Chapter 13
Science Advocacy: Challenging Task, Difficult Pathways

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Abstract The practice of scientists acting as advocates in their own political cause is a relatively recent one around the world. The primary cause of their advocacy is their desire to maintain or increase funding. Despite a natural reluctance to undertake lobbying activities, science has learned that it must engage with policymakers if it wishes to maintain its influence and funding. The chapter details a number of the formal and informal methods science has used, drawing examples from the United States, Britain, Australia and Canada. It charts the emergence of science advisers to governments, either as individuals or committees. It looks at the formation of advocacy groups, and contrasts their strategy and activities with lobby groups representing non-science interests. The paper concludes that advocacy is not always a natural and easy course for scientists, but one they must undertake. The voice of science advocacy is not strong, but it is there.

Keywords Science advocacy, science lobbying, FASTS, Congressional Visits Day, Science meets Parliament

The practice of scientists acting as advocates in their own political cause is a relatively recent one around the world. The primary cause of their advocacy is their desire to maintain or increase funding.

Scientists are ambivalent about lobbying: they tend to regard such activities as crass and distasteful, but are beginning to realize they are being out-competed. In the past they had a naive faith that the value of science was self-evident and that it would therefore be automatically recognized and funded by legislators. But scientists have come to realize that, just like every other interest, science needs to make its case against competing demands for government funds—hospitals, roads, the war against terrorism, the environment and social services.

At the same time, they recognize that lobbying for funds risks contradicting the 'disinterested' approach science espouses, and could be seen as compromising the integrity of their work:

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> The credibility of scientists is on the line. Do we want them to serve as lobbyists? Is that good for democracy, and, finally, is it good for science? Should generals lobby for a war?[1]

To many scientists the advocacy role seems, as Daniel Greenberg put it, somehow 'inappropriate':

> Physicians, trial lawyers, real-estate agents, and other professionals take the political route to promote their interests. They collectively raise money and give it to favored candidates, which is what counts in electoral politics, and thereby gain politicians' attention. But for scientists, that's out of character. They did it once on a big scale, in 1964, when Republican Barry Goldwater's nuclear saber rattling created alarm among the physicist alumni of the World War II A-bomb project and many other researchers. They raised significant sums and sent leading scientists barnstorming around the country to denounce Goldwater and boost Democratic candidate Lyndon Johnson. But after that, they swore off organized politics as inappropriate for the scientific community. (Greenberg 2007)

Despite that natural reluctance, science has since engaged with policymakers through a number of formal and informal mechanisms. Funding is not the only issue. Science has a strong hand to play in the evidence-based policymaking that many governments pride themselves on. At times the science can be drowned by a multitude of other voices, from self-interested industries to aggrieved communities and passionate advocates of causes. If science is to be heard, it has to compete, especially on controversial issues such as climate change, environmental legislation and the teaching in schools of 'intelligent design' as a competing theory on the origin of the species.

In response (and it has been a response, not an initiative), science has moved to make its voice heard in the national capitals of the world. The voice not strong, but it is there. At times science works within the executive or legislative arms of government; in other cases, it operates completely independently of government, making the first steps towards organizing itself like 'physicians, trial lawyers and real-estate agents'.

This chapter describes the emergence of these voices, drawing on some international examples and trends, and looking at the approaches and strategies different groups have used.

13.1 Science Advisers and Chief Scientists

In the US and the UK, there were moves early in the Cold War to increase the representation of the views and expertise of the scientific community in government, to complement the more scholarly representations of groups such as the learned academies, the Royal Society and the American Association for the Advancement

[1] Nigel Cameron; retrieved from http://choosingtomorrow.blogspot.com/2007/02/triumph-for-science-or-merely-for.html

of Science (AAAS). Governments began to see the need for science advisers: senior people who were close to the President or the Prime Minister and who could be trusted to interpret science, advise on priorities and propose policy options.

In 1957, US President Dwight D. Eisenhower appointed James Killian to the newly created position of Special Assistant to the President for Science and Technology. Just as science lobby groups were later spawned by the threat or reality of funding cuts, it also took a crisis to create Killian's position: the launch by Russia of the first spacecraft, Sputnik.

