

# **THE ICARUS TEMPTATION: DEMOCRATIC LEADERSHIP AND THE POLITICS OF TECHNOLOGY**

Modern democratic leaders face a new quandary – how are they to confront and deal with the challenge posed by modern technological innovation? In this paper I explore three specific aspects of this challenge – the problem of change or hyper-flux; the problem of theodicy; and the problem of authority. In examining these challenges of democratic leadership I want to explore the way technology can be said to have transformed democratic politics, and therefore posed a problem for democratic leaders, whether contingently or permanently.

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‘Certainly man will not become immortal; but may not the distance between the moment in which he draws his first breath, and the common term when, in the course of nature, without malady, without accident, he finds it impossible any longer to exist, be necessarily protracted?’<sup>1</sup> Thus Condorcet, with his belief in progress and the perfectibility of the human race, could now realistically entertain what was once only a dream, the possibility of tempering, if not denying our mortality. This extraordinary confidence in our ability to improve, both physically and morally, that is evident in the ambitions of Voltaire, Condorcet and Comte, does not sound strange to our ears.<sup>2</sup> After all, we have daily proof of the apparently limitless ability of technology to improve our lives – new medicines to alleviate illnesses, new devices to lighten our work, new insights into who, and what, we are. This undeniable evidence of the beneficence of technology, and the optimism it engenders, coexists, however, with a sense of unease or foreboding. It is the fear that technology is now beyond control, that mass democracy and industrial technology can promise only nihilism, a moral degradation of humanity, resulting in a brutish ‘last man’.<sup>3</sup>

Thus between Daedalus, the skillful inventor and innovator, and his son Icarus, who overreached, flying too high and dashing to the ground, we find the modern democratic leader. Modern democratic leaders face a new quandary – how are they to confront and deal with the challenge posed by modern technological innovation? In this paper I explore three specific aspects of this challenge – the problem of change or hyper-flux; the problem of theodicy; and the problem of authority.<sup>4</sup> In examining these challenges for democratic leadership I want to explore the way technology can be said to have transformed democratic politics, and therefore posed a problem for democratic leaders, whether contingently or permanently.<sup>5</sup>

## HYPER-FLUX

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<sup>1</sup> Reference to Condorcet, *Outlines of an Historical View of Progress of the Human Mind*, cited in Löwith (1949, 95)

<sup>2</sup> See generally Voltaire, *Essay on the Manners and Mind of Nations* (1756); Condorcet, *Outlines of an Historical View of Progress of the Human Mind* (1795); Comte, *The Positive Philosophy* (1842).

<sup>3</sup> See for example Marx: ‘There is one great fact characterizing the nineteenth century which cannot be denied by any party: on the one side, industrial and scientific powers have developed which no former period of history could have fancied; on the other side, there are symptoms of disintegration surpassing even the well-know terrors of the late Roman Empire’ (cited in Löwith 1949, 36). Compare with Nietzsche’s famous account of the beetle-like ‘last man’ in Zarathustra’s Prologue, *Thus Spoke Zarathustra*.

<sup>4</sup> There is of course an extensive scholarship on the character of science, and its distinction from technology (which may be autonomous or neutral). On the literature that examines the relationship between technology and democracy see: Kraft and Varig (1988); Street (1992), Wenk (1999); Boyle et al (1977); Ezrahi (1990); Mickunas and Pilotta (1998); Feenberg and Hannay (1995); Winner (1992); Katz et al (2003); Ellul (1964); Ezrahi (1990); Melzer et al (1993); Day et al (1989); Willard (1996).

<sup>5</sup> I limit my discussion to the challenge posed by technology to democratic leaders. Of course non-democratic leaders also face technological challenges, but I would contend that the nature of these challenges will be shaped and determined by the specific character of the regime.

