and to draw an ideological contrast with the Republicans on scientific issues; he also promoted initiatives and policies that aimed at putting science back at the forefront of the political arena and projecting a vision of science based on pragmatism, not on ideology. The annual White House Science Fairs, launched by Obama himself in 2010 following a commitment made at the launch of his *Educate to Innovate* campaign to “move American students from the middle to the top of the pack in science and math achievement over the next decade” (The White House, Office of the Press Secretary 23 November 2009) provided the President with opportunities, through his speeches, to regularly put forward his vision of science. Reuniting, not only science and politics, but also science and the younger generations, the Democratic Party, as illustrated by Benedetti, has thus presented itself as an ally of the scientific sphere, not only for the sake of science, but, more importantly, to advance a political agenda, reconnecting science (often perceived as exclusive and elitist) with social and ethnic minorities.

While the previous chapters have essentially focused on the natural sciences, the last chapter will investigate the legitimising effects of scientific discourse in relation to economics, with a particular focus on the interactions between economic science and political discourse during the

1970s and 1980s and on the role played by the economic theories underlying neoliberalism and the Alternative Economic Strategy put forward by post-Keynesian economists in the respective success and failure of these political projects. To understand how, in the 1980s, many observers left and right, in the United Kingdom, came to accept Margaret Thatcher's argument that there was no alternative to free-market capitalism, Paul Auerbach, Gilles Christoph and Marc Lenormand focus on the issues of inflation and the trade unions as conceptualized by proponents of neoliberalism and the AES as well as on their political and electoral impact.

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## Bibliography

- Bourdieu, Pierre. 2013. *Distinction: A Social Critique of the Judgment of Taste* (translated from the French). London: Routledge. [1984]
- . 1991. *Language and Symbolic Power* (translated from the French). Cambridge: polity. [1982]
- Boyd, R., P. Gasper & J. D. Trout (eds). 1991. *The Philosophy of Science*, Cambridge, Massachusetts: MIT Press.
- Chalmers, Alan F. 1999. *What is this thing called Science?* (third edition). Indianapolis: Hackett Publishing Company, Inc.
- Fairclough, Norman. 1989. *Language and Power*. London: Longman.
- Gillispie, Charles Coulston. 1959. "Science in The French Revolution" in *Proceedings of the National Academy of Sciences of the United States of America*, Princeton University, May, vol. 45(5): 677–684.
- . 2004. *Science and Polity in France: The Revolutionary and Napoleonic Years*. Princeton: Princeton University Press.
- Hatch, Robert A. "The Scientific Revolution, Definition – Concept – History" at <http://users.clas.ufl.edu/ufhatch/pages/03-Sci-Rev/SCI-REV-Teaching/03sr-definition-concept.htm> (accessed Sept. 28, 2015)
- Henry, John. 2002. *The Scientific Revolution and the Origins of Modern Science*. London: Palgrave Macmillan. [1997]
- Holly, W. 1989. "Credibility and Political Language", in Ruth Wodak (ed.), *Language Power and Ideology*. Amsterdam: John Benjamins, pp. 115-35.
- Kuhn, Thomas S. 1962. *The Structure of Scientific Revolutions*, Chicago: The University of Chicago Press.
- Latour, Bruno. 1989. *La science en action*. Paris: La Découverte.

- Le Bart, Christian. 1998. *Le discours politique*. Paris: Hachette.
- . 2003. “L’analyse du discours politique : de la théorie des champs à la sociologie de la grandeur”. *Mots. La ville, entre dire et faire*, 72 (July).
- Orwell, George. 1946. *Politics and the English Language*, First published in *Horizon*, London, April. To be consulted at:  
[http://www.orwell.ru/library/essays/politics/english/e\\_polit/](http://www.orwell.ru/library/essays/politics/english/e_polit/)
- Raynaud, Dominique. 2015. *Scientific Controversies: A Socio-Historical Perspective on the Advancement of Science* (translated from the French). London: Transaction Publishers. [2003]
- Reid, Charles. “Ethos, Pathos, and Logos: A Guide for Scientists.”  
<http://charlesreid1.com/wordpress/2013/01/ethos-pathos-and-logos-a-guide-for-scientists> (accessed Aug. 14, 2015).
- Shapiro, Michael J. 1981. *Language and Political understanding: the Politics of Discursive Practices*. New Haven: Yale University Press.
- Torode, B. 1991. *Review of Fairclough, N., Language and Power, Discourse and Society* 2 (1), pp.121-2.
- Wilson, John. 2001. “Political discourse”, in Deborah Schiffrin, Deborah Tannen, Heidi E. Hamilton, *The Handbook of Discourse Analysis*, Oxford: Blackwell, pp. 398-414.