The changing role of the special assistant has been described by Pielke (2007). In an article in *Nature*, Pielke claims that the power of the holder of the office has continually declined—paradoxically, as the power of science in the federal administration has increased. He ascribes this to increasing complexity and the play of numbers:

> Yet as the adviser's influence has declined, scientific and technological expertise at the highest levels of government has been triumphant. William T. Golden, investment banker, philanthropist and a chief architect of the science-adviser position, wrote in 1950 that the government could draw on 'somewhere between 20 and 200' top scientists. By 2003 there were approximately 8,000 scientists serving on about 400 federal advisory committees. Without effective mechanisms to turn advice into options, and options into action, the often heroic efforts of these scientists will amount to little more than academic exercises.

Science per se is not a matter of great interest to Presidents. It may well be part of the solution in many areas of policy, but in the end policy decisions are political rather than scientific and will be made by the President in discussion with his inner circle. While the role of the science adviser will vary depending on their relationship with the incumbent President, Pielke says that few advisers play the sort of political games that would gain them admittance to the inner circle.

He sees the position as steadily developing since 1957:

> The reality of pluralistic policy-making helps to explain why today so many issues involving science are politicized, and will continue to be so, under all future presidents. The scientific community can assist the next president by focusing greater attention on the overwhelming supply of expert advice beyond the White House that feeds into all aspects of government decision-making. In practical terms, this would mean eschewing calls to separate science from politics, and fostering instead more sophisticated ways to integrate science with the needs of policy-makers. (Pielke 2007)

Pielke suggests that the position could evolve into an in-house think tank, putting policy options to the President and eliciting from government 'policy-relevant questions that need to be addressed by scientific and technological experts'.

In 1965, not long after the appointment of the first presidential science adviser in the US, Sir Solly Zuckerman was appointed Chief Scientific Adviser in the UK, and served under both under Labour and under Conservative prime ministers.

Twenty-four years later, in 1989, Professor Ralph Slatyer was appointed as Australia's first Chief Scientist. Slatyer later recalled his response to the phone call inviting him to take up the new position:

> I had already been the chairman of ASTEC [the Australian Science, Technology and Engineering Council] and I thought the new chairman ought to continue working the way

> I had. [Senior bureaucrat Mike Codd] said, 'No, this is going to be quite different. ASTEC is outside the bureaucracy; this is inside. The person in [the Chief Scientist's] job will have access to all the Cabinet papers and will be expected to be across all of them'. He said the new [Prime Minister's Science] council would be very influential, with the prime minister and six other senior ministers involved. Also, there had been a great need for a coordination committee to bring the various bureaucratic elements together, avoid overlap and so on. 'It really is a challenge', he said. 'Why don't you do it for three years?'[2]

Complementing the Chief Scientist appointment in Australia was the creation of a powerful committee—the Prime Minister's Science Council, where cabinet ministers had six-monthly meetings with scientists.

In all three countries, these advisory positions created a pipeline for science straight to the highest political levels. They reflected the increasing importance of science in the national decision-making process, in which many problems had a scientific component. Science gained a seat at the policymaking table not because of any innate qualities, but because it was perceived as generating solutions to problems and helping to create industries, jobs and wealth.

By the 1980s, however, it was apparent to many scientists that individual advisers and government-selected committees might not be enough to protect science and its funding streams. Coalitions began to form.

13.2 Science Advocacy Groups

In 1983, the National Coalition for Science and Technology (NCST) was formed in Washington D.C., where it was the only registered lobby of scientists for science. Other groups followed, including the Council on Research and Technology (CORETECH) in 1987. Research!America was formed in 1989, 'under the realization that there was a vast deficiency in medical research funding—and that such a gap would be detrimental to Americans for years to come'.[3] Each of these groups was a coalition of industry and researchers.

Garfield (1987) describes the NCST as:

> a registered lobby representing individual scientists, universities, businesses and associations. It promotes governmental support for science and has recently concentrated its efforts on funding for the National Science Foundation and NASA.

