



### Could Terrorists turn the UK into a Nuclear Wasteland?

**Statement issued by SGR on 16 November 2001.**

With the admission that "All plutonium can be used directly in nuclear explosives"<sup>1,2</sup> and a plane crash on Sellafield possibly creating a 200 to 700 kilometre exclusion zone<sup>3</sup> for a century (making the large parts of Britain uninhabitable) with unimaginable human suffering, environmental damage and economic costs<sup>4</sup>, Scientists for Global Responsibility calls for an urgent and comprehensive review of the risks of continuing to operate the Sellafield nuclear facilities

Nuclear power is often portrayed as the clean alternative to fossil fuels with no mention of the potential cost of damage of nuclear fuels and waste.

Whilst the threat of terrorists making a nuclear bomb from stolen plutonium is of great concern, it is clear that much more devastation could result from a more conventional attack.

Recent analyses of the effect of a plane crashing onto the storage buildings of Sellafield indicate a release of far larger amounts of radioactivity<sup>5</sup> than occurred in the Chernobyl disaster, with proportionately<sup>6</sup> larger exclusion zones.

It is clear that Sellafield has no defence against such a plane crash, either accidental or as a deliberate act of terrorism. An accurate hit by a plane would quite realistically cause sufficient breach of storage facilities to produce 50% loss of Caesium-137 and other exceedingly dangerous waste, causing these exclusion zones. For the next century at least, the land in those zones would be unusable for

habitation, cultivation or even travelling across. These areas would cover much of central UK but may extend to other European countries, and 'tolerable' contamination would extend far beyond the exclusion zones, eventually covering the world in the same way that Chernobyl affected farming in the UK and elsewhere.



The effects in terms of rapid loss of life and long term trends in deaths from the effects of mutations and cancers and would be far greater, environmental damage would be severe, and the world economy would be damaged for several generations.

Such a situation cannot be ruled out, and the official attitude of ignoring risk for commercial reasons is totally unacceptable. The infrastructure required for storing, processing and moving nuclear materials is in acute need of review.

SGR therefore calls for an urgent and comprehensive review of the risks of continuing to maintain a British nuclear industry, and that such a review should:

- consider in full the undeniable risks of terrorism and accidents associated with these industries, and

- reappraise the effective public subsidy that the UK nuclear industry continues to enjoy

and in the light of these, re-evaluate the still limited support which renewable energy and energy-efficiency measures get from the UK Government.

In addition SGR urges that

- BNFL face in full, and not be protected from, its estimated £34 billion bill<sup>7</sup> for decommissioning of old reactors and disposal of waste.
- immediate measures should be implemented to counter terrorist or accidental breaches of high-level waste storage facilities or nuclear power facilities anywhere in Britain and to determine and acknowledge any other aspects of the industry where accidents could cause massive danger to life.

*(references on page 8)*

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# News from SGR

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## A few words from the Chair..

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**Stuart Parkinson**

The last six months have starkly demonstrated the devastating potential of technology. On the one hand, the attacks of September 11th have shown that determined terrorists can make even everyday technology such as civilian aircraft into weapons for mass murder. At the same time, the retaliatory bombing of Afghanistan by the US (supported by the UK) has shown the problems of relying on a military response to such actions. For example, it has directly resulted in the deaths of an estimated 5000 civilians, seriously hampered aid efforts intended to help the six million people affected by drought, and cost up to \$1 billion a month. Proponents of the bombing argue that these costs were justified because of the capture of many suspected Al Qaida terrorists and the removal of the highly repressive Taliban regime which sheltered them.

But we must take a broader perspective. The bombing of Afghanistan is perpetuating an international cycle of violence that needs to be broken. Following a 'zero tolerance' military response without trying to address some of the root causes of the problem, as the US has done, will not bring long term peace and stability. One only has to look towards the Middle East for proof of this. Indeed, it is the US's example which is being used as justification by Israel for its increasing use of military force there. We see a similar pattern with India and its threats against Pakistan. Since nuclear weapons are present in both regions, the

potential exists for a catastrophic outcome. A further dimension of this is the international arms trade, in which the UK is a major player. It was, after all, the US who armed and trained the 'lesser evil' of Afghan rebels (including Osama bin Laden and his associates) to fight the Soviets. And it is not hard to find this pattern repeated: the US and UK arming of Iraq - until they invaded Kuwait; the UK and French arming of Argentina - until they invaded the Falklands. And now the UK has just signed a major arms deal with India despite the tensions in that region. We must work much harder to break this cycle of violence, by tackling the roots of the problems such as international poverty and racial and religious intolerance.

These arguments won't come as much of a surprise to SGR members, but it is important that we reiterate them. As scientists and engineers, we must play our part in this process, by making sure the goals of our work support efforts to tackle problems such as poverty and environmental damage, rather than fuel this cycle of violence.

SGR's work over the past months continues to take forward this agenda. Just days before the September 11th attacks, we published our 32-page booklet, 'An Ethical Career in Science and Technology? - A Summary' (see p3 or enclosed leaflet), which includes sections on (amongst others) arms issues. Following the terrorist attacks, we were one of many groups which issued statements condemning the terrorists (see p7

for SGR's), but calling for the response to these to focus on tackling the root causes of violence rather than perpetuating it. Barely a month later, the UK Government decided to give the go ahead to the Sellafield Mixed Oxide (MOx) reprocessing plant, which SGR criticised on the grounds that it was ignoring the potential terrorist threats involved in the wake of the September 11th attacks. As part of this work, Phil Webber carried out a short analysis of the potential release of radioactive material resulting from a plane striking the plant (see front page). And the UK Week of Science and Peace (see p4) in November, organised by Alan Cottey for SGR, comprised events that contribute to the constructive use of science and technology.

Other notable SGR activities in recent months have included the continuation of work on genetic engineering issues (see p5) thanks to Eva Novotny, the founding of a local SGR group in Cambridge (see p6) thanks to Yunus Yasin, Dominick Jenkins and Eva Novotny, the redesign and update of the SGR web-site thanks to Alan Cottey, Patricia Hughes and Bob Kenyon (p3), and a big increase in SGR's press work thanks to Jan Tari (p5; and see the new press web-pages: <http://www.sgr.org.uk/press.html>).

Turning now to a smaller issue but one that does affect SGR's ability to attract supporters and to get its messages heard - we have a new logo, and you can see it at the bottom of this page. This is gradually being incorporated into

**Scientists for Global Responsibility**

**SGR**  
*Promoting ethical  
science and technology*

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SGR's promotional materials, with the ethical careers guide and the web-site being the first to benefit. We hope you like it!

There are two important events coming up to put in your diaries. The first is SGR's 10th anniversary conference entitled 'Can scientists be trusted?' in London on 27th April (see announcement on back page). This will also feature SGR's Annual

General Meeting, including a motion to update the aims of the organisation following the internal review completed early last year. The proposal for the revised aims was circulated to members last year, but as a reminder it appears on p4. The other event for your diary is the council meeting and conference of INES (the International Network of Engineers and Scientists for Global Responsibility) on May 23th-26th

(see announcement on p23), this year taking place in the UK (Bradford).

And finally, a reminder about the SGR Appeal which has recently been sent to you: please help the continuation and expansion of SGR's work by making a donation!

<StuartP@sgr.org.uk>

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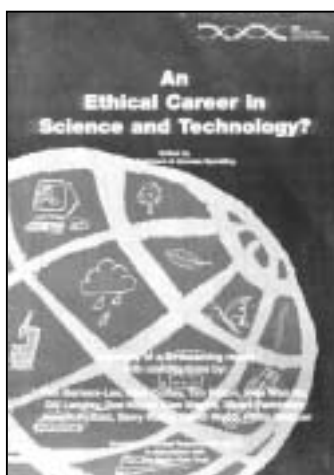
## An Ethical Career in Science and Technology?

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### Stuart Parkinson

SGR's 32-page careers booklet, 'An Ethical Career in Science and Technology? - A Summary', was published at the start of September. The publication was timed to coincide with the beginning of UK Science Year, with a call from SGR to incorporate an explicit consideration of ethics in the Science Year programme.

The booklet covers many important issues such as: genetics, climate change, the arms industry, the militarization of space, clean technology, animal experiments, information technology, politics & ethics in science, science funding and assessing the sustainability of your career. Contributors include Nobel Peace Prize Laureate, Professor Joseph Rotblat; designer of the World Wide Web, Dr Tim Berners-Lee; and the well-known commentator on biotechnology issues, Dr Mae Wan Ho.



Copies of the booklet are free to students and SGR members, and £5 plus £1 package and postage to others. They can be ordered using the enclosed leaflet. Alternatively, electronic copies can be downloaded from SGR's web-site: <<http://www.sgr.org.uk/>>

Copies have been sent to all university and college careers offices, with promotional material going to student unions, professional scientific organisations and environmental/peace groups. We have received many requests for copies and invitations to promote it at ethical careers fairs. The booklet will also be promoted through the new 'Ethical Careers Service' which has just been launched by the student pressure group, People and Planet. If you can help with promotion of the booklet (e.g. by distributing leaflets or helping run a stall at a careers fair), please contact the SGR office.

Work on the full-length book version of the guide has re-commenced and we are in discussion with book publishers.

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## Website

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### Alan Cottey

*Forth Bridge Painted!*

Quite a lot has been happening on the website (<<http://www.sgr.org.uk>>) lately. New material we have posted includes a group of pages on Science Policy, numerous press releases and Statements, and a discussion paper on GM crops.

We have completed the change of visual style, and have made many incremental changes. These include

improvements to the index page and additions to the links page. We thank all those who supplied copy or comments. Do let any one of us know if you wish to propose copy (it can be a signed article or a suggestion for SGR output), or if you notice any errors.

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## Science, Peace and Development

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### Alan Cottey

*"It's only for a week, so have no fear  
Be grateful that it doesn't last all  
year"*

Tom Lehrer  
on National Brotherhood Week

Last 5-11 November was the UK Week of Science and Peace 2001, organised by SGR. There were 11 events in the week, which included

- a course for staff from natural, cultural or historic sites, organised by Snowdonia National Park Study Centre
- The World's Greatest Ideas Party, thrown by the Institute for Social Inventions
- a debate on 'Science and Society - Time for a New Relationship?' organised by the Norwich Research Park

- a conference on 'Citizenship, Business Studies and Economics Education: The Global and Ethical Perspective', organised jointly by Just Business and the University of London Institute of Education

- a vigil for the imprisoned Israeli technician and whistleblower Mordechai Vanunu

- awareness and fund raising for appropriate technology projects that help to solve problems created by landmines, organised by Norwich Landmines Action Group

- a conference on 'No Star Wars: Keep Space for Peace' organised by Sheffield CND.

10 November this year will see the first World Science Day for Peace and

Development, coordinated by UNESCO. There is a small budget for coordination and publicity but not for the events themselves. For more information on this, including a link to UNESCO's current information, visit

[http://www.sgr.org.uk/UNESCO\\_UKWOSP\\_pr.html](http://www.sgr.org.uk/UNESCO_UKWOSP_pr.html)

UNESCO will launch the Day, with a world-wide invitation to participate, in the Spring. SGR has welcomed this initiative and expects to participate.

It's only a day, so give it your weight. The earth's in the balance and we shape its fate.

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## Aims of SGR

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### Stuart Parkinson

Following SGR's internal review, which was completed early last year, the National Co-ordinating Committee is bringing a motion to this year's AGM to update the aims of the organisation. The proposed new aims (which were circulated to the membership last year) are given below. Please send any further comments to the SGR office <[sgr@gn.apc.org](mailto:sgr@gn.apc.org)>.

#### SGR Statement of Objectives

##### 1. Statement of Values

Scientists for Global Responsibility (incorporating Electronics and Computing for Peace, Psychologists for Peace and Scientists Against Nuclear Arms) is an independent organisation of scientists and engineers committed to the ethical and accountable practice and use of science and technology.

