Anticipatory Governance of Emerging Technologies

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Imagine you're putting together a jigsaw puzzle. This puzzle, however, works a bit like the board game in the movie "Jumanji": When you finish, whatever the puzzle portrays becomes real. The children playing "Jumanji" learn to prepare for the reality that emerges from next throw of the dice. But how would this work for the puzzle of scientific research? How do you prepare for unlocking the secrets of the atom, or piecing together the genome of a bacterium new to evolution, or assembling from the bottom-up nanotechnologies with unforeseen properties, or engineering the climate in an attempt to ward off catastrophic global warming – especially when completion of such puzzles lies decades after the first scattered pieces are tentatively assembled?

One response to this problem, characterized by chemist and philosopher of science Michael Polanyi, holds that because the progress of science is unpredictable, society just needs to move forward with solving the puzzle until the picture completes itself. Another chemist, Nobel laureate Frederick Soddy, believed that once the potential for danger reveals itself, one must reorient the whole of one's work to avoid it. While both scientists stake out extreme positions, Soddy's approach can provide a foundation for the anticipatory governance of emerging technologies that does not rely on the prediction that Polanyi argued, correctly, was impossible.

This presentation narrates these two perspectives and discusses how ASU's Center for Nanotechnology in Society puts into practice a vision of anticipatory governance that builds the capacities for foresight, public engagement, and the integration of natural and social science perspectives in order to make better decisions about the course of emerging technologies while such decisions are still possible.