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The Importance of Politics to Nuclear New Build

Summary

It is often stated that we need three things from our energy systems: secure, economic supplies which do not have unacceptable environmental consequences.

However, a cursory glance at the history of nuclear energy over the last two or three decades reveals that such an analysis is only partial. Energy supplies must also satisfy a series of political imperatives which are related to, but not the same as, the above requirements. Since the late 1970s no fewer than twenty-five civil nuclear plants have been closed early, or refused an operating licence, in OECD countries. Many countries have instituted legal or policy barriers against developing nuclear energy in the future.

Increasingly, problems which can be regarded as arising at the interface between scientific industries and the political establishment are being seen in other fields: BSE ('mad cow disease'), the MMR (measles-mumps-rubella) vaccine, mobile phone masts, Genetically Modified Organisms, animal experimentation etc. Paradoxically, outbreaks of profound public concern at activities that in all likelihood represent very small risks to human health are seen at a time when life, at least in the developed world, has never been safer. Disputes in these areas have come to follow a common path.

If the scientific and political establishments are to be reunited behind a common agenda, two related themes must be examined and resolved. First, the philosophical and practical mismatch between the political and technical mindsets. Secondly, the periodic changes in societal ethics between a basically utilitarian approach (often observed during times of societal stress) and a Kantian or rights-based approach, often more dominant during times of relative comfort and how these must be managed if long-term solutions to technological problems are to be found and implemented.

Nuclear energy, politics and society

Though difficult to model as accurately as, say, the effects of oil price or the influence of climate change on decision-making in energy, the stance of the political establishment, locally, nationally and internationally, towards a major technical-scientific issue such as nuclear energy can be enormously important.

It is difficult to identify solid themes in the evolving relationship between the nuclear industry and the political establishments in various settings. For example, it is in the

nature of politics that values are debated, often passionately, between members of the same community, to the extent that prevailing political fashions, for example the neo-liberalism of the last decade of the twentieth century, however deeply they may seem to be ingrained, will always have dissenters. Even if we believe we can identify national political 'styles', they can differ considerably from country to country and from time to time. If the politics of Scandinavia can be described as 'consensual', that of the Anglo-Saxon countries as 'confrontational' and 'fragmented', those of some of the Romance countries as 'centralist' (in which the State is expected to play a major role) these labels are useful only insofar as their limitations are recognised. Prevailing political cultures during wartime or other times of national stress are often very different from those which may pertain in prolonged periods of peace and economic prosperity.

Nonetheless, certain tentative themes can be recognised in this changing relationship.

Science and politics - a changing relationship

When nuclear energy emerged in the post-war years it was the recipient of large amounts of support, both political and financial, from a wide range of governments. This was partly as a result of recognition of its potential as a new source of energy; partly perhaps as a political cover for nuclear weapons programmes which might otherwise have attracted more opposition; partly owing to the great faith that politicians put in scientists and the very concept of 'progress'. (On the scientists' part, developing nuclear energy represented a way to salve their conscience by turning the devastating destructive force of nuclear technology towards a more benign purpose.)

Nuclear energy at this stage mapped well onto the prevailing political and social fashion in most developed countries - one of considerable 'deference' towards experts and decision-makers, driven in part by a recognition that after the War things would be difficult for a long time and that governments needed to take bold decisions, be they in the realm of welfare reform or industrial policy. In effect, politics (as the arena for decision-making), science (as a source not only of technical input but also of legitimacy for those decisions) and the public (prepared to defer to both and to surrender some of their individual 'rights' as long as overall progress was maintained) were able to work in considerable harmony. The prevailing societal ethic was a utilitarian one - there was widespread assumption that policy was to be made on the basis of the greatest good for the greatest number, even if some individuals suffered disadvantage in the process.