‘We both step and do not step in the same rivers. We are and are not’. With this enigmatic observation Heraclitus revealed the problem of flux: ‘Everything flows, nothing stands still’. It is telling that we now attempt to understand politics and the political in such abstract scientific or metaphysical terms as, for example, flux, speed, power.<sup>6</sup> We will examine the political consequences of such an approach below. For now, however, it is important to take up one aspect of flux or change that is consequential for democratic politics. This may be formulated as the problem of differential notion of change, or the increasing rate of change in technological innovation or change. It is a natural temptation to consider our own times as the most variable and uncertain. Yet even a cursory glance at history shows some periods marked by relative stability. Though the source of such stability can be found in a range of factors, such as relative isolation or territorial inaccessibility, certainly an important factor was the way each government conceived and understood change. Some political regimes were so resistant to change that they strictly guarded against innovations. These attempts to subordinate technological innovations to the political will – in some cases by literally walling-off change and innovation – showed (irrespective of their success) a desire to still time.<sup>7</sup>

Modern democracies, in contrast, can be said to have technologically permeable borders. In encouraging and fostering technological innovation and competition within each nation and internationally, modern democracies have implicitly accepted the necessity, indeed the beneficial nature of change. What may not have been as clear, however, in this adoption of democratic openness, is the character of the change inaugurated by modern technology. A well known example regarding *the* modern technological innovation, the computer, is illustrative. Moore’s Law claims that computer capacity will double every 18 months. To date this has meant that our present computers are exponentially more powerful than the very first models devised during the Second World War. If this principle is applied more widely to technological change in general, the implication is that all change in the future will not be steady or linear but exponential. If modern change is not simply flux, but hyper-flux, then the obvious question is, how will this influence modern democracy? We gain an inkling into the significance of this question when we reflect on the way hyper-flux in computers has transformed most aspects of our lives. Most everyday items now have, or will have, a computerized component governing their use or function. What will comprehensive hyper-flux mean? It is difficult to imagine how widespread and extensive will be the changes due to technological innovation, and the demands they are going to make on politics. Yet certain political aspects of these changes are already evident.

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<sup>6</sup> On the question of truncation of the present due to the problem of speed see Connolly (2000).

<sup>7</sup> Consider the limits on innovation imposed in China: de Bary (1991).

Hyper-flux forces us to rethink and thereby refound politics. In doing so, it demands a hyper-flux politics. But it is not clear whether modern democracy can accommodate such a demand. A few examples may be instructive. Mobile or cell phones have transformed public manners – we no longer know, or at least we need to learn, how we should combine the convenience of private communication with the demands of public civility. The addition of digital cameras has further transformed the previously accepted meaning of public and private. Yet such technological innovations do not merely questions mores. That you may, in a public place, be captured on digital phone-camera, and within a short time displayed on the Web, visible to the entire world, has surely recast and transvalued the notion of ‘privacy’.<sup>8</sup> Consider also the extraordinary changes in biotechnology, especially due to genetic research. Developments in fertility treatment, and in-vitro fertilization, have meant that the idea of ‘mother’ and ‘father’ – seemingly obvious or self-evident titles – now need clarification. Who is your ‘mother’? Your egg-donor, your biological carrier, or your care-taker adoptive? This is obviously more than a technical question; it challenges our present understanding of the family, and the central place it has in society.<sup>9</sup> Finally, the continuing research into sub-atomic particles, in the form of nano-technology, suggests the possibility of ‘constructing’ (instead of growing or shaping) matter, with unknown implications for our notion of ‘property’, ‘copy-right’, criminal law and taxation, to name a few.<sup>10</sup>

These examples could of course be multiplied. Ranging from what we presently know and experience, to possibilities regarding an unknown future, they are intended to show how hyper-flux is, and will be, increasingly forcing us to revisit or reconsider some of our fundamental political presuppositions. In doing so it imposes an unprecedented burden on democratic leaders. In addition to conventional democratic politics, requiring the exercise of prudential judgment, modern democratic leaders are forced to resolve constantly changing questions that go to the core of the idea of privacy, family, property. Simply put, hyper-flux is transforming democratic politics to ‘constitutive politics’, where the very possibility of Burkean incremental change is denied, where every decision has radical consequences for the very make-up of the regime. Of course it is not always possible to make such determinations – an already crowded political agenda may not allow room for such decisions to be made. Moreover, these questions are typically politically thankless. Nevertheless, the leader who does not decide, who chooses not to make such ‘constitutive’ decision pays a different price, appearing unresponsive, indifferent or inefficient. Facing insistent public demands to address each new emerging issue, to ‘change the law’, and caught between the dilemma of appearing radical or inefficient, democratic leaders are tempted to escape by shifting their

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<sup>8</sup> For a recent examination of this problem, specifically regarding the question of where defamation takes place, see the Australian High Court internet defamation case of *Gutnick vs Dow Jones* [2002] HCA 56. For a discussion of the problem of technology and freedom of speech see Street (1992, 183-193).

