



# Science for Peace

UNIVERSITY COLLEGE, UNIVERSITY OF TORONTO, TORONTO, ONT. M5S 1A1 (416) 978-6928

## Bulletin

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### President's corner

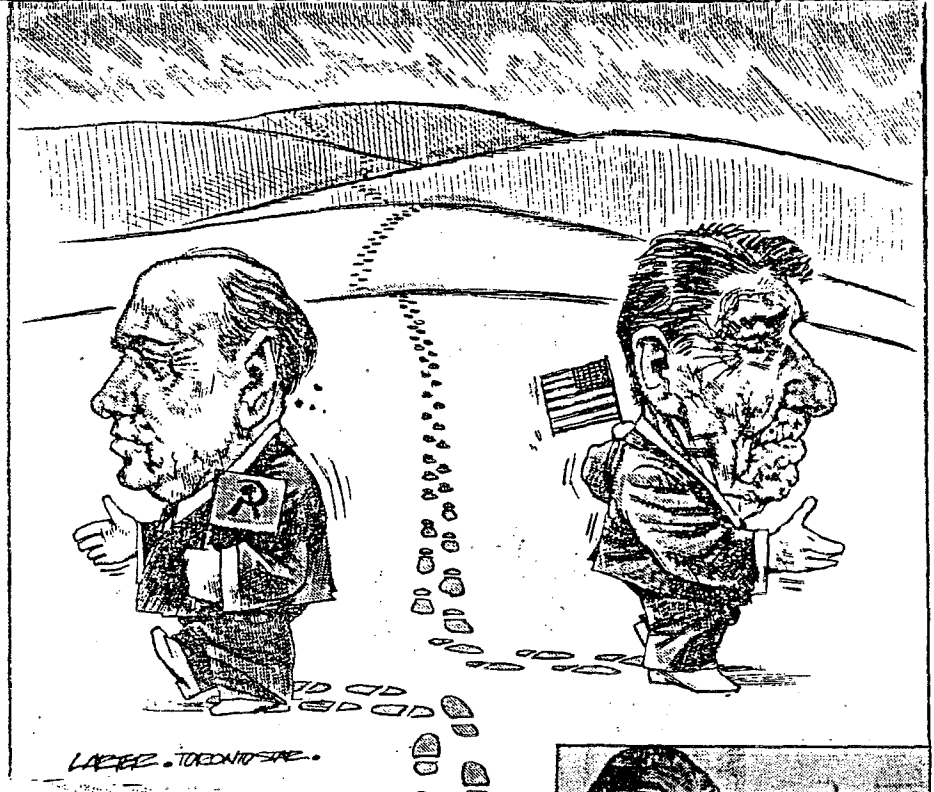
THE ENIGMA of exactly what happened at Reykjavik from a scientific peacemaking standpoint seems to revolve around the relative weight attached by President Reagan to the pursuit of his concept of a missile-proof shield against the threat of Soviet ballistic missiles, against the cost of sacrificing the opportunity for drastic reductions in the number and variety of these very missiles.

Choosing Star Wars over disarmament, President Reagan argued that this position is necessary insurance against the possibility of Soviet cheating. He clung to this position despite the expressed willingness of General Secretary Gorbachev to formalize cooperation in joint verification measures and in his evident eagerness to conclude some meaningful package of arms control with President Reagan now. One can judge that the Soviet Union prefers action now to waiting until another presidential election provides another unknown partner for negotiations two or more years later.

It would seem that Canada should press for respect for existing treaties and their restraints, notably the Salt II agreement and the ABM Treaty of 1972. We should also do everything possible to remove impediments to superpower agreements, especially in the area of verification of any test restrictions or bans, by the use of seismic technology and satellites. Canadian scientists, as well as scientists in the USA, have in large numbers called SDI dangerous to arms control as well as wasteful of resources. We must do everything possible to persuade our government that the insidious financial temptations offered by a "piece of the action" in the Star Wars programme divert Canadian research and development resources from much needed peaceful pursuits.

SCIENCE FOR PEACE EXTENDS WARMEST CONGRATULATIONS TO ROSALIE BERTELL, who has received the Right Livelihood Award, and to JOHN POLANYI, 1986 Nobel Laureate in Chemistry. They are valued members of Science for Peace. We honor them as scientists and as contributors to international peace.