## Notes

<sup>1</sup> See the chapter “The Scientific Method” in John Henry, *The Scientific Revolution and the Origins of Modern Science*, pp. 14-52.

<sup>2</sup> “These very different activities and disciplines all involve systematic and unbiased observations; the due examination of the record of these by trained minds leads to classification; from such classifications general rules or “laws” are deduced; these laws may be applied to further observations; failures and correspondence between new observations and accepted laws may result in alterations of the laws; and these alterations lead to yet further observations; and so on. This chain of activities is usually held to constitute the ‘method’ of science”. *Encyclopaedia Britannica*, 1962, vol. 20, p. 114, col. 1.

<sup>3</sup> The central issue here is what Karl Popper identified as “the demarcation problem,” that is, finding an operative criterion to distinguish between empirical science (for example Einstein’s general theory of relativity) and pseudoscience (psychoanalysis for instance). Popper opted for the notion of “falsifiability” as a decisive factor for demarcation. To illustrate the way this appraisal works, one can say that Freud’s theories could not be disproved because intrinsically, they virtually prohibited the test of their hypotheses, closing the system to refutability, while Einstein’s theory, even though originally impossible to prove concretely, could always be tested and contested through the *verifiable predictions* it made. Popper’s concept has been challenged, by Feyerabend most notably.

<sup>4</sup> For a discussion of this disputed term, see J. Henry, *op. cit.*, pp. 1-8.

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<sup>5</sup> In a letter to Strauss, Renan famously disputed the views of a “Germanic” patriotism that in the nineteenth century predicated a justification of German expansionism on a genealogic argument, whereby an antecedent culture was authorized by right of ancestry to recover its territorial integrity, the loss of which was but a historical accident: “With that philosophy of history,” he notoriously wrote, “the only legitimate right that will be left eventually, will be that of orangutans, assumed to have been unfairly disenfranchised by the treachery of the civilized.” To be consulted at:

[http://classiques.uqac.ca/classiques/renan\\_ernest/qu\\_est\\_ce\\_une\\_nation/qu\\_est\\_ce\\_une\\_nation\\_texte.html](http://classiques.uqac.ca/classiques/renan_ernest/qu_est_ce_une_nation/qu_est_ce_une_nation_texte.html) (accessed Dec. 19, 2015).

**PART I:**  
**THE IMAGERY OF SCIENCE**



SCIENTIFIC IMAGERY IN THE REFLECTIONS  
ON THE REVOLUTION IN FRANCE (1790):  
EDMUND BURKE'S VINDICATION  
OF THE BRITISH SCIENTIFIC TRADITION

SARAH PEYROUX-ROBLIN

When Edmund Burke published his *Reflections on the Revolution in France* in 1790, this sharp denunciation of the French revolutionary movement came as a surprise to most of his contemporaries. Not only had Burke never been hostile to revolutions (in 1774-75, he had even written speeches to support the American Revolution), but in more recent years he had ardently fought against established privileges.<sup>1</sup> His *Reflections* put an end to Burke's reputation as a radical. His old friends of the Whig party, such as Charles James Fox, broke with him. And the new English Jacobins, such as Thomas Paine, turned him into their arch-enemy, so passionate was the debate triggered off in England by the *Reflections on the Revolution*.

