



The US - Russian Nuclear Arms Treaty

Stuart Parkinson asks whether the treaty is a major step in disarmament or just a public relations exercise

On May 23rd Presidents Bush and Putin signed the Strategic Offensive Reductions Treaty between the US and the Russia. Hailed by the Americans as marking a 'new-era' in relations between the two countries, it commits them both to reduce their current arsenals of strategic nuclear warheads from around 6000 each down to between 1700 and 2200 each by 2012 (US Dept of State, 2002).

Should we celebrate this apparently very positive agreement? Here's eight reasons to be deeply concerned...

1. Even 3400 strategic nuclear warheads are still enough to end civilisation as know it. It only requires the detonation of a few hundred nuclear warheads to cause a nuclear winter (Sagan, 1983). The target levels agreed are still unjustifiably excessive.

2. The weapons taken off active service can simply be stored, rather than destroyed. The process of storing weapons simply involves separating the warhead from the delivery vehicle (e.g. ballistic missile) and storing them separately. This allows either country to rearm quickly should circumstances allow. Such a procedure is all the more dangerous in the case of Russia, as the storage arrangements for its stockpile of fissile material (currently estimated at enough for 40,000 warheads) are less than secure (Luongo & Davis, 2002). Expanding this stockpile will further increase the possibility that other states or even well-organised terrorist groups could gain access.



3. Only strategic nuclear weapons, and not tactical ones, are covered by the agreement. Strategic, i.e. long-range, nuclear weapons are only part of the story. Both sides have large numbers of tactical nuclear weapons, i.e. short-range and often of lower yield (also known as 'battlefield' nuclear weapons). The USA has approximately 1000 of these, whereas Russia has anywhere between 4000 and 12000 weapons - the exact number is not known (Luongo & Davis, 2002). Why haven't these been included the agreement, especially since even conservative estimates suggest that Russia has a major numbers advantage? It all seems to come down to the USA's recent 'Nuclear Posture Review' (NPR) which called for the USA to have a smaller, more flexible nuclear arsenal. The US thinking is that they should develop a new set of nuclear weapons with lower yields and higher

Can Scientists be Trusted?

"Academic science is essentially a moral enterprise, sustained by a tacit ethos of mutual trust. This ethos is being fatally undermined by 'enforced cohabitation' with instrumental research"

Professor John Ziman

Keynote Speaker, SGR Conference

See full conference review on p10

penetrative power (so-called 'bunker-busters'), which could be used against targets such as underground bunkers or caves (Krieger, 2002). Meanwhile, Russia's current stockpile of active tactical nuclear weapons remains a target for theft by terrorist groups. The possibility of limited nuclear battles is becoming much more of a risk.

(Continued on page 4)

Contents

News from SGR	2
Articles	
Batting for Monsanto	5
The Chardon Hearing	6
Nuclear Threats Against Iraq	8
Conference Reviews	10
Book Reviews	13
Letters	14
Events	15

News from SGR

A few words from the Chair..

Stuart Parkinson

You know that things are bad when even the White House starts warning that up to 12 million people might die in a nuclear war. As India and Pakistan's skirmishes in Kashmir got worse during May, we were again confronted by the possibility of a nuclear conflict. Even though tensions have eased somewhat since then, concern about international and sub-national security issues remains. It was timely, therefore, that INES (the International Network for Engineers and Scientists for global responsibility), in collaboration with SGR, held the conference '**New Security - Global and Regional Priorities**' in Bradford in May (see p12). The conference highlighted the importance of dealing with the roots of conflict, e.g. poverty and racial/cultural problems, as well as discussing the problems of the continued deployment of weapons of mass destruction (including the new US-Russian nuclear weapons treaty, see lead article), terrorism and conflict resolution. SGR's Phil Webber gave a presentation on the link between peace issues and sustainable development (which can be found on the SGR website). One further problem raised at the conference was the continuing trade in arms, shown particularly starkly by the sale of 66 Hawk jets to India by the UK arms company BAE systems (and supported by the UK Government). The sale will do little

to help relations between India and Pakistan, and indeed the aircraft could be adapted to drop nuclear bombs.

It is clear therefore that the military and commercial priorities are still very strong when it comes to the application of science and technology. And a quick look at figures from the UK's Office of Science and Technology show that these are the dominant sources of funding for UK scientific research.

This was one of the main issues discussed at SGR's own conference, '**Can Scientists be Trusted?**', held in London at the end of April (see p10-12). One of the outcomes of this conference was that SGR resolved to compile case files on the influence of vested interests within scientific work (see p12). Our AGM which took place at the conference, included two constitutional amendments (see p3 and enclosed revised constitution).

Unfortunately, Tony Blair, in his speech on science in May failed to grasp these concerns (p5). He lambasted those who, like us, have expressed deep concern over the way science is being driven by these vested interests at the expense of concern over their negative effects on society and the wider environment. He, like many, ignored the strong military presence in science, choosing to focus his

arguments on concerns about biotechnology.

Perhaps not coincidentally, at the same time a hearing on whether to allow commercial listing of the GM seed '**Chardon LL**' was being conducted. SGR was one of several organisations who presented evidence at the hearing which highlighted the possible negative effects of the GM agriculture, and this seed in particular (p6-7). Blair accused people like us of holding back advances in science. But when these advances are likely to benefit narrow vested interests, at the expense of the rest of society and the environment, are they the sort of advances we really want? Wouldn't it be better to allow science to be driven by wider goals?

As this newsletter goes to press, countries are gathering for the Earth Summit in Johannesburg to push forward the sustainable development agenda. Unfortunately, the signs are that any agreements will be weak, and proposals to control the power of large corporations will be dropped. INES, supported by SGR, have been lobbying for some recognition of the importance of peace and disarmament as part of sustainable development. This has not even made it onto the official agenda of the Summit. It is clear we have much work still to do.

<StuartP@sgr.org.uk>

MRT Appeal brings in over £7,000

Kate Maloney, Patrick Nicholson and Phil Webber

The appeal on behalf of the Martin Ryle Trust earlier in January was the most successful yet, bringing in over £7,000. The MRT is a charitable trust whose object is to fund scientific education, research and education on any aspects of reducing violence

between states. To date, SGR has been the principal beneficiary of MRT support.

The appeal money is already being put to good use - SGR has obtained MRT funds for website work, the International Week of Science and

Peace, the SGR conference, and the Bradford INES seminar.

Many thanks to all those who responded so generously to this appeal.

<PhilW@sgr.org.uk>

AGM 2002

Stuart Parkinson

This year, as usual, the AGM took place during the SGR annual conference.

The AGM began with the Chair, Stuart Parkinson, summarising SGR's activities over the last year as outlined in the Annual Report. These included the publication of the booklet 'An Ethical Career in Science and Technology?', the joint conference last May on the US's National Missile Defence system, and the UK Week of Science and Peace.

SGR's National Co-ordinating Committee (NCC) for 2002-2003 was then elected unopposed (see box). Two constitutional amendments were

then discussed. The first was the proposal to update SGR's aims, based on the results of the internal review completed last year. The second proposal was to allow the NCC (rather than the AGM) to set the membership

NCC 2002

Chair	<i>Stuart Parkinson</i>
Vice-Chair	<i>Philip Webber</i>
Treasurer	<i>Jenny Nelson</i>
Secretary	<i>Tim Foxon</i>
Members	<i>Alan Cottey</i> <i>Patrick Nicholson</i> <i>Eva Novotny</i> <i>Vanessa Spedding</i> <i>Yunus Yasin</i>

rates. Both amendments were passed with the necessary two-thirds majority. However, it should be noted that concern was expressed over the first amendment, due to the fact that nuclear weapons were no longer to be explicitly mentioned in the aims, only weapons of mass destruction. The NCC argued that that nuclear weapons obviously came under this umbrella term, but they accepted that some organisations (e.g. the UK Government) have tried to play down this point. The NCC agreed that SGR communications on this issue should not fall into the same trap.

