Writing about Risk in an Era without Boundaries

Michael Specter Graduate Science Writing Course MIT.

The critical decisions we need to make to flourish as a society have never been more urgent, but without an informed public, how can we hope to make coherent choices? Particularly when choices are never clear. And when it comes to scientific advances, that has never been more true. The course will focus on the philosophical decisions society needs to make when assessing scientific choices and confronting the potential of catastrophic risk. We will look at some of the most contentious and potentially valuable technologies and the moral, political, and philosophical issues they raise. Such as:

1.) Why are we still debating about GMO's?

More than thirty years have passed since the first tools of agricultural biotechnology were planted. Since then, engineered crops have been adopted widely around the world. Yet 45 percent of Americans say they won't eat foods that contain engineered ingredients and many countries in the world, even those desperate to feed their citizens, still refuse to plant any seed that has been genetically engineered. There are many objections to corporate ownership of seeds and to factory farming. But this opposition is much broader. Why?

Reading:

Panic Free GMO's A series by Nathaniel Johnson in Grist
https://grist.org/series/panic-free-gmos/

Annals of Science The New Yorker
Seeds of Doubt. Michael Specter
An activist's controversial crusade against genetically modified crops.
https://www.newyorker.com/magazine/2014/08/25/seeds-of-doubt

2.) Pandemic risk, synthetic biology, and information hazards.

As the world becomes more connected, the merger of information technology and biology offers many exciting prospects. We would never have had a vaccine for COVID in less than a year if the Chinese had not put the sequence on the internet and shared it around the world. Yet, does it make sense to simply put the sequence of nearly every lethal virus we know - including the 1918 influenza virus and smallpox - on the internet? It used to be expensive and difficult to assemble a virus from scratch. Today, there are thousands of people who can do it, and the number rises every year - while the price of DNA drops. How do we find a balance between putting ourselves at grave existential risk and using our tools to improve the world?

Reading:

The Precipice: Existential Risk and the Future of Humanity by Toby Ord
Chapters 5,6 and 7.

Optional:
Annals of Science. The New Yorker. Michael Specter
A Life of Its Own: Where will synthetic biology lead us?
https://www.newyorker.com/magazine/2009/09/28/a-life-of-its-own

— The Risks of Viral Research. We can now follow the evolution of a virus on a molecular level, gauge its power, and alter its functions. But should we?
https://www.newyorker.com/news/daily-comment/risks-viral-research

--Publish and Perish: Chapter from *Higher Animals: Vaccines, Synthetic Biology and the Future of Life.* (audiobook will be published March 2023. Michael Specter, Pushkin Industries.)

3.) Gene editing and social justice

In the past decade, we have achieved what many have considered a holy grail of genetics: our ability to rewrite and alter the fundamental code of life. With CRISPR and similar advanced tools, we can begin to prevent diseases by editing our genes; we can alter the biology of animals and possibly eradicate diseases like malaria by editing the genes of mosquitoes. But how do we decide what is fair and what is morally acceptable? In Nov 2018, a Chinese researcher, He Jiankui, announced that he had used CRISPR to modify the genes of twins in order to make them resistant to infection from H.I.V. He was immediately condemned - as he should have been. But does anyone think his attempt to edit the genes of humanity will be the last? Who should make these decisions, and what effects will they have?

Reading:

Is the CRISPR baby controversy the start of a terrifying new chapter in gene editing? VOX . Julia Belluz
https://www.vox.com/science-and-health/2018/11/30/18119589/crispr-gene-editing-he-jiankui

Industrial Society and its Future, (The Unibomber Manifesto) Ted Kazcyinski
Please read this section: THE 'BAD' PARTS OF TECHNOLOGY CAN NOT BE
SEPARATED FROM THE 'GOOD' PARTS. Paragraphs: 121-124
(Readily available on the internet)

National Geographic. Pro and Con: Should Gene Editing Be Performed on Human Embryos?
https://www.nationalgeographic.com/magazine/article/human-gene-editing-pro-con-opinions?loggedin=true
(This is for subscribers soI can provide pdfs)

Humans 2.0: A powerful technology enables us to manipulate our genetic code with ease. How will we use it? Annals of Science November 16, 2015

https://www.newyorker.com/magazine/2015/11/16/the-gene-hackers

4.) Geoengineering: Can we fix the climate without making it worse?

Climate change is real, and we are to blame. Can we do anything about it? Will we? Decades after it has been clear that we are headed toward disaster, we have implemented only minor efforts to lessen our dependence on fossil fuels. Should we intervene to speed up our efforts to correct our mistakes? What are the possible consequences, and who should decide?

Reading:

David Keith. The New York Times. The least bad way to cool the planet. New York Times
https://www.nytimes.com/2021/10/01/opinion/climate-change-geoengineering.html

Elizabeth Kolbert. Under a White Sky: The Nature of the Future Crown.

I am reluctant to ask people to read the entire book but it is a valuable counterweight to those who think geoengineering makes sense.

Optional:

Michael Specter. The New Yorker The Climate Fixers. Is there a technological solution to global warming?
https://www.newyorker.com/magazine/2012/05/14/the-climate-fixers

Michael Specter. The New Yorker. How Not to Debate Nuclear Energy and Climate Change, Dec.18, 2015.

https://www.newyorker.com/news/daily-comment/how-not-to-debate-nuclear-energy-and-climate-change

5. Animal Welfare: How can we continue to justify the way we treat other species - from a moral and environmental perspective?

When I was a student, there were no vegan dishes offered in the cafeterias of most universities (or high schools.) Today, in America, it is hard to find a place that does not offer at least one such dish. Even McDonald's and Burger King offer vegan and non-meat options. But we still treat animals in ways that are almost too horrible to conceive of. Why? Do we actually think that, as in the Old Testament, we should have dominion over other species? Is that changing? How far should it go?

Reading

Peter Singer, Animal Liberation. (This book, more than any other, started the animal movement.)

Jonathan Safran Foer, Eating Animals.

optional:

- Michael Specter, The Dangerous Philosopher, https://www.newyorker.com/magazine/1999/09/06/the-dangerous-philosopher (profile of Peter Singer)

- Specter, The Extremists. Ingrid Newkirk and PETA. https://www.newyorker.com/magazine/2003/04/14/the-extremist
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6.) AI. Should we fear Artificial Intelligence? Will AI ease our lives or end them?

For years the independent power of AI was depicted as an eerie if menacing impossibility ("Open the pod bay doors please Hal"). But we have already created systems with superhuman capacities. AIs are bound to become more powerful - accelerating the pace of technology. But at what cost? How do we ensure that the technology we develop is aligned with our interests and does not take over? Is that even possible?

Reading:

"Timelines to transformative AI" (A. Cotra)

"What failure looks like" (Paul. Christiano)

The Alignment Problem. Brian Christian. W.W. Norton

Other classes will be determined by the students. But possible subjects include: Climate Justice, the impact of Effective Altruism, and the issue of Patenting Life.

Either every week or every other week, we will look closely at one particular magazine piece with a particular eye on the mechanics of how it was written. Again, will choose those as we go.