Garfield puts these activities into context: 'Such action by scientists and their representatives would have been unheard of only a decade ago. But the crisis in funding for scientific research around the globe, as well as the qualitative change big science ushered in, has stirred many a scientist from political somnolence'.

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[2] An interview of Professor Ralph Slatyer by Dr Max Blythe, 1993. Published at http://www.science.org.au/scientists/rs.htm

[3] Research!America: http://www.researchamerica.org/history_mission

Until that time, scientists had been uncomfortable with the notion of lobbying for funding (although they had shown a readiness to raise their voices on ethical matters and issues of conscience). Garfield describes the 'innate distaste many hold for overt forms of influencing decision-makers in government'. He attributes the emergence of the new movement to new demands on the scientific community, quoting Shils (1987), professor of sociology at the University of Chicago:

> The freedom they enjoyed when research projects were small and demands for practical results were less insistent is no longer the natural and inevitable condition of scientific research. The outer world has forced itself into [sic] the horizon of scientists as never before.

One factor from this 'outer world' was the success of individual universities in the US lobbying for funds by circumventing the normal peer-review processes, and persuading powerful national politicians to earmark funds for their institutions by attaching funding proposals to other legislation. This threat to the peer-review process in the US had to be countered.

What was happening in the US in the 1980s was also happening in various forms in other parts of the world. The causes were the same: funding was under threat, the importance of science was not always appreciated by politicians making policy decisions, and there was a perceived lack of awareness in both public and policy circles of the power and capacity of science to change the course of nations.

In his article 'Scientists must learn to lobby', Eugene Garfield describes a series of activities and campaigns across Europe and the US at this time (Garfield 1987). Cuts inflicted by French President Jacques Chirac prompted 280 research directors to take out advertisements in *Le Monde* and *Le Figaro* appealing for additional funding.

A similar campaign in the UK led to the birth of a new organization, Save British Science (SBS):

> SBS was founded in 1986, following the placement of an advertisement in *The Times* newspaper. The idea came from a small group of university scientists brought together by a common concern about the difficulties they were facing in obtaining the funds for first class research.
>
> The original plan was simply to buy a half-page advertisement in *The Times* to make the point, and the request for funds was spread via friends and colleagues in other universities. The response was overwhelming.[4]

The advertisement (Fig. 13.1) appeared on 13 January 1986.

In contrast to the NCST in the US, the UK's SBS was supported largely by individual scientists, and aimed to:

> 'communicate to the public, parliament and the government a proper appreciation of the economic and cultural benefits of scientists' research', according to its literature. Its London office directed letter-writing campaigns by scientists to members of Parliament.

[4] Campaign for Science and Engineering in the UK (CASE): http://www.savebritishscience.org.uk/about/history/index.htm. (CASE was formed in 2005 as the successor to SBS.)

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SAVE BRITISH SCIENCE

Basic science has given us radio and television, plastics, computers, penicillin, X-rays, transistors and microchips, lasers, nuclear power, body-scanners, the genetic code, ... All modern technology is based on discoveries made by scientists seeking an understanding of how the world works, what it is made of and what forces shape its behaviour. Basic science is uncovering the secrets of life, gaining knowledge that defeats disease, inventing new materials, understanding the Earth and its environment, looking deeper into the nature of matter and reaching towards an understanding of the Universe.

Today's basic research enlarges our conceptions of the world and our place in it and underlies tomorrow's technology, the basis of future prosperity and employment.

Yet British science is in crisis: opportunities are missed, scientists emigrate, whole areas of research are in jeopardy. The Government's support for research is declining, falling further behind that of our main industrial competitors in Europe whose policy is to increase investment in scientific research.

There is no excuse: rescue requires a rise in expenditure of only about one percent of the Government's annual revenue from North Sea oil. We can and must afford basic research, Britain's investment for the future.