- George Ignatieff



DISINFORMATION IS TRUTH

A Summit Is Not A Summit

NON-WORKING WEAPONS ARE DEFENSE

SWAPS OF CAPTIVES ARE NOT SWAPS

Failure Is Success

War Is Not War

CIA Involvement Is Not U.S. Involvement

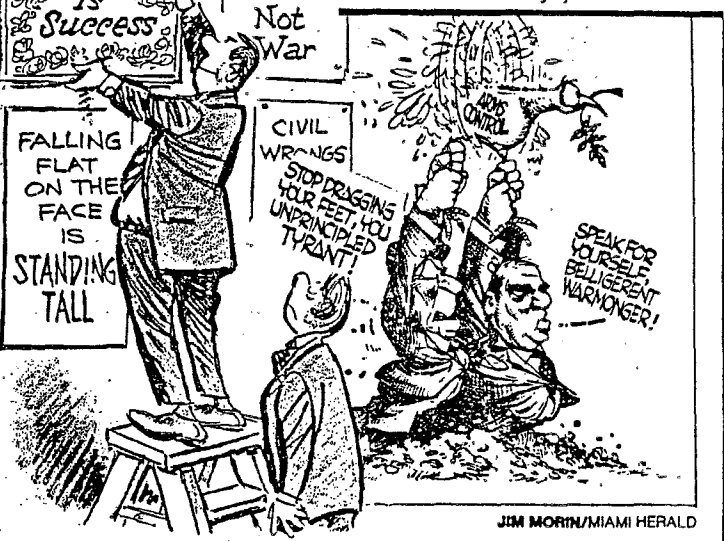
FALLING FLAT ON THE FACE IS STANDING TALL

CIVIL WRONGS STOP DRAGGING YOUR FEET YOU UNPRINCIPLED TYRANT!

DEFICIT POLICIES ARE ANTI-DEFICIT POLICIES

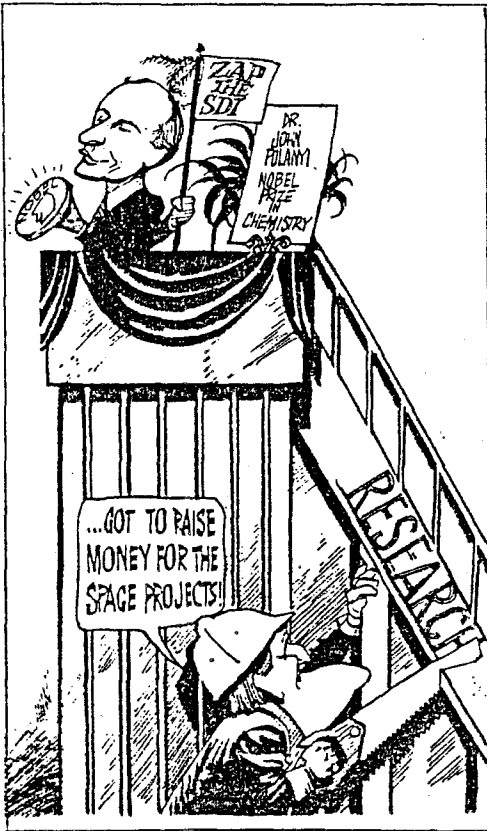


Ronald Reagan with Mikhail Gorbachev at the Reykjavik summit.



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JIM MORIN/MIAMI HERALD



## Announcing the CIIPS AWARD

-----For study and research of issues relating principally to arms control, disarmament, defence or conflict resolution, abroad or in Canada;

-----Two awards at \$25,000 each, five at \$14,000, for one year's study - award holders may reapply;

-----For first University degree holders who are citizens or landed immigrants;

-----Apply: Scholarship administration Services, Association of Universities and colleges, 151 Slater St., OTTAWA, K1P 5N1. (613)563-1236.

-----Deadline: February 1, 1987.

-----Send detailed study or research proposal, three letters of reference, complete university transcripts, and proof of citizenship or landed immigrant status.

### for your Bookshelf

Marc Pilisuk (Dept. of Applied Behavioral Sciences, U. of California, Davis), The Day Before The Day After: Psychological Accommodations to the Extinction of all Life.

*The incomprehensibility of the aftermath of a nuclear holocaust and the difficulties in mobilization of action to avoid it are examined as psychological problems.*

Available from SFP.

## Review:

Anatol Rapoport, GENERAL SYSTEM THEORY, Essential Concepts and Applications, 1986, Abacus Press, PBS P.O. 643, Cambridge, MA 02139 USA. \$34.50.