The book is presented as a letter "intended to have been sent to a gentleman in Paris," but the targeted reader might be more British than French. This long letter falls into two parts: in the first part, Burke opposes Richard Price, an enthusiast of the Revolution, who had contended that the French Revolution was the heir of the British Glorious Revolution. In the second part, Burke deals more theoretically with the faults of the new French regime, which allows him to highlight *a contrario* the merits of the English system.

The *Reflections* have always been praised for their style. To most critics, Burke is the last representative of the great rhetorical tradition of the eighteenth century, in the manner of Bolingbroke. His style is fluid and conversational in accordance with the epistolary form he has chosen; it is also lively, varied, and florid almost. James Boswell, the famous biographer and friend of Samuel Johnson, said of him that he had a great facility with stylistic devices, that he "picked them up like apples."<sup>2</sup> And images are profuse in the *Reflections'* fruit basket.

Burke borrows them from a whole range of gentleman's concerns: from painting and architecture, literature and drama, finance and trade. However, the most pervasive network of images is that of science: it covers the whole variety of eighteenth-century scientific endeavours, from physics to chemistry, from mathematics to natural history, testifying to the great familiarity of the author with scientific debates, in accordance with his early training at the dissenting academy of Ballitore in Ireland (Fuchs, 22-23).

Of course, those images are not a mere ornament in Burke's prose: they have a real rhetorical function, as they help him make his point more explicit, and convince his reader of the validity of his counter-revolutionary stance. This paper will thus examine how scientific images are picked up and used in the *Reflections*. It will contend that this imagery is central to Burke's ideological enterprise, which heavily relies on the British scientific tradition, and its praise of empiricism. In *The Reflections* scientific metaphors have a twofold function: satirical and epistemological. On the one hand, in order to cast the blame on the French revolutionary movement, Burke repeatedly depicts it as either partaking of unscientific pursuit, or of over-speculative tendencies, which may prove dangerously impractical. On the other hand, to oppose the French method, he suggests a more empirical approach to politics, which is directly inspired by Bacon's inductive reasoning; if scientists are not qualified to be statesmen, governing a country should nevertheless be seen as a scientific experiment.

### **The Satirical Use of Scientific Metaphors: Blaming the French Revolutionaries as Incompetent Scientists**

Burke's rejection of the French Revolution is articulated around three types of scientific prejudice that his reader, as a true heir of the seventeenth-century scientific revolution, was very likely to share: a modern scorn for pseudo-scientific or unscientific pursuits like alchemy or quackery, a more distinctively British contempt for speculative science in the tradition of Swift, and eventually a sort of blind devotion to Sir Isaac Newton, the English national hero of science.

Since the seventeenth century and the days of the scientific revolution, alchemists and quacks had been openly scorned by the British enlightened public as unscientific people who professed a false knowledge out of irreligious madness or selfish interest. Capitalizing on this negative image, Burke, in *The Reflections*, repeatedly compares the French revolutionaries to alchemists or quacks in order to deride their policies as dubious and ominous practices.



In his long development on the French revenue, Burke explicitly draws a parallel between the new French leaders and the alchemists of the past: “Their fanatical confidence in the omnipotence of church plunder has induced these philosophers to overlook all care of the public estate, just as the dream of the philosopher’s stone induces dupes, under the more plausible delusion of the hermetic art, to neglect all rational means of improving their fortunes” (*Reflections*, 230). The creation of paper money (the *assignats*) following the confiscation of the Church estates by the new State is indeed presented by Burke as the French discovery of the philosopher’s stone, as made clear by the choice of the term “transmutation” to describe that process: “It consists in the means of drawing out at discretion portions of the confiscated lands for sale; and carrying on a process of continual transmutation of paper into land, and land into paper” (187). Not only does this imagery allow Burke to insist on the dangerous consequence of such a policy, the “volatilisation” of property, one of the pillars of civil society, but it also immediately casts discredit on the theoretical basis of the French monetary practice, which appears just as illusory as the hermetic art of alchemy.<sup>3</sup>

Burke’s portrayal of the French “alchemists” is more alarming than amused: with the art of the caricaturist, he depicts the revolutionaries in their infernal laboratories, their alembics of hell “furiously boiling” (88). And if they are just as greedy as their ancestors, their mad quest for money may turn to more sacrilegious means: “...the project for coining into money the bells of the suppressed churches. This is their alchymy. There are some follies which baffle argument; which go beyond ridicule; and which incite no feeling in us but disgust; and therefore I say no more about it” (238). As they are blind, fanatical and irresponsible, those alchemists’ experiments will inevitably prove destructive.

