Communicating Science to the Public: How does the experience of long-term nuclear waste disposal prepare us to think about climate engineering?

 Speakers: Jane Long, Joseph Masco

At this Science and Justice Working Group event, Jane Long (contributing scientist for the Environmental Defense Fund, Visiting Researcher at UC Berkeley, Cochair of the Task Force on Geoengineering for the Bipartisan Policy Center and chairman of the California Council on Science and Technology's California's Energy Future committee) and Joe Masco (Professor of Anthropology, University of Chicago) discussed possibilities for climate engineering and public perceptions surrounding these ideas. Science and Justice Research Center Associate Director Andrew Mathews welcomed the audience and introduced the participants, explaining that both Long and Masco have conducted extensive research in nuclear politics and share a capacity to communicate to different kinds of audiences.

Long began the discussion by introducing her own work and background. She described her dynamic career as “a quest to work on every controversial issue in Earth Sciences”. Long’s involvement in nuclear waste began when she was working at the Lawrence Livermore National Laboratory (LLNL) and was assigned to design a hydrologic modeling system that could help determine the location for waste storage for the Hanford project. She recalled her frustrations about the political nature of the project, and compared it against a similar project in Sweden. In Sweden, the decision about where to place nuclear waste began by first tasking scientists with determining the criteria for a best possible location, and then determining which areas in Sweden most closely matched those criteria. For Long, the Swedish case represented a safer and more scientifically rigorous decision-making process.

During her career at LLNL, Long also had the opportunity to work on climate change and climate engineering projects. This included a report written for the Department of Energy that looked at the feasibility of climate engineering and included recommendations from nonscientists. Working on this project was “the hardest thing [she’d] ever done in [her] life”, because of the difficulty of communicating across disciplinary and ideological lines. The process of writing the report caused Long to become increasingly concerned with vested interests. People are often aware of the possibility of economic vested interests, but less so the scientific and institutional interests that are involved when entire careers and institutions are dependent on researching one project, something she sees as a legacy of the Cold War emphasis on big projects like nuclear weapons development.
Masco then explained his interest in nuclear waste and climate engineering. He argues that the Manhattan project changed the way the U.S. relates to the future by presenting two options: either the future ends abruptly in nuclear war or technoscientific projects could solve problems systematically until a form of utopia is achieved. These two competing visions for the future existed side by side for generations in a sort of schizophrenic state. During this time, the Civil Defense project instructed people in unifying around fear and collective imaginaries about nuclear technologies. The Civil Defense model stumbled and failed after the disaster at Three Mile Island, rendering it ineffective against new existential concerns such as climate change. There is no longer an optimistic sense that technology will lead us towards utopia, but yet there are certain problems, such as the question of how to store nuclear waste that require technological solutions.

One of the unifying threads between nuclear waste disposal and climate engineering is that both issues require the contemplation of deep futures, a timescale that Masco suggests is too long for engineering and too short for geology. Long said that the challenge of contemplating deep futures is that they require a different way of framing the issue, a different ideology. According to Long, an ideological approach is necessary because people don’t think analytically, but ideologically. The issue of ideology became central to the conversation, and was returned to later in a discussion about planetary boundaries.

The Stockholm resilience institute proposed a concept of planetary boundaries that could be regulated and monitored by global governments. This proposal was brought up by Masco, who thinks that reframing future concerns as planetary boundaries is an extraordinary shift in thinking that takes us away from assuming a framework of unlimited growth. Such a framework had come to be the norm during the “petrochemical era” that relied on inexpensive fossil fuels to drive technological developments and economic growth. Long is less enthusiastic about the idea, citing concerns that people in ecology, and especially the Breakthrough Institute, reject this framework. They are still committed to the idea that technology will overcome, and that is in part, she believes, because it provides possibilities for facing the challenges of the future. Long says that she agrees with this position, in part because she believes that climate change mitigation alone is insufficient to prevent widespread disaster, so climate engineering could be an important tool.

In concluding the conversation, Long reiterated her position that climate engineering is another crucial tool that can help prevent climate change disasters in the future. Masco said that he is inclined to agree, but cautions that engineering cannot be thought of as a “fix” to the problem. It needs to be thought of as one potential tool in a broader set of changes that include widespread ideological change of the sort ushered in by the Civil Defense project of the mid-twentieth century. Rather than teaching nuclear fear, however, such a project would instill belief in and respect for planetary boundaries as fixed conditions that technology cannot outrun.