<sup>9</sup> On biotechnology generally see Nicholl (2002) and National Bioethics Advisory Committee (1997).

<sup>10</sup> On nanotechnology see Sargent (2006)

burden. They might appoint Commissions or advisory bodies to tell them what to do, or let a matter become a question of judicial adjudication, resulting in or encouraging a form of judicial activism. In doing so they place added pressure on democratic institutions, subtly altering and transforming their character, and demonstrating the subtle ways the authority of the executive and representative institutions are being transformed by hyper-flux.

## **A NEW THEODICY**

Of course hyper-flux may also excuse democratic leaders. Dizzy with the rate of change, citizens may well understand why democratic leaders cannot address and resolve all the complex issues raised by the ever-increasing changes wrought by technological innovation. Yet in one respect modern technological innovation appears to have already had a profound effect, shifting the moral and therefore political burden in a radical way, placing an almost impossible weight and responsibility on democratic leaders. An important aspect of this concerns the transformation in our understanding of justice, or more generally put, the reformulation of the question of theodicy. Theodicy, or the question of god's justice, is a profound question that is usually brought to the foreground when disasters are of such enormity that they seem to challenge divine providence.<sup>11</sup> Modern technology appears to replace the question of theodicy with its secular and popular version, the theodicy of the democratic leader. To understand the nature of this new theodicy, it is necessary to explore the complex and dynamic consequences of modern technology on morality.

Modern technology appears to have two, contradictory moral vectors or trajectories. The first consists of an ever-more comprehensive account of nature that shows in its causality and therefore determinism a world that leaves no room, or denies, human volition, intentionality and therefore moral culpability.<sup>12</sup> Fat genes, angry genes, clever genes, 'genes made me do it' is the inevitable inference from a biology and physics that accounts for all our actions in terms of an imperious and impervious gene map unique to each of us.<sup>13</sup> This aspect of modern technology calls into question (and arguable continues to undermine) moral, and juridical notions of responsibility, as well as restructuring the political and public policy responses to everyday problems. It transforms, for example, the problem of drug abuse from a moral to a medical question, demanding not censure but cure and rehabilitation (and in some cases accommodation).

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<sup>11</sup> See, for example, Pierre Bayle's, *Various Thoughts on the Occasion of a Comment* (Bayle 2000).

<sup>12</sup> In addition to the difference between popular and scientific views of the sciences, there is of course a major debate regarding the nature of science, whether its insights are 'real' or simply constructed or contested (see, for example, Feyerabend 1975). The problems explored here are arguably exacerbated even, or especially if one rejects Newtonian determinism and accepts this constructed notion of science.

<sup>13</sup> This aspect of modern technology was famously noted by Kant, who sought to overcome the determinism of Newtonian physics, which in positing scientific causality denied human beings their dignity, with a noumenal dignity founded upon autonomous human freedom: see generally *The Metaphysics of Morals* and his political works, such as *On Perpetual Peace*.

This moral understanding co-exists, however, with another contradictory tendency founded upon modern technology that makes us radically responsible for everything.<sup>14</sup> This is based on the simple insight that once we know the cause of something and are able to change it, then the presence or absence of that thing is a matter of our own choice. Greater knowledge makes us, in a sense, participants in what eventuates, and therefore morally accountable for it. This proposition not only re-introduces the question of morality into the world, but radically enlarges its scope. For example, historically it was assumed that there would always be poor people in the world – poverty was a *factum brutum* of being human. All that one could do was to alleviate it – pity, charity, compassion, *noblesse oblige* were the limits of what was possible and therefore morally mandated. What if, however, we can now discover the causes of poverty, for example, in inadequate use of farming technology, in predictable weather patterns, in the limitations of badly constructed political institutions? If this is so, then poverty is no longer unavoidable – it becomes a problem we can solve. But if poverty can be solved, then its continuing presence shows our lack of resolve, our moral inadequacy in solving this problem; it is an indictment of our moral and political will. Thus the very existence of the problem of poverty, within a specific political community, and indeed anywhere in the world, is proof of our injustice (see, for example, Sen 1995, and Drèze et al 1995).