ASK YOUR MEMBER OF PARLIAMENT
TO HELP SAVE BRITISH SCIENCE
BEFORE IT IS TOO LATE

1500 scientists
have paid for this advertisement

For information write to:
SAVE BRITISH SCIENCE
P.O. Box 241,
OXFORD, OX1 3QQ
or telephone: (0865) 51993

Fig. 13.1 Original advertisement for Save British Science

In Australia, the Federation of Australian Scientific and Technological Societies (FASTS) was formed in 1985.[5] Its birth was prompted by harsh cuts to funding for national research organizations in the 1984 budget. The Minister of Science—a science enthusiast visibly distraught at his failure to protect the funding of research—lashed out at scientists across Australia. They were wimps, he said, because they failed to muster the public support that would have enabled him to carry countervailing budget proposals through the Australian Parliament. He needed active advocates—scientists prepared to sell the value of the national investment in science to the public, the media and, ultimately, to members of Parliament.

In response to the budget cuts and the minister's statement, the Australian Academy of Science convened a meeting of leading Australian scientific societies to consider how science might more effectively present its views to politicians. The formation of FASTS was the result. It was established as a body representing working scientists (as opposed to the relatively small number of elite scientists elected to membership of the academy).

The role of FASTS, which continues to operate, is essentially political: to foster close relations between the societies; to promote a higher level of public understanding of science; and to encourage scientific dialogue between industry, government and the scientific and technological community. Its members are learned or

[5] The author was the executive director of FASTS from 1995 to 2003 inclusive.

professional societies that between them represent tens of thousands of scientists and technologists. It is funded by subscriptions from the membership, with only very modest government support to help it become established (although the Australian Government recently announced new annual funding sufficient to support two or three extra staff).

13.3 Secondments of Scientists to Government

In the US, the science community decided to take another, more direct route to policymakers. The Congressional Science Fellows programme, administered by the AAAS, was created to allow for the secondment of working scientists to Washington for periods of 12–18 months. There, they joined the staff of a member of congress, or worked in the congressional library, the congressional committee system or the bureaucracy. This programme continues today.

The scientists are funded primarily by one of the scientific societies, and the programme was (and is) administered by the AAAS:

> The Science & Technology Policy Fellowships began in 1973 with seven Fellows serving in congressional offices, providing their scientific expertise to policy-makers facing increasingly technical legislative issues. AAAS now partners with nearly 15 federal agencies, many congressional offices and committees, and nearly 30 professional scientific societies to operate the AAAS Science & Technology Policy Fellowships, which have been providing public policy education and outreach experiences for scientists and engineers for more than 30 years.[6]

The programme has grown steadily and has an annual intake of about 150 fellows chosen in a highly competitive process. Those scientists taking up positions in congressional offices (now about 35 annually) need to be comfortable with the political stance of their congressman because they may become involved in partisan activities. Scientists could visit up to a dozen offices before negotiating an arrangement with a compatible representative or senator.

The AAAS plays a training and coordinating role:

> The fellowships provide the opportunity for scientists and engineers, from recent PhD recipients to senior-level professionals, to learn about policy-making while contributing their knowledge and analytical skills to the federal government. The Fellows, representing a broad array of science and engineering fields, bring a common interest in learning about the intersection of science and policy, and a willingness to apply their technical training in a new arena. The host offices value the Fellows for their external perspectives and critical thinking skills, as well as for their technical expertise.[7]

The value of the programme is also recognized by members of congress in testimonials published on the AAAS website. Senator Edward Kennedy:

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[6] American Association for the Advancement of Science (AAAS): http://fellowships.aaas.org/01_About/01_History.shtml.

[7] AAAS: http://fellowships.aaas.org/01_About/01_History.shtml.

> The Congress is increasingly involved in public policy issues of a scientific and technical nature, and recognizes the need to develop additional in-house expertise in the areas of science and engineering. In addition, it becomes increasingly more important that the scientific and engineering communities become aware of the workings of government in these areas, and that better liaison be developed in the public interest.[8]

Other countries have shown interest in adapting the scheme to their own needs. For example, Switzerland trialed and then adopted the programme, making the first appointment in 2002. The Swiss convenor of the programme commented on the evaluation:

> Everybody is now very happy, even those who were so sceptical at the start; and that includes some of the permanent staff in Parliament. There has been a real change in attitude, so much that the secretaries of other Parliamentary Committees want to have a fellow attached to their staff.[9]

13.4 Advisory Committees and Councils

Partly because of prompting from science advocacy groups, many countries set up official advisory groups funded by government to inject science into their legislatures. Canada established the Science Council of Canada in 1966 'to advise the government on science and technology policy. The original membership was 25 appointed scientists and senior federal civil servants, later altered to 30 appointed eminent experts from the natural and social sciences, business and finance, and no civil servants'.[10] In 2007, the Canadian Government announced that it will create a new body, the Science, Technology and Innovation Council, as part of a broader effort to consolidate external advisory committees to strengthen the role of independent expert advisers.