Revolutionary quacks may be just as harmful for the country. Indeed the lexical field of quackery pervades the text of *The Reflections*, as Burke readily assimilates the French revolutionaries to medical impostors who are trying to cure dysfunctions in the existing political system. For those humorous portraits, Burke was inspired by seventeenth-century French comedies, a literary tradition he was familiar with,<sup>4</sup> but he also elaborates on the parallel between the revolution as a political strategy and the quacks’ much-vaunted nostrums.

Burke does not deny that the existing French political body was impaired, and needed to be reformed but, according to him, the treatment chosen by the French revolutionaries was too harsh: it consisted in “taking periodical doses of mercury sublimate, and swallowing down repeated provocatives of cantharides” (60), in using “poisonous weeds” and “wild

incantations” likely to “hack the aged parent in pieces” (93): under the guise of physicians, they are the real executioners of the State, the torturers of the monarch.<sup>5</sup>

In several cases, Burke more precisely identifies the “Rights of Man” to the new nostrum that revolutionary quacks sell to the population and may try to export, but Burke is confident that the British public will not be gullible, having been trained to more enlightened medical practices, and that the French Revolution will be kept at a distance: “Your affairs, in spite of us, are made a part of our interest; [...] If it be a panacea, we do not want it. We know the consequences of unnecessary physic. If it be a plague, it is such a plague that the precautions of the most severe quarantine ought to be established against it” (86). However, Burke acknowledges the persuasive power of the Jacobins’ rhetoric, of their equalitarian philosophy, a nefarious opiate which deludes the people into oblivion, into a passive acceptance of their misery:

They tell the people, to comfort them in the rags with which they have clothed them, that they are a nation of philosophers; and, sometimes, by all the arts of quackish parade, by show, tumult and bustle, sometimes by the alarms of plots and invasions, they attempt to drown the cries of indigence, and to divert the eyes of the observer from the ruin and wretchedness of the state. (130)

The revolutionary leaders’ oratorical skills are not so different from the quacks’, addressing the crowd from platforms, sometimes raising the enthusiasm of the audience with an unbridled eloquence, sometimes manoeuvring to divert its attention and deceive it. This satirical parallel, implicitly drawn by Burke in *The Reflections*, was to be pictorially developed by James Gillray a few years later. In the context of the counter-revolutionary campaign, Gillray published *Copenhagen House* in November 1795<sup>6</sup>, four days after the mass outdoor meeting of the London Corresponding Society (the English revolutionary society). This cartoon, inspired by seventeenth-century Dutch painting (in particular by Gerrit Dou’s 1652 *Quack*), portrays English Jacobins as quacks during a fair. As with Burke, the cartoonist’s aim is to arouse the suspicion of the British public, to unveil the political imposture.

Besides the rejection of alchemy and quackery as unscientific knowledge, the scientific revolution of the seventeenth century laid the stress on experimentations and empiricism, and cast the blame on abstract scientific speculation. The general distrust among the British public for a purely theoretical approach is a scientific prejudice Burke often relies on in his metaphorical choices.

This outlook had been fuelled, to some extent, by Jonathan Swift's *Gulliver's Travels* (part 3), which features the fictional lands of Laputa and Balnibarbi. In those places, speculative science rules supreme: the inhabitants, with one of their eyes turned inward, and the other up to the zenith, are completely wrapped up in their speculations and blind to practical concerns. At the end of the day, with their lack of interpersonal exchange and ill-shaped material world, the two scientific utopias turn out to be hellish places to live in. No wonder that when he compared the newly-organized French country to those famous literary creations Burke was sure to win the reader's intertextual consent: "From the general aspect of the country one would conclude that it had been for some time past under the special direction of the learned academicians of Laputa and Balnibarbi" (129). The English reader would rather flee away from such a world, than accept these incompetent rulers.