If this argument has purchase in the case of poverty, then it will be applicable to almost all those problems that humanity has thought intractable from time immemorial. War, disease, crime, homelessness, poor health, unemployment, all can be traced to causes we can understand and control. Consequently we are responsible for their continuing existence. More specifically, however, our *leaders* are responsible for these injustices, since it is they who have been given the mandate to alleviate and eradicate them. Our inclination to blame someone when something goes wrong is transformed by modern technology into a standing moral injunction accusing democratic leaders of injustice. When hurricane Katrina destroyed most of New Orleans in 2005, it was not seen as simply a natural disaster. It became the fault of President Bush – for not predicting its early arrival, for letting the people build in flood-prone areas, for not overcoming the black-white divide which made the blacks suffer disproportionately from the flooding, in short, in ‘willing’ (because he could have avoided most of this if he had not gutted the Federal Emergency Management Agency) the consequences of Katrina. President Obama confronted similar challenges with the explosion in April 2010 of the Deepwater Horizon drilling rig in the Gulf of Mexico, resulting in one of the world’s largest oil spills. Modern democratic leaders, as a consequence of technological advances, now become the authors of all major catastrophes and disasters, as well as those grinding quotidian problems that lack the spectacle of the tsunami, earthquake or hurricane. This reformulation and resolution of the question of theodicy as an uncontested moral responsibility of democratic

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<sup>14</sup> On the possible religious origin of this moral disposition see Funkenstein (1986).

leadership recasts the political and moral obligations of office in a way that would have been incomprehensible in previous epochs. The transvaluation of the office imposes extraordinary moral and therefore political demands on democratic statesmanship, making democratic leaders hostages to fortune.

## **DEMOCRATIC AUTHORITY**

The discussion above suggests that modern technology has the potential to redefine the moral landscape of democratic politics. In this final section I take up a more radical challenge to democracy, and more specifically, democratic leadership. This can be put simply as the proposition or claim that modern technology challenges and potentially ousts the authority of democratic leaders altogether.

There is an ambiguity in democracies regarding the foundations or bases for leadership. The egalitarianism that is the core principle in democracy tends to assert that all are capable of rule. After all, is this not the basis upon which all are allowed to exercise their authority in elections? Thus democracies tend to presume that all have or share in the prudence that is essential for sound leadership. Yet on certain other issues even democrats will defer to experts. We are prepared to accept that we are not as knowledgeable as others who exercise a specific craft, such as carpenters, or have special knowledge, such as engineers or economists. This raises a series of theoretical questions, such as: what is the difference between the political art and the other arts? Why are we prepared to assume that all have the political art, when we do not make such claims with the other arts? Is there an architectonic art that comprehends both the political and other arts?<sup>15</sup> In the West, these profound theoretical questions were articulated in practice within a larger historical engagement between philosophy and religion, and the subsequent development of democratic and liberal democratic government.<sup>16</sup>

The tension between revealed religion and philosophy in the west, evident in the early modern writings of political philosophers such as Machiavelli and Hobbes, and philosophers such as Descartes and Bacon, anticipate the later Enlightenment's attempts to replace so called 'superstition' with knowledge. Thus the Enlightenment sought to liberate politics from the authority of piety, only to replace it with the authority of the expert or 'knower'. The extreme manifestation of this was the positivistic belief that all were susceptible of liberation. Of course this Enlightenment project was not identical to the other historical and political development taking place, the introduction of democratic politics, which took place much later. The challenge of

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<sup>15</sup> Some of the reasons why the political art cannot be simply equated with the medical include the fact that the political art applies to both the 'doctor' and the 'patient' (and therefore resembles the art of piloting rather than medicine) and because political health, as opposed to physical health, is harder to discern.

<sup>16</sup> That these questions were present from the very beginnings of Western political thought can be seen in the discussion concerning the arts between Socrates, Polemarchus and Thrasymachus in the first book of Plato's *Republic*.

revealed religion was resolved by modern liberal democracies differently – following Spinoza, Locke and American founders, separation of church and state became the modern political compromise between democracy and religion.<sup>17</sup> This democratic resolution of the challenge of faith did not address, however, the other source that had asserted its authority in the early struggle between faith and reason – modern science. If religion was to be negotiated institutionally, by separation, what was to be the relationship between democracy and science? This larger theoretical debate is confronted in modern democracies in the contest between democratic and scientific authority and in how to resolve the tensions regarding the role of knowledge in determining rule. The resolution of this tension has two impulses in modern democracies.

