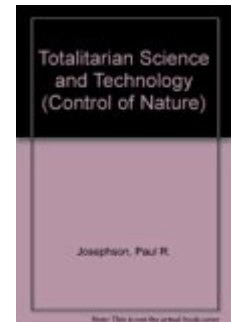


**Paul R. Josephson.** *Totalitarian Science and Ideology*. Atlantic Highlands, N.J.: Humanities Press, 1996. ix + 123 pp. \$39.95, cloth, ISBN 978-0-391-03979-7.



**Reviewed by** Fae L. Korsmo

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The fifth book of the series *The Control of Nature*, edited by Margaret C. Jacob, Rosemary Stevens, and Spencer R. Weart, this volume on Soviet and Nazi science is intended for non-specialists and students who want to know more about the relationship between science and political ideology. Josephson focuses on totalitarian regimes because of their extreme influence on the content and practice of science. He defines totalitarian regimes as those with a monopoly of power, commonly experienced as one-party rule, and the use of an all-encompassing ideology in addition to state-sponsored terror to reach the regime's goals. With this definition, the author hopes to skirt past and contemporary controversies over the category "totalitarian" and move on to the actual effects of Hitler and Stalin on the biological and physical sciences and technology (i.e., engineering and planning). Josephson's purpose in using totalitarianism as a category is to emphasize the similarities of the Nazi and Soviet cases, but this approach glosses over important differences.

In the biological sciences, the author compares the Lysenkoism of the Soviet Union and the

racial hygiene theories of Nazi Germany to demonstrate the extent and penetration of the totalitarian regime's transformationist vision, a chilastic ideology that underwrote pseudo-science to achieve New Soviet Man or a pure Aryan race. In the physical sciences, Josephson also sees ideology at work, isolating Soviet physicists from international developments and, in Nazi Germany, driving Jewish physicists from their positions. The "ideologization" of science meant a greater emphasis on applied as opposed to theoretical physics, a much narrower frame for intellectual debate, and substantial costs to the scientist who challenged the dominant ideology. Finally, technologies in totalitarian regimes can be distinguished from those in pluralist regimes, according to Josephson, by large-scale, state-driven projects designed as show cases of national power and symbols of the regime's success.

The discussion of biology, physics, and technology in Nazi Germany and the Soviet Union draws on Josephson's own original work on Soviet science as well as numerous secondary sources. Its wide coverage, in slightly more than one hun-

dred pages, of different intellectual disciplines, political regimes, historical periods, and ideological formulations necessitates a bold march through the thickets of detail. Josephson is to be applauded for taking this journey into comparison, and students of science policy and history will benefit from reading the results. In many ways, the book functions as a springboard to further research rather than a set of definitive answers to enduring questions about the nature of science.

Importantly, how do different ideologies and political regimes influence the content and conduct of science? Here, Josephson emphasizes the nearly absolute grip of ideology on science and technology. For example, because Marxism and Nazism both relied on the notions that nature had to undergo radical transformation, biologists may have experienced more severe exclusion from their professions or their homelands than other scientific specialists (p. 14). Ideology, bolstered by a powerful state, lies behind the choice of scientific research problems, the retention of loyal quacks, and restrictions on international collaboration. Yet Josephson himself admits of exceptions, and even those scientists who spouted the regime's ideology (e.g., Johannes Stark, a self-proclaimed Aryan physicist in Nazi Germany) did not necessarily have their science accepted by the regime (Walker, 1995, p. 63). Indeed, scientists were seldom asked to provide political content, but rather quietly put "apolitical" science at the service of the state. A study of grant applications for basic research in biology and chemistry during the Nazi period revealed surprisingly little ideological content (Deichmann, 1997).

Ideology does, of course, help to determine who can practice science, establishing exclusionary principles and justifying random acts of state terror to purge the professional ranks. What about liberal ideology, then? Josephson emphasizes that in pluralist regimes, as opposed to totalitarian regimes, scientific disputes are aired open-

ly and the practice of peer review prevents long-term hegemony of one school of thought. In other words, the value placed on competition keeps scientists accountable to many actors (including peers and public), not simply the state. Again, exceptions abound, with secrecy dominating weapons research in pluralist regimes under liberal ideologies and, in the former Soviet Union, periods of fierce competition for resources taking place among scientific communities (Krementsov, 1997).

Ideology by itself does not account for these exceptions. Josephson refers to totalitarian regimes as well as ideologies, tying together governmental structure, policy, and underlying beliefs as a whole system. This is a macroscopic view, useful for large-scale systemic comparisons. But there is also room for more sharply focused case studies (which also can be comparative across scientific disciplines, nation-states, and time periods) that break down regimes into smaller structures: party bureaucracies, executive agencies, research institutes, funding institutions, academic societies, and universities. Structural features may not reflect or emanate from the ideological concerns expressed by party leaders, yet they may have tremendous influence on the development of science and technology.

A related issue raised by Josephson's book has to do with the relationship between ideas and structures, on the one hand, with power and human nature, on the other. What Josephson describes as ideological pressures on Russian physicists might also be characterized as a simple abuse of power. Ambitious young German scientists did not have to be virulently anti-Semitic to take advantage of the opportunities opened to them by the purge of Jewish scientists. Different patterns of institutions (or rules of the game) and organizations present different combinations of constraints and opportunities. Josephson presents the comparative study as a single pattern of totalitarianism, but the details he reveals suggest that the differences

between Nazi Germany and the Soviet Union and between historical periods (e.g., World War II vs. the early-middle 1930s) form not just one, but several patterns of relationships between scientists, party leaders, research institutes, and state bureaucracies.

Finally, the discussion of technology and the preoccupation of totalitarian regimes with gigantic, heroic projects (the Reichstag, the Autobahn, the Soviet Magnitogorsk iron and steel complex, the Moscow metro) touches on the expression and diffusion of national styles and aesthetics rather than the dictates of ideology and regime type. Washington, Rome, Berlin, and Moscow were all graced with large public architecture in the inter-war period. Large-scale power production and mining operations were not unique to authoritarian regimes. The question of nationalism's effect on technology seems best treated as a separate subject in another volume.

For the classroom, I would recommend using *Totalitarian Science and Technology* with detailed case studies, such as the ones listed below, and selected works cited in the book's bibliography. The book will no doubt encourage lively debates and lead to fruitful interdisciplinary research in comparative politics, the history of science, and science and technology studies.

#### References:

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