

aster, Kuchinskaya's book gives researchers a new perspective and approach to examining policy creation in response to accidents. The strategies developed and deployed by national and international experts at Chernobyl should, based on Kuchinskaya's analysis, make every reader pause with concern.

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JASON KRUPAR

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Jason Krupar is an associate professor of history at the University of Cincinnati.

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Voices of the Soviet Space Program: Cosmonauts, Soldiers, and Engineers Who Took the USSR into Space.

By Slava Gerovitch. New York. Palgrave MacMillan. 2014.
Pp. 305. \$95.

Slava Gerovitch, who has worked on the history of manned space exploration for several years, has published a fascinating primary source in *Voices of the Soviet Space Program*. This book consists of thirteen interviews with cosmonauts, soldiers, and engineers that Gerovitch (plus a few with Asif Siddiqi) conducted from 2002 to 2010 over several oral history projects. Two are with women (one a “backup” cosmonaut), and the other interviews with men, most born in the 1920s or early 1930s. Now elderly, they all have fond—and vivid—memories of their achievements and those of Soviet science. Gerovitch translated all of the interviews. He offers them in question-and-answer form, starting with the person's background, then where he/she worked, the nature of that work, issues and problems encountered, achievements, and relations with other people and other organizations. Several of the interviews discuss technical issues at length.

The interviews enable the reader to learn about the beginnings of the Soviet space program, the role of the Soviet equivalent of the U.S. “Operation Paperclip,” through which scientists and military personnel removed Nazi scientists and engineers to the USSR to assist in the space program. Nikolay Pilyugin, Sergey Korolev, and Valentin Glushko, future masters of the Soviet program, all studied German V-2 rockets, and brought them and Nazi specialists to the USSR to continue research and development.

Many people imagine the military sectors of the Soviet economy during the cold war as somehow functioning efficiently and independent of the civilian sector with its bottlenecks of supplies, functional but poorly designed products, and shortages. These interviews reveal that political leaders, engineers, and cosmonauts encountered frequent challenges in meeting plan targets and in manufacturing space technologies that satisfied their multiple constituencies. The interviews reveal intense bureaucratic battles and both camaraderie and personal rivalries swirling around various technologies, programs, schedules, and more.

The Soviet space program had high human costs because of accidents and because officials often discriminated against Jews who wished entry to the program. This well-known institutional anti-Semitism also had an impact on nuclear weapons projects, and generally kept larger numbers of Jews from entering universities and research institutes. While they do not always identify themselves as such, it appears that a number of Gerovitch's respondents—Russian émigrés to the United States—were Jewish. He conducted most of the interviews in Russia.

We learn a great deal about the organization of design bureaus and the evolution of their research programs; the importance of personal connections, mentors, and patronage in career patterns; and the tremendous political and other pressures on the chief engineers, engineers, and cosmonauts to succeed in the space race during the cold war. The personalities of the chief designers pushed programs ahead when bureaucratic impediments to success, poorly performing industries, and secrecy slowed progress. The interviews reveal, however, that there was a greater flow of information in the closed secret institutes than might be expected. Also, Soviet specialists respected and understood the level of technology in the United States, which was ahead in onboard computing and in solving problems of guidance, though they always were proud of their own designs.

Competition in the space race led to risk taking—to be the first to orbit new spacecraft, to achieve firsts of spacewalks and dockings, and so on. The program directors pushed ahead to establish world records. This led to close calls, mistakes, accidents, and loss of life, often the result of miscommunication and distrust between cosmonauts and engineers in a debate over automation versus human control. The Soviets were also the first to put women into space. While many (male) cosmonauts opposed women's groups and flights, they recognized them as crucial for the prestige of the country. But after Valentina Tereshkova became the first woman in space in 1963, they sought to do away with the women's program. In any event, successes in space led to rewards on the ground: cosmonauts and engineers received ruble prizes, membership in the Academy of Sciences, homes or nice apartments, dachas, and so on.

Gerovitch begins the volume with an insightful essay. The book has a thorough index. However, it consists of names of participants, institutes, and devices, but nothing really thematic, so that it reads like the Moscow phonebook.

This is an important contribution to space history, cold war history, the history of the USSR, and the history of technology.

PAUL JOSEPHSON

Paul Josephson teaches history at Colby College and is a professor at Tomsk State University in Siberia. He is writing a history of nature transformation projects in Russia, from 1900 to the present.