The first, as seen in the Enlightenment and positivists such as Comte, is a ‘technocratic temptation’ that seeks to replace politics with science.<sup>18</sup> Politics, in so far as it appears beyond *techne*, seems partial, partisan, chaotic and dangerous. Seeing the specific expertise of the doctor, we bemoan that politics too is not subject to such disinterested technical solutions. The suspicion in democracies that those who seek office do so to gain rule or personal benefit, contrasted with the evident merits, and selflessness of the technical arts, tempts democrats with the vision of the political reduced to the technical or the administrative. If we could only reduce politics to economics, medicine, law, engineering and so on, then we could avoid the perennial incompetence, inefficiency and dangers of democratic politics. This is especially tempting in modern democracies where, in contrast to the inefficiency and moral murkiness of politics, the sciences prove their public worth daily.<sup>19</sup> Such a technocratic temptation raises a number of obvious questions, such as, which of the sciences would take priority? How would they be ranked or ordered? But the most challenging question concerns the place of democracy itself, because this temptation seems to deny the authority of democracy. If democracy is the rule of all, based not on individual knowledge or ability but on the simple fact of eligible citizenship, then rule based on wisdom, albeit an attenuated or truncated idea of wisdom as *techne*, questions the validity of democracy. Such an approach reduces or undermines the political to replace it with the administrative, a form of technocracy rather than democracy.

The other, orthodox democratic response that seeks to resolve the tension between democratic and scientific authority is to assert a ranking or order in authority. Politics is to take

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<sup>17</sup> See for example Spinoza’s *Theologico-Politico Treatise*, Locke’s *A Letter Concerning Toleration*, and the First Amendment of the United States Constitution: ‘Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances’.

<sup>18</sup> For a modern formulation of this argument see Dewey’s defence of pragmatism: Larry A. Hickman, ‘Populism and the Cult of the Expert’ in *Winner* (1992, 91-104).

<sup>19</sup> Singapore has relied on this premise, in its education, recruitment, administration, as well as its attempts to limit political debate. Note, however, that such a technocratic solution in Singapore has assumed increasing wealth, and has co-existed with a dynastic politics: Barr (2005).

precedence, with democratic leaders as the authority regarding the place, role and reach of science. This democratic response views science like all aspects of technical knowledge (such as medicine, engineering and so on) as discrete areas of knowledge to be employed and deployed by democracies as they wish. Such an instrumental understanding relies on a demarcation of expertise to solve the challenge posed to democratic leaders by experts. Is it persuasive? I would argue that there are at least three reasons – the limits of prudence, the problem of good counsel, and the limits to democratic rhetoric – that show why this apparently obvious and simple solution does not adequately comprehend the complexities involved.

### **Prudence and Science**

In confronting the scientific challenge to the authority of democracy, democrats defend the primacy of popular sovereignty and the political by making the scientific subject to the democratic. From this viewpoint, science is a servant, or an instrument, to be used by democracy. The justification for this ranking can be founded upon the fundamental difference between prudence and scientific knowledge. Political judgment requires *phronesis* or practical wisdom, which cannot be bounded by rules, and which issues in practical action or *praxis*. The arts are defined by *techne*, the methodical application of principles to practice, which can be mastered by instruction, and result in *poesis* or ‘making’.<sup>20</sup> *Techne*, though a form of knowledge, cannot become prudence, let alone wisdom. For example, *techne*, though apparently self-sufficient, requires both prudence and wisdom in accounting for itself, both in its inherent importance and relative merit to the arts generally.<sup>21</sup> Accordingly, the democratic ranking of the *phronesis-techne* dichotomy, which seeks to retrieve and defend the authority of democracy and specifically democratic leaders, reflects a more fundamental feature of the character of human knowledge.

But this very ranking, which is premised on the dichotomy, also reveals a core problem – the distance that separates prudence from modern technology. This distance was manageable when most were familiar with the arts, even if not fully aware of their subtleties. We know when shoes fit us, or when a chair is comfortable. We even have a rough idea of how shoes and chairs are made. But modern technology, in its sophistication, and specialisation, has separated the two to such an extent that democratic leaders seem unable to understand, let alone manipulate their ‘instruments’. Though leaders may still be able to appreciate the fruits of science, especially when it can be judged traditionally as a better shoe or chair, democratic leaders now have no real insight into the origins of

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<sup>20</sup> On the difference between wisdom and prudence see Aristotle’s *Nicomachean Ethics*, 1139a ff.