We believe science and technology should be used responsibly, in a way that contributes to justice and peace in human society, and to the long-term well-being of the wider environment.

##### 2. Statement of Aims

The objectives of Scientists for Global Responsibility are to promote and co-ordinate research, education, discussion and related activities of scientists aiming to further the ethical practice and use of science and technology. In particular, we will

- work for the elimination of weapons of mass destruction
- promote a transfer of human and financial resources away from military applications and towards civil ones
- promote a transfer of human and financial resources away from non-renewable energy and material sources and towards renewable ones

- argue for adequate analyses of the benefits, risks and uncertainties of technological innovations (especially those, such as biotechnology, with great potential for good or ill) before commitment to their use or non-use

- promote economic ideas and policies which are consistent with the values expressed in (1) above

- promote a culture which recognises both the expertise of specialists and the needs of all those affected by science and technology

- promote the conditions in which scientists and technologists may use their skills in ways consistent with the values expressed in (1) above. Such conditions include the existence of pluralist, accountable sources of funding, and the ability of scientists and engineers to publish their work, freely and without risk of reprisals

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## Press and Media

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### Jan Tari

The past few months have been quite productive for SGR press releases and publicity in general.

Press releases include 'Could Terrorists Turn the UK Into A Nuclear Wasteland?' (see p1), two criticisms of the UK government's decision to proceed with the infamous white elephant MOX plant 'Reprocess A Dangerous Decision' and 'Scientists Say Government's MOX Go-ahead "Irrational"', also comment on the regrettable shortsightedness that led to the watering down of the Kyoto Agreement, as well as announcements of the UK Week of Science and Peace (UKWOSP, see p4).

We've also had letters published in Nature and Physics World, an

article in Corporate Watch (extracts of which surfaced in The Big Issue), attended a radio discussion on Radio 4's 'You and Yours' on environmental risk, and had a radio interview with London's Capital Radio. We've also had a short column describing us in the journal Chemistry and Industry, and unexpected mention in The Parish Pump (!) and mentions in the INES and Alnet newsletter amongst others.

Very notably, an article published in UNIDIR (United Nations Institute for Disarmament Research) disarmament forum 'singled out' SGR for mention in Europe for its anti-nuclear mission.

However, the crown jewel in this has to be SGR's release of the Ethical Careers Guide (see p3) with

efforts by many SGR members to spread the word as far as possible, and with considerable success judging by the number of enquiries we've had.

This altogether louder voice from SGR has produced some gratifying responses. We've had contacts and requests for information from the BBC and New Scientist, as well as the radio interviews mentioned, and even requests from journalists as far away as Greece and Cairo! Not bad.

The steady pressure of publicity from NCC members and others is evidently working and with our continued output we can expect an even greater recognition next year.

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## GM Issues

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### Eva Novotny

In November, SGR received an appeal for support in the campaign to prevent an issue of Your World magazine (vol. 10, issue 1) from being distributed to Scottish schoolchildren. This was produced by the biotechnology industry and is strongly biased in favour of genetic engineering in agriculture. SGR has responded with a letter to the Scottish Education Minister, expressing the view that either the issue should be withdrawn from circulation to schools or it should be balanced by similar material to provide the facts on the opposing side of the debate.

In December, the newly re-activated Cambridge local group of SGR met for the first time (see p6). On the genetic-engineering front, the possibility of holding a conference for farmers was broached. The idea was that consumers have forced large supermarkets to reject GM ingredients from their own brands,

and it might be possible to persuade farmers to reject GM seeds. Then, if large numbers of consumers refused to eat GM foods, and if farmers similarly refused to buy and plant GM seeds, there would be no economical market in the UK for genetically-engineered food. Even if EU legislation required that the general introduction of GM products into the UK be allowed, there would be very little or no take-up of this market, and Britain could remain largely GM-free.

This idea has grown into a project for the national level and may be enlarged into more than one conference. The main theme now will be to encourage conventional farmers (i.e., those who use chemical sprays and fertilisers) to convert to organic agriculture, although the anti-GM arguments will still be presented. Help is being sought from various other NGOs. We have already been offered sponsorship and some financial support from the Farm and

Food Society and offers of speakers from various other organisations. A delay in implementing these plans now seems desirable, as farmers (both conventional and organic) are having serious financial difficulties. Also, the government received, on 29 January, the report of the Policy Commission on the Future of Farming and Food, which may be expected to take some months to study before the Government issues its plans for the future of agriculture in the UK. Ministers are now speaking about the need for sustainability, and the new government policy may well be favourable towards organic farming.

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## Cambridge SGR Local Group Formed

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A local SGR group was formed in Cambridge following a meeting held on 29 September 2001. This first meeting was a brainstorming session exploring the areas in which the group aims to be active. The discussion included the following topics:

- changing the views of scientists; encouraging scientists to consider the consequences of their work
- the independence of academics in the face of the growing influence of commerce
- the need for scientists to explore their own ethical values and develop a sense of responsibility

- how can scientists work for peace?

- raising discussion and openness among scientists to new levels – democratisation of science

- reforming scientific education to make it less like a production line

The group agreed to pursue the following ideas as priorities:

- **Farming and Science** - to get in touch with farmers and provide independent information on GMOs and Genomics. Also the group proposes to give recommendations on GMOs, and on alternative approaches and other possibilities to solve problems. Corporate control of food chain was also to be studied in the future

- **Weapons and Science** - pushing for reductions in nuclear weapons, and making the connection between biotechnology and weapons

- **Forum for Science and Ethics** - to discuss ethical issues pertaining to science and technology (the group subsequently held a public discussion on science and terror which was well received and was attended by more than 30 people).

Members of the group are working with other local organisation such as CamPeace to ensure more co-operation between SGR Cambridge and the local community.

*Yunus Yasin*

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## Elsewhere in the news...

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### **British Scientists turn on GM food**

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According to a report published by the Royal Society, GM technology “could lead to unpredicted harmful changes in the nutritional state of foods.” A further blow to the GM food industry came from English Nature, which showed that a generation of herbicide-resistant “superweeds” was developing around Canadian GM fields.

*Guardian, 5/2/02*

### **Mobile phone emissions increase worm fertility**

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The safety of mobile phones is under fresh scrutiny following the discovery that their emissions have an unexpected effect on living creatures. British scientists have found that microwave emissions typical of mobile phones make a type of worm more fertile. Why this happens is unclear and there's no suggestion that human fertility could be affected. William Stewart, head of the British government's "independent expert group" on mobile phones is taking the results seriously. "These results are very important and potentially far-

reaching, Independent confirmation is crucial and we need this quickly."

*New Scientist 6/2/02*

### **New letters expose war-time secrets**

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Letters written by Niels Bohr about his famous 1941 meeting with Werner Heisenberg have been released by the Niels Bohr Archive in Denmark. The unsent draft letters reveal that Heisenberg had been working flat-out for the previous two years on an atomic bomb and was convinced that the Germans would win the Second World War. Bohr also says in the letters – which he wrote in the early 1960s – that he did not believe claims that Heisenberg made after the war that German physicists had wanted to prevent construction of a bomb.

*PhysicsWeb, 6/2/02*

### **New radome at Menwith Hill**

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Menwith Hill, the European Ground Relay Station for the Space Based Infra Red System (SPIRS), is to get another radome. Activists from the Campaign for the Accountability of American Bases (CAAB) discovered a planning application

for the radome, which is to be erected in 2004. Two SPIRS radomes are already in place. On December 1, CAAB blockaded the base, protesting against the fifth NMD interceptor test.

*Nonviolent Action, 1/02*

### **Afghan civilian casualty figures**

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In the middle of America's hi-tech, \$1bn a month bombing blizzard, the simple matter of keeping a tally of civilian casualties has been overlooked. There are no official US figures and NGOs operating in the country have not done any independent research. A senior Médecins Sans Frontières worker estimates the number of civilian dead at between 2,000 and 3,000. Carl Conetta of the Commonwealth Institute estimates that up to 1,300 civilians have been killed by US bombs and at least 3,000 other Afghans are dead due to the humanitarian emergency. Professor Marc Herold of the University of New Hampshire puts the number of civilian casualties at at least 4,000.

*Guardian 12/2/02*

*Summaries by Patrick Nicholson*

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# Response to the Terrorist Attack on the USA, September 11th 2001

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## Statement issued on 22nd September by the Coordinating Committee of Scientists for Global Responsibility

Scientists for Global Responsibility (SGR) expresses deep sympathy for the thousands of people, from many countries, who were killed and injured in the terrorist attacks on the USA on September 11th, 2001. SGR unreservedly condemns these attacks and supports attempts to identify the perpetrators and bring them to trial.

However, SGR is deeply concerned about the possibility of military action taken in retaliation to this attack by US and other forces.

Further, we feel that there are important lessons which should be drawn concerning global security and global inequality, and that these are not getting adequate attention in media coverage of the issue.

### US Government Response

The US Government, understandably outraged by these attacks, has chosen to brand them as the opening shots of a 'war', thus psychologically preparing the ground for military retaliation against the alleged perpetrators in Afghanistan.

SGR believes that such actions run the severe risk of inflaming a tense situation with the likely result being that more innocent civilians will die in the 'crossfire'.

Already, western aid agencies have been told to evacuate from Afghanistan, hence abandoning refugees created by Afghanistan's civil war and the ongoing drought in the region. US threats are creating a situation which is already adding to considerable suffering in the area and where the UN aid agencies have already only three weeks supply of food aid<sup>1</sup>.

SGR urges European Governments to restrain the US from precipitous action.

### 'Deeper Problems'

It is essential to see this attack in a wider context. Global spending on armaments is approaching \$1 trillion (\$1,000,000,000,000) annually. Meanwhile global inequality is

increasing, with nearly half the world now living in poverty.

Such spending on weapons, which has decidedly not increased world security, has to be compared with the much smaller sums given to an increasing range of natural disasters such as the flooding in Bangladesh in 1991 which killed approximately 140,000 people and the 1998 landslides in Venezuela which killed 30,000 people.

Such a reality can only breed hostility against those who control the world's money supplies: and the World Trade Centre provided a physical symbol for those feeling resentment. Moreover, the US Government has been selective in regard to whom it criticises for human rights violations: it has condemned certain Arab countries but is rather quieter about violations carried out by Israel. Its apparent double standard is shown even more starkly when it is remembered that the US supplied arms to Iraq during the Iraq-Iran war and to the Taliban regime in Afghanistan in its war against the Soviet Union.

### Missile Defence

It is very important to realise that the attacks of 11 September and any other terrorist attack on the USA would not have been prevented by the missile defence systems proposed by President Bush. Critics of these systems, including SGR, have consistently pointed this out. These events show that the greater threat to the USA is from terrorist attacks and not from intercontinental ballistic missiles from 'rogue states'.

SGR repeats our urgent call to President Bush that this programme should be abandoned to prevent a global arms race which will decrease, not increase, global security.

### Terrorist Use of Biological, Chemical and Nuclear Materials

These events have highlighted the power and unpredictability of terrorist threats. These threats could have involved, and may in the future

involve, the use of biological, chemical or fissile nuclear material. SGR calls on all states, particularly the USA, to take serious steps to bring into force a strong enforcement regime for the Biological and Toxic Weapons Convention this year. Commercial concerns expressed by the USA during the recent failed negotiations on this issue should not be used as an obstacle.

The black market trade in the fissile material from which nuclear bombs could be made has greatly increased since the break-up of the Soviet Union. Even countries such as South Africa have admitted that they cannot account for all the fissile material they have produced. In 1991, Scientists Against Nuclear Arms (a forerunner to SGR) warned that reprocessed nuclear fuel could be converted into weapons grade material. A recent report by the respected nuclear scientist Frank Barnaby has reiterated this.

