This overall project was set in motion by me in 1989 when I was a U.S. Advisor (a title which meant “gopher” and fundraiser for an outstanding group of leaders who were testing the limits of glasnost and perestroika) to the International Foundation for the Survival and Development of Humanity. The Chairman was of the foundation was President Gorbachev’s Science Advisor, Academician Yevgeni Velikov. Academician Velikov was also director of the Kurchatov Institute (which has done and still does fundamental research into the physics of nuclear power and nuclear weapons) and Vice President of the Soviet Academy of Sciences. In those three roles he authorized the participation of the Soviet nuclear establishment in this project in a period of time when the Cold War was not yet over, but only three years after the Chernobyl disaster. It was a period of increased nuclear cover-up and secrecy by the nuclear establishment in both countries in the face of strong pressure, also in both countries, to lift the veil of secrecy.

The first activity was a conference at UCI in April of 1991 on the environmental consequences of nuclear development. This conference brought to UCI ten Chinese nuclear scientists, fifty Americans of very diverse backgrounds (the social ecological paradigm), twenty-five Soviet nuclear weapons scientists and designers from the Ministry of Atomic Power, and an outspoken (it was still the Soviet Union) group of environmentalists and anti-nuclear activists.

Environmental Destruction, Citizen Action, and Government Response

The research reported in the Critical Masses book investigates the response of American and Russian societies to the adverse impact on the environment and public health of the nuclear arms race. In Russia, the collapse of authoritarian control systems in the early 1990s made it possible to study the newly emerged citizen environmental groups that were protesting the equally newly acquired public knowledge of the environmental consequences of nuclear weapons production at Mayak, the formerly secret and closed (and not on the map) primary source of plutonium production for the Soviet nuclear weapons program. The immediate post-Soviet society provided a level of freedom which gave rise to citizen mobilization.

In the United States, after the release of formerly classified documents in 1986 as a consequence of Freedom of Information Act filings, there was a parallel mobilization of citizen groups related to America’s primary source of plutonium production for the United States nuclear weapons program, the Hanford Nuclear Reservation in eastern Washington State. In the same general time frame of the middle and late 1980s, there was an unprecedented lawsuit filed by the Department of Ecology of the State of Washington and the United States Environmental Protection Agency against the United States Department of Energy intended to compel the Department of Energy, the responsible authority for Hanford, to manage it and clean it up in accord with the nation’s environmental laws.
The research is in a general context of examining comparative international environmental policy and, more specifically, citizen action and governmental response to environmental destruction and its accompanying public health consequences. Mayak is considered by many to be the most polluted location on the planet. Hanford has the most nuclear waste by volume in the nuclear weapons complex of the United States. Both locations represent what Kai Erikson called a “new species of trouble” for humankind: environmental pollution for which there are not technical or engineering solutions, which defy existing political institutions, and which will be harmful for hundreds and thousands of years.

The core of the research is the process by which the public’s environmental concerns become mobilized into political action, and how the political system responds to these concerns. The research touches on a range of fundamental theoretical questions such as the nature of environmental social movements, the political values and behavior of citizens in a comparative context, and the processes of governmental response, again in a comparative context.

The research questions are organized in different categories:

**Assessing perceptions of nuclear destruction**
This category examines how Russians and Americans think about environmental matters and their respective perceptions of the nuclear pollution, as it is the reality of their perceptions which shapes the willingness of the public to engage in environmental action.

**Social movements and the organization of protest**
This category documented, in both locations, formal organizational development and shifts in attitudes of the respective publics. Policy development on the future of Mayak and Hanford has occurred in a highly politicized environment. In both countries environmental social movements challenged their respective nuclear defense complexes. In the process, these challenges provided unique insights into the political nature of both societies and the relationship between citizens and their governments over such sensitive issues as how the public can maintain its democratic control over a sensitive area of national defense such as nuclear weapons production when there is a curtain of national security covering the government’s actions.

Specific environmental issues have been widely discussed in both regions, and the future of the complexes debated. In the West, what has been called a “New Environmental Paradigm” involving a coherent set of beliefs has contributed to public attitudes and behavior. This comparative research study made it possible to investigate whether the same paradigm exists in a society shaped by Marxist-Leninist ideology and collective values shaped by a region closed to foreigners. Environmental thinking was examined at two levels: opinion surveys which
assessed environmental values and intensive interviews with environmental activists.