<StuartP@sgr.org.uk>

Press and Media

Jan Tari

The press front has been rather quiet recently, with much communication between SGR and other organisations and rather less with the public media. Nonetheless we've released press statements 'King neglects weapons and growth in nuclear power debate' criticising Professor David King (the government's chief scientific adviser) for quietly passing over some important issues in the debate

on Britain's energy future, and 'Climate change: the UK is better than the Americans, but is that good enough?', which suggests that the US disinterest in global warming is no reason for the UK to be over-pleased with the limited steps it has taken.

Other contacts include local and national enquiries from the BBC, taking part in a Radio 4 interview

on scientific ethics, and a short article in the August issue of *Science and Public Affairs* about SGR's considerable role in the GM maize debate. I expect the forthcoming months to be more active, and would welcome any ideas from other members on how to get wider coverage.

<JanT@sgr.org.uk>

Website

Alan Cottey

Since the cutoff of the Website report in the last Newsletter, SGR has posted the following new pages:

- a summary report on SGR's 2002 Conference and AGM
- the programme of the seminar 'New Security - Global and Regional Priorities' organised by INES in co-operation with SGR
- PowerPoint slides from Philip Webber's presentation 'The Topology of Crisis Stability:

Towards Sustainability' at the 'New Security ...' seminar

- an abridged reprint of an article on the Export Control Bill by Ross Anderson, of the Foundation for Information Policy Research.
- a reprint, from the last Newsletter, of John Moore's article 'US Policy Responsible for Nuclear Proliferation'
- an open letter to the IEEE on sanctions against residents of Burma, Cuba, Iran, Libya and Sudan

- a press statement 'King neglects weapons and growth in nuclear power debate'
- a press statement 'Climate change: the UK is better than the Americans, but is that good enough?'

Numerous other small changes to the site have also been made. These include editing the Constitution page to incorporate the changes agreed at the AGM, and tweaking the design of the front page.

<AlanC@sgr.org.uk>

Elsewhere in the news...

Missile defence plans go forward

The building of silos for interceptor missiles has begun in Alaska. Whilst plans foresee up to 375 interceptors based in Alaska and North Dakota, it is still unclear whether the concept can work. "The kind of testing being done now is not real world" said David Wright of the Union of Concerned Scientists.

USA Today, 13/6/02

GM firms only winners at food talks

The world food summit in Rome was branded a waste of time by everyone except the US, which successfully promoted GM crops as a solution to famine. US agriculture secretary, Ann Veneman, said that "biotechnology has tremendous potential to develop products that can be more suited to areas of the

world where there is persistent hunger". "There is no food safety issue whatsoever", she added.

Guardian, 14/6/02

Plan for UK N-bomb factory

A massive nuclear bomb-making factory is being planned for Aldermaston. The plant will be able to test, design and build a new generation of nuclear bombs. Arms experts believe it will focus on smaller atomic warheads for use against "terrorist groups and rogue states". Analysts warn that it appears to be a blatant breach of Britain's obligations under the nuclear non-proliferation treaty.

The Observer, 16/6/02

BAE reaches for the stars... and misses

BAE Systems (formerly British Aerospace) had set its sights on

acquiring parts of TRW, a major US defence business. BAE's US expansion has already made it the sixth largest Pentagon supplier. However US defence giant Northrup Grumman beat BAE to it, snapping up TRW for \$12bn.

Guardian, 2/7/02

Earth "will expire by 2050"

The World Wildlife Fund's Living Planet report warns that the human race is plundering the planet at a pace that outstrips its capacity to support life. Attention is now focussed on the Johannesburg Earth Summit, but America is being accused of blocking key initiatives on energy use, biodiversity and corporate responsibility.

The Observer, 7/7/02

Summaries by Patrick Nicholson

Nuclear Treaty

(continued from front page)

4. The existing weapons will remain on hair-trigger alert. With no agreement on de-alerting nuclear weapons arsenals, the possibility of accidental full-scale nuclear war remains - with the aging Russian arsenal being of particular concern.

5. The target levels apply only to 2012 - there are no intermediate reduction targets. Both countries could do little for several years without being in breach of the treaty...

6. Only 90 days notice of withdrawal may be given.

...and then, if political circumstances change, withdraw after three months without having taken significant action.

7. Either signatory is allowed to return to any force level it desires after ten years. In light of the agreement to allow weapons storage, major re-armament is again allowed, despite both countries' commitments to completely

eliminate nuclear weapons made under the Nuclear Non-Proliferation treaty.

8. The treaty puts no restrictions on the development of 'missile shields'. The agreement thus allows for the USA to pull out of the Anti-Ballistic Missile treaty and continue with its development of 'National Missile Defence', including space weapons. This will, of course, do nothing to avert the current terrorists threats, may cause an arms race with China, and waste billions of dollars which could be spent on tackling poverty and environmental problems.

At best, this treaty is only a very small step in arms control and, bizarrely given the current international situation, may actually increase the threat of nuclear terrorism due to use of the 'storage' option for weapons, especially by Russia. Further, by leaving the issue of tactical nuclear weapons out of this agreement, it seems that the day

when nuclear battles are fought has just got one step closer.

<StuartP@sgr.org.uk>

References and further reading

Krieger D. (2002) Nuclear Dangers Remain After Bush-Putin Agreement. Nuclear Age Peace Foundation. <http://www.napf.org/articles/02.05/0515kriegerbushputin.htm>

Luongo K. & Davis I. (2002) Bush-Putin Summit Fails to Bury the Cold War. British American Security Information Council. Note, 22 May. <http://www.basicint.org/bushputin.htm>

Sagan, Carl (1983) The Nuclear Winter. Council for a Livable World Education Fund, Boston, MA.

US Dept of State (2002) Arms Treaty Marks New Era in U.S.-Russia Relations. Background briefing, 13 May. <http://usinfo.state.gov/topical/pol/arms/02051309.htm>

The text of the treaty is at: <http://www.nuclearfiles.org/issues/nuclearweapons/sortreaty.htm>

Batting for Monsanto

Peter Nicholls on the state of UK science

Tony Blair's Royal Society speech on May 23 2002 supporting biotechnology and nanotechnology was trailed widely beforehand. Although he had earlier shown no concern at the teaching of creationism in an OFSTED approved school, he was concerned at opposition to biotechnology in the UK and elsewhere in Europe compared to non-European countries, as highlighted in a conversation with unnamed academics or businessmen in Bangalore in January. All of Tony's science is of course mission oriented - creating GM foods, designing nanoequipment, controlling climate change (ah, fantasy), synthesizing patient DNA determined drugs (I don't understand that idea at all), spinning off companies, registering patents.... but the marked decline in funding per student head in UK universities for basic academic work is not going to be reversed. Hywel Williams in the Guardian on the same day doubted that Blair understands science at all. But what he says reflects the broader pressures on the scientific system. The following day (May 24 2002) a letter to the Guardian from Ignacio Chapela, author of the earlier Nature paper on GM gene transfer to wild strains of maize in Mexico, comments on Nature's later critique of that paper, in which the editors withdrew their support for its publication following technical criticism from others including representatives and perhaps hirelings of the GM industry. Technical discussions of course are important in the literature. But if every paper with technical faults had to be withdrawn the scientific canon would be fatally impoverished; some true and powerful forerunners and all interesting sidelines would disappear - my own publications list as a parochial example would go down from 200+ to a half dozen (if I was lucky).



What was Nature itself saying in this fateful week? Its opening news item concerns apparent fabrication of data in the field of nanotechnology (Nature 417, 367-368; issue 6887, May 23 2002). Its final page presents a withdrawal note from the leader of a molecular engineering group (Nature 417, p. 468; May 23 2002). The nanotechnology papers in which the same diagram of current-voltage effects has been used in several different publications are from a commercially driven programme headed by a 31-year old whiz kid who already has over 100 publications and numerous patents to his name at an age where many graduate students have not completed their theses and those who have are struggling to obtain fragments of new publishable material as post docs. The molecular engineering laboratory has been unable to reproduce results reported earlier; and this is printed despite the fact that the senior author of the paper, who did most of the laboratory work involved (Altamirano et al. (2000) Nature 403, 617-622), did not agree to its withdrawal, which was thus carried by 3 votes to one.