As time passed, this consensus broke down, though to different extents in different countries. At first the fault lines appeared between politics/science on the one hand and the public, or growing numbers of members of the public, on the other. As post-war austerity was replaced by economic prosperity, so other profound social changes came to threaten the hegemony of the political/scientific establishment. People became more individualistic, traditional religion was replaced by cults, formal dress was replaced by informality (and even open nudity!) among younger generations, drug taking became more common and young people were encouraged to 'tune in, turn on and drop out' by academic gurus like Timothy Leary and Allen Ginsberg [1]. It is of course bizarre to claim that all members of the population, or even more than a small minority, ever took up such activities, but a general decline in the awe with which royalty, politicians, clergymen and 'experts' were held was clear. The rights of individuals became more important than was typical of societies under external pressure.

For a while the establishment could ride these changes - for example, large numbers of new nuclear reactors were ordered in the 1970s and 1980s, and indeed the economic decline of the 1970s, driven largely by the massive increase in the oil price in 1973, presaged a more subdued decade in which the strong political leadership (or out-of-touch, even uncaring, authoritarianism, depending on one's standpoint) of figures like Margaret Thatcher and Ronald Reagan could flourish in a way that might have been more difficult a decade earlier (or later). Science continued to play its role of not only supporting but to a large degree setting the direction of government policy, politicians by and large continuing to view the pronouncements of well-established scientific figures with close to blind faith. One can imagine that scientists were torn between a desire to make sure that politicians understood the inherent limitations of scientific inquiry (which cannot even in principle offer certain predications of the future, only well-based guesswork) while at the same time enjoying the social cache of exerting such influence over the great and good.

Through the 1980s and 1990s (though it had been presaged by writers like C.P. Snow a quarter of a century earlier [2]) the commonality of interest and the close interaction between scientific and political cultures began to disintegrate. 'Big science', as represented perhaps most spectacularly by the space programme, fell out of favour and governments, with a few notable exceptions (Japan, France), drastically reduced expenditure on 'blue skies' research and development. In part this schism came about through deliberate (and often successful) attempts by the opponents of technology, increasing numbers of whom were being elected into parliaments, to undermine the scientific basis of decision-making, including the assumption that scientists could be regarded as fonts of unbiased 'truths'. In this they were aided by the behaviour of some scientists working for

major corporations who seemed to be prepared to allow their views to be used (or covered up) in such a way as to promote the financial interests of their sponsors. (Research into the health effects of smoking tobacco became something of a cause célèbre, both because of the delay in the scientific community taking up the cause and because of the failure of some scientists to make their findings public.) In part also it was because of a growing number of examples of 'failure' in the science on which decisions had been based - the nuclear accidents at Three Mile Island in 1979 and Chernobyl in 1986 were particularly influential, as were such events as the Bhopal chemical disaster in 1984 and the explosion of the Challenger space shuttle in 1986.

It was surprisingly easy to create a schism between science and politics because it seems that the two never really understood each other. Indeed, the end of the twentieth century was a time of growing suspicion, scientists getting frustrated that politicians were requiring 'right' answers to simplistic questions of the kind the science cannot answer and accusing them of only being interested in the next election, while politicians were becoming increasingly annoyed at the difficulty of getting a straight answer which could subsequently be relied upon and the scientists' inability to recognise the constraints of decision-making in a democratic context. So, for example, scientists during the Bovine Spongiform Encephalopathy (BSE) affair of the 1980s/1990s were:

both deliberately and inadvertently utilised to provide spurious scientific legitimation for policy decisions which government officials believed ministers, other government departments, the meat industry and the general public might not otherwise accept [3].

Science and politics in conflict

The similarities between the paths followed by controversies in widely ranging scientific fields is striking. Typically they involve issues in which an activity is alleged to have an effect on a small number of people, in circumstances where no clear causal relationship can be determined. At first politicians and (some) scientists dismiss fears as unfounded, an action which often exacerbates the initial concerns by adding suspicions of 'cover-up'. The media identify and promote individuals who claim to have been affected by the activity in question and these individuals are often given equal (or greater) airtime and prominence as large-scale studies which imply a very small risk, if any. Politicians now set up a committee, drawn from 'experts' and non-experts, in the hope that it will provide a clean bill of health for the activity. This cannot happen - the scientists will always argue in effect that a negative cannot be proved, while the activists will stress that it has not 'yet' been proved that the activity is harmless and so it should be stopped. The outcome, in many cases, is regulatory action that puts

barriers in the way of developing new technologies, however beneficial they may be.

