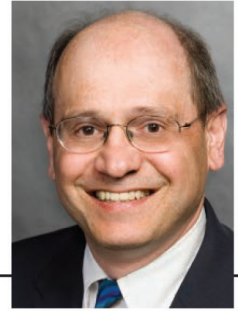


The History Professional

An Interview with Thomas Wellock

Thomas Wellock is the Historian of the Nuclear Regulatory Commission (NRC) in Rockville, Maryland. He earned a Ph.D. in History from the University of California, Berkeley, in 1995, and published his research in Critical Masses: Opposition to Nuclear Power in California, 1958–78 (1998). He served as a professor of history at Central Washington University (1997–2010). At the Commission, he recently authored the NRC report titled No Undue Risk: Regulating the Safety of Operating Nuclear Power Plants (June 2014). His latest article is “The Children of Chernobyl: Engineers and the Campaign for Safety in Soviet-Designed Reactors in Central and Eastern Europe,” History and Technology: An International Journal (2013). He has presented papers widely on nuclear energy issues and published numerous articles and reviews.



Interview by Benjamin Guterman

Thomas Wellock

How did you become interested in your dissertation topic of opposition to nuclear energy in California, 1958–78?

I have an undergraduate degree in engineering, and I worked for several years testing nuclear reactors on submarines and as an engineer at a nuclear power plant. When I left nuclear power and started graduate work in history, I wanted to understand the protestors I saw on the other side of chain-link fence at the places I worked. Working on my Ph.D. at Berkeley I recognized that California offered a unique perspective on the antinuclear movement and the role states played in bringing down the “iron-triangle” controlling nuclear power promotion and regulation.

What are your official duties in support of the Nuclear Regulatory Commission?

My primary responsibility is to write histories of nuclear power regulation that meet the scholarly standards of the profession. Like any scholar, I present papers, write articles for journals, and publish books.

An aspect of the job that has grown since I arrived at the NRC five years ago is public outreach through social media. I write occasional blogs on more popular nuclear history topics, and the NRC has launched a “Moments in NRC History” video series of short (6–8 minutes) documentaries on the history of civilian nuclear power. I write the scripts and narrate them—learning to hold forth in front of a camera has been quite a learning experience.

The video series has been very popular. One of them on Three Mile Island has been the most viewed of the many videos produced by the NRC. That success encouraged me to plan with our Office of Public Affairs an entire set of short videos that cover the history of the agency. We have made seven of them so far. The blog posts have had similar success.

I am also the primary contact for staff, press, and public citizen questions about agency history. Finally, I advise the Commissioners on the maintenance and retention of their records.

After starting as the NRC Historian, where did you see the need for research and investigation in the program, or did you have prior projects in mind?

After settling into my job, I altered my research agenda. Initially, I envisioned doing a complete regulatory history of the

1970s, but I decided to draw on my engineering background by investigating a more technical problem that spans the entire history of nuclear energy: How did the Atomic Energy Commission (AEC) and NRC try to prevent and mitigate severe accidents in a reactor? It is a question with interesting technical, political, and social angles.

Generally, what types of records do you have access to and use at the Nuclear Regulatory Commission?

The NRC has a rich collection of historical records, including many records related to civilian reactors from its predecessor, the Atomic Energy Commission, though most AEC records are at the National Archives. I hope over the next several years, a fair chunk of the Commission’s most valuable older records will be digitized.

In what important ways did environmental and safety concerns from western states in the 1970s and 80s ultimately affect nuclear plant design and safety measures?

A unique concern over nuclear power in western states was seismic safety. Utilities failed to get approval for power plants at several locations along the California coast due to seismic hazards and the uncertainty that a specific design was adequately safe. This uncertainty came at a time when states were trying to protect their coastal environments. So, many people in the West opposed nuclear power plants on safety, environmental, and aesthetic grounds. This made site selection very difficult, and few nuclear power plants were built in the West. These episodes forced the AEC to develop greater expertise on seismic safety and raise standards that reactors survive more intense earthquakes than previously considered.

You’ve written that in the 1970s “computers did more than produce information—they demanded it.” How did the emerging “computer-accident modeling” change nuclear oversight?

