Soviet-American Science Accord: Could Dissent Deter Détente?

Through the years of the Cold War, American and Soviet scientists have managed to maintain relatively amicable relations amid the variable hostility of the two superpowers. Contacts were sustained through international scientific organizations and meetings, Pugwash conferences, limited but durable official exchange programs, and through a variety of improvised personal efforts. Now, at a time when Soviet and American governments seem genuinely committed to major expansion of cooperation between the two scientific communities (see story below), some American scientists are viewing the prospect in a critical spirit, and a few are even raising the question of their willingness to cooperate.

Two main issues are involved. The first is the Soviet government's policy on the emigration of Soviet Jews to Israel. The problem has a special dimension for Jewish scientists and other professionals, since Soviet authorities have applied special sanctions against them, most notably an "education tax," levied, as the explanation goes, to compensate the state for the cost of the training of members of the elite.

The second issue is a more general one of "scientific freedom." For years, Western scientists have been aware of official controls on the activities of Soviet scientists—for example, on freedom to travel outside the Soviet Union to attend international meetings, to receive foreign visitors in their laboratories, to exchange research results, and even to conduct personal correspondence with foreign colleagues. In broad terms, American and western European scientists are arguing for international acceptance of the principle that a scientist should have the right to pursue his work to the limits of his abilities where he chooses.

To some degree, the scientific-freedom issue intersects the "human rights" issue raised in the Soviet Union by a relatively small group of dissenters who concern themselves primarily with civil liberties. Several prominent scientists, writers, and artists have been identified with this "movement." Physicist Andrei

U.S.-U.S.S.R. Agreement on Cooperation in Science, Technology:

American and Soviet negotiators on 21 March announced 25 "action programs" designed to give substance to the agreement on cooperation in fields of science and technology signed during President Nixon's visit to Moscow last May.

The science and technology protocol—or "S and T" agreement as it is called for convenience—is one of four new agreements for cooperation in scientific and technical fields unveiled in Moscow. The other three accords were in medical science and public health, space, and environmental protection. The new agreements are regarded as falling within the general rubric of the American-Soviet agreement on exchanges and cooperation in scientific and cultural fields established in the 1950's. Scientific exchanges have been administered by the National Academy of Sciences on the American side, but under the new agreements a variety of agencies, including the National Science Foundation (NSF), will participate directly. Work in each of the four new areas is being coordinated by a "joint commission" composed of high-level Soviet and American government officials and scientists, but specific projects are being developed by working groups of specialists from government, universities, and industry in the two countries.

Implementation of the agreement on science and technology is somewhat less advanced than on the other protocols. In the environment, health, and space areas, considerably more spacework had been done before the Moscow talks. Meetings on the S and T agreement were delayed by the illness of V. A. Kirillin, chairman of the Soviet State Committee for Science and Technology and Soviet chairman of the joint commission on scientific and technical cooperation. For the Americans, Edward E. David, Jr., first U.S. chairman of the Joint commission, was replaced by NSF director H. Guyford Stever, after David resigned as the President's science adviser in January.

Estimates of the costs of participation in the cooperative efforts have not yet been made public, and there has been speculation as to whether the Nixon Administration, in a time of budget stringency, would be willing to put large sums into new programs.

So far, the only major undertaking in progress is the development of compatible rendezvous and docking systems for manned Soviet and American spacecraft and space stations. The necessary funds have been approved by the Office of Management and Budget for the coming fiscal year, and design of the hardware is said to be well along. A team of about 40 Soviet scientists, engineers, and cosmonauts was in Houston during the last half of March working on the project.

It is axiomatic that projects involving development of hardware systems are expensive, and no such big projects in other areas are said to be even in the talking stage.

In general, federal agencies have been told they will have to finance their activities under the cooperative program out of available funds. So far, costs have been confined primarily to paying for exchange visits by working parties and small groups of scientists, and the expense has been manageable. Observers say that there are signs that the Soviets may have budget problems of their own and that the terms have made agencies on both sides limit projects to those they really want to do.

Much of the activity planned so far amounts to ex-

Sakharov, the biologist Zhores Medvedev, and the novelist Alexander Solzhenitsyn are perhaps best known in this country.

Most attention, however, has been drawn here to the question of Soviet refusal to grant exit permits to Soviet Jews wishing to emigrate to Israel, and American and European scientists over the past year have sought increasingly to exert pressure on behalf of the would-be emigrants.

On 21 and 22 March, the American press carried reports that Soviet authorities had suspended the exit fees—which amounted in the case of some highly educated Soviet citizens to $30,000. The action clearly came as a result of congressional criticism of the Soviet emigration policy and seemed to be inspired quite directly by a strong move in the Senate to block the granting of special trade concessions to the Soviet Union until restrictions on emigration to Israel are lifted. First reports indicated that about 40 Jews from the Moscow area were being permitted to emigrate without paying the exit fees.