SGR therefore calls for much stronger action, not only into seizing illegally traded fissile materials, but also to restrict and quickly eliminate the reprocessing of nuclear fuel. Lessons can be learnt from the USA which stopped the reprocessing of nuclear fuel in the 1970's.

In the UK, the planned approval of the Sellafield MoX plant - whilst the eyes of the world are elsewhere - should be halted. It carries the risks of making even more dangerous plutonium vulnerable to terrorist seizure and creates the need for a completely unnecessary and dangerous world-wide plutonium shipment network - including shipment by air. The recent attacks also raise the possibility that nuclear power plants themselves could be terrorist targets, with horrific consequences<sup>2</sup>.

Military action against Afghanistan runs the severe risk of destabilising a region which contains nuclear weapons - in Pakistan and India. The possibility of nuclear weapons under the command of an extreme faction has to be avoided at all costs.

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## In Conclusion

Important lessons need to be learnt from these attacks. Whilst we need greater co-operation between nation states to guard against terrorism and to bring its perpetrators to trial with principles of international law<sup>3</sup>, we also need urgently to take major steps in reducing the reasons which cause such actions: religious and cultural intolerance, and economic and social inequality. These root causes of terrorism, not imprecise military action to avenge their effects, are the major issues to address as we begin the 21st Century.

Notes:

1. The lack of action to support humanitarian measures should be contrasted against huge sums already allocated for the 'war' against terrorism. On Friday 14th September

the US Senate approved spending of 40 billion dollars for reparations and a "war" against terrorism. Five billion dollars have been agreed to support the US airline industry. Some of this financial allocation should be used for increased international aid for refugees in Afghanistan and Iraq and other states directly affected by recent conflicts. In stark contrast, the US has failed to meet its UN commitments. In March 1999, Kofi Annan, General Secretary of the UN, urged Washington to pay up 1.3 billion dollars of unpaid arrears to enable the UN to do its job properly. On May 11, 2001, the House of Representatives froze US repayments to the UN. The US currently owes the UN over 220 million dollars.

2. International Atomic Energy Commission meeting Vienna, September 17, 2001; spokesperson

David Kyd: At present all nuclear plants present a clear target for terrorist attacks and the security of radioactive material must be taken very seriously indeed. Most nuclear plants would not withstand direct hit of large fuelled airliner.

3. Support the setting up of the International Criminal Court via the Treaty of Rome. Almost alone amongst world states, the US has refused to support the International Criminal Court and the 1998 Treaty of Rome, fearing cases against itself. The US should change this stance to support this global effort to set up an international court where offenders including terrorists could be tried consistent with internationally agreed principles.

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## Nuclear Wasteland?

(continued from front page)

### References

For brevity, the 'Report on the Legal Liabilities for Civil Plutonium Incidents' is referred to here as RLLCPI and may be found at <<http://www.oxfrg.demon.co.uk>>

1. Selden, R. W., Reactor Plutonium and Nuclear Explosives, Lawrence Livermore Laboratory, California, 1976: "All plutonium can be used directly in nuclear explosives. The concept of [...] plutonium which is not suitable for explosives is fallacious. A high content of the plutonium 240 isotope (reactor-grade plutonium) is a complication, but not a preventative."

2. Letter from The Former Director General of the International Atomic Energy Agency, Hans Blix to the Nuclear Control Institute, Washington DC, 1990: "considers high burn-up reactor-grade plutonium and in general plutonium of any isotopic composition...to be capable of use in a nuclear explosive device. There is no debate on the matter in the Agency's Department of Safeguards." From RLLCPI: "Having obtained plutonium oxide from the plutonium store at Sellafield or a MOX fuel assembly by diversion or theft, a terrorist group would have little difficulty in making

a crude atomic bomb. If plutonium oxide (PuO<sub>2</sub>) itself is stolen it could be used directly to produce a nuclear explosive or converted into plutonium (Pu) metal, which could then be used to make a nuclear explosive".

3. Based on a scaled up Chernobyl-type release of Caesium-137, 200km immediate exclusion zone with up to 700 km exclusion zone downwind. This pattern is very dependent upon weather conditions, though. Chernobyl had a 30 km radius exclusion zone and distances of up to 100 km required evacuation depending upon weather conditions (Something in the Wind, Politics After Chernobyl, chapter 2, R Erskine & P Webber, Eds Mackay and Thompson, Pluto Press, 1988). If 50% of the stored Caesium-137 (an isotope used as a representative of typical radioactivity) stored at Sellafield was released, this would be approximately 50 times the Chernobyl release, which would produce an exclusion zone described. The amount of Caesium-137 stored at Sellafield in the B215 building and is approximately 100 times the quantity released at Chernobyl, see <[http://www.wise-paris.org/english/ourbriefings\\_pdf/011029AircraftCrashSellafield3.pdf](http://www.wise-paris.org/english/ourbriefings_pdf/011029AircraftCrashSellafield3.pdf)>

4. RLLCPI. Extracts: 'Western commentators have estimated the

**direct cost** [of Chernobyl] to be in the order of £6 Billion'. 'The Head of the Soviet Fire Service, making an estimate including **long-term** costs of treating those suffering from radiation sickness and other illnesses [resulting from Chernobyl], calculated a figure of £200 Billion' [emphasis added]. 'Medevac concludes that the Chernobyl accident was the "most expensive industrial accident in modern history"'. A far larger accident over a much more densely populated area such as Britain and parts of Europe would be hugely more expensive than Chernobyl.

5. Using Caesium-137 as a measure - this isotope is treated as representative of general radioactive contamination in nuclear accidents

6. Areal contamination grows in proportion to the quantity of the contaminant, the radius of the exclusion zone grows approximately in proportion to the square root of these, all else being equal.

7. BNFL has liabilities of £34bn for decommissioning its ageing nuclear power stations and disposing of radioactive waste over the next 100 years', (The Sunday Telegraph 21/10/2001)

<sg@gn.apc.org>

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## Media Lens: Correcting for the distorted vision of the corporate media

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### David Edwards and David Cromwell, Co-Editors of MediaLens.org, examine the corporate media and outline what can be done to address its failings

One of life's unspoken assumptions is that we have a free press and broadcast media. To be sure, we have the usual news nasties such as Rupert Murdoch, Kerry Packer and the late Robert Maxwell. And media conglomerates are getting bigger and more powerful. Nevertheless - unlike in totalitarian or oppressive regimes, such as the former Soviet Union - we take it for granted that western journalists can write about whatever they wish, holding politicians to account for their policies, misdemeanours or plain arrogance. As Andrew Marr, the BBC's political editor, once put it: journalism is a 'crusading craft' full of 'disputatious, stropky, difficult people' keen to get to the heart of the matter, even to the extent of bringing down a president, as in the Watergate affair.

It's interesting that the media is so sure of its dissenting role that it has never yet seriously examined the extent to which it actually performs that role. In fact, we believe that the mass media is complicit in human rights abuses and environmental destruction; mainstream newspapers and broadcasters provide a profoundly distorted picture of our world. The increasingly centralised, corporate nature of the media means that it acts as a de facto propaganda system for corporate and other establishment interests. The costs incurred as a result of this propaganda, in terms of human suffering and environmental degradation, are incalculable. As US journalist Danny Schechter notes: 'I became a journalist to help spotlight the problems of the world. It is now clear that global media is one of them.'

At the time of writing, for instance, the corporate media (including the BBC), have almost completely turned away from the starvation and deaths of civilians in Afghanistan. Aid agencies declared last October that 7.5 million already hungry Afghans would be placed in jeopardy by the threat, much less the execution, of bombing. That Western policy proceeded in the knowledge that it

risked a catastrophe of this size was remarkable - imagine if the U.S. had declared that an attack had to be launched on France to wipe out terrorism, even though it might cost 7.5 million lives! Even more remarkable is the fact that the media had comparatively little to say on the matter.

Despite passionate pleas from aid agencies and Afghan groups about the dire conditions of millions of civilians, the warring pronouncements of Bush, Blair and the 'defence' establishment were given considerable more column inches and airtime. Whereas footage of Kosovar refugees swarming over hillsides filled our screens in 1999, in 2002 traumatised Afghan refugees are nowhere to be seen. To take one example, ITN has featured literally no reports of human refugee suffering in Afghanistan up to 15 January, 2002. By contrast, it has twice covered the plight of Marjan, the one-eyed lion in Kabul Zoo (January 9 and 13).

But why is the media so beholden to establishment views? We must first recognise that the media is big business. Media owners are wealthy people with many fingers in many business pies, and are dependent on the support of advertisers. How likely is it that anyone calling for radical change in society - whether environmentalists, human rights activists or opponents of the arms trade - will be consistently and fairly reported by broadsheets (which are dependent on advertisers for 75 per cent of their revenue), and corporate news organisations owned by giant corporations, wealthy owners and tied into the stock market? How much more likely is it that the corporate media will reflect the priorities of elite interests in society?

Market forces, coupled with obedience to authority, are a powerful mix. No conspiracy is required (indeed, any conspiracy would quickly be exposed and thus neutered). 'The sinister fact about literary censorship', George Orwell

once wrote, 'is that it is largely voluntary. Unpopular ideas can be silenced, and inconvenient facts kept dark, without any need for any official ban'. Journalists will often retort: 'Nobody tells me what to write. I'm free to say as I please'. Again, Orwell summed it up nicely: 'Circus dogs jump when the trainer cracks his whip, but the really well-trained dog is the one that turns his somersault when there is no whip.' Journalists either learn to toe the establishment line, by 'internalising' mainstream views, or get squeezed out.

Our objective in setting up Media Lens (<http://www.medialens.org>) is to reveal, not that the media is guilty of occasional lapses, but that the media is fundamentally corrupt and deceptive, that it is incapable of reporting the true horror of what state-corporate interests are doing to people and planet. Our goal is to raise public awareness of this view and to undermine the credibility of the myth that we have a 'free press'. There is no contradiction in believing that, nonetheless, most journalists are professional, well-meaning and honest. The point is that they are employed by a corporate system that selects for certain goals, certain values, certain attitudes; if they believed something different, they wouldn't be sitting where they're sitting. The deeper point is that they are part of a system that is instrumental in pacifying the public, diverting them from the true result of state-corporate policies. The results are unseen horrors against humanity and what may well prove to be a terminal environmental catastrophe.

Our response was to launch Media Lens last summer with endorsements from a number of activists including Noam Chomsky, John Pilger and George Monbiot. We provide rationally-argued articles with a humane perspective on a wide - but related - range of issues: Iraq, economic globalisation, 'the war against terror', biotechnology and climate change. Perhaps the most useful feature of Media Lens is our

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free email ‘media alerts’ sent directly to a growing number of subscribers (nearly 300 at the latest count) . These provide an opportunity for members of the public to confront and challenge leading editors, journalists and news organisations, to examine how the media’s assumptions of press freedom and honesty stand up under scrutiny. The results to date have been

shocking to many readers and deeply depressing for anyone who cares about democracy and human rights.

We believe that state-corporate oppression is dependent on the delusion that the mass media largely provides a level playing field for debate in free democratic societies. Our goal is to expose this delusion in

the hope that it will help people to work together and demand rational, compassionate solutions that can ease human suffering.

*David Edwards and David Cromwell are co-editors of Media Lens <<http://www.MediaLens.org>>*

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## Eugene Rabinowitch and the Origin of the International Scientists Movement

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### John Moore

Ever since the end of World War II, the United States has had a strong “scientists movement” advocating nuclear arms control and disarmament. An insight into the history of this movement and its involvement in international affairs was given in August 2000 when, at the 50th Pugwash Conference, Joseph Rotblat gave a talk entitled “Fifty Pugwash Conferences: A Tribute to Eugene Rabinowitch”<sup>1</sup>.

