

GENED 1058: Tech Ethics: AI, Biotech, and the Future of Human Nature

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Fall Semester 2019

Tech Ethics:

AI, Biotech, and the Future of Human Nature

Professors Douglas A. Melton and Michael J. Sandel

The course explores the moral, social, and political implications of new technologies. Will biotechnology and AI enable us to hack humanity? Should we edit the genes of our children, extend the human lifespan, and genetically enhance our athletic ability and IQ? Can algorithms be fair? Will robots make work obsolete? Can smart machines out think us? In an age of big data and social media, is privacy over? Is democracy?

The course will ask how science and technology are transforming the way we work, learn, make friends, raise children, care for our health, conduct our politics, and understand what it means to be human.

Course requirements

The course depends on informed participation and discussion; students who enroll should be prepared to keep up with course readings and assignments on a weekly basis.

- Three short papers (900-1000 words each): 30 percent of course grade
- Attendance at all lectures, and attendance and participation in weekly discussion sections: 30 percent of course grade
- Take-home final exam: 40 percent of course grade

The take-home final exam will be posted at 9:00am on Dec. 10, and due no later than 5:00pm on Dec. 12.

Papers should present a well-reasoned response to one of the questions assigned for a given week, drawing upon relevant course readings and, if you wish, arguments presented in lecture. The papers are intended to develop your ability to make well-argued ethical evaluations of the technologies discussed in the course.

Students may choose which weeks to submit papers, subject to the following requirements:

- The due date for each paper is the Sunday night (10:00 p.m.) following the class on the topic you choose. Papers should be submitted through the [course dropbox](#).
- Students are encouraged to schedule their papers at reasonable intervals. At least one paper must be submitted by Sunday, Oct. 13.

September no-risk bonus offer: As a practice opportunity, and as encouragement to begin writing sooner rather than later, any student who submits a paper in September will have the option of counting the grade on that paper or dropping it and writing three other papers.

Course policies

- No laptops, cell phones, or other mobile devices may be used during class.

- Students are asked to arrive on time and to remain seated until the end of class, to avoid distracting others. Any student who, for a compelling reason, must leave class early on a given day should contact the Head Teaching Fellow in advance.
- The course will be filmed for possible use as an online course or other uses in the future. Students who do not wish to be filmed should sit in the no-film seating area. Please contact the Head Teaching Fellow with any questions.
- If it is necessary to lottery the course, preference will be given to sophomores, juniors, and seniors.
- The course will not be offered pass/fail.
- Please sign the video release form here: [The video](https://harvard.az1.qualtrics.com/techethics) <https://harvard.az1.qualtrics.com/techethics> (Links to an external site.)

AEO: Any student needing academic adjustments or accommodations is requested to present their letter from the Accessible Education Office (AEO) and speak with the Head Teaching Fellow by the end of the second week of the term. Failure to do so may result in the Course Head's inability to respond in a timely manner. All discussions will remain confidential, although AEO may be consulted to discuss appropriate implementation.

Collaboration policy

Students are strongly encouraged to discuss their papers with one another. This is a good way of testing your arguments and anticipating possible objections. The best papers typically result from sustained discussion with classmates and others. You should make sure, however, that your written work is your own. Please indicate, in footnotes, or informally in the text, or in a separate acknowledgement statement, the names of those with whom you have discussed any ideas, arguments, or insights that figure prominently in your paper. This policy also applies to the take-home final exam.

Course administration

The Head Teaching Fellow is Dr. Sergio Imparato (sergioimparato@fas.harvard.edu)

Sectioning will open on Sept.11 (10:00 pm). Students must submit their section preferences through my.harvard.edu **no later than September 13 (10 am)**. Here you can find detailed instructions on how to submit your section preferences: https://harvard.service-now.com/ithelp?id=kb_article&sys_id=3f5cdb41dbfd4bc4a752f1a51d9619a1 (Links to an external site.)

Students will receive their section assignment on Sept. 15. Sections will begin the week of Sept. 16 and section rooms are available [here](#) (all sections meet in or around Harvard Yard).