In the UK, science expertise is found in the Parliamentary Office of Science and Technology (POST). The office was established in 1989 to help MPs examine science-based issues, and has a permanent staff of six supplemented by short-term appointments, including PhD students.

The rationale for POST is set out on its website:

> Most parliamentarians do not have a scientific or technological background but science and technology issues are increasingly integral to public policy. Parliamentarians are bombarded daily with lobbying, public enquiries and media stories about science and technology. These cover diverse areas such as medical advances, environmental issues and global communications.[11]

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[8] AAAS: http://fellowships.aaas.org/01_About/01_History.shtml.

[9] Personal correspondence, Dr Margrit Leuthold, then Secretary-General of the Swiss Academy of Medical Sciences.

[10] http://www.thecanadianencyclopedia.com/index.cfm?PgNm=TCE&Params= A1ARTA0007214

[11] Parliamentary Office of Science and Technology: http://www.parliament.uk/parliamentary_offices/post.cfm

POST writes short briefing papers and longer reports for MPs and Parliamentary committees. It organizes discussions and maintains a watching brief ('scans the horizon') for emerging issues. As well as working closely with the institutions of Parliament, POST also works with outside bodies, such as scientific societies, policy think tanks, business, academia and research funders. POST-like offices have been established in many of the Parliaments of Europe.

POST is part of the European Parliamentary Technology Assessment, a European network established in 1990 to advise Parliaments on the possible social, economic and environmental impacts of new sciences and technologies. The network defines its aim as:

> [providing] impartial and high quality accounts and reports of developments in issues such as for example bioethics and biotechnology, public health, environment and energy, ICTs, and R&D policy. Such work is seen as an aid to the democratic control of scientific and technological innovations, and was pioneered in the 1970s by the Office of Technology Assessment (OTA) of the US Congress.[12]

13.5 Advocacy and Lobbying: Strategy and Tactics

Scientists and governments have worked from a common menu in building better advisory and information mechanisms. Chief scientists, expert advisory committees and secondments of scientists to Parliamentary systems have all helped give a voice to science in the decision-making process. Although their role is not explored in this chapter, funding bodies, scientific societies and the learned academies also contribute to the advocacy of science.

The advocacy/lobbying function sits at one end of the spectrum of routes that science takes into national policymaking. So, how does the science community go about this task? Which of its subsectors and organisations play a leading part? What are its strategies and tactics? Has it had the same success as 'physicians, trial lawyers and real-estate agents'? How do its activities compare with the campaigns of major national lobby groups?

Successful advocacy is an amalgam of a number of approaches. The tactics organizations employ depend very much on the strategies they have adopted:

- Some use the media, working on the theory that the best way to pressure politicians is by mobilizing public opinion.
- Others adopt the tactic of working through grassroots mass movements, using their members to advocate for the cause by contacting local politicians. Some scientific societies or coalitions have even initiated such campaigns.
- A third approach is to take soundings of public views through polls and surveys, and present the results to politicians as evidence that this is what their constituency wants.

[12] European Parliamentary Technology Assessment: http://www.eptanetwork.org/EPTA/about.php

- A fourth is to employ experienced consultants (often ex-politicians) to take up the cause through contacts with their former colleagues in office.
- A fifth is to change the system from within, working quietly with politicians and bureaucrats. Personal relationships are often used to set up these unheralded meetings.