Eugene Rabinowitch (1901-1973) was a biophysicist and an author of what was, for a long time, the standard text on photosynthesis. He was born in St Petersburg but all his professional life was spent in America. To quote Rotblat:

*...his basic philosophy was that the tremendous progress in science and technology has changed the world so much, that the traditional way of life has become obsolete. In particular, the division of the world into a number of sovereign states is outmoded and untenable. Wars have become unthinkable, since they would spell the end of civilization. The survival of mankind, and the advance of its moral and spiritual needs, must be the paramount aim of all people. The aim can be addressed only if we develop a new feeling of community with the whole of mankind. Loyalty to mankind must override all other loyalties. In the creation of the new age, scientists must play a major part ...<sup>2</sup>*

*Eugene’s involvement in the nuclear issue started with the so-called Franck Report, which was submitted to the then Secretary of*

*War, Henry L Stimson, in June 1945, a month before the first test of the atom bomb in Alamogordo. The Report was prepared by a committee of scientists working in the Chicago branch of the Manhattan Project. Its two leading members were Eugene Rabinowitch and Leo Szilard: both early opponents of the use of nuclear weapons, but entirely different personalities with different approaches to the problem. The text of the Franck Report – which called for the international control of atomic energy, and appealed to the US government not to use nuclear weapons against civilian populations – was mainly written by Eugene.*

*When, despite this appeal, the United States used atom bombs to destroy two Japanese cities, a number of scientists on the Manhattan Project decided to do their utmost to ensure that such an act would not be repeated. They set up an organization, now known as the Federation of American Scientists, with the most eminent scientists in the United States among its members.<sup>3</sup>*

An even more significant achievement was the cofounding in 1945 of the Bulletin of the Atomic Scientists of which Rabinowitch was founding editor-in-chief until his death. From an 8 page mimeographed sheet in 1945, the Bulletin has become established as a prestigious journal using the latest printing technology, very influential in the scientific community and dealing with the most pressing problems of the day: in particular, issues of nuclear

armaments and disarmament. To quote Rotblat again:

*Through both these channels, the FAS and the Bulletin, Eugene exerted his influence and conveyed his teaching. His efforts were not confined to the United States: from the beginning he realized that since the problems created by the advances in science and technology affected the whole of mankind, a truly international endeavour was necessary to tackle them. He never missed an opportunity to press for this. Thus, when the first international conference on nuclear physics after the War was convened in Chicago in 1951, he brought together a number of participants and expounded the need to form an international body of scientists.<sup>4</sup>*



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It was only possible to realise this aim after the death of Stalin. During several visits by Rabinowitch to London, in 1954 and 1955, he and Rotblat worked on an agenda for an international meeting, which at that time was still a dream, but which actually turned out to be the agenda for the First Pugwash Conference in Pugwash, Nova Scotia in 1957. The agenda, worked out earlier between Rabinowitch and Rotblat, consisted of three items:

- Nuclear energy hazards in War and Peace;
- Problems relating to international control of Nuclear Energy;
- Responsibility of Scientists and International Collaboration.

The conference ended with an agreement to continue the endeavour by setting up a new organisation, The Pugwash Conferences on Science and World Affairs, which in 1995 was jointly awarded the Nobel Peace Prize with Joseph Rotblat. The last agenda item has been taken up by the student

Pugwash movement in particular, with the American student group, for example, establishing an annual lecture on the theme<sup>5</sup>. Referring to the main (senior) Pugwash movement, Rotblat stated, in his lecture, that:

*In my opinion, the subject [the social responsibility of scientists] should also figure more prominently on our agenda, because – in addition to the threat from the existence of nuclear weapons – the rapid advances in several areas of technology may lead to profound societal disturbances, which may arise from the changes in the norms of life of the human community as a result of these advances; changes in economic, cultural and spiritual values, changes that may be abhorrent to some sections of society. There is a real danger that science and scientists will be blamed for the upheavals. It will be difficult to refute such accusations, unless the scientific community wakes up to its social*

*responsibilities. There is a greater need than ever for Pugwash to take a leading role on these issues; there is a real need to pay heed to the teachings of Eugene Rabinowitch.*<sup>6</sup>

*John Moore is a Lecturer in Mathematics at Leeds College of Technology and an SGR member*

1. The text of Rotblat's talk is reproduced in the December 2000 issue of the Pugwash Newsletter pp50-7.
2. Ibid. p53.
3. Ibid. p51.
4. Ibid. p52.
5. The deliberations of the international student Pugwash movement can be followed at [www.student-pugwash.org](http://www.student-pugwash.org)
6. Pugwash Newsletter. December 2000, op cit, p56.

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## “Myth of Chernobyl Suffering Exposed”?

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**Philip Webber responds to an article by Anthony Browne in the Observer. The newspaper declined to print either this response or a condensed version.**

Anthony Browne's article: "Myth of Chernobyl suffering exposed" which alleged that "relocation and hand-outs have caused more illness than radiation, a new UN study concludes" (Observer, 6 January 2002) creates a very misleading and unfortunate impression of the aftermath of the Chernobyl accident. Coincidentally with the UN report "The Human Consequences of the Chernobyl Nuclear Accident - A Strategy for Recovery" I have been reviewing the potential impacts of a nuclear accident or possible sabotage as part of my work with Scientists for Global Responsibility. Rather shockingly, after 4 days have elapsed, the radiation impacts of a serious nuclear accident resulting in the vapourisation and release of around half of the reactor core, are worse than the fallout from a one megaton nuclear bomb! This is because a reactor as part of its normal operation accumulates a large inventory of long lived radioactive isotopes.



Chernobyl was the worst nuclear plant accident we have had so far. As time goes on we should expect additional accidents, and now, with the reawakening of the realisation of the possibility of deliberate attack or sabotage, nuclear plant safety and risk is a key issue for modern society to seriously re-consider. The nuclear industry was trying to dismiss some of the effects of the Chernobyl release as "radiation phobia" as early as 1987 - that sort of loose talk is nothing new. However, the OECD themselves estimated the excess deaths due to Chernobyl radiation (in the Russian area) as around 670. Other estimates

come up with figures towards the 5000 mark. This latest UN report (page 17) states that numbers of people designated as "permanently disabled" by Chernobyl now total 91,219 (2001 figure).

Applying the Chernobyl disaster to a nuclear plant in the UK would result in evacuation areas some 170 miles downwind and 60 miles across, or circular radiation evacuation zones of say 100 km (62 miles) across. However the fallout pattern would not be that tidy and could involve almost anywhere in the UK. Imagine such an area superimposed on the UK from one of over a dozen operating nuclear plants and the scale of the problem for a small island such as the UK is starkly visible and could require the evacuation of hundreds of thousands of people for over a year (to where?).

Would anyone dare to suggest that if such a large number of people in the UK or perhaps the US felt "illness" as a result of this huge disruption, that

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this should be attributed to some kind of radiation "phobia"? That would be patronising in the extreme. Just imagine the lawsuits for damages. To suggest somehow that it would be better NOT to evacuate people is quite absurd.

In today's society you simply could not make people stay and they would have perfectly justifiable reasons for demanding to be evacuated and would have a prima facie case for claims for huge damages.

Nuclear plants - and even more so nuclear reprocessing plants such as Sellafield and Cap de la Hague on the North French coast, offer us benefits (electricity), at a cost and at a risk. The BNFL fiasco has shown very clearly that nuclear power is not only more expensive (due to massive decommissioning costs) but is also uninsurable by the private sector.

Turning to risk, a nuclear release such as Chernobyl has always been possible, it has just been thought so extremely unlikely as to not be worth planning for. The planes striking the twin towers should have changed that thinking for good.

The evacuation areas outlined above could apply to a successful act of sabotage of a nuclear plant. Deliberate sabotage or attack (and you don't need to crash a plane on a plant - there are lots of other very nasty sabotage scenarios which the nuclear industry are well aware of) could result in releases equivalent to a "Chernobyl" or in the case of a reprocessing plant such as Sellafield something up to 50 times worse and evacuation areas 7 times the length or diameter (see p1). The French have taken this threat very

seriously and have deployed Crotale anti-aircraft missiles around their plant at Cap de la Hague - there is no similar approach being taken in the UK. And as reported only two weeks ago, as Sellafield is very near normal flight paths, a diversion to impact upon unprotected high level waste storage areas would be a matter of minutes - before any scrambled fighter plane could arrive.



In SGR we promote the appropriate uses of science and technology for an open and more fair society. As long ago as 1976, the Flowers Royal Commission on nuclear power concluded that nuclear safety required levels of security and secrecy that were in conflict with a democratic society. In 1981, Joseph Rotblat, now Nobel Laureate wrote in "Nuclear Radiation in Warfare" of the grave dangers of terrorist attack upon a nuclear plant.

Do we have to wait for another disaster, this time engineered deliberately or perhaps another

"normal" accident, before we phase out nuclear power and urgently introduce low risk, low cost and environmentally beneficial renewable energy such as wind farms, solar, tide and wave energy? And other solutions to use energy more efficiently such as dispersed combined heat and power plants to replace polluting and wasteful centralised conventional electricity generation, more efficient public transport, better home insulation?

The other big international benefit on top of really dealing with the threat of devastating global climate change, is that gradually we would become less dependent upon on oil supplies controlled by potentially unstable states and thus increase energy security. We would also deal with a major contributor to world injustice - the primary use of the global atmosphere as a carbon dioxide dump by the US and the industrialised countries.

We have the technology, let's use it properly.

*Phillip Webber is Vice-Chair of SGR*

*PhilW@sgr.org.uk*

*Footnote: Only one letter (January 13) was published by the Observer in response to the original article. This was from the main author of the UN report Patrick Gray who made it clear that Anthony Browne's article was a "wholly misleading impression of the study's findings". Patrick Gray went on to say that what is needed is "a balanced and scientifically grounded debate on the implications of Chernobyl for humanity".*

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## US Policy Responsible for Nuclear Proliferation

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### John Moore

There is increasing international concern that America's controversial missile defence policy, a counter proliferation policy, may lead to the further proliferation of missile and nuclear weapon capabilities to more countries - the very developments the policy is designed to counter. It is likely that Russia and/or China will modify or expand their strategic nuclear missile systems to have the

capability of penetrating a United States missile defence shield; and, like India and Pakistan, hitherto non-nuclear weapon states may perceive from these developments that nuclear weapons still have some value. So the post-Cold War gains of nuclear arsenal reductions, made during the 1990s, are likely to be slowed or even reversed.

In respect of treaty commitments, these gains are already looking fragile. President Bush has indicated that, in order to be free to explore the development of a wide range of missile defence systems, the United States will, at some time, revoke its Anti-Ballistic Missile treaty with Russia. This will have knock-on effects on other nuclear arms control

understandings with Russia. In particular, ratification of the START 2 treaty by the Russian Duma in 2000 was made contingent upon American ratification of agreements limiting missile defence systems; and neither President Bush nor the Congress are in any mood to ratify arms control agreements made during the Clinton administration, as seen by the US Senate's decision in 1999 not to ratify the Comprehensive Test-Ban Treaty (CTBT).

Nevertheless, the US administration has stated that it does not intend resuming nuclear weapon tests; although it does have a "Stockpile Stewardship Program" designed to keep its weapons "in good working order". All other nuclear weapon states have agreed to be bound by the CTBT; and India and Pakistan are currently observing their own moratoria on nuclear testing. Not being able to test their weapons is thought to be a major constraint on the ability of nuclear weapon states to design new weapons. The CTBT is thus considered to be an instrument limiting "vertical" proliferation, as well as the "horizontal" proliferation of nuclear weapons to new countries.

