

# PHYSICS and SOCIETY

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PHYSICS AND SOCIETY is a quarterly newsletter of the Forum on Physics and Society, a division of the American Physical Society. The newsletter is distributed free to members of the Forum and also to physics libraries upon request. It presents news of the Forum and of the American Physical Society and provides a medium for Forum members to exchange ideas. PHYSICS AND SOCIETY also presents articles and letters on the scientific and economic health of the physics community; on the relations of physics and the physics community to government and to society, and the social responsibilities of scientists. Contributions should be sent to the Editor: John Dowling, Physics Department, Mansfield University of Pennsylvania, Mansfield, PA 16933, 717-662-4275.

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**Forum Questions for APS Candidates**

The Forum traditionally asks candidates for the APS offices of Vice-President and Councillor at large to respond to a set of questions. The following questions were constructed by Thomas Moss and John Dowling and approved by selected members of the Forum Executive Committee.

1. Concern arose last year over two "Science Pork Barrel" projects at Catholic and Columbia Universities which were given a political bypass around the normal proposal submission and review process. Now two more projects are in the works: \$7M for a supercomputer at Florida State and \$160M for a full-cell demonstration project at Georgetown. Two questions: what are your views on such projects and should the APS take a stand on the issue?

2. The Forum was initiated to discuss and deal with the interaction between physics and society. Today there is a commendable increase of interest within APS in physics and society issues as represented by the Panel on Public Affairs (POPA), Committee on Intellectual Freedom of Scientists (CIFS), International Physics Group (IPG), Committee on Status of Women (COSW), Office of Public Affairs (OPA), Committee on Opportunities in Physics (COPS), etc. What can the Forum do to help these groups communicate with each other, or what role should the Forum take?

3. On page 46 of the June 1984 issue of *Physics Today* appears a picture with the following caption: "Foreign nationals have in some instances been prohibited by the Federal government from attending scientific meetings and visiting university laboratories engaged in unclassified research." Is this an issue of concern to you? Should it be of concern to the APS?

4. The National Academy of Sciences (NAS) recently announced an indefinite postponement of a proposed NAS visit to the Soviet Union. The cancellation was due to the drastic change of events in the Sakharov case. Should the APS take an active role to effect some relief in Sakharov's circumstances?

project, I would propose the following action by the APS: a formal letter by the APS president to the two presidents of the pertinent professional societies, stating the strong opposition of the APS to science pork barreling in general and offering to lend official support to whatever action they might take to prevent these specific cases.

2. Two possible actions occur to me: (1) Inviting members of POPA, CIFS, etc. on some regular schedule to write guest-editorials in "Physics and Society"; (2) Annual meetings, chaired by the Forum's chairperson, of the chairperson (or their representatives) of POPA, etc.

3. Yes, this is of great concern to me. I accept the need for classification in certain cases. But one of the corollaries of the classification system is that unclassified material is open to everyone. Where this problem affects physicists, the APS should intervene directly. Where it affects other scientists, the APS should offer support.

4. I personally disagreed with the National Academy of Sciences decision to postpone their delegation's visit to the USSR. I would have preferred if they had gone there, thereby convincingly demonstrating the NAS's interest in improving scientific relations with the USSR and, after arrival, would have insisted on speaking -- at least by telephone -- with their Foreign Associate, Sakharov. If they would have met refusal they should have returned to the USA. I believe such a course of action would have put greater and more dramatic pressure on the Soviet authorities and had at least a slight chance of success.

Since Sakharov is a physicist the APS clearly has the responsibility to closely monitor his situation and to contribute to his support, along with the National Academy of Sciences and other organizations. The appropriate committee to propose steps to be taken by the Council is the Committee on the International Freedom of Scientists.

**Val Fitch: Candidate for Vice President, Jadwin Hall, Princeton Univ., P.O. Box 70B, Princeton, NY 08544**

No comment available at press time.

**Michael E. Fisher: Candidate for Councillor at Large, Cornell University, Baker Laboratory, Ithaca, NY 14853.**

1. The words "Science Pork Barrel" have a nasty ring; but not all barrels are tarred with the same brush! In approaching this issue my two main concerns are for the scientific strength of the United States and for the intellectual climate in which scientific research is conducted here. The first demands continuing ade-

quate funding: alas the "standard channels" do not always ensure that; the second requires a shared sense of fairness and justice in which the most scientifically worthwhile projects are the first to be supported: regrettably this also represents an ideal that cannot always be achieved. If it really proves necessary for institutions to move increasingly into the political arena to finance important and worthwhile projects, the funding should, nevertheless, be awarded in a way that demonstrates and ensures the scientific quality of the project and the justice of the support granted. I would like to see the APS consider these issues carefully and take a well-considered public stand on that basis.