<sup>21</sup> That is, those who study wasps cannot, as students of entomology, explain why wasps are more deserving of attention than human sexuality – thus Alfred Kinsey could not as a *scientist* account for his change in research direction from entomology to the examination of human sexuality. For a biography of Kinsey see Christenson (1971).

most modern innovations. One reason for this lies in the differences in the language employed in the political and scientific fields.

Nature, according to Bacon, had to be tortured to reveal her secrets. For Galileo these secrets were written in the language of mathematics.<sup>22</sup> If modern science, especially physics, speaks mathematically, it is a mathematics that is incomprehensible to most democrats. At best, at the intersection of technological innovation and democratic application we find the language of probability and statistics that reduces the exercise of prudence to mathematical chance, and in doing so denies it of any authority. For example, what exactly is the practical (as opposed to the mathematical) meaning of claim ‘there is one in 100 000’ chance that something will happen? How does it differ from odds of 1 in 200 000, let alone 1 in a 1,000 000? Moreover, what if the odds are extreme, yet the outcome catastrophic?<sup>23</sup> In other words, odds and chances, put in these terms do not allow us to understand, let alone reckon, what is the proper – sensible, prudent, or wise – course of action. The same can be applied to the entire world of science, from flux, to genome, to ‘strings’, and sub-atomic ‘flavours’ and spins. Democratic leaders do not understand what any of these things mean. Consequently, either someone has to educate these leaders as to their meaning (in effect transforming them into amateur scientists), or interpret for them in political terms the implications of these insights (thereby assuming a political competence over and above their acknowledged scientific expertise).

### **Good Counsel**

The difference in language between scientist and democratic leader is an example of the larger problem of the disparity of knowledge that exists between the two. Does any democratic leader have the time, ability or knowledge to judge any, let alone all, the endeavours in each scientific field, within his jurisdiction, and more widely? But this need not be an insurmountable problem if the leader can seek counsel from those he trusts. Posing the problem in these terms suggests that it is no different from the perennial problem of leadership – how to take advice. In his famous defence of democracy in the *Politics* (book 3, chapter 11) Aristotle suggests that one of the strengths of democracy is its ability to gain advice, or be informed, from many sources. On the other hand, there are some limitations on this solution. For Thomas Hobbes in the *Leviathan* (Part II, chapter 19) seeking advice is one of the great weaknesses of democracy, in so far as it undermines expeditious decisions. The core difficulty, put succinctly by Machiavelli in *The Prince* is, you will not need

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<sup>22</sup> For Bacon’s discussion of the secretive disposition of nature see his *Essays*. In his *The Assayer*, Galileo claims that the letters of the mathematical language are triangles, circles and other geometrical figures.

<sup>23</sup> An infinitely bad outcome in effect makes any calculation based on prudence meaningless. This, in a way, is the problem of religion in politics that early modernity sought to overcome.

advice if you know; if you do not, then you are at the mercy of your advisors, who in tendering their advice come to rule you.<sup>24</sup> In one sense this problem of good counsel cannot be resolved theoretically; it is subject to the exigencies of the circumstances, and especially the nature of the advice sought and tendered. Even, or especially on these terms, however, technology exacerbates this tension between leaders and advisors. The obvious and simple problem of language we explored above shows the distance that now separates political leaders and scientists. Thus more than ever, such leaders are reliant on the knowledge and competence of scientists.

One solution for this problem is for the democratic leader to choose politically, that is, select the counsel and advice that advances his or her political interests, irrespective of the substance of the scientific knowledge. This approach, which exploits the continuing dissent and dispute that exists at the frontiers of science, may well work in representative democratic politics, where modern electioneering techniques and short election cycles tend to favour immediate or short term solutions to long range problems and concerns. Such an approach may have its costs, however, with unintended consequences and long term problems which may undermine the leaders' political prospects as well as long term reputation.<sup>25</sup>

For this reason some leaders may choose to employ democratic means to solve the problem of scientific advice. It is true that democratic expedients – of consultative discussion and deliberation, of independent tribunals and commissions, of committee hearings and deliberations – have been employed to overcome such disparities.<sup>26</sup> Yet these apparent solutions in fact reintroduce greater complications. First, to the extent that such procedures and institutions restructure the political landscape, they tend to further erode the authority of the leaders; the politics of committee further complicates the politics of technology. Second, it is not clear if democratic 'deliberation' is a suitable or appropriate method in the field of science. Deliberation, instead of leading to consistency of advice, may bring to the surface the contending theories and hypothesis that inform all science. Where deliberation does lead to consensus regarding the contests that inform scientific research, such consensus may be at the cost of scientific insight. Either outcome therefore seems to politicise different scientific perspectives, distorting their foundations and challenging the basis of their conclusions. Third, because the conclusions reached from such a process ties the hands of

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<sup>24</sup> See generally, *The Prince*, chapter XXII ('Of Those Whom Princes Have as Secretaries') and chapter XXIII ('In What Mode Flatterers Are to Be Avoided'). For a more recent discussion see Meltsner (1988).