Schedule of topics

1. Sept. 5 Introduction: Genetic and digital clones
2. Sept. 12 Designer babies: Embryo screening and gene editing
3. Sept. 19 Eugenics, old and new
4. Sept. 26 Genetic enhancement: For and against
5. Oct. 3 Ethical frameworks: Utility and dignity
6. Oct. 10 The ethics of AI and the internet
7. Oct. 17 Algorithmic fairness and discrimination
8. Oct. 24 Surveillance capitalism
9. Oct. 31 Genetically altered athletes and animals
10. Nov. 7 Emotion AI, affective computing, companionate robots
11. Nov. 14 Frontiers of biomedical ethics: Stem cells and life extension
12. Nov. 21 Technology, big data, and democracy

Sept. 5: Introduction: Genetic and digital clones

Is it wrong to try to conceive a deaf child? Is there a moral difference between conceiving a deaf child and making a child deaf at birth? Is there anything wrong with using a Nobel Prize sperm donor in hopes of conceiving a brilliant child? What are the new technologies of reproduction, and what ethical questions do they pose?

Margarette Driscoll, [“Why They Chose Deaf Children.”](#)  *Sunday Times*, April 14, 2002.


Darshak M. Sanghavi, [“Wanting Babies Like Themselves, Some Parents Choose Genetic Defects.”](#)  *The New York Times*, December 5, 2006.


Sept. 12: Designer babies -- Embryo screening, sex selection, and gene editing

Part I:

Is embryo screening to avoid having a child with disabilities morally desirable? What about embryo screening to choose whether to have a boy or a girl? If it were possible to choose the sexual orientation of one's child, would it be objectionable to do so? Should parents try to select children with the best possible genetic endowment?

Sumathi Reddy, [“Fertility Clinics Let You Select Your Baby’s Sex,”](#)  *Wall Street Journal*, Aug. 17, 2015.

Julian Savulescu, [“Sex selection: The case for,”](#)  *Medical Journal of Australia*, Oct. 1999.


Nicholas Eberstadt, [“The Global War Against Baby Girls,”](#)  *New Atlantis*, Fall 2011.

Scott Baldauf, [“India’s ‘Girl Deficit’ Deepest Among Educated,”](#)  *Christian Science Monitor*, January 13, 2006.

McDougall, [“Acting Parentally: An Argument Against Sex Selection,”](#)  *Journal of Medical Ethics*, vol. 31, 2005.


Edward Stein, [“Choosing the Sexual Orientation of Children,”](#)  *Bioethics*, vol. 12, no. 1, 1998.


Pam Belluck, [“Many Genes Influence Same-Sex Sexuality, Not a Single ‘Gay Gene,’”](#)  *The New York Times*, Aug. 29, 2019.

Emma Green, [“Should Women be Able to Abort a Fetus Simply Because it is Female?,”](#)  *The Atlantic*, May 2016.

Part II:

What is gene editing, or CRISPR? What ethical issues does it pose? Should gene editing be used only for medical purposes--to cure or prevent disease--or should it also be used to engineer taller, stronger, or smarter children?

David Cyranoski and Sara Reardon, [“Chinese scientists genetically modify human embryos,”](#)  *Nature*, 22 April 2015.

David Cyranoski and Sara Reardon, [“Embryo editing sparks epic debate,”](#)  *Nature*, 30 April 2015.

Antonio Regalado, [“Engineering the perfect baby,”](#)  *MIT Technology Review*, March 5, 2015.

Erika Check Hayden, [“Should you edit your children’s genes?”](#)  *Nature*, 23 February 2016.

Video animation:

[“Genetic Engineering Will Change Everything Forever – CRISPR,” by Kurzgesagt – In a](#)





[Nutshell \(Links to an external site.\)](#)


Sept. 19: Eugenics, old and new

What is eugenics? Are eugenic practices morally objectionable only insofar as they are coercive (as with forced sterilization policies), or are voluntary measures to improve human genetic endowments also objectionable? Does voluntary genetic enhancement amount to “free market” eugenics? What about shopping for sperm with particular traits?

Fraser Nelson, [“The Return of Eugenics,”](#)  *The Spectator*, 2 April 2016.