2. The existence within the APS of active committees such as POPA, CIFS, COSW and others concerned with aspects of the inter-relationships between physics and society is encouraging to me and, I hope, to Forum members. Certainly the Forum should take interest in the progress made by all these committees. I do not personally see, however, that the Forum has a special role in helping these groups communicate with each other; rather, the Forum should continue to be outwardlooking, informing the membership at large about important issues and conducting special studies and meetings as distinct needs arise.

3. Yes, I am seriously concerned about any interference with the free international exchange of scientific ideas. Of course, the issue should also be of concern to the APS. While there can be legitimate reasons for restricting the access of foreign scientists to the United States, such restrictions could be imposed most sparingly: even then, it is hard to understand the cogency of the reasons when only university laboratories engaged in unclassified research are involved.

4. The case of Andrei Sakharov is very famous and very sad. Regrettably, it is not the only instance of a respected physicist being unjustly treated by this government. The APS should be concerned and willing to assist in all such cases provided it can do so in an effective way. Indeed, in the past, the Committee on International Freedom of Scientists has been able to formulate appropriate actions which were taken and proved effective. I would hope the record could be maintained and improved in the future.

**Harold P. Furth: Candidate for Councillor at Large, Plasma Physics Lab., P.O. Box 451, Princeton Univ., Princeton, NJ 08544.**

1. Respect for the peer group review process is essential to the health and integrity of American science. This is just the sort of issue on which the APS should take a strong stand: The outcome is of immediate concern to us, our members are in full agreement, and our representatives are well qualified to argue the case.

**Walter Kohn: Candidate for Vice President, National Institute for Theoretical Physics, Univ. of California, Santa Barbara, CA 93106.**

1. Science pork barreling is bad for science and a bad deal for the country. We physicists have a considerable stake in not letting the recent cases at Catholic and Columbia University become a new "fashion". As for the two new cases, concerning a chemical and computing

2. The existing arrangements for liaison among the APS standing and ad hoc committees seem to be working well. The Forum can play a valuable role in promoting interactions between the committees and the APS membership.

3. Since classification is necessary in some areas of research, but is also known to hamper scientific progress, the boundaries between classified and unclassified subject matter must be drawn with care. In this context, there are obvious disadvantages to the growth of a third major category of subject matter which is neither classified nor conveniently accessible. I am concerned about such a development. The APS should be (and is) very much concerned. Fortunately, the Congress has become sensitive to the problem, and one may hope that the Export Administration Act of 1984 will contain appropriate exemptions to protect international communication in science.

4. The APS would be able to exert greater leverage in support of Andrei Sakharov if U.S.-Soviet scientific relations were not already in such a poor state. At this point, the best policy is to seek a more normal overall relationship, and at the same time give unmistakable expression to our feelings on behalf of Sakharov as a great scientist and a great champion of mental freedom.

**Anne Kernan: Candidate for Councillor at Large, Physics Dept., Univ. of California, Riverside, CA 92521.**

1. The politicization of science funding is a grave threat to U.S. science. The APS must, in concert with other concerned groups, make Congress aware of the importance of maintaining the integrity of the scientific review process.

2. The Forum is already effectively performing this function. I have no additional suggestions.

3. Yes, I am concerned about unwarranted government interference with scientific communications. This issue must be a continuing concern for the APS since the free interchange of ideas is closely linked with the advancement of physics.

4. During the last few years the APS has intervened with some success on behalf of physicists who were political prisoners. I favor an intervention by the APS on behalf of Andrei Sakharov. In the present political climate any action taken by the APS must be carefully weighed for its effectiveness.

**Rolf Landauer, Candidate for Councillor at Large, IBM Research Center, P.O. Box 218, Yorktown Heights, NY 10598.**

1. Over the years we have built up reasonable mechanisms for the allotment of Federal funds, for the support of science. It is unfortunate if the scientific judgement, that normally enters into this process, is shunted aside. On the other hand, our present allotment mechanisms are far from perfect, and we cannot really object to modest experimentation with alternative procedures. It is arrogant and inappropriate for the scientific community to tell Congress: "We, as specialists know best, and normal political considerations are irrelevant." Thus, while direct Congressional allocation is clearly a matter for our concern, a formal stand by the APS, as a whole, seems premature.