**Mobilization of Citizen Support**

There are stark differences in significant aspects of the sociopolitical contexts of Hanford and Mayak. These unique circumstances made it possible to study why people join forces to achieve public good in response to similar environmental wrongs in a context where it is possible to compare the level of information available to the citizenry, the response of the government to citizen protest, the power of local environmental movements, the magnitude of the environmental destruction, the opportunity for political organizations to act on behalf of aggrieved citizens, and the historic openness of the political process. Studying the regions around Hanford and Mayak provides settings with clear and major sociopolitical differences and with clear and major salient and longstanding nuclear environmental problems.

**Russian and American governmental response to the long-term environmental consequences of nuclear weapons production**

There were major similarities to how the American and Soviet governments responded to the Cold War competition centered around large-scale production of nuclear warhead materials. In comparing the Russian and American responses after the end of the Cold War to the environmental destruction, there were significant differences. Several questions were central to the comparison:

- Who were the key institutional actors entrusted with the authority to hold the secrets of the atom for military purposes?
- How did governmental institutions in both nations reconcile the tensions between scientific norms and military necessity, and what were the consequences for the environment and public health?
- When things went seriously wrong, especially when there were implications for the environment and public health, what was the nature of the government response?
- Did the special environmental and political problems created by these facilities result in deviations from normal governmental process?
- What was the nature of the each government’s response to the need to establish public trust in its capacity to preserve and protect the public welfare, especially on dimensions of health and environment?
- To what degree has there been a modification in the secret nuclear weapons production mission to incorporate a public, inclusive process of environmental cleanup?
- To what extent have government agencies originally entrusted with nuclear weapons production been forced to open their files and work with a broad range of government agencies dedicated to environmental restoration?
- To what extent have efforts at environmental restoration met with adequate funds from central government sources? (Again as a footnote to this
ongoing process, the study of the U.S. Senate entitled *Train Wreck Along the River of Money* has been followed by an impartial scientific report that, even if money was not an issue, there is not the technology available for effective environmental restoration.

The dynamics of citizen action (and policy influence) concerning Mayak and Hanford contain, at different levels of analysis, policy lessons and considerations for social science theory. The consequences of actions by their respective citizens and by the two governments help to understand more fully democratic governance on issues of environment and public health in both the United States and Russia. There are also implications for the central tenets of citizen influence on government and the transition from Cold War national security competition conducted in secrecy to a more open and citizen-inclusive form of political life.

The title of Chapter 11 of *Critical Masses* had the theme of "still tilting against the environment." This referred back to the Soviet-era Cold War practices. It is absolutely in a long tradition that one of President Putin's first acts was to abolish their equivalent of the U.S. Environmental Protection Agency. The Russian Ministers of Atomic Power have been aggressively pursuing a plan to receive nuclear waste from around the world. The goal is to earn $20 billion by importing spent nuclear fuel and storing it in the location of our research, Chelyabinsk. A law making this possible was signed by President Putin. The point is that the nuclear waste law developed by successive Russian Dumas beginning in 1992 would have prevented this importation of spent nuclear fuel for permanent storage when there was no infrastructure. As documented in Chapter 11, a draft law passed both houses of the Russian Parliament only to be declared by President Yeltsin to be a violation of the State Secrets Act. And in secret he signed decrees allowing the Ministry of Atomic Power to do what it wanted.

All of this is background to say that this book in terms of scholarship spans six years of development beginning in 1993. The collaborations with Russian scientists, parliamentarians, and citizen activists would not have occurred had it not been for the larger project which began in 1989. The scholarship was an important opportunity but it took numerous trips and collaborations. The subject matter in both countries covered the most secret of Cold War weapons developments. While the period from 1993 to 1999 in the United States were not as momentous as in Russia, the book simply would not have been so rich in content or thorough in its coverage if we had tried to bring it to completion sooner. Also, elements of the security services in both countries tried to obstruct open inquiry, a circumstance which worsened in Russia after 1996 (see Chapter 11 for the public version