Soviet Academy Attacked for Being Undemocratic

Protesters cite failure to nomimate Sakharov and others for congress of deputies, criticize stance on environmental issues

THE USSR ACADEMY OF SCIENCES, one of the front-line bodies responsible for promoting the new social and economic policies of Soviet leader Mikhail Gorbachev, has come under some heavy fire for not doing enough either to democratize its own internal voting procedures or to protect the nation's environment.

On 2 February, several hundred scientists took part in a demonstration outside the Academy's offices in Moscow to protest the way it had handled nominations for the 25 seats allocated to its members in the Congress of People's Deputies, the 2250-strong body that can play an important role in shaping legislation and which elects the members of the USSR's top law-making body, the Supreme Soviet.

A secret ballot of those attending what was described as an "enlarged presidium" meeting of the Academy 2 weeks earlier had failed to approve the candidacy of various supporters of radical reforms, including physicist Andrei Sakharov, economist Abel Aganbegyan, and planetary scientist Roald Sagdeyev, even though each had received substantial support from grass-roots Academy members. Those accepted as candidates for the elections, due to be held at the end of March, are all senior Academy figures. They include three of its new vice presidents.

A week before the demonstration, the *Literaturnaya Gazeta* had given prominent coverage to a statement by the board of the USSR Writers' Union strongly criticizing the Academy for not admitting past mistakes made by its members in supporting projects that had later caused serious environmental damage, and for "sacrificing its own independence and prestige" by supporting the interests of individual government departments, "thereby demonstrating its dependence on those departments."

According to Western observers, both events reflect the extent to which the Academy has been caught up in tensions between the Soviet Union's needs for economic renovation on the one hand—a process in which Gorbachev is keen to see science-based technologies play a key role—and the pressure for political reform on the other, often coming from a very different direction.

Officially, the Academy has already adopted a more "democratic" structure. Academy president Yuri Marchuk, attending a meeting of top scientists and intellectuals organized by Gorbachev at the beginning of January to review the progress of his reforms, was able to report that recently "about 150 [institute] directors out of 250 had been democratically elected."

In the case of the selection of the Academy's candidates as "people's deputies," the process of democratization appears to have been less successful. More than 130 names of potential candidates were put forward by different departments and institutes belonging to the Academy, and the special enlarged presidium session, attended by about 290 selected Academy members, was held to choose those whose candidacy would be accepted.

Sakharov, whose candidacy was supported by 60 separate institutes, suggested that all the names that had been proposed by the institutes should automatically go on the ballot papers. But after lengthy debate it was agreed that a candidate would be approved only if he or she received the support of at least half the Academy members present in votes cast by secret ballot—regardless of how many nominations the candidate had received.

Out of the 130 names initially suggested, only 23 received the necessary support to go through to the election. This was itself something of an embarrassment, since 25 places had been set aside for the Academy. Thus, not only would two places remain vacant, but there would be no competition for the remainder—a situation avoided only by a subsequent decision to allocate five of the places to other scientific organizations.

Those selected as candidates, some of whom had only been nominated by one institute, are all part of the Academy hierarchy. They include A. Galanov-Grekhov, director of the Academy's Institute of Applied Physics, V. Platonov, president of the Belorussian SSR Academy of Sciences, and three recently appointed Academy vice presidents, physicist Yuri Osipyan, geophysicist Oleg Nefedov, and biologist Rom Petrov.

Sakharov, Sagdeev, and other well-known reformers were not nominated. Sakharov was, however, subsequently nominated as a candidate for the city of Moscow by physicists at the Lebedev Institute. They protested that his exclusion from the Academy's list was "a breach of both the spirit and the letter of the new electoral law."

Although no one has criticized the qualifications of those selected, the result appears to have caused considerable embarrassment to the Academy itself. After the vote, officials defended what had taken place. Vice president Vladimir Kudryatsev later told the news agency Tass that critics of the results were being "discourteous" to those who had been adopted as candidates.

Others, however, openly expressed their disquiet at how the votes had been cast. "We simply struck off the names of those about whom we have nothing to say and who are not known to us personally," academician I. Gelfand is reported to have told the meeting. "How are we going to be able to look our colleagues in the face?"

Geneticist Zhores A. Medvedev, who now works for Britain's Medical Research Council—and whose historian brother Roy Medvedev was another candidate whose nomination failed to receive approval—said in a telephone interview with *Science,* that it appeared that the Academy wanted "to make sure that no one with unconventional views, like Andrei Sakharov, would be elected." Medvedev also described the formula

Wide World

Andrei Sakharov *participating in a demonstration outside the Academy to protest the way candidates for the congress of deputies were selected.*

that gives Academy nominees almost all the seats allocated to organizations representing scientists as "very undemocratic."

Among those who failed to have their nominations accepted was historian Dmitri Likhachev, who is also a member of a group within the Writers' Union thought to have persuaded the union's board to pass the resolution highly critical of the Academy's record on environmental issues.