<sup>25</sup> In the context of general advice, the problem of ministerial advice has become a more pressing question in the bureaucratic scholarship, especially due to the tendency of politicians to seek the counsel of their own appointed staff, rather than the expertise that has traditionally been preserved in the bureaucracy. In those areas that straddle the political and scientific, the quality of such advice, and its exploitation by politicians, has been one of the major concerns: see for example the problem of no WMD in Iraq, contrary to intelligence reports.

<sup>26</sup> On the politics of inquiries see Peters and Barker (1993); Fischer (2000). On the use of participative or deliberative democracy to overcome these dilemmas see H. D. Forbes, 'Dahl, Democracy, and Technology' in Day et al (1989, 227-247); Roger Masters and Arthur Kantrowitz, 'Scientific Adversary Procedures' in Kraft and Vig (1988, 278-305); Willard (1996).

democratic leaders – it is politically difficult to hold off, or even reject the decisions reached by such independent bodies – democratic leaders may be tempted to control or manipulate the entire process. This fact not only exacerbates the politics of committees noted above, but potentially undermines the validity of all such consultative measures as political manipulation undertaken by democratic leaders who always knew the outcome they wanted. The present debate on global warming is perhaps the most striking example of such politics.<sup>27</sup>

The distance that separates prudence from modern science therefore exacerbates the democratic problem of good counsel. It produces the politics of science, which has two competing tendencies. On the one hand the democratic leader, confronted with a range of scientific advice he cannot expertly negotiate, pursues the science that is politically useful or feasible. This may be done directly, or through the manipulation of consultative or advisory bodies. In doing so, democratic leaders will appear to have succeeded, but at the price of completely undermining the basis of scientific advice, and always vulnerable to the critique of such experts and long term political consequences. On the other hand, the democratic leader who genuinely attempts to discern the best science, and who is able to avoid the politicisation of scientific disputes will appear to insist on the ministerial role of science while in effect conceding the contrary. Such an approach shows the hidden rule of science or technocracy in democracy. Thus technology, in complicating the problem of good counsel, questions the simple assumption of science as the minister or servant; it reveals the problem of the ‘master’s apprentice’.

### **Democratic Rhetoric**

The political attempts to manipulate science show the extent to which scientific inquiry is subject to political control. In the Soviet Union Stalinist doctrine was decisive in directing research away from genetics to a proper *Soviet* science.<sup>28</sup> Yet the extent of such manipulation is significantly reduced in modern democracies, especially where research is undertaken by an international community of scientists who are only incidentally located within a particular state. International competition is aided by a fundamental limitation, if not inability, of democratic leaders to constrain the authority of technology in modern democracy. It is difficult for democratic leaders to deploy persuasive arguments to confront and limit technological innovation. It is well to recall that historically the great obstacle to unlimited technological advance was piety. Icarus fell to earth from hubris; even Prometheus, that great benefactor, was punished, according to Hesiod, by being pinned to a rocky

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<sup>27</sup> See Philander (1998) and Houghton (2004) regarding the politics of global warming.

<sup>28</sup> Lysenko, a fraudulent biologist, preached a *Soviet* science with aspirations of transforming species, and thus ousted geneticists, who were said to preach fatalism and resignation in the face of heredity (Ulam 1973, 643-652).

outcrop and having his liver consumed by eagles.<sup>29</sup> The jealous gods do not admire the human hubris displayed by technological achievement. But as we have seen modern liberal democracy sought to limit the role of religion, and political arguments founded upon religious belief, by instituting a separation between church and state. At the same time the newly liberated science assumed an authoritative place in modern democracies. Consequently, in the absence of such religious and moral claims, there appeared to be few means at the disposal of democratic leaders, who rely primarily on persuasion to shape politics, to limit or check technological progress.