Even before the eighteenth century, the utopian genre cast doubts on scientifically-constructed social systems. In the description of the new territorial organization decided by the National Assembly (*Reflections*, part two) Burke's style is reminiscent of Thomas More's narrator, Raphael Hythlodai, presenting the geographical and political organization of the island of Utopia; behind the apparent delight in precise figures and new terminology, the authors ironically point at the absurdity of such geometrically-planned and arithmetically-organized systems:

...they divide the area of their country into eighty-three pieces, regularly square, of eighteen leagues by eighteen. These large divisions are called *Departments*. These they portion, proceeding by square measurement, into seventeen hundred and twenty districts, called *Communes*. These again they subdivide, still proceeding by square measurement, into smaller districts called *Cantons*, making in all 6400. (169)<sup>8</sup>

State surveyors have a leading role in the new French utopia: they have imposed their abstract geometrical rules on the country, dividing it along exact measurement and calculation, so much so that Burke greets an organization "made on the system of Empedocles and Buffon, and not upon any politic principle" (170). Hence, he cannot but predict the failure of a territorial division that ignores demographic, economic and cultural realities. To sum up his argument, in a Latin formula that sounds like a tribute to the humanist tradition: "*Hominem non sapient*" (178); Burke denounces a de-humanizing method that neglects human concerns.

With its emphasis on rationality (against the intellectual erring of alchemy and quackery) and on experimentalism (against the dangerous abstractions of speculation), the scientific revolution of the seventeenth

century was epitomized by the works of Sir Isaac Newton. The poets of the first half of the eighteenth century largely contributed to the popularization and quasi-veneration of the English scientist,<sup>9</sup> so much so that, by the middle of the century, debasing his thought had become truly repugnant to the British public. In the *Reflections*, some scientific images are clearly related to Isaac Newton's theories: Burke's satirical strategy here consists in showing how the French revolutionaries are guilty of misunderstanding or misapplying Newton's scientific heritage. For instance, in the midst of his diatribe against the new territorial divisions, Burke makes the following remark:

Is every land-mark of the country to be done away in favour of a geometrical and arithmetical constitution? (...) Are all orders, ranks and distinctions to be confounded, that out of universal anarchy, joined to national bankruptcy, three or four thousand democracies should be formed into eighty-three, and that they may all, by some sort of unknown attractive power, be organized into one? (52)

This “unknown attractive power” sounds distinctly Newtonian to the reader, but the French revolutionaries' attempt to apply the theory of universal attraction to their new social and geographical entities seems a desperate, pathetic, attempt at sorting out order out of chaos: obviously, for Burke, the potent optimism of the early eighteenth century, in the Thomsonian manner, cannot hold in a revolutionary context.

Burke's allusion to the other theoretical achievements of the famous English physicist is even more far-reaching:

These metaphysic rights entering into common life, like rays of light which pierce into a dense medium, are, by the laws of nature, refracted from their straight line. Indeed in the gross and complicated mass of human passions and concerns, the primitive rights of men undergo such a variety of refractions and reflections, that it becomes absurd to talk of them as if they continued in the simplicity of their original direction. The nature of man is intricate. (59)

The notion of “light” in the philosophical context of the age opens onto a rich polysemy: it is the whole philosophy of the French Enlightenment that is here attacked, insofar as its abstract and rationalist dimension (its “metaphysic” tone to quote Burke's word) has no grasp on human nature: according to the British philosopher, the political scientists of the new French regime have failed to identify the very special nature of the medium they were working on, a medium which is of infinite variety and far from neutral. To Burke's mind, human nature cannot be reduced to

mathematical principles, and this criticism forms the basis of his redefinition of political action and philosophy.