The resolution lists various events and issues on which it says the Academy has failed to take a firm stand. These range from the (now shelved) project for diverting part of the flow of northern rivers into the Volga, to its silence on "the losses in quantity and quality of forests and land as a result of so-called land improvements." The resolution also cites the Academy's failure to publish "an objective and complete picture" of the human and environmental damage caused by the Chernobyl accident.

Similar criticisms of the Academy's stance on environmental issues—despite the increasing priority being given to environmental research—was voiced at a meeting in December held jointly with the Academy of Agricultural Sciences to discuss plans to construct a canal between the Volga and Chogray rivers. One of the project's opponents, Y. Pastukhova of the All-Union Scientific Research Unit for the Protection of Nature, later criticized Academy president Marchuk, who presided over the meeting, for saying that only scientific problems pertaining to the canal project—and not wider questions about the project's general desirability—could be discussed.

This time, the criticism appears to have had an effect. Last week, it was announced by the USSR State Planning and State Construction Committee that work on the canal will be stopped. The Academy apparently convinced the Ministry of Land Reclamation and Water Resources to take seriously scientists' fears that the construction of the canal would result in an "ecological catastrophe" in the Caspian region.

Marchuk is said to be coming under increasing pressure from Soviet leaders to make sure that criticism of the Academy and its activities does not get out of hand. A meeting of the Academy's Presidium was due to be held on 7 February to discuss how it should respond to last week's demonstration, and in particular to a resolution handed in by the protesters asking for the results of the selection procedure to be overturned. Some Western observers were speculating that a new procedure for approving candidates for the congress elections would be adopted at this meeting, and that last month's selection might be rerun.

■ **DAVID DICKSON**

U.S. Students Flunk Math, Science

There is more bad news on the science literacy front. One week after the National Research Council released a report calling for a complete overhaul of U.S. math education to counteract poor math proficiency (*Science*, 3 February p. 597), a new international study shows that U.S. 13-year-olds are at or near the bottom of the pack when it comes to math and science achievement.

American students placed dead last in math achievement, behind four foreign countries and four Canadian provinces. They fared little better in science achievement, ranking among the bottom four groups studied.

But what is bad news for the United States is good news for South Korea. In math, students in all the countries sampled did well at simple addition and subtraction. But while 95% of Koreans could solve simple one-step problems, only 78% of American students could do so. When it came to two-step problems such as calculating an average, the gap widened to 78% versus 40%. And the differential in understanding concepts was even greater; 40% of Koreans, but only 9% of Americans showed an understanding of basic principles of measurement and geometry.

Science scores show a similar pattern. All students knew basic everyday science facts, but Koreans excelled in applying simple scientific principles (95% versus 78%), analyzing simple data (72% versus 35%), and designing experiments and interpreting data (31% versus 7%).

The study, conducted by the Educational Testing Service with funding from the U.S. Department of Education and the National Science Foundation, included 24,000 students in the United States, the United Kingdom, Spain, Ireland, Korea, and four provinces of Canada—British Columbia, New Brunswick, Ontario, and Quebec. Tests were translated from English into native languages. In the Canadian populations, French- and English-speaking students were tested separately.

Overall, in math achievement the groups divided into four tiers, with Korea all by itself at the top. The second tier was filled by British Columbia, English-speaking New Brunswick, and the French- and English-speaking students of Quebec. The third tier held Spain, the United Kingdom, and Ireland, the French-speaking students of New Brunswick, and the English-speaking group of Ontario. The last tier held the United States and the French-speaking students of Ontario.

In science achievement there were three tiers, with British Columbia and Korea at the top. The United States, Ireland, and the French-speaking populations of Ontario and New Brunswick were in the bottom tier.

The study did not examine reasons for the differences, but does offer some interesting possibilities. Some of the groups studied—Korea and New Brunswick, for example—feature centralized control over curriculum, a system that routinely results in high achievement on standardized tests. That system has not proved workable in the United States, where states and local school districts set curricula.

South Korea, too, is riding the crest of a wave of high-tech industrialization, and science is promoted both at home and in school. Adult illiteracy is almost unknown in Korea, and parents place great emphasis on education.

American students were weakest in those skill areas in both math and science that most often predict future careers in those fields, the report says. "It's a pretty accurate picture of what the 23-year-olds of 1999 will be able to do," Archie Lapointe, author of the study for ETS, said at a news conference.

The study has elicited the expected howls of dismay from educators.

"It's obvious that if this is not corrected, the Buck Rogers of the 1990s will be living in Seoul, not Chattanooga, Los Angeles, or Chicago," said Lamar Alexander, president of the University of Tennessee and a former governor of the state.

"Comparisons are odious, and few comparisons are more odious than the ones embodied in this little book," said Bassam Z. Shakhashiri, assistant director for science and engineering education at NSF. "The lack of preparation for further education and future employment that these American teenagers demonstrated is nothing short of frightening."

Albert Shanker, of the American Federation of Teachers, called the report "devastating."

Talks are under way for another international comparison, possibly including the Soviet Union, in 1990.

■ **GREGORY BYRNE**