Tensions among the scientific and political establishments and the public have emerged at times of economic prosperity in many developed countries. As far as many members of the public are concerned, there is no apparent need for radical political action to protect the fabric of our way of life (as there might have been, say, at times of war or prolonged industrial unrest). Society is not any happier - our anxieties simply get transferred onto other potential threats such as mobile phone microwaves in the environment which by any reasonable standards are patently much less severe [4] - but there is less space for strong political decision-making in response to future threats where this may be seen to violate the rights of some individuals, however few.

Ironically, it seems that while thoroughgoing 'strong/authoritarian' or 'consensual/weak' modes of leadership can be successful in delivering implementable policy in the realm of scientific controversy, to fall between these extremes may be less so. The search for a site for a radioactive waste repository seems to have been concluded in Finland and Sweden (where local people have been kept at the centre of the decision-making process throughout) and in the USA (where a firm federal decision to use Yucca Mountain in Nevada had been pursued in the face of widespread local opposition). By contrast, those countries which have made some attempt to accommodate public concerns, e.g. by including non-experts on advisory bodies, but which have continued to operate in conditions of considerable secrecy (it was only in 2005 that the list of sites considered for waste repositories in the UK in the 1980s was released to the public, and then only after an application under the then recent Freedom of Information Act [5]) have made relatively little progress. Undoubtedly, national political characteristics and history play a part in these different approaches to decision-making - there can be no assumption that what has 'worked' on one country or region would be appropriate for another.

As a response to the growing public scepticism about the role of science in decision-making (and perhaps to the need to be seen to be 'doing something' without having to do something), politicians have attempted to rebuild a relationship of trust with the public by downgrading technical expertise or even writing it out of the loop. The panels charged with finding 'solutions' to matters such as radioactive waste management, the health effects of mobile phone masts, BSE, foot-and-mouth etc. are increasingly populated by individuals with no technical knowledge of the topic in question and, indeed, often an antipathy towards such expertise.

The proper role of science?

Yet, properly used, science has a vital role to play in decision-making. The scientific method, while not offering certain knowledge, especially when dealing with relatively uncommon potential health threats, is likely to provide advice which is closer to the truth, and therefore more useful, than that emerging from religion, gossip or ideology [6]. As long as a suitable attitude is taken to uncertainty this must lead to better decision-making. Even Hume, who takes the extreme sceptical position that simply because something has always happened in the past is no proof that it will happen in the future, argues that only a fool would live his life on that basis [7].

Such reflections are particularly vital when decisions taken or ducked today will have implications long, long after the end of the term of office of the politicians taking them. It is wrong to say that politicians are never motivated by long-term factors - each leader wants to ensure their place in history - but how these desires can be integrated with the short-term strains of the electoral timetable is not always clear. Nuclear energy is particularly (but not uniquely) vulnerable to any impression that politicians in the future may change the rules in a more or less capricious and unpredictable way. The initial investment costs of nuclear energy represent a higher proportion of total costs than is the case with most other ways of making electricity (notably Combined Cycle Gas Turbine, CCGT). To ensure a fair rate of return on the project it therefore requires a stable business environment for a rather longer period of time. If, say, it is perceived that a change in political control might bring with it more stringent regulations (or even a formal phase-out policy), then the economic risk associated with investment in nuclear plant becomes high and possibly unmanageable. In the most extreme case, the Shoreham nuclear station at Long Island, New York, was closed in 1989 before commercial operation began because it was refused an operating license on the grounds that it could not comply with evacuation requirements introduced after construction had started. The Long Island Lighting Company was effectively bankrupted by the affair.