The two most important changes created by accident modeling were data collection and expanding regulatory capability. As accident models became more sophisticated, experts were frustrated by the lack of quality data to plug into their programs. This led to standardized data recording at operating reactors and greater safety research.

More importantly, computers made reactor designs transparent and empowered regulators. Modeling and risk assessment programs put them on an equal footing with reactor plant designers as far as understanding reactor performance and accident scenarios. They could see inside a design to a degree not possible in the 1960s. Computers made for smarter regulators and smarter public critics of nuclear power.

You've written that the Three Mile Island accident demonstrated human failure, leading to the NRC's promotion of "safety culture." Could you explain that goal and NRC progress to date in that area?

The emphasis on safety culture at the NRC has grown over a 30-year period. The 1979 Three Mile Island accident started the agency down that path. Before the accident, regulators avoided significant oversight of utility plant management since the plant operator needed to "own" plant safety during an emergency. Regulators focused on the oversight of hardware quality and design, as well as operating and maintenance procedures and qualifications.

Three Mile Island made it clear that the "errors" committed by the reactor operators that day were really indicative of a regulatory and industry-wide failure to pay attention to human factors in reactor safety, particularly in control room design, information sharing, and training. Early on, the nuclear industry took the primary lead on safety culture and established an independent organization, the Institute of Nuclear Power Operations (INPO), that promoted developing an attitude of excellence among nuclear plant operators.

The term "safety culture" gained currency after the Chernobyl accident in 1986. In the West, regulators concluded that the Soviet Union's nuclear industry had a production rather than a safety mindset. There were efforts to apply the INPO model of excellence worldwide and spell out what it meant for an organization to have a safety culture.

The NRC took a more direct role in incorporating safety culture requirements in its oversight process after an episode in 2002 at the Davis-Besse nuclear power plant in Ohio almost led to a significant accident. The agency also issued a safety-culture policy statement in 2011.

Your fascinating study of the momentous post-Chernobyl developments traces the closure of numerous unsafe reactors in Central and Eastern Europe and argues that this process improved international communication and regulation. How so?

The post-Soviet era is an interesting moment in nuclear history wherein diplomats and experts have been able to carve out a fair amount of international cooperation on what had been a fiercely protected area of national control: reactor safety regulation. After Chernobyl and the fall of the Soviet Union, previously reluctant nations agreed on the need for an international agreement spelling out a common understanding of reactor safety. The Convention on Nuclear Safety was mostly a European Union initiative that later gained U.S. backing. Western nations drew in other nations by not pushing their advantage too hard.

The convention offers incentives rather than sanctions for nations that do not completely measure up to its standards. That may sound weak, but it has been successful in improving a commitment to a common safety approach among nations with nuclear power programs. Several other conventions on nuclear energy were negotiated in this period.

Did you face any special challenges in documenting that research, perhaps in access to materials or in locating surviving scientists?

Just the opposite. Given the recent nature of this topic, there were scores of sources just a mouse-click away. I am going to love being a historian in an all-digital age. Compared to how I found interviewees for my dissertation—going through the major phonebooks in California—finding people today is delightfully easy. For the experts I needed in other countries, the NRC's Office of International Programs was very helpful.

Your article "Engineering Uncertainty and Bureaucratic Crisis" argues that technological advances ultimately created deep divisions among AEC engineers and thus revealed the untenability of the agency's mission. How did you first come to that realization and to research the article?

Among historians of technology, it is common to assume that social and political factors drive technological design, research, and regulation. At the AEC, I was surprised to find the reverse was true. Technological advances in the form of computer modeling and research destabilized political support for nuclear power when they unexpectedly produced negative results. With its known unknowns growing, the AEC was worried it did not have sufficient information to say that nuclear power plants were safe.

Congress and the public found the AEC's response to the situation troubling. Long-standing divisions over safety within the agency broke into the open. News reports claimed it cut off funds to safety research programs and harassed and demoted employees who dissented from the agency's conclusions on safety. The dissenters responded by secretly leaking information to nuclear critics. Regulators discovered they could not control the impact of this news on the public or political events. The AEC's questionable behavior in the face of engineering uncertainty demonstrated that it could not be a promoter of nuclear power while regulating its safety. Congress dissolved the AEC in 1975 and created the NRC as an independent regulator.