Those who want to defend their work do so in the Guardian. Nature becomes an anti-publication instead of a publication. What are the fields involved? Biotechnology and nanotechnology, the two trumpeted by Tony Blair. Why are they in difficulties? Because of financial

and commercial pressures. What do they do for science in the public eye? Create distrust. What does Tony Blair want science to do? To generate "facts" which the public will trust.

What does he not understand (apart from what science is about)? Presumably that what he advocates is itself the legitimate source of the distrust.

I am organizing a session on 'science and ethics' for the British Association meeting next year (2003) in Salford (overall theme "Sustainable Science"), hardly a radical or fringe event in UK science. I sent electronic or written invitations (i) to Francesco Calogero (ex-President of Pugwash and CERN scientist who writes on nuclear disarmament) and to Keith O'niions (senior UK Defence Ministry weapons scientist), to talk about the ethics of nuclear weapons, and (ii) to Mae-Wan Ho (former Open University researcher and a holistic biologist critic of GM technology), Arlene Klotzko (writer in residence at the Science Museum) and to Lord Sainsbury's Biotechnology office at the UK Department of Trade and Industry (asking for his participation or that of a designated representative), to discuss the ethics of biotechnology. Who replied right away indicating interest? Calogero, Ho and Klotzko. After some hesitation I also have an acceptance from Keith O'niions, semi-autonomous scientist and Government advisor at the MOD. But who have not deigned to answer at all after two months? Tony Blair's appointees at the DTI.

What is to be done? We can't all go trashing crops in Essex and computers on the support ships at Faslane. Some of us do not even agree with such actions. But calm rational discussion of science and the future is hardly being encouraged.

Dr. Peter Nicholls is at the Department of Biological Sciences of the University of Essex

The Chardon Hearing

Eva Novotny on SGR's contribution to this important event in the GM debate

In October 2000, a public hearing began that gave the public an opportunity to express views about whether a GM forage maize, Chardon LL, should be grown commercially in this country. ('LL' stands for 'Liberty Link', Liberty being Aventis's herbicide.) Presentations to the Hearing have just ended, after a prolonged interruption. Before any new variety can be grown, it must first satisfy certain criteria and then it must be entered onto the National List of allowed varieties. The latter stage was imminent at the time the Chardon Hearing began. Ministers will be given a summary of the evidence presented at the Hearing before making the decision. If ministers decide to include this maize in the National List, it will be the first genetically modified crop to be grown in this country (except for the limited trials). Other GM crops would then follow more easily, once approval for listing had been given to the first GM variety.

The fact that the hearing was held at all was due to Friends of the Earth finding a piece of legislation that forced the (then) Ministry of Agriculture, Fisheries and Food (MAFF) to hold it. It was chaired by a senior barrister, Alun Alesbury, and it was the first hearing of its kind. Hence the Hearing had to set its own procedures. In April, before it met, written submissions had already been sent to MAFF by 52 organisations (including SGR), 115 individuals and 58 political parties, MPs, Assembly members and Councils - all of whom were against the listing. Only 4 submissions were in favour of listing (Aventis Crop Science [the developer and owner of the seed], British Society of Plant Breeders, National Farmers Union and United Kingdom Agricultural Supply Trader Association Ltd). Oral submissions against listing were made by 66 organisations and individuals; the single submission in favour of listing was made by Aventis.

In November 2000 the Hearing was abruptly adjourned for an indefinite time when MAFF learned (as a result

of the Hearing) that some testing of the maize on which it had depended and which had been carried out by the French did not meet UK regulations for such tests. New tests had to be performed. It was not until April 2002 that the Hearing was resumed.

Submissions to the Hearing covered the entire spectrum from personal opinions to scientific statements from expert witnesses. SGR's submission focussed on four main areas and a more general concluding report. The five resulting reports are described below:

I. 'Non-suitability of Genetically Engineered Feed for Animals'

Although the whole maize plant is intended to be fed to cattle over their lifetime, Aventis gained EU approval of the maize partly on the basis of two experiments, one on the feeding of the isolated GM protein to rats for 14 days and the other on the feeding of maize kernels to chickens for 42 days. Both studies concluded that the genetic modification had no effect on the animals. However, an independent review by SGR of the data on weight gain and on feed intake in the two experiments revealed that, insofar as any conclusions could be drawn at all from these poorly designed experiments, both types of data in both experiments indicated that adverse effects resulted from the GM diet. Expert witnesses who examined these studies on behalf of other groups came to the same conclusions.

Numerous examples were cited of both farm animals and wild animals refusing to eat GM crops or losing weight when forced to eat them.

II. 'Hazards Arising from the Use of the CaMV 35S Promoter in Genetic Engineering'

In order for inserted genes to be activated in their new host, it is necessary that a promoter (which is a gene switch) be included in the package delivered to the host along with the desired gene. The promoter used in almost all GM crops now in cultivation is derived from the cauliflower mosaic virus (CaMV). A

group of scientists (Dr Mae-Wan Ho, Angela Ryan and Prof. Joe Cummins) published a paper expressing fears about the use of this promoter, including the possibility of its recombining with dormant viruses in the host plant to create new, infectious viruses. Another fear is that this highly active promoter may cause certain genes to be continually overexpressed, causing stress and possibly even cancer. Pro-GM geneticists have published a critique of this paper, and Ho et al. have answered their criticisms. SGR's report summarises the papers and gives point-by-point rebuttals, using quotations from these papers.

III. 'A Model for Pollen Transport by Wind'

This is a summary of an ongoing research paper by the SGR Co-ordinator for GM Issues and a Belgian colleague. It describes the modelling of pollen flow on the wind and eventual deposit. Several numerical experiments are described, which show the patterns of deposited pollen and of air-borne pollen for various assumptions about the size of the field and various components of the wind (steady, turbulent, gusty, etc.), as well as about the probability of pollen sticking onto a crop or field (which is a yet-unknown parameter). Hybridisation between crops in neighbouring fields was also calculated. The numerical experiments on pollen dispersal and on hybridisation were then compared with observations. The most significant finding is that pockets of high pollen deposit can occur well beyond the distance at which the overall level of pollen deposit has become low. This fact is significant for considerations of setting separation distances.

IV. 'The Wheel of Health'

The title is derived from that of a book of that name written in the 1930s. The theme of the book is that soil, plants, animals and human beings are all part of a circular dependence, the circle being completed by the return to the soil of

all things that came from it. Thus the health of all living things is ultimately only as good as the health of the soil. The book and this report describe experiments on organic farming carried out by Sir Albert Howard during his service in India. Plants and animals raised by this method enjoyed extraordinarily good health, even to the point of immunity from infectious diseases, including foot-and-mouth disease. The report also discusses the successes of organic farming in modern times, failures of GM crops and the destruction of the soil by chemical methods. The vital roles of soil micro-organisms are described, as is the potential danger that GM crops may cause alteration of these micro-organisms and thereby infertility of

the soil in an ever-progressive and ever-spreading manner.

V. 'Concluding Comments'

Miscellaneous new topics were introduced in this final report including the following:

- the dangers of the applied herbicide (glufosinate ammonium)
- the poor design of the farm-scale trials (including photographs of a trial of oilseed rape at Munloch, Scotland, showing large and lush non-GM plants and stunted GM plants - but this will probably not be mentioned in the evaluation: it is not what the trial is about)

- lack of proper testing of the maize
- alleged widespread fraud by scientists working for the government or in recently privatised laboratories
- wider implications of GM crops for biodiversity and greenhouse gases; and the question of who benefits from GM crops.

Dr Eva Novotny is SGR co-ordinator for GM Issues, and a member of the NCC.