The challenge for politicians and the 'consumers' of their decisions, then, is twofold. First, how to reintegrate science into decision-making without making the mistakes of the past in which some scientists were given almost a free hand over policy development [8]. Secondly, how to take strong and possibly unpopular decisions before the impending crises of energy shortages and climate change become unmanageable (quite possibly after the politician in question has left office, thereby risking taking the short-term pain while receiving little of the long-term gain). Unless these are overcome, complex technologies like nuclear energy, even if they have a useful potential role to play, are likely to be excluded on grounds which, from an external viewpoint, will be regarded as irrational. (This is not, of course, to argue

that there are no rational grounds for opposing any particular technology.)

There are certainly political risks associated with firm action over controversial issues, especially when society is not yet ready to acknowledge the need for such action. But so too there are political risks in ducking difficult questions - the risk of being seen to be weak during or after one's term of office. Politics is not merely a matter of getting through the next election - some decisions are inevitably longer-term, and the success or otherwise of politicians in dealing with them will cast long shadows.

References

1. In *The downwave: surviving the second depression*, Milestone Publications: Portsmouth, Hants (1983), ISBN 0 903852 38 1, Robert Beckman argues that a whole range of social factors, such as formality of dress, levels of church-going, tastes in music etc. can be correlated to perceptions of economic prosperity and comfort.
2. Snow, C.P. (1959, reprinted 1993), *The two cultures and the scientific revolution*, Cambridge University Press.
3. <http://www.ingentaconnect.com/content/beechn/spp/2001/00000028/00000002/art00002>, Millstone E. and van Zwanenberg P. (2001), 'Politics of expert advice: lessons from the early history of the BSE saga', *Science and Public Policy* 28 no 2 (April 1, 2001).
4. Schopenhauer notes that each of us tends to live our life at a fairly constant level of anxiety, independent of what the external environment has on offer to create those anxieties. It seems to the author that this observation has profound implications for our management of risk - particular risks should be regarded as better or worse candidates to justify a general sense of anxiety rather than matters to be 'resolved' in some way, to the greater happiness of mankind. 'All willing springs from lack, from deficiency, and thus from suffering. Fulfilment brings this to an end; yet for one wish that is fulfilled there remain at least ten that are denied. Further, desiring lasts a long time, demands and requests go on to infinity, fulfilment is short and meted out sparingly. But even the final satisfaction itself is only apparent; the wish fulfilled at once makes way for a new one. No attained object of willing can give a satisfaction that lasts and no longer declines; but it is always like the alms thrown to a beggar, which reprieves him today so that his misery may be prolonged till tomorrow. Therefore, so long as we are given up to the throng of desires with its constant hopes and fears we never obtain lasting happiness or peace.' Schopenhauer A. (1819), tr. Payne E., *The world as will and representation* (volume 1): Dover Books.
5. <http://www.timesonline.co.uk/article/0,,2-1649479,00.html>, Henderson M. (2005), 'Secret list of nuclear dump sites revealed', *The Times Online* (June 11, 2005).
6. This is not to denigrate the importance of non-scientific sources of 'knowledge' when it comes to settling our personal values and sense of right and wrong. In the view of this author, though, these sources are less reliable than the output of properly conducted science when it comes to interpreting the behaviour of the physical universe.
7. 'Should it be asked me whether ... I be really one of those skeptics who hold that everything is uncertain, I should reply that neither I nor any other person was ever sincerely and constantly of that opinion. I dine, I play backgammon, I converse and am merry with my friends and when after three or four hours of amusement I would return to these speculations, they appear so cold and strange and ridiculous that I cannot find in my heart to enter into them any further. Thus the skeptic still continues to reason and believe though he asserts he cannot defend his reason by reason.' Hume D. (1739), *A treatise of human nature*.
8. One issue within this broad topic might be how to create institutions and incentives to build interdisciplinary scientific expertise, with a view to establishing reliable bases of 'facts', explaining different standpoints and outlining the advantages and disadvantages of various courses of action, hence aiding individuals who wish to become involved in the debate.