Information available in the following week through the informal information network which has developed in this country and Britain, however, indicates that none of the scientists whose cases have particularly concerned scientists in the West were included in the released group. A Washington newsletter, *Near East Report*, which has a good record of reliability in this area, is the source of word that none of the 40 to 50 persons getting visas were "activists," none had applied for visas before and so had not been refused permission to emigrate, and none were above middle-echelon technical status.

The case of Benjamin Levich has become perhaps the best known in scientific circles in this country. Levich, 55, a corresponding member of the Soviet Academy of Sciences, was professor of mathematical physics at Moscow University. After applying for exit visas for himself and his family last summer, Levich lost his job, and he and his family were subjected to a variety of other punitive actions and harassments. In a letter widely circulated among U.S. scientists, he noted that he was isolated from foreign colleagues, his telephone having been cut off and his incoming and outgoing mail filtered. His main point was that individual appeals to Soviet authorities from foreign scientists have had little effect and he argues that this is "why activity of scientists as a body has become so urgent."

Word directly from Levich at about the time of the reported Soviet suspension of the exit fees indicated that he was still living in limbo, his emigration blocked by a serious new obstacle —his son, an engineer, was told he might be inducted into the military.

The Emphasis Is on Applications and on Practical Results

changes of information, visits by scientists to labs, and the scheduling of conferences and symposia. The time when sizable numbers of Americans will join Soviet teams working in the U.S.S.R. and vice versa does not seem imminent, although such exchanges have begun in a modest way under the health agreement and may well increase in its three target areas of research in cardiovascular diseases, cancer, and environmental health.

The meeting on 19–21 March in Washington was the first of the U.S.-U.S.S.R. Joint Commission on Scientific and Technical Cooperation. The commission met to consider specific proposals for projects developed by working groups over recent months. The proposals fall into six general areas of cooperation agreed on at the time of the Moscow meeting: (i) energy, (ii) computer applications to management, (iii) agricultural research, (iv) microbiological synthesis, (v) chemical catalysis, and (vi) water resources. The 25 action programs, agreed on generally emphasize applied research and technology.

The Soviets are said to have favored from the beginning fairly short-term projects which promise practical results, rather than longer term efforts which lean toward more basic investigations and might yield inconclusive results. The Soviets are obviously interested in applied fields where the United States has a reputation for leadership, and the action programs include five projects in the area of applications of computers to management.

All the projects, however, appear to meet the test of mutual interest. Five areas for "priority implementation" selected under energy problems, for example, are electric power systems and transmission lines, magnetohydrodynamics, solar energy, and geothermal energy. The U.S.S.R. is regarded as a world leader in some aspects of energy technology and research.

One area of negotiations that seems to have required special effort was that of integrating American private industry into the cooperative program. In projects involving industrial processes, for example, expertise of American industry was important, but the issue of proprietary information was an inhibiting factor. This seems to have been particularly true in discussions in the field of chemical catalysis. American officials say that, after some earnest explanations, the Soviet representatives came to an understanding and acceptance of the situation and that representatives of American industry will be regularly involved in the program.

In almost every area, it was found that Soviet and American scientists had a serious lack of knowledge of what their opposite numbers were doing and how. This lack of understanding of research systems and traditions in each other's country, as well as more obvious problems, such as the language barrier, means that the participants are going to require a fairly prolonged period of getting acquainted. In the field of microbiological synthesis, for instance, the gaps proved sufficiently wide that it was thought advisable that an American working group, as the official news release of the meeting put it, "have further discussions with the Soviets before defining priority projects for cooperative work."

So far, it would appear that the cooperative effort is going well, if rather slowly. The participants, however, are only in the tuning-up stage, and it will obviously be more difficult to get the whole ensemble playing in harmony.—J.W.

Under Soviet law this would prevent the son's emigration for a minimum of 7 years because of his access to military secrets, and it is believed the prohibition would be extended to members of his immediate family.

Protests from individuals in this country and from scientific organizations have been increasingly frequent, but they have, for the most part, been formulated in fairly general terms emphasizing scientific freedom. In February 1972, the council of the Federation of American Scientists adopted a resolution calling on all nations to respect the right of scientists to travel abroad and exchange information. Apparently the first organization to take dead aim at the issue of Jewish emigration in a formal way was the Society for Neurosciences. At its national meeting in October, a letter of protest signed by the society's president was sent to Soviet Academy of Sciences president Mstislav V. Keldysh. Other organizations have subsequently taken similar action.