<EvaN@sgr.org.uk>

The five reports described in this article will shortly be available on the SGR website and from the SGR office.

Afterword: Aventis's Actions at the Chardon Hearing

On the very first day of the Hearing (in fact, at the pre-Hearing meeting, when participants and the Chairman met to discuss procedures), Aventis's lawyer caused much displeasure and consternation to all by declaring that they would not present evidence or produce a witness (which meant that they could not be cross-examined). In spite of the Chairman's warning that this would weaken their case, and his urging for them to re-consider, Aventis remained firm in this decision.

When presenting their submission on 29 May, what the Chairman (a senior barrister) had feared from the beginning came to pass: Aventis did not merely make comments on what had been said by objectors but presented evidence, some of it without back-up references. The lawyer for Friends of the Earth then protested, asking that the lawyer who had been reading the submission should be declared a witness and be subject to cross-examination. The lawyer from RSPB supported the position taken by FoE. The lawyer for Aventis insisted several times that what he had said was NOT evidence and he also refused to become a witness. FoE insisted that it WAS evidence, and the Chairman concurred that it was 'incontrovertible' that Aventis had given evidence. It was also clear,

however, that Aventis's lawyer was not in a position to answer technical questions, even if he had been willing. FoE therefore suggested that the offending evidence be excised before Aventis's submission was released to Ministers. Aventis countered that its entire submission was already on its website and thus available to Ministers. The ensuing legal wrangle took the rest of the day and also nearly all the next day, when the proceedings ran well overtime even though Aventis had only 20 pages more to read of its submission (which they were allowed to complete). The Chairman expressed his regret that Aventis had chosen to give evidence, which the law firm preparing Aventis's submission would have realised was evidence, and thereby caused this difficulty; it was the unhelpful situation he had foreseen from Day One (the pre-Hearing meeting). Finally, the Chairman and the lawyers for Aventis and FoE retired for a private meeting. At the conclusion of this meeting, the Chairman said it had been helpful that the parties had reached a compromise and announced that Aventis's evidence would not be excised, but all protesters would have the right to reply to it and would have an extension of time to do so; and they

would be allowed to include new evidence in support of this reply.

On the day Aventis concluded its presentation, its website carried a press release about the conclusion of the Chardon Hearing. It assumes an air of innocence and co-operativeness:

'Aventis were disappointed that during the presentation of our oral submission, representatives of Friends of the Earth and RSPB made applications to Mr Alesbury, the Chairman of the Hearing that sections of this submission "should be excised from the public records to ensure that it is not considered by the national authorities".'

We find this train of thought very strange since during the hearing, a number of questions were raised, to which Aventis has responded in a full and honest fashion. Aventis has published the full submission to ensure that the general public is not denied this important information.

However, Aventis does welcome Mr Alesbury's comment at the end of the day's session that he believed the way that Aventis had presented their submission was helpful to the other parties involved in the hearing.'

Eva Novotny

Nuclear Threats Against Iraq

Milan Rai looks at UK nuclear weapons policy in the wake of recent government statements regarding Iraq

British and US ministers and officials have issued veiled nuclear threats against Iraq, despite the fact that there is no solid evidence that Iraq possesses weapons of mass destruction, raising the prospect, as threatened in the 1991 war against Iraq, of nuclear weapons being used in a conflict with a non-nuclear nation.

Hoon's Triple Threat

Just before he left on a 'peace mission' to India and Pakistan, Jack Straw was asked on Radio 4's Today programme why the two countries should pay any attention to a country which had never itself renounced the first use of nuclear weapons. The Foreign Secretary 'said everyone knew the prospect of Britain (and the US and France) using nuclear weapons was "so distant as not to be worth discussing".'

Guardian columnist Hugo Young commented that Straw's response was 'about as misleading an answer as can be found in the entire record of Britain's conduct as a nuclear power.' The journalist then referred to the repeated nuclear threats made by Jack Straw's Cabinet colleague Geoff Hoon this Spring. ('Hoon's talk of pre-emptive strikes could be catastrophic', Guardian, 6 June 2002)

1) On 20 March 2002, British Defence Secretary Geoff Hoon told the House of Commons Select Committee on Defence that states like Iraq 'can be absolutely confident that in the right conditions we would be willing to use our nuclear weapons.'

2) Then, on 24 March, Geoff Hoon appeared on ITV's Jonathan Dimbleby show and 'insisted that the government "reserved the right" to use nuclear weapons if Britain or British troops were threatened by chemical or biological weapons.' (Richard Norton-Taylor, 'Bush's nuke bandwagon', Guardian, 27 Mar. 2002)

3) Finally, Hoon was asked about his threats in the House of Commons in a debate on 29 April Hoon said, 'ultimately and in conditions of

extreme self-defence, nuclear weapons would have to be used.'

In the House of Commons debate, Diane Abbott MP pressed the Defence Secretary for an explanation of what these 'conditions of extreme self-defence' might be. Hoon refused to be specific. The Defence Secretary confined himself to saying that it was 'important to point out that the Government have nuclear weapons available to them, and that - in certain specified conditions to which I have referred - we would be prepared to use them.' This deliberate ambiguity is thought by the Government to be a useful form of 'deterrence'.

Non-Proliferation Promises

MPs have expressed concern as to whether Hoon's threats might be in contravention of international commitments given by the UK. In 1978, the five declared nuclear powers promised that they would avoid firing nuclear weapons at non-nuclear-weapon states. The US and British promises - or 'negative security assurances' (NSAs) - were full of exceptions and loopholes.

Restated in 1995, the British NSA said, 'The United Kingdom will not use nuclear weapons against non-nuclear-weapon States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons except in the case of an invasion or any other attack on the United Kingdom, its dependent territories, its armed forces or other troops, its allies or on a State towards which it has a security commitment, carried out or sustained by such a non-nuclear weapon State in association or alliance with a nuclear-weapon State.' (This was looser wording than given in 1978.)

In contrast, the 1995 NSA from China said, 'China undertakes not to be the first to use nuclear weapons at any time or under any circumstances. China undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon States or nuclear-weapon-free zones at any time or under any circumstances.'

In 1989, Nigeria proposed an international treaty banning the use of nuclear weapons against any non-nuclear-weapon State which had signed the Non-Proliferation Treaty, unless that State had nuclear weapons stationed on their territory. Britain and the other nuclear powers have resisted such proposals.

Broken Promises

Iraq is a member of the Non-Proliferation Treaty. There is no evidence that Iraq possesses functioning nuclear weapons. Iraq is not allied with any nuclear weapon state. Therefore, unless the British Government claims that Iraqi military action against British and US troops in any coming war is 'in association' with China or Russia, the 1995 Negative Security Assurance ought to rule out the possibility that Iraq could be attacked by British nuclear missiles.

Hence the question by Malcolm Savidge MP to Mr Hoon on 29 April:

'Do the Secretary of State's recent comments concerning the possible use of nuclear weapons against Iraq signal a change of Government policy, whereby Britain is reneging on assurances given to non-nuclear weapons states under the nuclear non-proliferation treaty? Indeed, are the Government abandoning the policy of successive British Governments of regarding nuclear weapons as a deterrent of last resort?'

Hoon said that nuclear weapons were still a 'deterrent of last resort', but did not respond to the question about Britain's NSA.

The promise not to use nuclear weapons against non-nuclear-weapon States is fundamental to the Non-Proliferation Treaty. A French diplomat was asked about Hoon's comments, 'Don't you think that all this might encourage small countries that are still developing nuclear arms to acquire atomic bombs themselves and therefore ruin all the efforts so far to eliminate nuclear weapons of mass

destruction?' The representative of the French Mission to the UN replied, 'The danger you point out is real. We've drawn the attention of our partners and allies to this difficulty many times.' <www.un.int/france/documents_anglais/020326_mae_presse_moyenorient_2.htm>

Chemical and Biological Exceptions

Giving testimony to the Defence Select Committee in March, Hoon cast some doubts on whether British nuclear threats might work in relation to 'a country like Iraq that, for example, places the lives of its own citizens at little value and might be prepared to contemplate taking on a nuclear power like the United Kingdom and accept the consequences.' Iraq doesn't have any nuclear weapons, so far as we know, and the International Atomic Energy Agency continues to inspect Iraqi nuclear sites.