### **The Epistemological Use of Scientific Metaphors: Propounding a New Methodology for Scientific Politics**

Alongside his satirical remarks, Burke adopts a more constructive approach when he analyses the proper links between politics and science: after excluding the abstract scientist from the political arena, he advocates an experimental approach for the political thinker, and announces a sort of epistemological revolution for political philosophy, on the Baconian model.

Even though some of his assertions may sound dangerously anti-intellectual,<sup>10</sup> Burke is not hostile to science and scientists. When he wrote his pamphlet, during the first stages of the Revolution, Burke knew that some leading scientists were among the key figures of the new regime: Jean-Sylvain Bailly, an astronomer, had been elected president of the National Assembly in June 1789; and the Marquis of Condorcet, a famous mathematician and philosopher, was secretary of the same assembly and very influential during legislative debates. In the *Reflections*, Burke does not hide his admiration for such men, addressing them as “men of shining talents” (38). But he laments that they have been deluded into actively taking part in the new institutions. To his mind, scientists should not interfere in the political life of the country. Be they the most brilliant minds of their age or the most obscure physicians of some French province called to sit on the benches of the new Assembly, they have not, according to Burke, received a proper training to rule a country: “the sides of sick beds are not the academies for forming statesmen and legislators” (41) (laboratories would probably not have seemed more appropriate to him). Burke's condemnation of the scientists' political involvement reflects his belief in the specialization of society, his rejection of *amateur* politics. But he may also want to preserve science just as much as politics since, for him, science is likely to be the first victim of the intrusion.

According to Burke, when scientists become statesmen, science will necessarily be degraded by the mob. This elitist vision of science is contained in a famous quotation that was to infuriate all the supporters of the *Rights of Man*: “Happy if learning, not debauched by ambition, had been satisfied to continue the instructor, and not aspired to be the master! Along with its natural protectors and guardians, learning will be cast into the mire, and trodden down under the hoofs of a swinish multitude” (76).

Scientists should rather remain in their ivory tower than run the risk to

have their thoughts and theories disfigured by ignorant people. In his essay, Burke makes it clear that the political leaders of the movement have turned scientific notions of abstraction and universality into mere instruments of their equalitarian rhetoric: science was a means to reach their political goals, not an end for them. One of the first measures testifies, to Burke's mind, to this lack of concern: the confiscation of the church estates, decided in November 1789. This decision amounts to a major financial loss for scientists who are hence deprived of a traditional source of patronage.<sup>11</sup> To him, the Revolution tolls the knell of French science.

Furthermore, Burke hints at the totalitarian potentialities of the scientific discourse and shows how it has been put into practice by the presumptuous leaders of the movement. Invested with the prestige and dignity of their scientific supporters, they have simplified scientific theories to the extreme, turning them into a sheer rule of numbers: "It is said that twenty-four millions ought to prevail over two hundred thousand. True, if the constitution of a kingdom be a problem of arithmetic. This sort of discourse does well enough with the lamp-post for its second: to men who may reason calmly, it is ridiculous" (49). Burke contests the hegemony of a blind, arbitrary, scientific discourse that leaves no room for discussion. His remark sounds like an early premonition of the violent excesses of the Terror, with the lamp-posts serving as gallows to get rid of the enemies of the new regime, a practice so vividly depicted by Gillray on his 1793 cartoon, *The Zenith of French Glory*.<sup>12</sup>

Science thus has to be protected from the rashness and opportunism of revolutionaries, scientific discourse should never become prescriptive in order to preserve individual liberties; however, scientific methods, insofar as they encourage prudence, may guide observations and prove valuable to political chroniclers and philosophers.

In a metaphor that runs through the first pages of the *Reflections*, Burke explains how he has himself adopted a scientific method of observation:

When I see the spirit of liberty in action, I see a strong principle at work; and this, for a while, is all I can possibly know of it. The wild *gas*, the fixed air, is plainly broke loose: but we ought to suspend our judgment until the first effervescence is a little subsided, till the liquor is cleared, and until we see something deeper than the agitation of a troubled and frothy surface (6-7).

Echoing the interest in chemistry stimulated by the recent and simultaneous discoveries on gases (especially oxygen) by Joseph Priestley