David Malakoff set out other 'tools of the trade' in an article in *Science* ('Perfecting the art of the science deal'):

> Nearly 150 of the 545 members of Congress got at least one award from a science-related group over the past 18 months, according to an informal survey by *Science*. Although such 'grip and grin' events might seem ritualistic, 'everyone wants to be recognized for the good work they do', says Missi Tessier of the Science Coalition, which hands out its share of prizes. She's especially proud of a nanoscale saxophone that the coalition presented to President Bill Clinton. 'He kept it on his desk for a long time', she says. 'That can't be a bad thing'. (Malakoff 2001)

Malakoff is unenthusiastic about email campaigns, and cautious about using celebrities (because of their fees), but does recommend the following approaches:

- Feed politicians—offer them a free meal and a compelling after-dinner speaker.
- Form coalitions of interests with like-minded organizations. They can be difficult to establish and maintain, but their political power makes them hard to beat.
- Ask politicians to persuade their colleagues.

Science faces stiff competition in the national competition for funding. We can learn from the vigour and the range of activities and training offered by grassroots organizations with interests outside science. All these groups are competitors, if not directly for funding then at least for time and attention in national political circles.

The American Civil Liberties Union offers advice to its supporters through a section of its website headed 'Becoming an effective and efficient activist'. This lists actions for individuals and training and advice on how to become more effective. For example, the site suggests the best approach to take in meeting with a member of congress:

> Decide who will attend the meeting. Bringing more than four or five people can be hard to manage. Keep it small, but bring people who represent different groups that have an interest…
>
> Agree on talking points. It's tough to make a strong case for your position when you are disagreeing in the meeting! If a point is causing tension in the group, leave it out.
>
> Plan out your meeting. People can get nervous in a meeting, and time is limited. Be sure that you lay out the meeting beforehand, including who will start the conversation.
>
> Decide what you want achieve. What is it you want your elected official to do—vote for or against the bill? Make a commitment to introduce or co-sponsor legislation? Asking your legislator or his or her staff member to do something specific will help you know how successful your visit has been![13]

[13] American Council for Civil Liberties: http://action.aclu.org/site/PageServer?pagename=AP_effective_activism

The National Rifle Association (NRA) is also widely recognized as a hugely effective lobby group in the US. It offers a high-quality website with information, news and advice, including a three-hour video newscast each weekday evening to update viewers on 'what's hot and happening with your firearm freedoms'.

The NRA is conscious of the pressure it is able to bring to bear on politicians and the potential rewards from mobilizing 3 million members. Former Clinton spokesman George Stephanopoulos says, 'Let me make one small vote for the NRA. They're good citizens. They call their Congressmen. They write. They vote. They contribute. And they get what they want over time'.[14]

The NRA aims to ensure that its members call, write, vote and contribute by offering them advice on practical activities, including letter writing:

> Be Brief, Specific, & Always Be Courteous! Letters shouldn't exceed one page, and the purpose of your letter should be stated clearly in the first paragraph. If your letter pertains to specific legislation, identify it accordingly (use the bill number, if known, and the title of the bill and/or a brief description). To make sure your letter is as productive as possible, always be courteous, even if you disagree with your representative's position! Never threaten or use abusive language. This only hurts your cause.[15]

13.6 Advocacy Activities

Congressional Visits Day (CVD) began in 1994 in Washington D.C., and has been organized annually since then. The day usually brings 200–250 scientists, engineers, researchers, educators and technology executives to Washington to raise visibility and support for science, engineering and technology. The event is run by the Science–Engineering–Technology Working Group, a coalition of professional and learned societies and industry and educational institutions. In 2008, the event is expected to reach almost two-thirds of all members of congress.

> CVD is a grassroots activity designed to help scientists and engineers establish and maintain relationships with their local Representatives and Senators through visits in the Washington offices. This event is designed to show the cross-disciplinary support for federal science and technology programmes. Participants try to show the 'human face' and local impact of science and engineering issues…[It] gives us a chance to demonstrate how our own organizations affect innovation, competitiveness, the creation of a skilled and world-class workforce, national security, a healthy environment, and our economic well being.[16]

CVD was the model for an Australian equivalent, the annual Science meets Parliament Day (SmP), which was first run in 1999 by FASTS and has been held every year since (except 2004).