However, closer examination of American developments during the 1990s – the Clinton era – show that, despite perceived gains made in nuclear arms control, the decade did see further (vertical) US nuclear proliferation in terms of new weapon designs and new posited uses for nuclear weapons. These changes seem likely to quicken rather than be retarded under Bush's presidency, although it is also likely that the United States will make further numerical cuts in its vast nuclear arsenal, a relic of the Cold War.

These qualitative "improvements" in America's nuclear weapons were initiated after the end of the Cold War, when defence planners began looking for new scenarios under which nuclear weapons could be used. US nuclear weapons researchers began exploring the use of small nuclear explosives for destroying hardened underground targets and/or chemical and biological weapon manufacturing facilities or storage depots. The most significant product of this research into "mini-nukes" is the B61-11 warhead. In 1994

Congress enacted legislation limiting such research, but loopholes were left allowing for modification of existing warheads.

In 1996, against Iraq, and 1998, against Libya, US defence department officials hinted at the possible use of the B61-11 warhead against underground chemical or biological weapon plants or stocks. Although both the 1996 and 1998 threats were later disavowed, or "clarified", in essence the damage had been done; and arguably the pattern of threat and retraction is itself a tactic, part of the intentional ambiguity of US nuclear weapons policy. The stated policy, reaffirmed during the 2000 Non-proliferation Treaty Review Conference, is that American nuclear weapons would only be used against another nuclear weapon state (NWS) or a state in alliance with a NWS; but ambiguous statements made during the 1991 "Desert Storm" war with Iraq and subsequently suggest that America may walk away from this undertaking, just as it is abandoning its treaty obligations.

These developments in America's nuclear weapons technology and doctrine may be summarised by quoting from a recent paper by Andrew M Lichterman<sup>1</sup>:

*The end result may be a multipolar arms race of unprecedented complexity, with the US deploying an array of exotic new "conventional" weapons, along with a smaller, modernized nuclear arsenal on long-range, more accurate, and stealthier delivery systems, with a number of other nations resuming or intensifying weapons development in an effort to keep up ... other militaries will demand expanded weapons programs to offset the possibility of an insurmountable US advantage, and the conditions for a renewed arms race are in place.*

*The continued pursuit of high-tech military dominance by the United States also provides the militaries of a number of other states with arguments for either keeping or obtaining weapons of mass destruction and the means for their delivery. The modernization of enormous post-Cold War nuclear forces by a state whose wealth and*

*power dwarfs all others legitimates nuclear weapons as instruments of state power and prestige, and provides a model for others to emulate ... the militaries of states which the US views as adversaries, facing the continued refinement of long-range, stand-off weapons which appear to be lowering the political costs of violence to the United States and increasing US willingness to use force, may perhaps see weapons of mass destruction as a cheap "equalizer". This would in turn fulfil the prophecies of Pentagon contingency planners who then can argue for yet more "counterproliferation" weapons, whether conventional or nuclear.*

*Within this broader context, it is clear that US programs aimed at developing low-yield nuclear weapons concepts make the world less safe, not more. Researching ways to use nuclear weapons against chemical and biological weapons systems, command and control facilities, and other targets, manifests a dangerous drift towards a lower threshold of nuclear weapons use, including possible use against states without nuclear weapons. These efforts also make disarmament efforts far more difficult by calling into question the sincerity of the US commitment to its Nuclear Non-proliferation Treaty obligation ...*

*John Moore is a Lecturer in Mathematics at Leeds College of Technology and an SGR member*

1. "Looking for New Ways to Use Nuclear Weapons: US Counter-proliferation Programs, Weapons Effects Research, and 'Mini-Nuke' Development", Western States Legal Foundation Information Bulletin, Winter 2001, pp10-11. This article relies heavily on this paper.

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# Book Reviews

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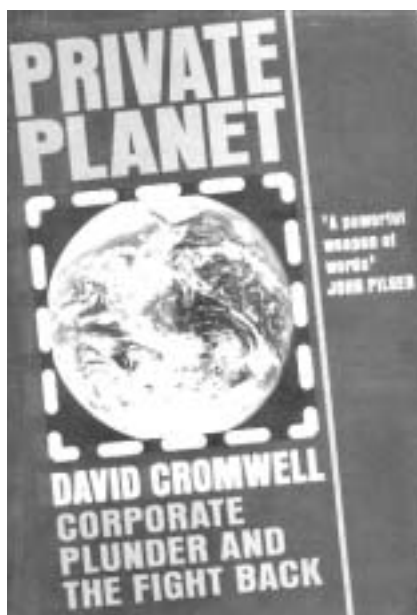
## Private Planet: Corporate Plunder and the Fight Back

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David Cromwell

Jon Carpenter Publishing, 2001,  
242 pp., £12.99

At bookshops and available direct  
from Jon Carpenter Publishing,  
Alder House, Market Street,  
Charlbury, OX7 3PH, tel. 01689  
870437.



As I began reading this book I found myself making comparisons with George Monbiot's "Captive State: The Corporate Takeover of Britain" (Macmillan, 2000). The two books deal with similar themes, but David Cromwell's offering is a broader and more ambitious attempt to address globalisation in the worldwide context. I have to say that I found *Private Planet* both a more useful and a more enjoyable read. Reasons for this include the clarity of David Cromwell's presentation and his ability to move at ease between different areas of concern whilst retaining a common critical thread.

The first two chapters deal directly with the forces driving economic globalisation and its disproportionate negative impact on the poor. David Cromwell then discusses corporate

and elite control of the media, in an analysis that essentially recapitulates Chomsky and Herman's propaganda model of the media, but is no less valid for that (David Cromwell is co-editor of Media Lens, a project aiming to address the failings of corporate media; see p9 of this issue).

The following two chapters deal with related issues of climate change and energy use. I was particularly struck by the way David Cromwell draws powerful connections between the need for renewable energy generation and for enhanced local democracy. This sort of "joined-up thinking" crops up frequently in the book, making one wonder why one hadn't made the connections before.

The penultimate two chapters are again strongly related, dealing with agriculture and land use, and with genetic engineering. The final chapter gives a potted history of the anti-globalisation movement, and provides the necessary jump-off points for readers wanting to take their concerns forward into positive action. I would stress the word positive, because throughout the book David Cromwell balances his criticisms with examples from around the world of realistic alternatives that do not compromise ecological sustainability, social justice or human rights.

Altogether it is an inspiring and timely piece of work. A measure of this book's success for me is the fact that it has remained on my desk as a campaigning resource long after the first reading.

*Patrick Nicholson*

## The Environment Agency at the Crossroads

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A briefing by the Low Level  
Radiation Campaign (4 pages).

LLRC, The Knoll, Montpelier  
Park, Llandrindod Wells, Powys  
LL1 5LW.

The basis of the LLRC's case is that the National Radiation Protection Board (NRPB) who provide the

advice which the EA rely on are using a flawed radiation response model for low doses.

LLRC sent criticisms of this model to the EA who asked the NRPB to respond as they do not have expertise of their own. A key point of controversy is the higher rates of infant leukaemia after the Chernobyl accident which apparently show higher than expected rates by factors of up to 100 times.

LLRC also criticise the NRPB for using averaged doses - for example in the case of a lung dose - rather than using risk factors which take account of the fact that particles lodge in one place giving a much larger local dose.

All of this debate is highly important for issues such as the decommissioning of Magnox nuclear power stations, the recent decision to allow the Sellafield MOX plant to go ahead and waste discharges by BNFL.

This all a highly technical area and one where such disputes are likely to continue for many years to come. One key problem in developing hazard factors for low doses of radiation is that (fairly obviously) risks are lower for lower doses and it is much more difficult to establish the effect of radiation from a host of other factors real or imagined (for example the effects of diet, genetics, viruses etc). It can also be extremely difficult to establish what the actual dose received by any one individual is. This is one of the reasons behind the LLRC's Tooth Fairy campaign where donated children's teeth can be sent into a public health research program being conducted by Pittsburg Medical School.

Ever since Nagasaki and Hiroshima, experts have been arguing about the "correct" risk dose relationship and how it should approach zero at very low doses. Chris Busby has also added a new theoretical dimension by his Second Event hypothesis where the effects of some internally ingested radioactive isotopes such as Strontium-90 decaying to Yttrium-90, and Tellurium-132 to Iodine-132 deliver a sequence of two doses of radiation to a microscopic area of the

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body thus initiating a cancer. Conventional dose risk models are based on data from radiation doses not involving ingested radioactive particles (for example through breathing or eating).

This is a highly technical and complex area. Those who wish to follow this up take a look at excellent LLRC web site <<http://www.llrc.org>>

*Philip Webber*

## **Bridging the Gap - Sustainability Research and Sectoral Integration**

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**Swedish Environmental Protection Agency, 2001, 28 pp.**

**SE-10648 Stockholm, Sweden.**

**Downloadable as a 1.9Mb pdf file from**

<<http://www.bridging.environ.se/bridgdok/bridgtid.pdf>>.

During the Swedish EU Council Presidency the Swedish government hosted "Bridging the Gap" — a two and a half day conference devoted to "sustainability research and sectoral integration". The conference was jointly organised by the Swedish Environmental Protection Agency, the EU Commission, the European Environment Agency and the EU Joint Research Centre. Held in Stockholm, from the 9th to the 11th of May 2001, the conference addressed the question of how the gap between scientific research and public policy making could be bridged. Essentially it was a call from EU policy makers to the research community for help in formulating policies to protect the environment.

Initially intended to address the question of how scientific research could contribute to sustainable development, it focused on unsustainability because of the difficulties in reaching an agreement on what constituted sustainable development. Six unsustainable trends were identified: climate change, the threat to natural resources and biodiversity, health problems, land use and transport, poverty and social exclusion, and the

"demographic problem" of a greying population.

In 26 pages the booklet *Bridging the Gap* (that is here reviewed) provides twelve summary reports of the various meetings held at the conference. The topics covered include health and environment, scientific uncertainty/precautionary principle, sustainable development and global trade, climate change, information technology and greening agriculture. Further documentation for the proceedings of the conference are available at:

<<http://www.bridging.environ.se/f-1.htm>>

The objectives of the conference were to identify research and development that needed to be done in different policy areas. A particular goal of the conference was to prepare a sixth environmental action programme for the Sixth framework programme of the European Community for research and technology and development (2002 - 2006). One of the seven research areas in this new framework will be sustainable development and global change.

Many different individuals contribute to this booklet. The single unifying theme is how sustainable development can be realized, and the difficulties that need to be overcome - whether social, political or scientific. All of these are addressed in the rich diversity of ideas and opinions are included in this booklet. The precautionary principle comes under intense scrutiny in the third chapter - too much caution can be a problem as well as too little caution. The urgent need for more scientific knowledge to inform policy is clear in the chapter discussing the environmental effects of chemicals. Quite the opposite is the case in the chapter on the environmental effect of transportation where the science is well known and the problem is the implementation of environment saving policies. In general I was encouraged to see the commitment of EU commissioners to the policy of sustainable development, and to read that publicly funded science "needs to avoid focusing on short-term wealth creation and instead look to a broad public interest model" (p. 20). It seems clear that the EU does want to establish policies for sustainable development, and is

bringing together those whose knowledge will contribute to the development of those policies.

*Richard C. Jennings teaches philosophy of science and gives various lecture courses on ethics in science at the University of Cambridge. He is also a member of the Ethics Committee of the British Computer Society.*

## **Cluster Bombs: a Case for Banning?**

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**Hugh Beach**

**ISIS Briefing Paper No. 79 (February 2001) 12 pp.**

**ISIS and Centre for Defence Studies**

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

Hugh Beach is an example of that phenomenon of our times - the ex-General (Admirals and Air Marshals are also sometimes susceptible) who has begun to have doubts about the moral direction of military action and policy. His major recent work, in collaboration with researcher Nadine Gurr, was a critical study of Britain's development of its own nuclear weapons and continued political reliance upon them<sup>1</sup>. In the pamphlets under review he writes as a member of the governing board of the 'think tank' ISIS on two issues of our time - a narrower one of the legality, actual or desirable, of cluster bombs, and a broader one (see review below) of the problems involved in determining the legality of any conventional weapon under international humanitarian law.