Of course it may be possible to use utilitarian arguments, based on the efficacy of the scientific innovations. Claims based on the dangerousness of technology perhaps reached their apex with the development of nuclear weapons. The potential for technology to produce a ‘nuclear winter’ or even destroy humanity altogether made a sobering argument for reassessing unlimited technological innovation. The end of the cold war, however, has undermined the power of this argument.<sup>30</sup> It has revived the extraordinary optimism that animates the modern democratic disposition towards scientific innovation. Those advocating limitless technological advance do not deny that science may produce problems; they simply assert that these problems are provisional, to be repaired by progressive innovation. In their favour they cite as proof the extraordinary advances we have seen to date. Such advances make those questioning this endeavour appear overcautious, even intransigently ultra-conservative. The media that wields enormous power in modern democracies aids in this presentation, portraying any such limits not as simple caution, but as a positive act of injustice. In a version of the secular theodicy argument, moral or ethical questions regarding, for example, the experimental use of stem-cells collected from embryos, are interpreted as a denial of the future potential of such technology, such as the potential for repairing the spinal cords of those who are unable to walk due to severe spinal injuries. If modern liberalism considers cruelty the worst thing, then compassion mandates limitless technological advances.<sup>31</sup> Combined with democratic argument formulated in terms of fairness and ‘rights talk’, the modern democratic leader has difficulty finding persuasive and principled bases for rejecting any technological innovation. How can comfort and solace – compassion – be granted to one group of sufferers and not others? What is not possible from the healing hand of the modern scientist if only it were liberated from political constraint? No arguments seem to counter this proposition, certainly none based on cost and financial burdens.<sup>32</sup> There is something arbitrary or idiosyncratic (if not

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<sup>29</sup> Prometheus, who fashioned humans, tricked Zeus by depriving him of the best parts of the sacrificial offering; for this reason Zeus took fire away. Perhaps an indictment of the cruelty of the gods, the liver would regrow overnight (Hesiod, *Works and Days*, 50).

<sup>30</sup> On the extensive scholarship at the time regarding the dangers posed by nuclear warfare see, for example, Gay (1987); Prins (1984); Shroeer (1984); Craig (1985); Bobbitt (1988).

<sup>31</sup> On the claim that cruelty is the worst thing from a liberal perspective see Shklar (1984).

<sup>32</sup> On the problem of imposing financial limits on health care see generally Hacker (2004); Baumol (1993); Cutler and McClellan (2001).

hypocritical), in the Amish decision to accept the horse and cart but not the motor car. The rhetorical inability of modern democratic leaders, who in a democracy can rule only by persuasion (and not fear) makes them even more vulnerable to scientific authority. It is difficult to persuade the democratic sovereign, the people, that scientific research that seems to promise limitless advantages, should be curtailed or stopped. As such, technology assumes an independence and authority in modern democracies that challenges that of its democratic leaders.

## **A NEW POLITICS**

Technology appears to promise limitless bounty. Though concerned with the body – its health and comfort – technology's boon extends to the political. Those who celebrate the achievements of innovations such as the Web suggest that politics itself may be revolutionized by new communication technologies. We may be at the threshold of a politics that surmounts the limitations imposed, for example, by representative democracy.<sup>33</sup> We cannot tell the future, but from past evidence, technology promises to solve all our problems. It would appear that those early modern philosophers who sought to replace sectarian religion and politics with the clarity of modern reason and science have succeeded beyond their greatest hopes and dreams. Yet the sense of optimism regarding technological innovation that pervades modern democracies seems founded more on a sort of faith in progress, rather than a cold, clear-sighted assessment of the benefits of innovation. Where democratic leaders attempt to evaluate technological innovation they confront a democratic politics that is fundamentally complicated, if not transformed, by technology. Democratic leaders seem to be caught out, running after and responding to changes that they can barely influence, let alone direct and control. Hyper-flux makes them play catch-up. Secular theodicy makes them morally responsible for matters they did not initiate. Lack of knowledge, and inability to persuade, questions their authority. In short, the new politics of technology has shifted the political from its central place in democracy to the periphery, as one of the sources of authority. What, if anything, has occupied its place remains unclear.

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<sup>33</sup> On the extensive scholarship regarding e-government and e-democracy see, for example, Bailie and Winseck (1997); Hoff et al (2000); Barney (2000); Jenkins and Thorburn (2003).

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