What Hoon is afraid of is the possibility that Iraq may have some chemical or biological weapons which it succeeded in keeping hidden.

Former UN Special Commission (UNSCOM) weapons inspector Scott Ritter says that's not possible: stocks of chemical and biological weapons 'would no longer be viable': 'Weapons built before the Gulf war that slipped through the UNSCOM net would by now have passed their sell-by date.' (Guardian, 5 Mar. 2002, p. 16) 'Contrary to popular belief, BW [biological weapons] cannot simply be cooked up in the basement; it requires a large and sophisticated infrastructure, especially if the agent is to be filled into munitions. As with CW [chemical weapons], the CIA has not detected any such activity concerning BW since UNSCOM inspectors left Iraq.' (Ritter, Arms Control Today, June 2000)

But the fear in the Pentagon and the Ministry of Defence is that if, somehow, Iraq does have chemical or biological weapons, there would be no reason for Saddam Hussein to hold back from using them against British and US troops (and perhaps Israel) if Washington and London launched a war aimed at deposing and killing him. Hence the attempt to 'deter' him from using his weapons of mass destruction by threatening to use

British and US weapons of mass destruction in retaliation.

The Nuclear Posture Review

A leaked US policy document - the 'Nuclear Posture Review' - 'is understood to identify three circumstances in which nuclear weapons could be used: against targets able to withstand non-nuclear attack; in retaliation for the use of nuclear, biological or chemical weapons; and "in the event of surprising military developments".' (Sunday Telegraph, 10 Mar. 2002, p. 1) Iraq is mentioned as a possible target.

Tactical Trident

Tory Defence Secretary Malcolm Rifkind said in November 1993 that because the threat of an all-out nuclear assault might not be 'credible' against certain enemies, it was important for Britain to be able to 'undertake a more limited nuclear strike' to deliver 'an unmistakable message of our willingness to defend our vital interests to the utmost.'

This limited strike would be carried out by a single nuclear warhead, fired from a Trident submarine, on a 'Tactical Trident' missile, possibly carrying a 5 to 20 kiloton nuclear warhead. Hiroshima was destroyed by a 15 kiloton bomb.

Vital Interests

The policy of using nuclear weapons to defend 'vital interests' was confirmed by New Labour's 'Strategic Defence Review', which concluded in July 1998 that Britain's nuclear arsenal should be the minimum needed to 'deter any threat to our vital interests'. (Chapter 4, para. 61) The Review explained that 'our vital interests are not confined to Europe. Our economy is founded on international trade... We invest more of our income abroad than any other major economy... We depend on foreign countries for supplies of raw materials, above all oil.' (Ch. 2, para. 19) So, 'vital interests' include economic and financial interests abroad as well as national survival.

Four Scenarios

According to the respected military journal International Defence Review (Sept. 1994) Tactical Trident has four possible roles: 'At what might be

termed the "upper end" of the usage spectrum, they could be used in a conflict involving large-scale forces (including British ground and air forces, such as the 1990-91 Gulf War) to reply to enemy nuclear strikes.

'Secondly, they could be used in a similar setting, but to reply to enemy use of weapons of mass destruction, such as bacteriological or chemical weapons, for which the British possess no like-for-like retaliatory capability.

'Thirdly, they could be used in a demonstrative role, i.e. aimed at a non-critical, possibly [!] uninhabited area, with the message that if the country concerned pursued its present course of action, nuclear weapons will be aimed at a high-priority target. Finally, there is the punitive role, where a country has committed an act, despite specific warning that to do so would incur a nuclear strike.'

Only one of these scenarios involves an enemy with nuclear weapons.

Conclusions: Towards an Ethical Foreign Policy

1) Geoff Hoon should be forced to make an explicit statement that British nuclear weapons will not be used in any war on Iraq that may take place.

2) The Defence Secretary should withdraw from any planning for such a war, and the Government should state that Britain will not participate in a war on Iraq.

3) The Government should make a clear, unambiguous and legally-binding Negative Security Assurance that it will never, at any time or under any circumstances, use nuclear weapons against a non-nuclear-weapons State which has signed up to the Non-Proliferation Treaty, and which has no nuclear weapons on its territory.

4) The Government should publicly abandon the idea of 'defending' financial and economic 'vital interests' overseas with British nuclear weapons.

Milan Rai is a founder member of Active Resistance to the Roots of War (ARROW) and is joint co-ordinator of Voices in the Wilderness UK. ARROW, c/o NVRN, 162 Holloway Road, London N7 8DQ, <www.justicenotvengeance.org>

Conference Reviews

Can Scientists be Trusted?

SGR Conference and AGM, Friends Meeting House, London, 27 April 2002.

Dr Stuart Parkinson, Chair of SGR, opened the conference with a welcome and some comments on the conference theme. He noted that the issue of trust in science and scientists has become an increasingly “hot topic” recently, particularly in the context of events such as the foot and mouth epidemic and the MMR vaccine controversy. Stuart pointed out that there has been a thread of concern about this issue of trust for a much longer time, not least through the work of SGR over the past 10 years.

Dr Parkinson then introduced the keynote speaker, Prof. John Ziman FRS, Emeritus Professor of Physics, University of Bristol, and former Chair of the Council for Science and Society.

Prof. Ziman’s starting point was encapsulated in the title of his talk - **“What does Society need Science for?”**. In addressing this question he identified two basic categories of science: ‘instrumental’ and ‘non-instrumental’. Instrumental science has ‘foreseen’ uses - specific goals defined mainly by the governments and corporations which fund it. These lead to technologies and applications which are argued to benefit society (but sometimes don’t!).

“Instrumental science undoubtedly provides the world with many novel products, services and capabilities - some humanly beneficial, some horribly anti-social. In most cases it is controlled by the interests that organise and fund it... The goals of research are set by these interests, often regardless of other considerations.”

Non-instrumental science, on the other hand, is driven by scientific curiosity. However, it too has important benefits, performing valuable social functions by providing

‘world pictures’, scientific concepts, critical rationality, and reliable expertise. Essential attributes of non-instrumental science are that it is public, universal, imaginative, self critical and independent.

Historically, Ziman argued, academic science has been non-instrumental, and various safeguards were introduced to ensure its independence and trustworthiness. However, the emphasis in scientific work has undergone a transition which has eroded much non-instrumental work. Academia must now justify itself by having direct practical utility, which in general means being able to be commercially exploited.

“As scientific research becomes more expensive and more dependent on public and corporate funding, increasing stress is laid on its direct practical utility. All modes of knowledge production are merging into a ‘post-academic’ research culture... dominated by instrumental values.”

Apart from particle physics and astronomy, university science is now funded primarily for its potential ‘impact’ and pressured prematurely into material exploitation. Openness and autonomy is being overridden by corporate and bureaucratic imperatives. Independent university expertise on many contested environmental and health issues is running short.”

Ziman suggested that in addressing this problem we should be talking about...

“...not just scientists, but science, for global responsibility. Global responsibility needs non-instrumental science for its - wide-eyed knowledge and global vision - realistic perspective on future

global needs - unexpected discoveries with global impact - reliable framework for assessing global risks - self-winding scientists to do global research - impartial experts to advise global institutions”
(emphasis added)

Summing up, Ziman argued that in an era of transition to “post-academic” science there is no going back, but non-instrumental science is vital to pluralistic democracy and hence we need to find ways to reinstall it within society.

The SGR AGM (see p3) was held after Prof. Ziman’s presentation, followed by an excellent lunch consisting of organic and fairtrade produce.