It is satisfying to discover simple laws that unify a body of knowledge. Occasionally, much to one's surprise, what serves as a unifying idea in one field carries over to another. It may be an amusing (or profound) observation to note that the equations describing a laser are structurally the same as those for convection in the atmosphere. What is much more baffling is the observation that the interplay between fear and rage in a dog can be described in the same mathematical language as the coexistence between gaseous and liquid water, or the fact that the analysis of the arms race is similar to that of the population dynamics of spiders and green rice leafhoppers. How does one identify the common threads linking such diverse systems? What tools are needed to carry out such a unification? These are some of the questions posed in the general system theory approach.

It is not always obvious what constitutes a system, especially if it evolves in time. This seemingly paradoxical notion of constancy amid change is central to the understanding of how a system preserves its identity and is the first of the three major themes of the book.

The study of how a system is organized can be couched in the language of information theory: 'The more organized a structure or process is, the less information is required to specify it completely.' The often stated idea that biological organization decreases entropy and, thus, violates the Second Law of Thermodynamics is easily refuted. The relation between thermodynamic entropy and information theory is intricate, yet clearly discussed in the book. Questions concerning goal-directedness are tackled in a systematic way through the study of decision theory, which is the focus of the third major portion of the book.

In spite of the fact that the tools of general system theory cover many branches of mathematics, not to mention physics, chemistry, biology, psychology, etc., the clarity of presentation and the simplicity of the examples make for enjoyable reading. The book is liberally sprinkled with amusing examples: the stochastic process leading to an almost sensible English sentence, the exorcism of Maxwell's demon, an unusual look at a game of chess, and so on. I highly recommend this book for either desk or armchair reading.

- Raymond Kapral

## Newsorthy

From the October, 1986 NOTICES OF THE American Mathematical Society:

"The Department of Defense (DOD) has established a new program called the University Research Initiative (URI) which is designed to strengthen the ability of universities to conduct research and educate graduate and undergraduate students in areas important to national defense."

- Allyn Jackson

### DOD FUNDING IN MATHEMATICS:

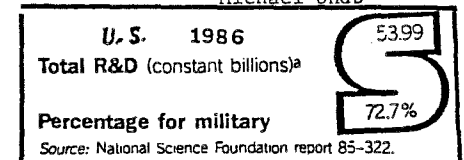
"The good part is that a lot of deserving work in mathematics and dynamical systems in particular will now be supported. The bad part is that the CIA and the DOD are doing the supporting."

"I think the Reagan government has been escalating the arms race enormously, that the 'star wars' initiative is very dangerous and wasteful, and that DARPA-CIA funding forms a continuum with SDI research."

"Defense agencies are not in the business of promoting free and open exchange of information. DOD will have to defend the legitimacy of its math program sometime if the program is to continue. I think that legitimacy will have to be in the form of actual technology transfers to DOD or defense related industries. Ultimately the work supported by these grants will shift toward applications in DOD's interests."

"Work tends to follow money. Over the long run, will DOD funds provide additional support for mathematics, or will they provide a competitive market for mathematical talent that will redirect it to narrow goals?"

-Michael Shub



Paul Cappon, Centre for Nuclear Disarmament and Community Health, Montreal, and Frederick Lowy, Dean of Medicine, University of Toronto, are among 10 prominent Canadian doctors touring the Soviet Union from Oct. 16-30. Plans were to be made for further medical exchanges between the two countries.

J. Van Stolk, Dorothy Goresky and John Thompson are planning the AGM and board meeting for PSR for March 6 - 8 in London, Ontario.

The next conference on PSR's horizons is Montreal '88's HEALING OUR PLANET. Paul Cappon will chair the local organizing committee.

Lloyd Etheredge, Nuclear Deterrence Without the Rationality Assumption, a discussion paper prepared for the Int'l Security and Arms Control Seminar, Yale Univ., Oct. 9, 1986.

Available from SFP.



Rosalie Bertell  
Scientist for Peace

## Editorial

Sister Rosalie Bertell, director of the International Institute of Concern for Public Health, will receive the 1986 Right Livelihood Award in the Swedish Parliament Dec 8. The award is for her "vision and work forming an essential contribution to making life more whole, healing our planet and uplifting humanity".

Dr. Bertell, who belongs to the Grey Nuns Order, argues for setting our values straight, for telling the truth and creating equality among people: "We are at a crisis. The outcome will either be a breakdown or a breakthrough. I plead that we break through into a new way of life."