In Briefing Paper 79 he points out that cluster bombs, with their capability of spreading death and injury over a wide area of both space and (because the bomblets often fail to explode upon initial landing) time, could be seen as falling into the same category as variously banned devices such as explosive and dum-dum bullets. They also have some similarities to anti-personnel mines, banned under the Ottawa convention (1997). In Laos about 9 million unexploded bomblets from the US campaign during the Vietnam war, have injured or killed over 10000 people, one third of them children.

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The International Committee of the Red Cross has proposed severe limitations on their use, which Beach endorses. But, despite his critique of the MOD defence of these weapons, and thinking perhaps like the Master-General of the Ordnance which he once was, he refuses to call for an outright ban on such often effective weapons, which rather weakens the punch line of the pamphlet. However the cluster bomb may not be the most wicked of the devices currently available to the military and its banning, alas, would not greatly improve the humanity of modern warfare.

*Peter Nicholls*

1. Beach, H. and Gurr, N. (1999) "Flattering the Passions, or, The Bomb and Britain's Bid for a World Role." I.B.Tauris Publishers (London, UK).

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## **Qualitative Arms Control and International Humanitarian Law Applicable to Armed Conflict**

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**Hugh Beach**

**ISIS Policy Paper no. 1 (July 2001)  
8 pp.**

**Other details as above.**

Policy Paper 1 was intended as a contribution to the debate at the review conference on 'certain' conventional weapons (December 2001). It deals with the classical problems of sustaining some kind of law in war and in the preparation for it (*jus in bello* and *jus ad bellum*). It includes some fascinating quotes<sup>1</sup> which severely limit the military options available to a US Naval Commander. The Geneva Conventions (1864-1949) have been updated with additional protocols in 1977 defining legal methods of war. The later 1980 UN Convention (CCW) contains four more specific protocols, against certain types of mine, against some uses of incendiaries and against laser-blinding and X-ray undetectable fragmenting weapons. The UK ratified the 1977 protocols in 1998. The US is not a full

party to either the 1977 protocols or the 1980 CCW. Hugh Beach thinks (seemingly rather disloyally) that nevertheless the US "is probably the most scrupulous nation in the world about applying (such) elements". Some of Donald Rumsfeld's recent comments leave the reviewer less confident of this although he was heartened by the story of the capture, removal and subsequent release of the Afghani oil truck drivers before and after the aerial destruction of their vehicles - a story that may well be true because it came from the drivers themselves, complaining about the loss of the trucks upon their return to Pakistan.

The world is not completely without hope. But progress will take time.

*Peter Nicholls*

1. US Department of the Navy (1995) Commander's Handbook on the Law of Naval Operations. NWP 1-14M. (Norfolk, VA, USA).

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## **The Biological Weapons Convention Protocol: Politics, Science and Industry.**

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**Henrietta Wilson**

**Vertic Research Report No. 2  
(December 2001) 36 pp.**

**Available from [www.vertic.org](http://www.vertic.org) or  
Vertic, Baird Ho., 15-17, St. Cross  
St., London, EC1N 8UW.**

This report appears at a critical juncture - following the collapse of the BWC talks in December last, after the US indicated its unwillingness to continue support for the so-called Ad Hoc Group (AHG) that was trying to develop mechanisms for BW verification - a "protocol" to follow the convention. The report itself is based upon research done at the 17<sup>th</sup> Session of the AHG, two years ago. Produced in an elegant printed format, it deals with the politics, the science and the industrial context of the struggle to put teeth into a BWC signed as long ago as 1972 and ratified by most States party<sup>1</sup> in the years immediately thereafter (by the USA itself in 1975).

A possible analogue for the much more difficult to achieve Nuclear

Weapons Convention, the BWC gets a fair amount of attention at peace and other conferences. The Hague Appeal for Peace meeting (May 1999) had a relevant session<sup>2</sup>. The UK Royal Society held a significant discussion on the issues the same year<sup>3</sup>. The 8<sup>th</sup> Report of the UK Commons Foreign Affairs Committee<sup>4</sup> dealt at some length with CBW issues and indicated BW as an area where the UK might exert some pressure upon the USA - but so far this suggestion has either not been acted upon or any action has been ineffective. A key difference between the UK and the USA has been the positions taken by the pharmaceutical companies of the two countries. The UK pharmaceutical industry perceives little threat to commercial secrecy from BW inspections; the US industry does see a threat.

Henrietta Wilson's account of the currently successful pressures by representatives of the latter, "PhRMA" (Pharmaceutical Research and Manufacturers of America), brings sadly to the reviewer's mind the sinister actions of the "pharmas" in Le Carré's gripping but depressing novel<sup>5</sup>. The price of living with a private industry making profit out of human suffering, or at least the alleviation of that suffering, is high. Events subsequent to the report under review are tracked by Jenni Rissanen of Acronym<sup>6</sup>. Despite all the NGO's determination to secure US and international support for a binding protocol, NGO's that included representations made from within the US itself (University of Michigan, Federation of American Scientists, 20/20 Vision), the US delegation refused further support to the AHG, criticised other members of the committee for their supposed failures to conform to the BWC, and precipitated the collapse of the talks.

Henrietta Wilson's analysis provides the background needed to understand all this. It enables us to see the politics and the economics behind the US intransigence and some of the military difficulties involved. Ironically the US has not only been one of the few countries to have engaged in mass vaccination of parts of its armed forces against anthrax<sup>1</sup> - action bringing with it two types of problem, the negative clinical sequelae in some susceptible vaccinees and the

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suspicion that dogs any army that defends its soldiers against a known threat, that it may be planning the use of that threat itself - but it is also the only one to have suffered a deliberate BW attack involving anthrax in its postal system.

Keep the booklet on the 'Peace' shelf of your library and look forward to what we must hope will be a more positive follow-up booklet in a few years' time. In between we must trust that no-one again contracts deliberately spread anthrax or any similar disease. Keep your fingers crossed.

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*Peter Nicholls*

1. Stockholm International Peace Research Institute (2001). SIPRI yearbook 2001: armaments, disarmament and national security. Solna (Sweden) and Oxford University Press (Oxford, UK).
2. Sidel, V. (1999). The Implications of an Expanding US Biological Defense program (HAP Conference session on 'Biological disarmament: the agenda for the next century'). Hague Appeal for Peace, The Hague, Netherlands.

3. Royal Society (2000). Measures for controlling the threat from biological weapons (document 05/00), London UK.
  4. Foreign Affairs Committee (2000). 8th. Report "Weapons of Mass Destruction". House of Commons session 1999-2000. HMSO, London, UK.
  5. Le Carré, J. (2001). The Constant Gardener (Coronet Press).
  6. Rissanen, J. (2001). BWC Review Conference Bulletins (Nov-Dec). Acronym Institute, London, UK.
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## Conference Reviews

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### Human Cloning Anyone?

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**Public debate on the ethics of human cloning has been sparse, even in the Houses of Parliament. Angela Ryan recounts some of the arguments from a recent debate and questions: Why bother with science that is mired in risk and dubious morality, especially when there are more promising alternatives?**

23rd Jan 2002: The Clore Lecture Theatre, Imperial College London, was filled to capacity as the public took their seats to debate human cloning. Dr Antony Grayling, philosopher at Birkbeck College, and John Gillott of the Genetic Interest Group spoke for the motion; and Peter Garrett, Director of LIFE, and Bruno Quintavalle of the Pro-Life Alliance were against it.

Antony Grayling said he sees no moral problem with human cloning, but one must draw a distinction between therapeutic cloning and reproductive cloning. Reproductive cloning cannot be justified due to practical difficulties but in principle, its benefits can be seen in relation to therapeutic cloning, which "aims to reduce suffering and is at one with medicine" he said.

Grayling claimed "a human clone is nothing more than a time delayed twin", and infertile couples could clone themselves, producing a twin of

either parent, depending on what sex they want. Human cloning is much like any other medical application, hence religious arguments against it are flawed.

Peter Garrett questioned the psychodynamics of a cloned family and the risk of mother falling in love with a younger version of her husband?

Grayling answered "women are far too sensible for that", but conceded cloning would restructure the family.

Garrett then took the stand and argued that the power between generations is crucial to the workings of society. He said therapeutic cloning is being promoted as a bridge to reproductive cloning and "it is bad in its own right" to use the unborn child as a means to an end. The high failure rate of cloning experiments signify the science is seriously flawed and moreover, it is not possible to determine whether a cloned embryonic stem cell will differentiate properly, until it is too late and already implanted in the patient. Safer, more promising alternatives are now available through adult stem cells.

John Gillot was next to speak and argued the scientific establishment should be allowed to proceed with human cloning if they want to. Things will eventually even out, especially regarding the import and export of cloned embryonic stem cells and different political and cultural climates will explore all the possibilities.

He acknowledged public fear of things slipping out of control but added "groups like Pugwash are currently campaigning for scientists to take an oath, much like the Hippocratic oath for doctors, and this will safeguard against the horrors".

In response, Bruno Quintavalle agreed for the need to find common ground and prevent the debate from polarising. But he is concerned that therapeutic cloning is diverting public funds away from more promising research. It has been reported that private investors are not backing cloning for adult stem cells may provide more effective treatments faster.

Quintavalle said that human cloning is an abuse and exploitation of women, turning human eggs and the human uterus into commodities. In order to cure one patient with diabetes, millions of eggs would have to be extracted from thousands of women, via invasive surgery that requires heavy doses of hormones, endangering the health of donors.

It has been shown that adult stem cells are easy to isolate, store in the laboratory and proliferate in culture and moreover they can be turned into any tissue type. "Cloning is dangerous!" he exclaimed. It took 277 attempts to get "Dolly" the sheep and problems occur right from the outset and cannot be detected at the blastocyte stage. He concluded "human therapeutic cloning is an assault on 'person-hood', and the UK

government is out on a limb, being one of the few governments not to sign provisions for banning it. Scientists in Germany would face imprisonment if they attempted the same."

Questions from the floor included "wouldn't giving birth to your husband be a sort of warped form of incest?" The audience went on to express further distaste for human cloning, as well as adding some important scientific arguments against it.

It was pointed out that a human clone would not be equivalent to a biological twin - it would have two mothers as the mitochondrial DNA derives from the donated egg. Also, the importance of sexual reproduction was highlighted and the fact that we stopped doing asexual reproduction billions of years ago - wouldn't it be stupid to devolve now?.

It was suggested that the wider implications of cloning have not yet made an impact. Cloning demonstrates the extent to which DNA is effected by the cytoplasm and environment. In short, it was argued that the paradigm of genetic determinism and its more sinister aspect, eugenics - the idea of "better than / less than" humans and genes - has collapsed forever in light of cloning. In other words, DNA [and mankind] is inextricable from the environment.

Philosopher, Mary Midgeley was mentioned and her suggestion that we check the "yuck!" factor of genetics and question motives. Behind cloning lies the "patents on life" debate, and being that industry is determined to turn the whole of the living realms into a shop, included gametes and the wombs of women, proper ethical debate should be paramount for governments all around the world.