Three workshops were run concurrently in the afternoon, and separate reviews of these follow below. The conference rounded off after the workshops with a final plenary in which Tim Foxon introduced spokespeople from the three workshops so that they could summarise their findings. The ensuing discussion produced support for most of the suggestions emerging from the workshops. A call was made for volunteers, in particular, to begin the work of compiling files on the influence of vested interests in science. Two people put themselves forward and this project is now underway. It was suggested that we investigate the possibility of obtaining lottery funding for some of the recommended projects.

Stuart Parkinson closed the conference by thanking everyone for coming and saying the day had been a very good and productive one. As usual the limiting factor is the number of people with available time to work on any of the ideas that have emerged, so volunteers are always welcome. SGR is currently in the process of trying to secure funding and additional proposals for fundable projects are also welcome.

Stuart Parkinson

How Should Science be Funded?

SGR Conference Workshop facilitated by Dr Stuart Parkinson (SGR).

Dr Parkinson highlighted two main problems in the funding of science and technology in the UK: the dominant level of corporate funding of R&D and the high fraction of Government spending which is military.

The workshop then discussed policy changes which may help address these problems. Suggestions included the following.

- Increasing the funding given to Research Councils so that universities were less pressured into accepting corporate or military funding. Such funding could come from eco-taxes on unsustainable industry or a reduction in military funded projects.
- Separating non-instrumental and instrumental science departments to preserve the independence of non-instrumental scientists.
- Restricting the links between Research Councils and industry and/or having some lay input to the general areas to which scientific funding was directed.

It was felt that there were two important roles that SGR could play. The first was to carry out research to highlight which military funded scientific work might be axed in order to fund civil ones. The second was to publicise more widely within the scientific community the evidence that the UK arms industry is not necessary from an economic or employment perspective.

Stuart Parkinson

Biotechnology and the Influence of Vested Interests

SGR Conference Workshop facilitated by Dr Eva Novotny (SGR).

Dr Novotny presented evidence of the way in which large biotechnology corporations exert their influence upon governments, regulatory and advisory bodies, and individual

scientists to further their own ends. In the workshop, time permitted an examination of only three instances:

- the history of the approval of Monsanto's hormone rBST, in the United States and very nearly in Europe, through the machinations of the company despite the evidence of risk to the health of cows given the hormone and of human beings drinking the milk of these cows;
- the case of Lord Sainsbury in having multiple roles as UK Government Minister for science and technology, whilst holding interests (behind the veil of a blind trust) in commercial and public agencies standing to benefit from development of GM products; and
- the discreditation by the establishment of a respected senior scientist, Dr Arpad Pusztai, whose experiments indicated that genetically engineered potatoes had been detrimental to rats.

One outcome of the workshop was the decision that SGR will compile files on the influence of vested interests, as part of its work on Science Policy. One file will focus on biotechnology whilst a second will focus on other areas of science.

The workshop also discussed the ways in which individuals could take action to reduce the influence of corporations, for example, through ethical investment and ethical consumerism. A further suggestion was to set up more formal or legal modes of support for whistle-blowers and other scientists encountering ethical dilemmas in corporate funded research.

Jenny Nelson, Stuart Parkinson and
Eva Novotny

Science Communication: Should Scientists Listen More?

SGR Conference Workshop facilitated by Dr Christopher Langley (former director of the Media Resource Service).

Chris began by putting forward four questions to help steer the discussion.

1. Can those engaged in research afford the time to listen? Can they

afford not to?

2. How should scientists respond when the public makes it clear that it does not want a particular line of research to continue?
3. Can the voice of the public overcome the very clear and powerful voice of industrial interests? How?
4. Is there a place for public representation on those bodies that represent funders and the science profession? How might this happen in practice?

Whilst there was wide agreement that scientists should be involved in the science communication process, the pitfalls of communicating science, particularly through print and broadcast media, were of enormous concern to participants. Issues of concern included the transparency of sources and the willingness of the public to take as truth the opinion of "a scientist".

The workshop discussed at length the importance of providing statistical evidence – and not allowing it to be abused.

Chris pointed out that scientists are often asked: What exactly is it that you want to communicate? Facts, or the methods behind what you are doing, to enable the public to make their own judgements on the reliability of the results of that research? There is also a difference between engaging the media on issues of general scientific or social relevance and engaging them to cover "my own research", whatever that may be. Being aware of the context of the communication and ensuring that both the argument and the authority to contribute to it are presented honestly is one of the responsibilities that scientists bear. The media also needs to adjust its perspective: all too often its members view the scientific establishment as a unified body, but in fact should be relaying both (scientific) sides of a particular argument.

It's not hard to make the connection between these points and the need for a genuine, two-way dialogue between scientists and the public. Without such a dialogue the public is barely allowed to form informed opinions, let alone express them.

Chris reminded the group that the media presents an extremely powerful multiplier of any message and, cynicism aside, that SGR should make best use of the opportunities that it presents. How? Aim to get the stories that we think need airing into the press, by identifying and highlighting any social relevance or political angle. Focus on the big moral issues; captivate the attention of younger people. Try unlikely places - women's magazines, for example (they are the most widely read). Be investigative: go back further in the knowledge cycles (looking, say, at funding applications), and identify research projects in their embryonic states, so bringing pressure to bear before it is too late.

It was emphasised that it is the responsibility of scientists to try to trace out the implications of their research, just as Professor Ziman emphasised in his speech, and to bring to the public's attention the implications of their work. But this is often hard for scientists to do.

A last-minute flurry of discussion resulted in a final air of optimism, concluding with a call for a more "activist" approach to uncovering and exposing the "dark side" of those areas of science with societal impacts, and a suggestion that SGR seeks Lottery funding.

In summary, the recommendations from the Science Communication workshop were:

1. SGR should make efforts to influence meetings of appropriate organisations such as the BA and the Association for Science Education in order to facilitate a two-way debate and to present an alternative view.
2. SGR should keep track of funding and patent applications, and compile a file of vested interests behind research. This could lead to "exposé"-style press coverage of issues.
3. SGR should offer a clearing-house for scientists to air ethical concerns that they are unable to address within their place of employment.
4. SGR should seek funding from the New Opportunities Lottery Fund
5. SGR should revisit its publications initiative in order to increase awareness among both the various

publics and the press.

Vanessa Spedding

New Security - Global and Regional Priorities

International Network of Engineers and Scientists for Global Responsibility (INES) in co-operation with SGR, Dept of Peace Studies, Bradford University, 23-24 May 2002.

This seminar was arranged so that member groups of INES could discuss security issues in the aftermath of the September 11th attacks. In particular it was focussed on discussing alternatives to militarisation, including conflict prevention, disarmament and peace in the context of sustainable development.

The seminar began with a presentation by Prof. Paul Rogers, former Director of the Dept. of Peace Studies, which highlighted the importance of addressing the causes of conflict, especially poverty. He pointed out the short-sightedness of increasing spending on arms (which globally stands at about \$800 billion a year) while doing little to tackle, e.g., third world debt.

Two talks followed on efforts to control weapons of mass destruction. The first by Dr David Krieger (Nuclear Age Peace Foundation) reviewed the threat of nuclear weapons. It drew attention to the new US-Russian nuclear weapons (SORT) treaty, and argued that it will do little to reduce the threat of nuclear conflict (see lead article). The second talk looked at biological weapons, in particular the collapse of the negotiations to tighten up the Biological and Toxic Weapons Convention following the withdrawal of the US last year.

The next session focussed on civil security policies. SGR's Vice Chair, Dr Phil Webber, argued that serious pursuit of sustainable development was a necessary route to peace and security, through the technologies and policies which prioritised social and environmental goals. Dr Chitralekha Marie Massey of the UK then spoke about the importance of human rights

agreements and the International Criminal Court.