2. My thought on this are not sufficiently developed to deserve attention.

3. The economy and defense of the U.S. require technical leadership. This is best achieved through continued rapid advances, rather than excessive secrecy. Technical espionage, however, does really exist. Some of our visitors will be systematically questioned upon return to their country. Furthermore, there is no clear and simple demarcation between classified and unclassified work; we've all learned to read between the lines, particularly in informal discussions. As in many other situations, an attempt to avoid all minor risks can only be achieved at excessive cost. It would seem best to leave unclassified meetings open to all; it would be hard to interpret and stabilize any other boundary line. But we should not take a reasonable course, and try to give it a sanctified status. Times and circumstances can change. P.W. Bridgman, in the years just before World War II closed his laboratory to German visitors. In its time, that was an admirable decision.

4. APS has a role in opposing repressive treatment of science, or scientists, in other parts of the world. That fact is recognized through our (standing) Committee on International Freedom of Scientists. We cannot, however, respond to all occasions, and must choose those where we are needed, and can be effective. In Sakharov's case we deal with a case which long ago reached the attention of the general public. Editorials in the N.Y. Times and the coverage in the TV news are more effective than anything that the APS can do. This is, furthermore, a case where APS has little leverage compared to NAS. My conclusion: It would be best for the APS to concentrate on other cases.

**David Schramm: Candidate for Councillor at Large, AAC-100, 5640 S. Ellis, Univ. of Chicago, Chicago, IL 60637.**

1. Such projects require full scientific peer review and should not go via political bypasses. The APS should work toward peer review of such large projects.

2. Exchange of materials and notices in a common newsletter.

3. Yes. The APS should continue to work for freedom of access to research sites for visiting scientists.

4. If a suitable role became apparent then the APS should follow it.

**Stanley G. Wojcicki: Candidate for Councillor at Large, Physics Dept., Stanford Univ., Stanford, CA 94035.**

1. I am very strongly opposed to the "Science Pork Barrel" projects. I believe that the normal submission process together with the peer review is essential if science research is not to become politicized. I believe that the APS should strongly support this position.

2. I am not familiar with what the Forum is doing along those lines at the present time. Some actions that might be helpful would be offers of better publicity for the issues being dealt with by individual groups, facilitating meetings between members of different groups on issues of common concern, and making members of the APS more aware of the existence and work of these groups.

3. Yes, this issue is of great concern to me and I believe it should be of equal concern to the APS.

4. This is a difficult question, both from the moral and pragmatic points of view. I am sure that the great majority of APS members support Sakharov's case and would like to see some relief in this circumstances. On the other hand, I think we would set a dangerous precedent should the APS get involved in this issue as an organization. In addition, I am not sure that any action that the APS might take would not be counter-productive in the long run. Thus on balance, I would answer the question in the negative.

#### ANNOUNCEMENTS

##### Physics, Technology, and the Nuclear Arms Race

The proceedings from the Short Course on the Arms Race, sponsored by the Forum and the AAPT, is now available from the AIP, 335 E. 45th St., New York, NY 10017 for \$36.75. Has your local physics department obtained this text for its library? These proceedings are useful as a reference for those teaching courses on the arms race, as well as those who would wish to study the topic in more depth. The text of 375 pages has 15 chapters and 9 technical appendices. It was developed for the PhD physics audience.

**AAAS Resolutions on Openness of Science**

Following are two Resolutions the American Association for the Advancement of Science adopted by the AAAS Council on 28 May 1984 which may be of interest to Forum members.

**Openness and National Security**, submitted by the AAAS Committee on Scientific Freedom and Responsibility.

**Whereas** progress in science and technology is greatly enhanced by open communication; and

**Whereas** such progress promotes both the national security, however defined, and general welfare; and

**Whereas** public availability of unclassified scientific and technical information is a necessity for democratic decision-making in a wide range of important public policy issues,

**Be it resolved** that the American Association for the Advancement of Science strongly reaffirms its opposition to continuing governmental efforts to restrict the communication or publication of unclassified research.

