

The famine victims were denounced as dangerous thieves and bandits, and Russian *kolkhozniki* formed militias against them.

This terrifying situation completely transformed Kazakh society. To receive any food at all, one had to find a connection to the regime. Many people survived only because of tiny advantages, having relatives in an official position, or gaining an opportunity to steal and “speculate.” Individuals who were capable of violence seized control. They did little for the starving but created bizarre fiefdoms and terrorized their surroundings. Strong clans and families placed their relatives in administrations and cut off weaker people. In a situation where everyone who survived became guilty of something, Kazakhs abused the more subordinate position of other Kazakhs.

Many interviews with Kazakh survivors and their children contain evidence of severe trauma. During the 1990s, informants spoke for the first time about what they saw and did. They struggled with guilt, shame, and helplessness, sobbing as they recalled images that tormented them, and revealed that they had turned away the hungry, stolen from them, and looted their corpses.

Kindler implicates the Communist Party most deeply. The mass deaths were not intended, but the party used them “as if they had been planned consciously” (22), in Kazakhstan as well as Ukraine and elsewhere. The Kazakh Communist Party functioned as a vessel for power struggles and left the steppe to itself. The larger Bolshevik vision for the steppe was realized: the Kazakhs were cut off from it, forced to remain in one place, and much of the land was given to state farms and to the NKVD for the gulag and exile system. The few remaining nomads were persecuted but finally allowed an existence as “specialists,” their families “brigades” (337).

The book’s conclusion deals with the absence of a national memorial to the famine victims. In Kazakhstan, public discourse about the famine has been abstract and few questions have been raised—much less answered—about Kazakhs’ contributions to its causes. Kindler suggests that Kazakh society might benefit from confronting the famine more actively.

MICHAELA POHL
Vassar College

Producing Power: The Pre-Chernobyl History of the Soviet Nuclear Industry. By Sonja D. Schmid. Inside Technology Series. Cambridge, Mass.: MIT Press, 2015. xxxii, 362 pp. Appendixes. Notes. Bibliography. Index. Photographs. Tables. \$38.00, hard bound.

There is perhaps no piece of technology more vilified than the RBMK reactor. The catastrophic explosion of one of these high-power channelized reactors at Chernobyl’ in 1986 condemned this unusual, distinctively Soviet approach to nuclear power to infamy. In its aftermath, some argued that the disaster demonstrated the fundamental unsoundness not merely of the USSR’s science and technology but also of the entire Soviet system. Antinuclear activists both inside and outside the Soviet Union asserted that Chernobyl’ proved that nuclear technology could never be “safe” and therefore must be abandoned. Advocates of nuclear energy in the west, however, retorted that the catastrophe resulted from slipshod Soviet safety and engineering practices and could never occur in an advanced western country. Finally, the Soviet government—and, after 1991, its Russian successor—insisted that the RBMK was safe enough that, with a few fundamental modifications, it could continue to play a major role in the country’s nuclear energy sector. Sonja D. Schmid’s *Producing Power: The*

Pre-Chernobyl History of the Soviet Nuclear Industry transcends these timeworn arguments to provide a pioneering institutional account of how the USSR developed its nuclear power industry.

The most important academic work on nuclear power in the Soviet Union since Paul R. Josephson's *Red Atom: Russia's Nuclear Power Program from Stalin to Today* (2005), *Producing Power* makes a convincing case for a surprising argument: the RBMK was less the epitome of Soviet callousness and technical incompetence than a historical accident. In contrast to some other well-documented cases in the history of Soviet technology—most notably missile development—where rivalries between different design bureaus spurred the wasteful development of redundant systems, such competition played little role in the choice between the RBMK and the USSR's light-water reactor, the VVER. Schmid notes that “the RBMK was in fact a puzzling choice,” because “well before Soviet planners decided to use it, nuclear power programs all over the world had adopted pressurized water designs” (98). While the VVER appeared technically superior, it required certain components—namely, a forged steel pressure vessel—that Soviet industry struggled to manufacture in quantity. Policy-makers' determination to rapidly expand the Soviet nuclear power industry impelled them to pursue the RBMK as an alternative, as it could be constructed using more easily produced modular components. “Critics of the RBMK attribute the design's selection to dysfunctional organizations, individual career ambitions, and deliberate recklessness; they argue, with a dash of nationalist rhetoric, that this choice set the world on a direct course toward the Chernobyl disaster,” states the author, but she counters that for Soviet decision makers in the mid-1960s, “selecting the RBMK made very good sense” (125).

Schmid's emphasis on situating technical choices in their social, institutional, and technological context reflects her commitment to the methodological assumptions of science and technology studies. Her analysis draws on interviews with participants in the Soviet nuclear industry, Russian-language publications, and previously unexamined archival materials from the Russian State Archive of the Economy and the Archive of the Russian Academy of Sciences. As archival and oral accounts of the Soviet nuclear industry in English remain scant, the monograph constitutes an important historiographic contribution. Furthermore, Schmid introduces English-speaking audiences to important Russian-language works, such as Nikolai Karpan's astonishing first-hand account of Chernobyl' (*Chernobyl': Mest' mirnogo atoma*, 2006), that have until now been sadly neglected. Unfortunately, the organization of *Producing Power* into five thematic chapters is liable to confuse readers unfamiliar with the history of the Soviet nuclear industry, as some important events—such as the serious accidents at the Leningrad Nuclear Power Plant in 1975—are introduced out of chronological order. While the work is otherwise quite approachable, this issue may limit its appeal outside scholarly audiences.

In a brief epilogue comparing Chernobyl' with the 2011 Fukushima Daiichi accident, Schmid hints at the wider significance of her findings. Documenting the similarities between the disasters, she predicts that the Japanese nuclear industry will eventually follow the same trajectory as its Soviet counterpart in a “return to normalcy” (175). The nuclear industries of both the USSR and “advanced” western countries are the imperfect outcomes of complex historical contexts. To pretend that Chernobyl' and Fukushima are exceptions that “can't happen here” forestalls our learning the lessons needed to prevent or mitigate such events in the future.

EDWARD GEIST
Stanford University