The first session of the second day focussed on regional security issues. Dr Philip Smith of the Netherlands discussed the difficulties of deploying peace-keeping forces in trouble spots around the world. He highlighted the problems of using soldiers for these activities when they have been trained for conflict, but pointed out that civilian peace-keepers are very vulnerable to attack. Dr Alla Yaroshinskaya presented a Russian perspective on disarmament issues. She pointed out the currently inadequate security of Russian nuclear materials. She also argued that the former Soviet countries had gone much further than NATO countries in nuclear disarmament. Two speakers from Dept of Peace Studies then discussed non-violent conflict resolution, using two case studies, Sri Lanka and Lebanon, to highlight the issues. One issue they highlighted was the problems that aid agencies have in working in these areas, and discussed how these organisations have developed their approach over the years.

The next session discussed ways of improving international security. Dr Owen Greene of the Dept of Peace Studies discussed the role of international bodies in three areas: conflict prevention; reaction to conflicts; and post-conflict peace building. He argued that international security bodies need to streamline their procedures for monitoring and preventing conflict. He also argued that in some cases, where prevention had failed and a conflict was threatening human rights, than proportionate military intervention can be justified. Prof. Jiri Matousek then outlined the challenges in trying to stop international terrorists. He highlighted the possibility of such people gaining access to weapons of mass destruction, and pointed out that attacks on infrastructure (e.g. water and energy supplies) can have major consequences.

The seminar concluded with discussion of the main issues and priorities for action. It was highlighted that Sept 11th has done very little to change conventional attitudes to conflict. The 'respond to violence with violence' edict is still very strong, and

few still understand the importance of tackling root causes such as poverty and racial intolerance.

On the final evening, we were treated to a rare presentation by Prof. Sir Joseph Rotblat, Nobel Peace Prize Laureate (and now 93!), who outlined the history of nuclear weapons (including his involvement and subsequent resignation from the Manhattan Project) and the very real danger that these weapons still pose.

Stuart Parkinson

The Future of British Nuclear Weapons

British Pugwash Group public discussion meeting, Imperial College, 19 April 2002.

Professor John Finney presented a summary of a Pugwash research project into the future of British nuclear weapons. A final report based on this work will be available later this year. Prof. Finney's talk covered the UK nuclear weapons programme, post-1995 developments in nuclear arms control, UK public opinion, and policy options regarding nuclear

disarmament. The report authors conclude that a positive decision should be made now not to replace Trident. Such a decision would give the government a new kind of political clout in actively advocating the elimination of nuclear weapons. Professor Finney compared a possible decision not to renew Trident to the 1952 decision to halt development of chemical weapons. Material relating to this report should be available on the British Pugwash website <<http://www.pugwash.org/organization/gb/home.htm>> and comments are welcome.

Patrick Nicholson

Book Reviews

Vocabulary of the Crisis

Ronald Higgins and Hugh Beach

International Security Information Service, October 2001, 4 pp.

ISIS, Strand Bridge Ho., 138-142, Strand, London, WC2 1RH.
<<http://www.isisuk.demon.co.uk>>

I take this Briefing Note for Parliamentarians to be an attempt, with a temperate tone, to persuade those politicians who might listen, that 'war on terrorism' rhetoric is at best a mistake and at worst cynical opportunism. There are short 'vocabulary' sections that analyse the current usages surrounding 'America', 'Islam', 'war', 'terrorism', 'civilisation and democracy', 'crusade', 'evil', 'national interest', and 'justice'. This material is grounded with quotations. For example, Belgian foreign minister Louis Michel has said "It's not a war. You can't just use words like that. There needs to be a 'mobilisation' against terrorism." In a final section, Higgins and Beach contrast retribution and success. For the latter, they conclude "relevant steps would be even-handedness over the Middle Eastern issues and serious efforts to remedy poverty, deprivation and powerlessness in the less developed world."

Alan Cottey

Weapons in Space

Karl Grossman

Open Media Pamphlet Series, Seven Stories Press, 140 Watts Street, New York, NY 10013, USA; 2002; 88 pp, £4.99.

Karl Grossman is an investigative reporter and professor in journalism at the State University of New York, and is one of the key figures keeping the issues of nuclear power and space firmly in the public eye. SGR members may remember that Professor Grossman spoke very effectively at the Leeds "No Star Wars" conference last year.

This compact book provides a good up-to-date introduction to the issues surrounding missile defence and the militarisation of space. Taking as his starting point US Space Command's chilling *Vision for 2020*, Grossman goes on to cover topics including space based lasers, the potential arms race in space, the role of nuclear power in space, and the US political and commercial influences behind the push for "Star Wars".

One weakness of the book for me was the lack of historical context. We learn very little of the long history of military interest in space, with the exception of some coverage of the US Excalibur project (nuclear powered X-ray lasers) of the 1980s. Another criticism is that Grossman tends to quote at length from other activists at

the expense of historical and technical details, but this perhaps reflects his journalistic background and an intention to appeal to a broad audience. On the plus side, there are good references so the interested reader can dig deeper if so inclined.

Patrick Nicholson

Science in Society

Issue 15, Summer 2002, Institute of Science in Society, 44 pp, £3.50.

I-SIS, PO Box 32097, London NW1 0XR, <<http://www.i-sis.org.uk>>

The first things to strike me about this journal were its feel (a weighty 44 pages) and its attractive design (striking full colour cover and intelligent use of original artwork inside). The editorial reveals that this is the first issue after a redesign, and also the first to be aimed at a wider audience. The quality of this issue, if maintained, suggests that I-SIS may well succeed in broadening and expanding their audience. Make no mistake, this is very substantial and rewarding read. There are in excess of 25 articles and features to choose from, grouped under one of half a dozen themes including biosafety, GM and bioweapons, water, health, and sustainability. In addition to the articles and features, there are book review and activist news sections. Most of the subject matter is of direct relevance to SGR core issues. Some articles nudge at the boundaries of

conventional science, and at the boundaries between science and politics. This may set alarm bells ringing for some readers, but I have to say that I found it a healthily provocative and refreshing read.

Patrick Nicholson

Transforming Science: a matter of public involvement

Greenpeace paper. May 2002, 4 pp.

**Greenpeace, Canonbury Villas,
London, N1 2PN. Available in
acrobat format from**

**<[http://www.greenpeace.org.uk/con
tentlookup.cfm?ucidparam=200205
29104359](http://www.greenpeace.org.uk/con
tentlookup.cfm?ucidparam=200205
29104359)>**

Greenpeace has recently issued this paper on the current relationship between science, government and commerce. It's a clear and untechnical four pages that outlines the well-recognised problem of inadequate control over science-based policy decisions by those who will be the recipients of the benefits (whether they want to be or not - witness the imposed blessing of GM), and who will be paying to clean up the mess if something goes wrong.

The paper outlines the two main causes of this. One is the lack of scope for input to government decisions on scientific matters, apparently in support of the commercial organisations with which it is now so closely entangled.

The other is the shrinking public (i.e. governmental) funding for science leaving an ever-larger space that commerce is desperate to fill - at the inevitable price.

Some market awareness in science brings a degree of focus and as such is no bad thing, and the closer links between research and commerce are therefore often to be welcomed. Nonetheless, commercial organisations in the end survive on profit, and when they fund research they expect their money's worth and will exert pressure to get it. Conflict of interest between the independence of the researchers and the needs of the funder is inevitable.

The solution is as apparent as the problem; a greater measure of democratic say in the government and the commercial processes that fund scientific research, and this is what the paper calls for.

In principle it is as simple as that. In practice there is the momentum of national government and the enormous resources of the companies which don't want restraining. In the much larger international context the problems are multiplied: there are the different degrees of democracy in other countries (where they are democratic at all), widely differing cultural views on what is acceptable, disparate types and strengths of legal systems with different degrees of corruptibility etc.

All of these permit, even encourage, the migration of bad practice rather than its overall suppression.

Democratisation is the target established by the paper as the means to offset the loss of confidence in science and government. However enormous the obstacles are (and the paper acknowledges them fully, both national and international), this democratisation is a worthy, and necessary, target.

Our current problems, the need for a solution, and the proposed solution itself; these have all been documented many times over and their reappearance here might seem entirely redundant after this repetition. I would say not. They bear repeating because they need repeating, and maybe after it has been said enough times a sufficient body of people will moved to act.