Adopted by the AAAS Council May 28, 1984

**Openness and Science and Technology**, submitted by the AAAS Committee on Scientific Freedom and Responsibility.

**Whereas** freedom of inquiry and communication contribute to the advancement of science and technology; and

**Whereas** the American Association for the Advancement of Science is committed to openness as an essential element for the advancement of science,

**Be it resolved** that the AAAS urges its affiliates and academic institutions to examine their policies, reaffirm their commitment to freedom of inquiry and expression, and make these policies publicly known.

Adopted by the AAAS Council May 28, 1984

**FORUM APS FELLOWS.** For the first time the Forum on Physics and Society exercised its privilege to nominate candidates for fellowship in the APS. Following are those candidates who have been awarded fellowship in the APS from the Forum:

**Harold Davis**

Citation: "For his sustained championing of the cause of arms control and for his constant editorial reminders of the role physicists are obligated to play in the debate."

**Robert H. Socolow**

Citation: "For actively developing technical knowledge of energy usage, and making this knowledge available to a broad public."

**Theodore B. Taylor**

Citation: "For his early insight into the technical problems of nuclear proliferation and safeguards and for alerting the public and his colleagues to the possibility of proliferation to sub-national groups."

**James S. Trell**

Citation: "For his inspired exposition in books and articles which made the excitement and beauty of modern physics available to educated Americans, resulting in enormous popular support for the discipline."

**Frank von Hippel**

Citation: "For his contributions to the understanding of the relationship between physics and society and for his many perceptive papers on subjects from nuclear war to the fuel efficiency of automobiles."

The Forum wishes to congratulate all these Fellows for this honor. Pete Zimmerman chaired the Forum committee which nominated these candidates.

**3. Walter R. Sooy, Lawrence Livermore National Laboratory (20 min.).**

The Strategic Defense Initiative is aimed at a proper and possibly feasible goal, defense against ballistic missiles, but a broader vision of our purpose is warranted -- near-earth space as a primary weapon basing and combat arena for the full range of tactical and strategic missions.

**4. Kurt Gottfried, Laboratory of Nuclear Studies, Cornell University (20 min.).**

The presentation will focus on the policy questions raised by the SDI: Can we rely on a largely automated system that cannot be realistically tested? What are the consequences for arms control and the arms race? Is SDI just a research program? What should the military space policy of the United States be?

**UPCOMING FORUM SESSIONS**

**November APS Meeting**

**Special Session BAE: Strategic Defense Initiative or Star Wars? Sponsored by the Forum on Physics and Society of the APS. Thursday evening, 1 November 1984; Grand Ballroom at 7:30 P.M.; Louis D. Smullin, presiding.**

**1. Gerold Yonas, Sandia National Laboratory (20 min.).**

The Strategic Defense Initiative is a highly goal-oriented, and yet broadly-based, program of research, technology development, and demonstrations to provide future options for achieving enhanced deterrence through defense against ballistic missiles. As we learn the limits of the technology and evaluate the threat response, there will be a concerted winnowing and selection process. We cannot now make the decision to deploy or even to begin to produce defensive weapon systems, but we will work toward an informed decision on whether to embark on an engineering phase in the next decade.

**2. Kosta Tsipis, Department of Physics, M.I.T. (20 min.).**

The presentation will describe the geometry of ballistic flight and of possible boost, mid-course, and terminal phase strategic defense systems and the potential difficulties such systems could encounter because of operational requirements, inherent vulnerabilities, and active and passive countermeasures.

**LETTER TO THE EDITOR**

**Scientific Freedom**

THE ATTEMPT TO CURB SCIENTIFIC FREEDOM (Robert L. Park, July, p. 3) is of course nothing new, and is in fact a very old story.

After a careful study of Freud's theories, I conclude that the basic problem is fear. People who would curb freedom should be scared out of their dangerous attitude, not by threats of massive retaliation, but by being convinced that they are their own worst enemies, far more fearful than the freedom they are worried about.

This points the way toward resolution of the "cold war," not by massive threats (thereby answering Barbara Levi's question), but by convincing the Kremlin rulers that they are their own worst enemies when they destroy good will by oppressing Afghanistan, thereby creating the situation which brought the missiles into Western Europe, so clearly that the withdrawal of the missiles from Europe should be linked directly to the withdrawal of Soviet troops from Afghanistan.

Park give further excellent examples of this in his article, which makes it clear that it is the dictator, not the scientist, who has too much freedom of the ogre which must be curbed, to save the people from oppression.

Kenneth J. Epstein  
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10 Aug. 1984