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[14] National Rifle Association (NRA): http://www.nra.org/aboutus.aspx

[15] NRA: http://www.nraila.org/ActionCenter/GrassRootsActivism.aspx?ID=11

[16] SETCVD: http://www.setcvd.org/cvd2008/CVD08-FAQ.pdf

It is a two-day event, with the first day devoted to a discussion of strategy and tactics, and the second to individual meetings with MPs. At the first event in 1999, both sides enjoyed the meetings: the scientists found MPs interested in their work, and the MPs discovered that scientists have potential solutions to problems in such areas as the environment, energy, transport, health and agriculture.

In the Australian Parliament only about 5% of the 227 members have tertiary qualifications in science. That lack of scientific expertise can become a problem when Parliament discusses science-based issues like water, energy, greenhouse, GM food or the environment. Apart from the bureaucracies, MPs' only alternative sources of advice may be a few chosen outside experts, or interest groups (whose 'science' can be unreliable).

And, just as Parliamentarians understand little about science, scientists have little appreciation of the work of MPs. They do not have a clear idea of the political processes, or appreciate the pressures on MPs, the timescales on which they work or the number of interests they have to juggle. One function of SmP is to educate scientists about these factors in order to make them better advocates for the cause.

The second day of SmP is devoted to individual meetings with MPs in their offices, normally lasting 20–40 min. Four or five people are present: the MP, a member of their staff, and two or three scientists. Their conversation might cover the theme of the day (as prepared by FASTS), the work of the scientists, and issues nominated in advance by the MP.

Feedback on both sides has been positive. Evaluations regularly score the overall event at a little over 8 out of 10, and participants believe that the event has helped put science on the political agenda.

Meetings are optional, and about 60% of MPs choose to participate. Participating scientists pay a registration fee and meet their own travel expenses.

A variation on this theme is 'Bacon & Eggheads', a Canadian event 'bringing together Parliamentarians with experts across science and engineering, showcasing outstanding Canadian research accomplishments. Its purpose is to provide unbiased insight into topical scientific issues, within a non-partisan forum in which lobbying is not permitted'.[17]

These 90-min breakfast meetings are organized by the Partnership Group for Science and Engineering, a cooperative association formed in 1995 and comprising more than 25 national organizations, which in turn represent some 50,000 individual members from industry, academia and government.

The media can be a useful complementary force in these events, or an advocacy tool in its own right. For example, FASTS brought pressure on the Australian Government by publicizing the 'brain drain' issue. This was a significant factor in squeezing a large funding package out of the government for science and research: 'brain drain' was a term that all electors could understand. A media release set out FASTS' basic position:

[17] Partnership Group for Science and Engineering: http://www.pagse.org/en/breakfasts.htm

> Australia's peak body for science and technology said today (Tuesday) that the Monash University study on brain drain told only part of the story.
>
> Ms Jan Thomas, Vice-President of the Federation of Australian Scientific and Technological Societies (FASTS), said the study camouflaged the real issues behind the story.
>
> 'We suspect that Australia is losing its top talent, the high-potential people hand-picked for their special abilities', she said.
>
> 'These people are being snapped up by institutions overseas which can offer top facilities, good salaries and the funds to carry out research in a comprehensive manner'.
>
> Ms Thomas said Australia was simply not able to compete for talent in the hot areas of science and technology, the areas like biotechnology, mathematics and nanotechnology.
>
> 'In most areas, Australia plays in the second division', she said. 'We can't compete on salaries, we can't offer young scientists a career path, and the funds for research and infrastructure are below world standards.
>
> 'International science is intensely competitive. While Australia offers a wonderful lifestyle, top scientists will only compromise so far when it comes to working standards'.[18]

Administrations are very sensitive to media coverage. If issues like the brain drain crop up on the evening TV news and are covered by the daily newspapers, ministers will demand a solution—in this case, it was a new funding programme.

Media coverage on other issues, such as 'mad cow disease' in the UK, has also forced governments to change course. Media controversy over GM foods has forced policy modifications in many countries.

The challenge for advocacy groups is that science policy is not a 'hot button' issue, and they need to consider how their core messages can be translated into terms that mean something to ordinary citizens. 'Brain drain' made this leap. It was couched in sporting terms and appealed to national pride and competitiveness. The implication was clear: failing to adequately fund research carried an ominous economic message for Australia.