John Polanyi, Scientist for Peace

SCIENCE FOR PEACE has special reason to rejoice in the award of the Nobel Prize in Chemistry to Professor John Polanyi of the University of Toronto. This is the highest honor that can be awarded a member of the world's scientific community. John Polanyi has combined a record of being a pioneer in research into the molecular motions in chemical reactions with being one of the most effective and outstanding champions of the cause of peace on the international as well as the national stage. As one of the founding members of Science for Peace, he has consistently urged resisting the financial temptations of becoming involved in the military applications of scientific discoveries.

John Polanyi's work helped him lay the scientific foundation for laser technology. Lasers has become practically a household word, having been publicized as a key to extending military operations into space. John Polanyi foresaw this misapplication of science and warned against using laser technology for Star Wars. Einstein, too, warned against military uses of his Nobel Prize winning work, but only when the atomic bomb was already in production.

Today any scientist who is in a position to extend the horizon of human knowledge faces the same dilemma. How can he guard against the terrible misuse of his discoveries? Should he, for fear of such misuse, not pursue a line of research which, he has reason to suppose, can possibly lead to production of more horrendous weapons? There is no way of foretelling to what uses what scientific discoveries can lead. When Einstein hit upon the resolution of the paradox generated by the results of the Michaelson-Morley experiment, he could not have foreseen a chain of events that would lead from this insight into the nature of space and time to Hiroshima and Nagasaki, and would ultimately bring humanity to the brink of extinction. Pasteur and Koch, who pioneered medical applications of microbiology, could not have foreseen its later applications to biological warfare. The same can happen to any discovery, no matter how benign or harmless it may seem.

Where should the scientist opposing the application of the death penalty to humanity draw the line? You can't stop the progress of science, so the argument goes. Most scientists would agree that you ought not stop it. The "progress" of science, it seems, is irreversible. This irreversibility gives support to the argument that "you can't disinvent" nuclear weapons and all the other lethal products of "scientific advances". Neither can you "disinvent" the guillotine, the electric chair or the gas chamber. But you can abolish the death penalty and consign the killing machines to museums.

Michael Gorbachev, for example, proposed such a line when he consented to tolerate US basic science research that might be applied to the militarization of space as long as it was confined to the laboratory. Testing military devices outside the laboratory would be prima facie evidence of hostile intent. Secrecy imposed on research findings is another giveaway of intended uses.

Wherever the line is drawn, every scientist who faces his responsibility to humanity can refuse to collaborate in the preparation of war, warn against misuses of science, expose and oppose schemes that are sure to accelerate the arms race and put a further strain on the string from which the Sword of Damocles is suspended over all of us.

SCIENCE FOR PEACE is proud to number in its ranks the two living Canadian Nobel Laureates, John Polanyi and Gerhard Herzberg, and the Canadian winner of the "Alternative Nobel Prize", Sister Rosalie Bertell. As John and Rosalie address their new world-wide audiences, they speak for us, carrying the message they helped to formulate: This should be a challenge to the rest of us to increase our efforts to influence our fellow scientists to join us in "doing" science for peace.

- George Ignatieff and Anatol Rapoport

Distinguished U of T professor and noted researcher John Polanyi has won the 1986 Nobel Prize for chemistry. He shares the award —along with the \$406,000 prize—with Dudley Herschbach from Harvard University and Yuan Lee from the University of Southern California at Berkeley.

The announcement came late last week just as Polanyi prepared for a trip to Rome to meet the Pope. The Nobel Laureate has recently been nominated to the Pontifical Academy of Sciences.

*A 1962 remark about nuclear armament:*

There is no rational way to justify the use of nuclear weapons in a general war. The reason that a threat to use such weapons is nonetheless credible is the very obvious one that, in a crisis, men frequently do not act rationally.

*Writing last year about the Strategic Defence Initiative (SDI):*

What we are today being asked to support and condone is not a prudent level of research, but a vast and deliberate acceleration in the pace of research into (anti-ballistic missile) technology on the part of the Western alliance. Such an action will — as so often in the past — succeed in provoking a response on the part of the opposing side, which will then be represented as confirming the need for the original step.

All this would be merely cause for the customary anguish over human folly, were it not for the fact that we are dealing here with a matter of unaccustomed gravity.

Even a suggestion that one super-power may be able to degrade the effectiveness of its opponent's nuclear arsenal can be depended on to put an end to all thought of disarmament. Each side will plan for the possibility that the other could mount a partial defence by increasing its own offensive capabilities.

The U.S. Government issued an invitation to Canada to participate in SDI research not because it is in need of our scientific and technical assistance. The intention was to obtain, if possible, a political vote of confidence in SDI. That we cannot, in good conscience, give ...