The U.S. National Academy of Sciences has taken no public initiative in the matter, but in a November meeting with Keldysh, NAS president Philip B. Handler is known to have communicated to Keldysh both his own serious concern and that of the NAS council on the matter. More recently, Handler was at a meeting at Bellagio on Lake Como attended by a group of well-known scientists and representatives of academies and scientific organizations, mostly from western European nations. Among the topics discussed was freedom of movement of scientists in relation to the 1948 United Nations Declaration of Human Rights and to current talks within the executive committee of the International Council of Scientific Unions. The group endorsed the principle that the right to leave their country and return should not be denied to scientists and intellectuals as a class; the group referred the problem to all national academies of sciences.

A new note has been struck in a petition being circulated in the National Institutes of Health and other scientific agencies in Washington. A letter, which is addressed to President Nixon, notes that a "wide range of punitive sanctions have been taken against scientists who have applied to emigrate from the U.S.S.R. . . ." The key statement, however, is, "We strongly favor expansion of scientific exchange between the U.S. and U.S.S.R. and staunchly support the spirit of the recent bilateral agreements. But, our readiness, personal and professional, to welcome Soviet scientists to our research centers and laboratories will be impaired by the awareness that many of our colleagues in the U.S.S.R. are prohibited from traveling abroad and pursuing their scientific careers wherever they may choose." The suggestion of noncooperation is only implied, but it is there and could grow. A number of scientists, including three Nobel Prize winners, are understood to have already said they would sign the letter.

A primary question facing American and European scientists seeking to aid their Soviet colleagues is, of course, whether their efforts help or hurt. The consensus now seems to be that if a Soviet citizen has actually applied for permission to emigrate, that publicity given his situation in the West can only help. The assumption is that Soviet authorities are particularly sensitive to Western public opinion during the delicate, early period of détente. It seems generally agreed that whatever concessions have been made or will be made on the emigration issue will stem less from protests by Western scientists than from the Soviet Union's desire to secure most-favored-nation status in trade matters and, perhaps, from direct intercession at the highest political level, namely, by the President.

Scientific Freedom Issue

While the issue of Jewish emigration could conceivably be resolved, as there are a relatively limited number of potential emigrants, the issue of scientific freedom, particularly where it involves "dissenters," may pose a longer term and larger problem.

Observers familiar with official Soviet treatment of the dissenters assert that there has been a crackdown in recent months, apparently aimed at vitiating the movement by a combination of threats and harsh treatment of leading figures among the protesters. A particular effort seems to be under way to prevent the continuation of the *Chronicle of Current Events*, the clandestinely circulated *samizdat* periodical which primarily reports and documents police action and trials involving protesters.

A significant occurrence is said to be the arrest last summer of historian Peter Yakir, a prominent civil liberties advocate, who has reportedly recanted and is rumored to be a prospective witness for the state in a trial likely to implicate persons associated with him in the past. An effort to remove vocal critics without incurring damaging publicity is seen in the recent granting of permission to visit Western countries given to Zhores Medvedev and Valeri N. Chalidze. Chalidze, a physicist who has made himself an expert on the Soviet constitution and the law, was permitted to lecture at New York University and George Washington University in December, and then his passport was picked up by Soviet consular officials and he was informed he had been stripped of Soviet citizenship for "acts discrediting a Soviet citizen."

Medvedev is the author of a book on Soviet science under Stalin and of *The Medvedev Papers*, which details Soviet scientists' difficulties in traveling abroad and in communicating with foreign colleagues. Both were published in the West, but not in the Soviet Union. In 1970, Medvedev was detained in a mental hospital, but was released after protests from a group of prestigious Soviet scientists. Medvedev was granted permission for a year's visit to British universities for research and writing. There has been no indication so far as to whether he will be permitted to return to the Soviet Union.

A 25 March story in the *New York Times* reported that Andrei Sakharov, a Soviet academician, nuclear physicist, and one of the chief figures in the development of the Soviet hydrogen bomb, had for the first time been questioned by Soviet secret police. Sakharov has been active on the unofficial Committee on Human Rights, which has links with corresponding groups in other countries. The *Times* reported that the Institute for Advanced Study at Princeton had in the works an invitation to Sakharov to be a visiting scholar next year, and it is suggested that the human-rights activist may follow the path of Medvedev and Chalidze.

The actions of the Soviet government obviously undermine any assumption that détente abroad for the Soviet Union will necessarily be accompanied by liberalization at home.

Some political observers subscribe to a theory of "convergence" in Soviet-U.S. relations, arguing that nuclear stalemate and the dynamics of industrial societies will bring the two countries closer and make them more alike. A corollary is that the Soviet dependence on scientists and other professionals will force a steady expansion of personal and intellectual freedoms that such elites demand.

It seems evident, however, that there has been a retreat from the liberalism assayed under Khrushchev. The group now dominating the Kremlin seem to be "conservatives" in Soviet terms, which is to say that, as authors of the détente, they are probably following a more tolerant line toward dissenters than pleases elements on the Soviet right, who seem to favor a return to Stalinist fundamentals.