Research!America makes extensive use of polling to make its policy stances relevant to politicians. In its media releases, the organization describes itself as 'the nation's largest not-for-profit public education and advocacy alliance working to make research to improve health a higher national priority'. Research!America has been gauging public opinion on Americans' attitudes towards medical, health and scientific research since 1992, and regularly samples their views through telephone or online polls.

The organization bases its strategy on the view that opinion poll results will be a powerful force in the decisions of politicians, either directly through correspondence or representation, or indirectly through the media. Polling questions raised in 2007 included:

- How important do you think it is that the US is a global leader in scientific research? (76% nominated 'very important')
- Do you agree or disagree with this statement: 'The US is losing its global competitive edge in innovation'? (65% nominated 'agree')

[18] FASTS: http://www.fasts.org/images/news2001/july-01-brain%20drain%20study.pdf

- Would you be willing to pay $1 per week more in taxes if you were certain that all the money would be dedicated to research to improve health, or not? (67% nominated 'Yes')[19]

The Task Force on the Future of American Innovation[20] is a coalition of high-tech businesses and academic groups, including high-tech companies such as Google, Intel and Microsoft as well as the American Chemical Society, the University of California and the National Association of State Universities. Defence industry contractors such as Lockheed Martin and Northrop Grumman are also members.

The task force has taken a different approach, nominating a target (a doubling of US research budgets over the next 10 years), and inviting all major candidates in the 2008 US Presidential race to make a commitment:

> 'So far, none of the top candidates has promised to make the pledge,' officials with the task force said, although several have given promising signals.
>
> 'For example, staffers for Democratic front-runner Sen. Hillary Rodham Clinton (D-N.Y.) met with the group and expressed an interest in modifying her position, according to Glenn Ruskin, director of government affairs for the American Chemistry [sic] Society. Clinton previously had proposed a 50% budget increase for the agencies over 10 years, but groups in the task force saw that amount as insufficient'.[21]

Daniel Greenburg is not optimistic about the task force's chances of success:

> Can the care and feeding of science win support and votes for a politician?
>
> From the record of recent presidential campaigns, including the current marathon, the candidates don't think so. None among the platoon of hard-running hopefuls has paid much attention, if any, to the cries of financial need coming ever louder from researchers, particularly those dependent on the National Institutes of Health. Senator Hillary Clinton pledged all good things for science in a speech in October observing the 50th anniversary of Sputnik. Technology is endorsed on Mitt Romney's campaign website. But, these are exceptions to the customary campaign fare—rare exceptions. (Greenberg 2007)

13.7 Conclusion

The past 30 years has seen a slow dawning of awareness among scientists. They have begun to accept that they, like all other interests in our increasingly complex society, need to advocate on behalf of their subject, to point out the virtues and benefits of a national investment in science. They have witnessed the consequences of not doing so: budget cuts, truncated career trajectories, and failure to make the best use of scientific talents in solving the problems of the world.

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[19] Research!America: http://www.researchamerica.org/uploads/AmericaSpeaksV8.pdf

[20] Task Force on the Future of American Innovation:http://thehill.com/business–lobby/high-tech-business-and-academic-groups-lobby-2008-hopefuls-on-science-funding-2007-09-26.html

[21] Task Force on the Future of American Innovation.

Advocacy is not always a natural and easy path for scientists. Their world is one of hypothesis, experiment, evidence, proof—and they are puzzled by a political decision-making process that follows any less rational course. Advocacy in its own cause may be one of the hardest things science has tried to do.

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Toss Gascoigne is executive director of the Council for the Humanities, Arts and Social Sciences (CHASS) in Australia. Before that he held a similar position with a similar advocacy group in the sciences, the Federation of Australian Scientific and Technological Societies (FASTS). He is interested in the linkages between researchers and government, the methods researchers use to persuade governments to adopt evidence-based processes in determining policy, and researchers' responsibilities while doing so. Toss is the inaugural chair of the PCST Network and a life member of the Australian Science Communicators.