## Newsorthy

### WHY A NETWORK OF RESEARCH DIRECTORS FOR SCIENCE FOR PEACE?

The greatest problem for previous research directors has been communication - a characteristic Canadian problem. The choice of a research director from outside the Toronto area and the suggestion that he should organize a network of associates throughout the country represent an effort to solve the communication problem and address that of over-centralization.

I think that many of you may feel 'as I do that it is difficult to define courses of action based on our scientific expertise and reputations to inform public opinion and decision makers. We are not used to handle that kind of problem. Nevertheless, if we are to advance our interests in peace and disarmament, we must organize effectively to identify issues on which we can speak with authority and in a timely fashion.

- Paul LeBlond  
Research Director

### PEACEFUL USE OF OUTER SPACE:

A Tallahassee, FLA (USA) company offering burials in outer space was charged with operating an unlicensed cemetery. The company, Celestis Group, Inc., advertised that it will launch cremated remains packed into a gold-plated, lipstick-size capsule. For \$3900 (US) the capsule would be placed in orbit around the Earth. For \$4600 the capsule would be sent to distant space.

### NEW PUBLICATION FROM PRI-DUNDAS:

Approaches to Peace Education, reports from Inter-University Workshops in Peace Education, #1 at York Univ, 1983; #2 at Brock, 1984. Compiled by Sally Curry. \$12. Send orders to PRI-Dundas, 25 Dundana Ave. Dundas, Ont. L9H 4E5

### CALL FOR PAPERS

December 10, 1986 is deadline for proposals for the annual conference programme of the Canadian Peace Research and Education Association, meeting with the Learned Societies June 4 - 7 at McMaster University, Hamilton, Ont. The proposal should provide title and a 100-word abstract of the paper to be submitted. Final papers are due March 15 and will be published in the CPREA journal: Peace Research.

Priority is given papers of CPREA members, but membership is available for presenters who have not yet joined the Society.

All correspondence and proposals should be directed to Donald W. Bryant, Programme Chair R.R. #1, 560 Bayshore Blvd. Huntsville, Ont. POA 1K0

## Chapters

### OTTAWA

Recognizing the United Nations International Year of Peace, Science for Peace is introducing a National Science Fair Award for the project that best illustrates a theme associated with the subject of Peace from Science. The prize will consist of a Certificate of Achievement and a week-long, all-expenses-paid, escorted visit to the United Nations Headquarters in New York.

Nominations for the award are invited from panels of judges at regional Science Fairs, the Canada-wide Science Fair and le Conseil de Developpement du Loisir Scientifique.

The Ottawa Chapter, which is organizing the project, reports that all preliminary work has been completed.

What needs to be done now is to contact members of Science for Peace and invite them to act as judges in Regional Fairs.

Donors to the award should make checks payable to Science for Peace and mail to the national office or to the Ottawa Chapter. A special roster of donors will be made. All contributions are tax exempt.

Co-organizers: James Neelin  
A. Mingarelli

### TORONTO

A Science for Peace Workshop on Peace Keeping Satellites, part of the City of Toronto's International Year of Peace programme, provided focus for a discussion at a St. Lawrence Centre Forum on the topic, Satellites for Peace - ISMA vs. Star Wars, Nov. 22. Specific recommendations from the workshop, presented to the Forum by Larry Morley, first director of the Canadian Centre for Remote Sensing, were

1. That Canada accept the development of satellite sensor technology and data analysis for aerospace surveillance for arms control verification as a high priority for the new Canadian space agency;

2. That Canada unilaterally initiate the use of aerospace surveillance technology for supplying the Canadian UN ground force contingent with day - night, all - weather aerial surveillance system capability;

3. That data from the French satellite SPOT and Canadian RADARSAT be used by Canadian personnel as a training ground for international arms control verification and crisis monitoring.

A full report embodying these recommendations will be presented Dec. 10 in Ottawa to the Inter-departmental Committee on Space. After that date the report will be

available to all SFP members.

- Eric Fawcett

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Toronto Chapter launches a membership drive this month after a media event Nov. 1 launching Lydia Dotto's Nuclear Winter book. Contacts at city universities are  
Toby Fletcher - Humber College  
Freda Formann - OISE  
John Sakeris - Ryerson Polytechnic  
Walter Zessner - George Brown  
Chester Sadowski - York  
Eric Fawcett - U of T.

### BROCK

- as of October 29, 1986  
George Ignatieff speaks on "The Political Framework for Disarmament at Brock University in St. Catherine's, Ontario. This Disarmament Week lecture launches a first membership drive of a new chapter - Science for Peace - Brock.

## Science for Peace

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