Perhaps one point on which the paper might be criticised is its view of the public, which seem to be presented as a thoughtful and well-intentioned sheep stalked and mauled by the wolf of corporatism. For example, it quotes the Royal Commission, that "People's environmental and social values are the outcome of informed reflection and debate", which might be just a bit on the rosy side. The case might be made for a distortion of public judgement by the persistent pressure of advertising, but that case would be stronger if the sheep did not sometimes seem so very eager to offer up its rump to those teeth.

Jan Tari

Letters

Against Darwinism

Dr. Johnson's letter (SGR Newsletter No. 24, May 2002) may appear to many harmless enough, but it contains some significant, if mostly unrecognised, misunderstandings.

Neither of the two examples he quotes - chaos theory and Darwin's theory of natural selection - were actually discoveries. As their names indicate, they are both theories i.e. interesting, but as yet unconfirmed, hypotheses -

at least insofar as any causal 'mechanism' for the observed phenomena are concerned (the claim that 'natural selection' or 'descent with modification' adequately explains the origin and development of life, form, consciousness etc. remains an unsubstantiated assertion).

This is not a trivial objection and I am not a fundamentalist Christian! The attempt by SGR and other organisations to inject an ethical element into the pursuit of science and technology is philosophically undermined by the core belief in

Darwinian theory, which informs all research in the biological, and increasingly also in the psychological and social, sciences.

Darwinism is incapable of providing a philosophically and logically credible foundation for any form of ethics other than self-interested opportunism, despite the futile efforts of evolutionary biologists and psychologists to argue that altruism is no exception to natural selection. Their arguments are wholly specious and lack any basis in fact.

The existence of deeply-held ethical convictions (whether or not these are connected to religious beliefs or affiliations) is itself a powerful argument against Darwinism (there are many others!).

In short, my appeal is for a genuinely rigorous approach to science which rejects speculation, assertion and the recourse to "Just So" stories to prop up an increasingly threadbare materialism which can never provide the basis for ethical action. Indeed, it

is that materialism which is the primary source of the problems which SGR is confronting!

*Paul Carline
Freelance writer and translator
Carlops, Midlothian*

Events

Every Saturday

Vigil Calling for the Release of Mordechai Vanunu

Noon - 2.00 p.m., outside Israeli Embassy in London (junction of Kensington High Street and Kensington Court). Organised by and further info. from the Campaign to Free Vanunu and for a Nuclear Free Middle East.

Tel: 020 7378 9324

Email:

campaign@vanunu.freemove.co.uk

Website:

<http://www.vanunu.freemove.co.uk>

Every Monday

Anti-war vigil

Opposite Downing Street, London, 6-7 pm. Organised by *Active Resistance to the Roots of War* (ARROW).

Tel. 020 7607 2302

August 28 - September 4 2002

The Earth Summit

Johannesburg, South Africa

Web site:

<http://www.earthsummit2002.org/>

9-13 September 2002

The BA Festival of Science

University of Leicester

Tel: 020 7973 3052

Email: joanne.coleman@the-ba.net

Web site: <http://www.the-ba.net/the-ba/page.asp?selectPage=62>

14-15 September 2002

CND Conference

University of London Union, Malet Street.

Tel. 020 7700 2393

Email: tony@cnduk.org

27 September 2002

Concert for Peace

Organised by Musicians Against Nuclear Arms, with guest speaker Kate Hudson of CND.

Sutton House (The Early Music Centre), 2-4 Homerton High Street, Hackney, London, at 7.30 pm.

Tel: 020 8455 1030

9 October 2002

To Boldly Go: The Future of Space Exploration

A Royal Society panel discussion

6.30 pm at the Royal Society, 6-9 Carlton House Terrace, London SW1Y 5AG.

Tel: 020 7839 5561

Email: info@royalsoc.ac.uk

Web site: <http://www.royalsoc.ac.uk/>

12 October 2002

CND Demonstration against Trident in Plymouth

Until now the four Trident submarines have been based at Faslane in Scotland, but this time HMS Vanguard is being refitted in Devonport, Plymouth.

Tel: 0207 700 2393

Email: patrick@cnduk.org

Web site: <http://www.cnduk.org/>

6 November 2002

Stormy Weather: Understanding Climate Change

The Royal Society in collaboration with the Institute of Contemporary Arts.

7pm at the Institute of Contemporary Arts, The Mall, London, SW1

Tel: 020 7839 5561

Email: info@royalsoc.ac.uk

Web site: <http://www.royalsoc.ac.uk/>

If you are attending any of these events, don't forget to take along a few SGR leaflets etc.

STOP PRESS: A Convention on Knowledge?

SGR has just agreed to link up with the Institute of Science in Society (ISIS) and the Third World Network (TWN) in promoting debate about the need for a 'Convention on Knowledge' - a set of guidelines about the ways in which we produce and use knowledge.

A draft of the Convention has been placed on our web-site <http://www.sgr.org.uk/> (follow the link under 'latest' to the new page).

This initiative is still at an early stage, so we would like comments on both the basic idea and the content. Comments on the draft convention

should be sent to Patrick Nicholson [<PatrickN@sgr.org.uk>](mailto:PatrickN@sgr.org.uk).

Stuart Parkinson

[<StuartP@sgr.org.uk>](mailto:StuartP@sgr.org.uk)

Join SGR - as a Member or an Associate

You can become a member of SGR if you are a scientist in the broad meaning of the word. Our members include biologists, chemists, engineers, geographers, mathematicians, physicists, psychologists, sociologists, students, teachers and people working in electronics and computing.

If you agree with SGR's aims and want to support our work, but are not a scientist, you are invited to become an associate member.

I enclose an annual membership subscription of £...

I enclose an annual associate subscription of £...

Suggested rates:

Waged: £20 or 0.1% of annual income

Unwaged: £5 (minimum)

I enclose a donation of £...

(Please make cheques payable to Scientists for Global Responsibility)

Please send me information on how taxpayers can increase the value of donations

Name

Address

..... Postcode

Telephone.....

Email

Signature Date.....

How did you hear about SGR?

.....

Please return this coupon to the address below...

Scientists for Global Responsibility

PO Box 473,

Folkestone,

Kent, CT20 1GS.

Tel: 07 771 883 696

E-mail: sgr@gn.apc.org

Web site: <http://www.sgr.org.uk/>

Sgrforum

Keep in touch between newsletters - Subscribe to sgrforum

What is it?

Sgrforum is an e-mail list for communication between members of Scientists for Global Responsibility.

How does it work?

You can contact all the members on the list (currently around 100) directly, simply by addressing your message to <sgrforum@gn.apc.org>.

If you aren't already on the list, you'll first need to subscribe - visit the sgrforum information page at <<http://mailman.greenet.org.uk/mailman/listinfo/sgrforum>> and follow the (very straightforward!) instructions from there.

What's new?

If you prefer, you can now choose to receive sgrforum messages batched together in a daily digest, or (if you are going to be away, for example) you can disable delivery entirely. You can also view the previous messages to the list (by subject, date or sender) in the sgrforum archives. To select any of these options, visit the information page (as above).

Any other questions?

Contact the list administrator <KateM@sgr.org.uk>

Other email contact

SGR has a number of specialist email addresses <___@sgr.org.uk> to use to contact particular people within SGR or for particular issues. A full list can be found on our web-site: <<http://www.sgr.org.uk/>>

Letters

Letters for inclusion in the Newsletter should be sent either by email to <newsletter@sgr.org.uk> or by conventional mail to 'The Newsletter Editor' at the SGR address (see left). Letters may be edited in the interests of clarity or brevity.

This edition of the Newsletter was edited by Patrick Nicholson. The opinions expressed within do not necessarily represent those of SGR.

Articles for the next Newsletter are welcomed from both members and non-members. Please send articles or other contributions to <newsletter@sgr.org.uk> or the postal address for SGR: see left.