What is the state of nuclear plant applications and construction in the United States today? Are new plants underway?

There are four new plants under construction, two each in South Carolina and Georgia. These plants are all new generation AP-1000 Westinghouse reactors. The Tennessee Valley Authority has also announced its intention to complete construction on a second unit at Watts Bar in Tennessee. This plant had suspended construction in 1985 when expected demand for electric power did not materialize.

As a federal historian, how would you compare and contrast your role and even research interests with that of academic historians. Are they perhaps less concerned with institutional history?

My responsibilities as a scholar are no different than when I was an academic historian. The NRC does not judge my scholarly work, my academic colleagues do. As far as research interests go, I am, of course, more restricted than my university days. The NRC hired me to explore the history of nuclear power and the agency; you won't see histories on Lewis and Clark from me. But the NRC allows me remarkable latitude to choose topics within the history of nuclear power, even when the agency isn't the main character. For example, in my article on reactor safety in post-Soviet Eastern Europe, the NRC appears as one player among many that influenced decisions to improve or close reactors.

An advantage of being a government historian is that I write for audiences not often reached by academic historians. The history profession has taken heat for leaving to journalists the writing of history for popular audiences. And, as you note, academic historians have taken less interest in institutional and policy history. Government historians help fill these gaps. I have produced practical analysis for the NRC staff and brief reports aimed at the public where I explain technical issues with significant historical context. My report, *No Undue Risk*, fits that latter category by explaining how evolving safety regulations have influenced the design and operation of existing reactors. And working outside of academia has opened up opportunities for me to reach the public through social media, such as blogs and documentaries fit for YouTube ♦

ORAL HISTORY NOTES

The Social Security Administration's History Office

The SSA History Office has added to its online oral history catalogue in recent years. The interviews focus on the administrative and institutional history of the Social Security program. At the core are the older oral histories conducted in the late 1960s and early 1970s, and the newer ones conducted since 1995. In addition, the office is gathering interviews from the Oral History Center at Columbia University, completed in the 1960s. Transcripts for most of these are not yet available online, but included is one for Arthur J. Altmeyer, a key member of the President's Committee on Economic Security that drafted the original legislative proposal in 1934, and Commissioner for Social Security from 1937 to 1953. The website also lists interviews that the office is gathering from the Centers for Medicare and Medicaid Services (CMS) and from collections at the Presidential libraries and other institutions.

An excerpt follows from an interview with John J. Corson on March 3, 1967. Corson was Assistant Executive Director of the Social Security Board in 1936–38, and he served as the Director of the Bureau of Old-Age and Survivors Insurance (BOASI) in 1938–41 and 1943–44.

Now during that time there also came the 1939 Advisory Council. And the 1939 Advisory Council came at a time when one of the big issues was, "Should we commence the payment of the benefits earlier?" because there was a certain impatience growing up in the country. They had heard about social security and social security was a good thing, but the only benefits that were being paid in 1938 were very minimal benefits to people who died and had made contributions and essentially there was a return of their contributions. We weren't really providing security in any



*John J. Corson
as Director of
BOASI, circa
1938 (SSA
History Archives)*

fashion at all. And that benefits which were the monthly benefits that might be expected to give security to people who retired weren't scheduled to commence until January 1, 1942. As a consequence, in the Social Security Advisory Council of 1939 the big issue was "Should we pay benefits earlier?"—the public demand for some production. Social security was a nice dream but it wasn't doing anything. Here we'd been talking about it now for 3 years but, moreover, we'd been collecting contributions for 3 years and there was great debate as to "Can't you get going, can't we actually start paying benefits?" That was related to the administrative effectiveness of the Bureau, as the Bureau has now gotten to a point that it can start paying benefits, that it's got its machinery in such shape. And my task between March of '38 and the fall of '39 when this Council was (meeting) was to get this Bureau in such shape that we could say with assurance, "Yes, we can handle it. We can handle it January 1, 1940," which was really quite early.