The matter of emigration to Israel—leaving aside implications of anti-Semitism—raises serious problems for the Soviet Union with its many nationalities. As it is in other countries, regional and ethnic consciousness is on the rise in the Soviet Union, and special treatment of Jewish citizens is not lost, for instance, on Crimean Tatars or Volga Germans.

As for the dissidents, in the Soviet Union, protest is viewed as criticism of the state and, in ideological terms, very much like heresy in a clerical state. There is no provision for an opposition loyal or otherwise in Soviet law, or for that matter in the Russian experience.

The protesters themselves are far from a united "movement." There seems even to be the traditional split, long antedating Communism, between the westernizers and the Slavophiles. Sakharov, with his espousal of personal freedoms, seems to fit in the former category. The Slavophiles reject European values and advocate the old Russian virtues; the view is said to have strong exponents among the military and even in the Communist youth movement. Medvedev is described as a "party democrat," an advocate of reform of the party from within. Chalidze is a self-made expert on what he sees as the government's illegal use of Soviet law.

The protesters have always been relatively few in number. They have failed to establish any real link with workers on collective farms, in factories or offices, or even, apparently, with university students. The protesters, an extraordinarily courageous group, have mostly been members of the Soviet elite and therefore specially privileged even in being less vulnerable than other Soviet citizens might be in "demonstrating" for their views.

Ironically, now that the categories of the Cold War are beginning to unfreeze, the protesters seem even more isolated and their lot uncertain. And this suggests that redefining coexistence is going to be a very tricky business on both sides.—JOHN WALSH

Herbicides: Agent Orange Stockpile May Go to the South Americans

Since early this year, the U.S. government has been toying with the idea of giving or selling its surplus stockpiles of Agent Orange, a military herbicide that was withdrawn from use in Vietnam in 1970 after concern was raised about its teratogenic properties, to Brazil, Venezuela, Paraguay, and possibly other South American governments.

The U.S. Air Force has a surplus stockpile of 2,338,900 gallons of Agent Orange, of which the original purchase price was $16,540,000. Some of it contains as much as 28 times the maximum acceptable safety limit of dioxin, a chemical which is one of the most potent teratogens known. Apart from the returning prisoners of war, these herbicides are perhaps the most politically sensitive property the United States has retrieved from the Southeast Asia battlefield.

Now, thanks to two enterprising businessmen, the Agent Orange may be used to flood the Latin American herbicide markets in the name of international development and improving the U.S. balance of payments. Jerome F. Harrington, president of IRI Research Institute, Inc., a New York firm and one of the two which have proposed the deal, says that the Agent Orange could be diluted and the barrels could be repainted (to conceal their old military markings) and then sold to farmers for prices as low as $5 per gallon, or a third of the going price of herbicide there of $15 per gallon. Even undiluted, the total military surplus would net $11.5 million, more than this country's herbicide sales in South America in 1971. "It would be developing markets. . . . We're beating swords into plowshares," he says.

The implications of the plan are two. First is the fact that Agent Orange was withdrawn from Vietnam after reports of a possibly worrisome number of stillbirths and defective fetuses in provinces where the herbicide had been sprayed intensively. Since there may have been a threat to the South Vietnamese, presumably there may be some risk to the South Americans were it used there. A second implication is that despite its obvious agricultural utility as a brush killer, Agent Orange is also a proven military weapon. Sources admit that once sold, there would be little further control; there is a remote chance that the recipient countries could use it against guerrillas, or, in the case of Brazil, against the natives in the northwestern portions of the country which the government is trying to "clear" for development. (The Portuguese and South Africans already buy U.S. herbicides commercially.)

Agent Orange is not exactly milk or honey.* It is made up of two chemicals: 2,4,5-T and 2,4-D. The former contains a manufacturing impurity called dioxin, which is highly teratogenic; 2,4,5-T is also somewhat teratogenic itself. In fact, after a lengthy controversy, the Environmental Protection Agency (EPA) has banned most crop-related uses of 2,4,5-T; and rangeland use may also be canceled. As for 2,4-D, the other half of Agent Orange, there are indications that this too is teratogenic, but the issue has not yet been resolved. Samuel S. Epstein of Case Western Reserve University Medical School and an environmental toxicologist who has written on dioxin problems,† says of the proposed Latin American deal: "This is a perfectly preposterous idea."

At the moment, the main thing standing in the way of the transaction is EPA action on an Air Force application to register most of its Agent Orange

* Agent Orange consists of 50 percent 2,4,5-trichlorophenoxyacetate and 50 percent 2,4-dichlorophenoxyacetate. † See Samuel S. Epstein, "Teratological hazards due to phenoxy herbicides and dioxin contaminants," in *Pollution: Engineering and Scientific Solutions* (Plenum Press, New York).