For further information:

Dr Anthony Grayling, Philosophy Department, Birkbeck College,  
<<http://www.acgrayling.com>>

John Gillott, Policy Officer, The Genetic Interest Group  
<<http://www.gig.org.uk>>

Peter Garrett, Research and Education Director, LIFE  
<<http://www.lifeuk.org>>

Bruno Quintavalle, Director, Pro-Life Alliance <<http://www.prolife.org.uk>>

Angela Ryan

## Student Pugwash Conference

**Young people call for a rethink on national missile defence, tackling the root causes of terrorism, and including ethics in education.**

34 young people (from Britain and several other countries) met for the first UK Student Pugwash conference at Wadham College in Oxford on Dec. 15-17, 2001. In the spirit of Pugwash Conferences on Science and World Affairs, we discussed issues of global importance, particularly where science has an impact on society. These are mostly interrelated problems, or otherwise known as problematiques, caused by inequities of various sorts (not just material), as Prof. John Ziman explained in his talk. Some aspects of World Affairs were elucidated by General Sir Hugh Beach talking about the declining role of NATO as a defence organisation, while becoming rather more important politically, and the prospect of eventual Russian membership. This was contrasted with the weaker and much less visible OSCE. Sir Timothy Garden gave a fascinating overview of the hotspots around the world and the rather bleak prospects for the coming year; only the European Union seems to give some hope.

Three working groups tackled the issues of missile defence, terrorism and genetics; and more details about the conference, such as the working group reports as well as the talks, can be found on the website:

<<http://www.student-pugwash.org/uk/spuk-conference.html>>

One of the working groups discussed the potential negative consequences of US national missile defence. If some sort of missile defence system is inevitable, a multilateral (as opposed to US national) theatre missile defence system was recommended as an alternative. This issue will be pursued further and will be taken up with relevant decision makers.

The working group on terrorism came to the conclusion that the root causes need to be tackled. These are usually related to inequities (part of a problematique), and often preceded by an arbitrary division of people. For the short term, several suggestions were made trying to strike a balance between security and freedom.

The working group on genetics discussed genetic discrimination, cloning, designer babies, xenotransplantations and GMO. It was agreed that ethics should be included in education, for example by introducing courses to teach the tools necessary for ethical analysis and debate.

On the last day the Student conference joined the British Pugwash meeting at the Royal Society in London to discuss "The Answer to Global Warming: A Plague of Windmills or Nuclear Proliferation?" (very timely with the government energy review being due). Dr. John Hassard pointed out the threats of global warming and emphasized that we should consider the worst case scenario, as we did in the Cold War, making a case for putting in just as much effort and resources. Prof. Jack Harris explained that nuclear power could 'paradoxically' help to reduce the threat of proliferation, as stockpiles of highly enriched uranium can be reduced by using them as fuel in civil reactors. Prof. Dennis Anderson, on the other hand, asked the question 'What's wrong with the alternatives?' and made a strong case for increased investment in renewable energies.

This first UK conference was organised by the Student Pugwash groups at Imperial College, Oxford and Cambridge, and generated interest to establish groups elsewhere as well. If you are interested to get involved, please feel free to contact us.

Carsten Rohr  
<[c.rohr@ic.ac.uk](mailto:c.rohr@ic.ac.uk)>

Student/Young Pugwash UK  
Email: <[uk@student-pugwash.org](mailto:uk@student-pugwash.org)>  
Website: <<http://www.student-pugwash.org/uk>>

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# Letters

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## How Should UK Science be Funded?

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While I enjoyed Stuart Parkinson's article in the last issue (How Should UK Science be Funded) one point missed, that would perhaps have hit home to a few, was the fact that so many discoveries, which at the time seemed of little practical benefit, have had enormous consequences for industry and society. The two discoveries that spring to mind immediately are chaos theory and evolution. I wonder if Darwin had approached an industry-biased NERC/ESPRC with what was then such a far-fetched and unpopular theory then, whether he would have received anything at all!

One other point that I always think is worth making is that society needs experts in seemingly ivory-tower areas of science in the same way that it needs artists. Our society will be so much the poorer when all science is directed by practical considerations. Open-ended science is a long-term investment that society should not shirk.

*Dr Magnus Johnson  
Lecturer in Marine Biology & Reach-  
out Co-ordinator Scarborough Centre  
for Coastal Studies (SCCS),  
University of Hull*

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## Comparing Population Explosions in the Afghan Region and the USA

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Many Western politicians have called for a campaign against global poverty, once the present conflict in Afghanistan is over. Such calls may improve the feel good factor of voters who are, by proxy, supporting the bombing of Afghanistan. But surely we need to have some foundation of reality for these global aspirations. Let us start by limiting them to tackling only Afghanistan and its adjacent

countries, namely Iran, Turkmenistan, Uzbekistan, Tajikistan and Pakistan.

In the year 2000, the combined population of these nations was 281 million expanding at 2.3% per year<sup>1</sup>. So over twenty years - perhaps a reasonable time to bring peace to Afghanistan, clear it of mines and rebuild its infrastructure - the population of the region will have expanded by 160 million. That is equivalent to the population which exists in the exceptionally fertile lands of Austria, Belgium, France and Germany<sup>1</sup>.

So while we are clearing the mines and rebuilding the infrastructure of Afghanistan, we will need, according to this circumscribed ambition, to help to improve the lives of the existing 281 million, while building facilities for another 160 million people. Both for the UK and USA, this looks like wishful thinking, in view of the many legitimate demands that voters have for an improvement in the life of weaker members of their own societies.

The West certainly has a responsibility for clearing the mines in Afghanistan, and helping their people to rebuild a country which we have played a part in destroying; but apart from that, the most useful thing we can do is to reiterate, by such simple calculations as those above, that if the region allows its population to expand along present trends, there will be no chance of improving the overall quality of life. In giving this advice, the West need not be seen as seeking to impose non-Islamic ideas. There is one Muslim nation, Iran, amongst those listed above, which has reduced the 1989 total fertility rate of 5.2 children per women, to 2.6 in 1997; moreover, Iran aims to reach the stabilising replacement rate of 2.1 in 2004 (due to age structure, there will still be a long delay before the population actually stabilises)<sup>2</sup>. In summary, while it is possible for these nations to avoid a deterioration in their situation, the achievement will be largely a result of their own efforts in controlling population growth.

Let us now turn to the USA which, by odd coincidence, had, in 2000, the same population, 281 million, as the Afghan region. Over the last three decades of the previous century, US population was increasing at 1.06% per year. At this rate, the next 20 years will see a population increase of 66 million<sup>3</sup>. If there is no decrease in the per capita emissions of carbon dioxide, and there has been no sign of that in the last decade, then this increased population will be adding another 1300 million tonnes of carbon dioxide to the atmosphere each year<sup>4</sup>. This is more than four times as much as will be added by the additional population of 160 million in the Afghan region<sup>5</sup>. Thus the population explosion in the USA is of greater danger to the world than that which is occurring in the Afghan region. A figure pointing up the danger is that if the US population continues to grow at 1.06% per year, then, without a decrease in per capita emissions, by 2050, the USA alone will be emitting more carbon dioxide than the Intergovernmental Panel on Climate Change calculates as a safe limit for the whole world<sup>6</sup>.

If the Afghan region fails to resolve its population explosion, it will be a tragedy for the region. If the US fails to solve its population explosion, it will be a tragedy for the world.

*Andrew R.B. Ferguson  
Research Co-ordinator,  
Optimum Population Trust*

### Notes

1. Extracted from the Population Reference Bureau reference sheet for mid 2000.
2. These data come from the Population Council.
3. US population increase over 20 years = 281 million x (1.0106<sup>20</sup> - 1) = 66 million
4. Data on emissions taken from Engelman et al. 2000. US emissions for 1996 shown as 5.37 tonnes carbon per person per year. So CO<sub>2</sub> emissions for 66 million people = 66 x 5.37 x 3.664 = 1299 million tonnes per year

5. Using the same data source, the mean emissions for the region work out at 1.94 tonnes CO<sub>2</sub> per person. So carbon dioxide emissions for 160 million people = 160 x 1.94 = 310 million tonnes/yr. This US emissions, over the 20 year period, is 1299/310 = 4.2 times as great.

6. US population growth 1970 to 2000 = 1.06% per year. US population in 2000 = 281.4 million. Therefore US population in 2050 would be 281 x 1.0106<sup>50</sup> = 476.7 million. US CO<sub>2</sub>

1990-2000 emission rate, fairly constant at about 19.5 tonnes/cap/yr. Therefore 2050 CO<sub>2</sub> emissions, at that rate, = 19.5 x 476.7 = 9295 million tonnes. Upper limit for the world, as recommended by IPCC (40% of 1990 emissions), 8900 million tonnes CO<sub>2</sub> a year.

#### References

Engelmann R, Cincotta RP, Dye B et al. 2000. People in the Balance. Population Action International, 1300

19th Street, NW Second Floor, Washington DC 20036, USA.

WWF, World Wide Fund for Nature International, UNEP World Conservation Monitoring Centre, Redefining Progress, Center for Sustainability Studies, 2000. *Living Planet Report 2000*, WWF, Gland, Switzerland. All calculations can be downloaded from <<http://www.rprogress.org/ef/lpr2000>>

## The Nobel Peace Prize : A Travelling Exhibition

The Peace Museum at Bradford launched an exhibition on the centenary of the Nobel Peace Prize, in October 2001, to coincide with the announcement of the then winner (the UN and Kofi Annan). Comprising 33 A2 sized laminated panels, it presents an overview of how and why Nobel started the prize and shows a range of peace prize winners. It takes a critical approach, including why there are few women winners. Also why some people did not win it but should have done (Gandhi) and others who did win it but should not have done (Kissinger). It contrasts the grassroots winners with the statesmen. It asks

what sort of peace is not covered by the prize. It asks what we as individuals can do.

A colourful mixture of text and images, including the latest winners, the exhibition has leaflets giving details of all the winners and also notes geared to primary and secondary schools.

Nobel thought that with his invention of dynamite and with other inventions, war would become so terrible that within thirty years no one would want to fight. Well.....!

To ask about borrowing the exhibition, which can be attached to walls or other surfaces, please ring The Peace Museum on 01274-754009.

Peter Nias  
The Peace Museum  
Jacob's Well  
Manchester Road  
Bradford  
BD1 5RW

### Now I Know

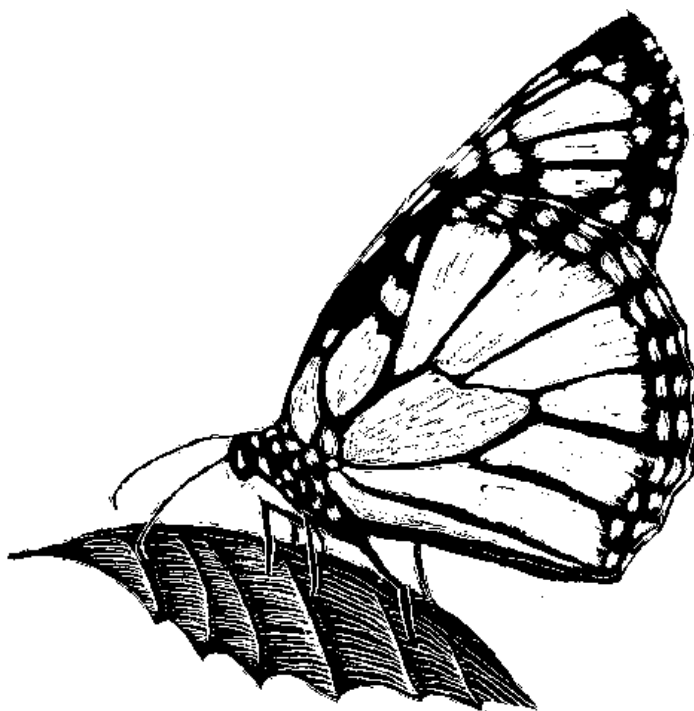
Now I know how nature is  
like putty in my hands, she's mine  
to deflower; a bride wizened  
until the thinned frame gives.

Although it may be best to ask:  
Is nature not aware her hands  
are mine? If so, she planned,  
foresaw the trick of consciousness

which says: If time exists,  
no chromosome could know the trend  
would end with homo sapiens.  
Matter mirrors itself, I think.

