

Book Review

Weiss, Charles. 2022. *The Survival Nexus*. Oxford: Oxford University Press.

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Charles Weiss has written a timely and compelling interdisciplinary book on science, technology, and world politics. He deftly blends insights from science and social science to a number of complex contemporary issues, ranging from the environment to nuclear disarmament to the economy. He concludes with some governance heuristics. The book is appropriate for undergraduate courses in global governance, science technology and society (STS), environmental politics, and world politics, as well as for a popular audience.

Weiss provides a matrix (or “nexus”) for understanding these issues and their governance: “the interweaving of science and technology with politics, economics, law, business, psychology, culture and ethics” (14), or, in summary, “science proposes, and politics disposes” (45), where politics encompasses geopolitics, domestic politics, market considerations, and policy tractability.

Human survival, according to Weiss, rests on harnessing science and technology (S&T) to deal with current issues. S&T is the co-productive driving force—science enables innovative technology with the potential for human betterment. Whether this potential is realized depends on good governance. S&T is subject to, and interactive with, the broader political nexus.

Technology: you can’t live with it, and you can’t live without it. Technological innovations and their governance have helped avoid nuclear Armageddon, promoted historically unprecedented economic growth and poverty reduction, and provided selective success at environmental protection and public health. Challenges remain: climate disruption, nuclear war, pandemics, and job losses from technology that has helped with economic growth and environmental protection, COVID-19, cyberwarfare, and the control of autonomous weapons and hypersonic missiles that can lead to unintended nuclear war. Yet technology offers the promise of developing renewable energy sources to mitigate climate change and agricultural innovation to combat famine.

Weiss warns that “we are needlessly allowing technology to take the world to the brink of disasters from accidental climate disruption, nuclear war, and pandemics—while we are allowing the means for controlling these technologies to erode. In effect, we are edging closer and closer to cliffs from which we have removed the guardrails” (251). He also recognizes the growing threat to governance from nationalism and antiliberal social movements.

Effective governance requires informed decision-making by decision makers. They need to be sensitive to the multiplicity of choices involved in current complex issues, including their political, ethical, and economic dimensions, and to be able to recognize and apply scientific understanding and parse the underlying uncertainties. And yet they cannot understand, or guide, governance without an appreciation of the social context: Weiss' *nexus*. Decision makers must be attuned to the changing science that defines issues, to policy trade-offs and unanticipated consequences, as well as to the ethical considerations associated with governance. Climate change, for instance, is not merely a technical challenge but is also ethical, when the distributional costs of who pays for mitigation come into question.

Weiss presents seven cases: stratospheric ozone, climate change, nuclear nonproliferation and autonomous weapons, global health, internet governance and cyberwarfare, jobs and manufacturing, and new technologies. Ozone depletion is a clear case of the double-edged sword of S&T: science helped develop new beneficial chemicals, until it identified their environmental harm and helped develop substitutes. Yet the overall trajectory of governance was driven by the influence of a diverse array of nonstate actors subject to economic, political, and legal considerations. Climate change highlights the role of ethics in determining who should pay for climate mitigation: those historically responsible, those currently responsible, or the victims.

Weiss also discusses the challenge posed by policy innovations and emerging technologies. Appropriate technology and local scale technologies (local seeds, low-flow toilets, efficient cookstoves) offer appropriate technical solutions to some issues. Emerging technologies for which governance arrangements have not yet been devised, such as autonomous weapons, hypersonic missiles, cyberwarfare, geoengineering, and carbon storage and sequestration, require attention.

Weiss presents the cases as stories. They are easy to follow, and he presents enough science for the reader to understand the stakes and changing understanding. He reviews the social factors influencing how scientific findings or warnings are addressed and what the ethical considerations are. These are inductively presented, so he points out how the *nexus* influences parts of each story. For instance, ozone science drove markets; in climate change, however, markets drive policy.

Without pledging allegiance to any theoretical perspective, Weiss' analysis is deeply informed by liberal and constructivist accounts, as he stresses the roles of experts and transnational political movements in international regimes that add "ideas, flexibility, dynamics and vigor" (255) to governance. But there is no comprehensive theoretical framework. He inductively indicates how the *nexus* operates for each case, but there is an absence of efforts to synthesize the influence of any of the individual elements in the *nexus*, or the *nexus* itself, across cases. He does not delve the depths of STS, as he fails to engage with the critical wing of the social studies of science literature.

He provides practical heuristics for policy, including the respect for facts and evolving knowledge, cooperation, and collaboration between states; avoiding harm and minimizing risk; focusing on equity, sustainability, and inclusivity; adding to knowledge and developing technology; and ensuring accountability. He concludes with a plea for more academic attention to interdisciplinary approaches to S&T.

Weiss provides a compelling framework for the study of STS in world politics. Technology is a mixed bag that offers benefits, but with threats. More inclusive and reflective policy advice may reduce the threats and amplify the potential benefits.