Such distance as there is  
from start to finish is subjective.  
The particles which underpin the seed  
foresaw the bloom. It's us that wears it.

*David Kuhrt*



From 'Spiral Bound: an Anthology of Poetry and Songs of Genes and their Engineering' (see adjacent page)

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## Gene Genie Exhibition

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### Emily Johns on an important campaigning resource for the newest round of the GM debate



*Gene Genie: making choices about genetic engineering* is a science and art exhibition which was funded in part by the Martin Ryle Trust. There are two premises to the exhibition; firstly that the public needs to be part of the decision making processes that govern the development or not of new technologies, and for this people need to be scientifically informed. Secondly that many millions of people have spent many thousands of years trying to understand the nature of life, of who we are biologically and how we as one species relate to the plants, animals and environments around us. We have inherited this mass of knowledge in a form called 'culture', much of it in the language of poetry, stories and pictures.

The lucid text panels of the exhibition lay out the basic biology needed to understand genetic engineering, and then examine some of the wider issues that arise from the technology such as medicine, bio-warfare, the feed-the-world argument, risk assessment,



environmental contamination. The exhibition argues that the debate is not merely about the ethics of genetic engineering but importantly there is a debate about the fundamental science of GM.

A cow with a mournful woman's head is suckling her calf in a dark byre – she is the product of Nestle Pharming which is putting human milk genes into cows so that they can produce human milk that can then be dried, reconstituted and put in bottles. In a delicate etching, Daedalus, in the middle of his spiral maze, looks up at Icarus, his GM fusion of boy and bird as it tumbles from the sky. The paintings and etchings that make up the visual part of the exhibition connect scientific fact with old mythology. With the coming of GM old metaphors embodied in the tales of the minotaur, of Ganesh, of Jack and the Beanstalk are made literal.

To accompany the exhibition is 'Spiral Bound: an anthology of poetry and songs of genes and their engineering' (£4 plus 50p P&P), and a booklet 'Gene Genie' containing the text of the exhibition including full references, also £4 plus 50p P+P.



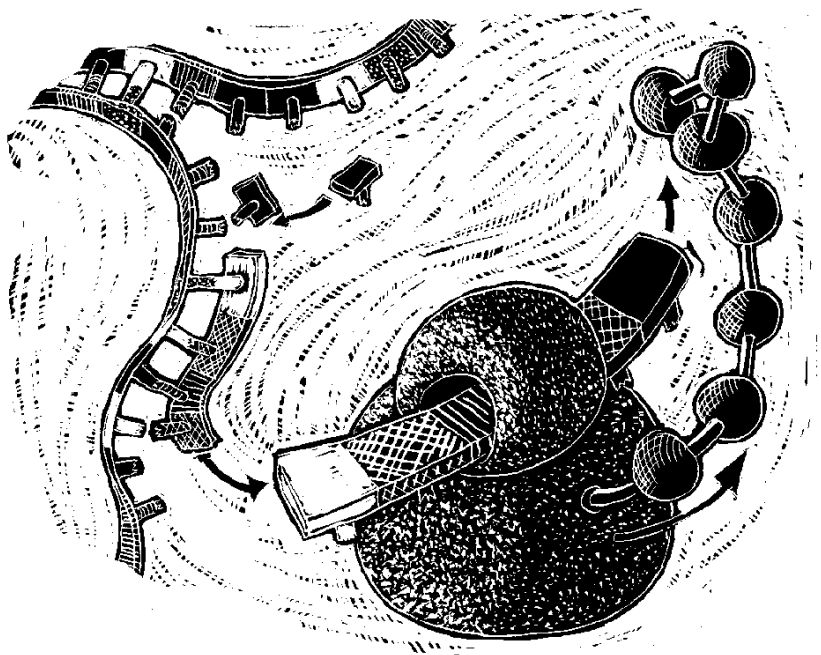
If you are interested in showing *Gene Genie* please contact Emily Johns:

Tel. 0845 458 9572  
Fax 0845 458 9571

29 Gensing Road  
St Leonards-on-Sea  
East Sussex  
TN38 0HE

<[emilyjohns@btinternet.com](mailto:emilyjohns@btinternet.com)>

All illustrations by Emily Johns



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# Events

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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 ARROW.

Tel. 020 7607 2302

8-17 March 2002

## **National Science Week**

Many events nationwide. Information from the British Association.

Tel.: 020 7973 3074

Email: [nationalscienceweek@the-ba.net](mailto:nationalscienceweek@the-ba.net)

Website: <http://www.the-ba.net>

11 March 2002

## **Risk and Society: Is Science Dangerous?**

Keynote speaker - Professor Lewis Wolpert.

6.30pm, LSE, Peacock Theatre, Houghton Street

First of four *Science and Society* public debates jointly organised by Imperial College and LSE. Further information and tickets from the LSE public lecture ticket line.

Tel.: 020 7955 6100

Email: [events@lse.ac.uk](mailto:events@lse.ac.uk)

Website: [www.lse.ac.uk/events](http://www.lse.ac.uk/events)

12 March 2002

## **The Illusion of Growth: Monetary Reform as an Essential Step towards Sustainability.**

Lecture by Richard Douthwaite organised by the Centre for Human Ecology, Edinburgh. Tickets £2.50/£3.50.

E-mail: [info@che.ac.uk](mailto:info@che.ac.uk).

12 March 2002

## **Soil Protection Strategy - Implications for the Agricultural and Environmental Sectors.**

Conference organised by the Society of Chemistry and Industry Agriculture and Environment Group, London SW1.

Conference Dept, SCI, 14-15 Belgrave Square, London SW1X 8PS.

13 March 2002

## **An Overview of BS 10175:2001 - Investigation of Potentially Contaminated Sites.**

Conference organised by the SCI Environment and Water Group. Details as above.

15 March 2002

## **Art, Science and the Public Good**

Panel discussion organised by the Royal Society on how the funding and ownership of art and science affect artistic and scientific practices.

The Tate Modern, Bankside, London SE1. Ticket only (£6/£3 concessions), available from Tate Ticketing.

Tel.: 0207 887 8888

Email: [tate.ticketing@tate.org.uk](mailto:tate.ticketing@tate.org.uk)

15 March 2002

## **Ethical Careers Fair - Bradford.**

Organised by Bradford University Department of Peace Studies. SGR has been invited to participate. If you can help with the stall or would like

further info, please contact Kate at the SGR Office (<[KateM@gn.apc.org](mailto:KateM@gn.apc.org)>).

16 March 2002

## **Brickhurst Science Fun Day**

Day of workshops on science and the environment, mainly for children, at a low impact dwelling / permaculture site near Tunbridge Wells, Kent. Supported by Martin Ryle Trust, and part of National Science Week. Booking essential.

Tel.: 01892 863941

Email: [PatrickN@sgr.org.uk](mailto:PatrickN@sgr.org.uk)

Website: <<http://www.geocities.com/seasonscience/home.html>>

19 March 2002

## **Decay & Change: Biodiversity - Where Do We Go From Here?**

Lecture by Professor Aubrey Manning organised by the Centre for Human Ecology. Details as above.

25-27 March 2002

## **Conflict Research: past, present and future**

Conflict Research Society 3 day residential conference £100/£80. High Leigh Conference Centre, Hoddesdon, Hertfordshire.

Bookings and info. from David Maxwell (Secretary), Flat 6, 68 Chaucer Road, Bedford, MK40 2AP.

Tel./Fax: 01234 352273

Email: [dmaxwell@talk21.com](mailto:dmaxwell@talk21.com)

Website:

<http://www.conflictresearchsociety.org.uk>.

21 April 2002

## **Concert for Peace**

7.30 pm Lauderdale House, Waterlow Rd., Highgate Hill, London.

Musicians Against Nuclear Arms

Tel. 020 8455 1030

## INES Meeting Bradford 23 - 26 May 2002

INES (the International Network of Scientists and Engineers for Global Responsibility) will be meeting at the Department of Peace Studies, University of Bradford from 23rd - 26th May 2002.

There will be an open meeting on 23rd and 24th May on the topic of 'The New Security Architecture after September 11th'. This is being organised by INES, but suggestions for speakers or discussion topics are welcome. Phil Webber (PhilW@sgr.ork.uk) is co-ordinating input from SGR members.

We understand that Professor Joseph Rotblat has agreed to give the keynote speech on the evening of Friday 24th May.

The INES Council meeting will take place on 25th and 26th May. This will involve discussion of INES's work over the forthcoming year, and is open for any non-INES Council members who wish to attend.

INES Office, Gutenbergerstrasse 31, 44139 Dortmund, Germany.  
Tel.: +49 231 575202  
Email: ines\_nat@t-online.de  
Website: <http://www.inesglobal.com>

23-26 May 2002

### INES Meeting

Bradford. See box on this page

14-19 July 2002

### World Civil Society Forum

Geneva, Switzerland

Tel: + 41 22 959 88 55.

E-mail: [admin@mandint.org](mailto:admin@mandint.org).

Web site:

<http://www.mandint.org/forum>

3-10 August 2002

### Stories and Strategies - Nonviolent Resistance and Social Change

War Resisters International 23rd Triennial Conference, Dublin, Ireland.

Tel: 0207 278 4040

E-mail: [triennial2002@wri-irg.org](mailto:triennial2002@wri-irg.org).

Web site:

<http://www.wri-irg.org/tri/tri02>

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

27 April 2002

### SGR AGM and Conference

Friends House, Euston Road, London.

See back page for details.

1-5 May 2002

### Summit for Survival

Washington. 15<sup>th</sup> World Congress of IPPNW and PSR. Nobel Laureates, world leaders and experts will address major challenges to health and survival in the 21<sup>st</sup> Century.

Email: [nwaller@ippnw.org](mailto:nwaller@ippnw.org)

Website: <http://www.psr.org>

# Communicating with SGR

## 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>](mailto: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>](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>](mailto:KateM@sgr.org.uk)

## Other email contact

SGR has a number of specialist email addresses [<\\_\\_\\_@sgr.org.uk>](mailto:___@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/>](http://www.sgr.org.uk/)

## Letters

Letters for inclusion in the Newsletter should be sent either by conventional mail to 'The Newsletter Editor' at the SGR address given on the back page, or by email to [<newsletter@sgr.org.uk>](mailto:newsletter@sgr.org.uk). Letters may be edited in the interests of clarity or brevity.

## 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)

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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](mailto:sgr@gn.apc.org)

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

## SGR 10th Anniversary Conference

### Can Scientists be Trusted?

**Friends Meeting House, Euston Road, London NW1**

**Saturday 27 April 2002**

Science today is at a crossroads. More and more questions are being asked about whether scientific research is 'ethical'. In a world increasingly geared towards economic globalisation, there is great pressure for scientific research to be geared towards corporate needs, often at the expense of wider social and environmental goals. Further, much existing funding of science and technology, particularly in the UK, comes from the military. And with the tragic events of 11 September, the pressure will be for this source of funding to expand.

So can scientists now be trusted to contribute to a more just and sustainable society? If not, what changes need to occur? And how can we make sure these changes are not simply PR exercises?

#### Keynote Speaker

Professor **John Ziman** FRS, Professor Emeritus of Physics, Bristol University

#### *What Does Society Need Science For?*

#### Workshops

- **How Should Science Be Funded?**

Dr Stuart Parkinson (Chair, SGR)

- **Biotechnology and the Influence of Vested Interests.**

Dr Eva Novotny (SGR)

- **Science Communication: Should Scientists Listen More?**

Convenor t.b.a.

SGR will also hold its Annual General Meeting during the conference, and copies of "An Ethical Career in Science and Technology?", the new 32-page booklet from SGR will be available.

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 (preferably in Word 97) to [<newsletter@sgr.org.uk>](mailto:newsletter@sgr.org.uk) or the postal address for SGR: see left.