Carolyn Abraham, [“Unnatural Selection: Is Evolving Reproductive Technology Ushering in a New Age of Eugenics?,”](#)  *Globe and Mail* (Toronto), Jan. 7, 2012.

Nathaniel Comfort, [“Can We Cure Genetic Diseases Without Slipping Into Eugenics?,”](#)  *The Nation*, July 16, 2015.


Allen Buchanan, et al., *From Chance to Choice: Genetics and Justice*, [ch. 2.](#) 


Daniel J. Kevles, *In the Name of Eugenics*, [ch 6-7.](#) 

[Note: Kevles' book, *In the Name of Eugenics*, is the best history of eugenics. For those who would like to read more than the two chapters above, the book is available for purchase in paperback at the Harvard COOP.]


David Plotz, [“The Rise of the Smart Sperm Shopper,”](#)  *Slate*, April 20, 2001.

Stephen Hsu, [“Super-Intelligent Humans Are Coming,”](#)  *Nautilus*, October 16, 2014.

Antonio Regalado, [“DNA tests for IQ are coming, but it might not be smart to take one,”](#)  *MIT Technology Review*, April 2, 2018.

Gwynn Guilford, [“A Chinese company is pioneering the technology to let parents pick their smartest embryo,”](#)  *Quartz*, January 14, 2014.

Option reading:


Adam S. Cohen, "[Harvard's Eugenic Era](#),"  *Harvard Magazine*, March-April 2016.


Sept. 26: Genetic enhancement: For and against


With [Julian Savulescu \(Links to an external site.\)](#)

Part I:

Do parents have a moral responsibility to improve their children's life prospects through genetic engineering (provided it is safe)? If "moral enhancement" were possible, should it be made obligatory?

Julian Savulescu, "[New Breeds of Humans: The Moral Obligation to Enhance](#),"  *Ethics, Law and Moral Philosophy of Reproductive Biomedicine*, vol. 1, no. 1, March 2005.

Julian Savulescu, "[Procreative Beneficence: Why We Should Select the Best Children](#),"  *Bioethics*, October 2001, vol. 15, no. 5, pp. 413-426.

Ingmar Persson and Julian Savulescu, "[The Perils of Cognitive Enhancement and the Urgent Imperative to Enhance the Moral Character of Humanity](#),"  *Journal of Applied Philosophy*, August 2008.

Michael Sandel, *The Case against Perfection: Ethics in the Age of Genetic Engineering* (2009), ch. 1, 3.


[Available on reserve in Lamont Library and for purchase in paperback at the Harvard COOP; author royalties from book purchases to be donated]

If you are unable to get the book, you can read the following article:


Michael Sandel, "[The Case against Perfection: Ethics in the Age of Genetic Engineering](#),"  *The Atlantic*, April 2004.


Part II:

Should scientists seek ways to genetically enhance people's intelligence? If it were possible to find a drug or genetic intervention that improved memory, would it be desirable? Is there anything objectionable about drugs that erase certain traumatic memories?

Maria Konnikova, [“Hacking the Brain: How we might make ourselves smarter in the future,”](#)  *The Atlantic*, June 2015.

John Bohannon, [“Gene Us: Why Are Some People So Smart?”](#)  *Wired*, July 16, 2013.


John Markoff, ["Elon Musk's Neuralink Wants 'Sewing Machine-Like' Robots to Wire Brains to the Internet."](#)  *New York Times*, July 16, 2019.

Susan Schneider, ["Merging with Machines is Suicide for the Human Mind,"](#)  *Financial Times*, 14 August 2019.

Jonah Lehrer, [“The Forgetting Pill Erases Painful Memories Forever,”](#)  *WIRED*, March 2012.

Jerry Adler, [“Erasing Painful Memories,”](#)  *Scientific American*, May 2012, Vol. 306, Issue 5.

Adam Piore, ["Totaling Recall,"](#)  *Scientific American Mind*, Jan/Feb 2012, Vol. 22, Issue 6.

Michael Henry, Jennifer R. Fishman, Stuart J. Youngner, [“Propranolol and the Prevention of Post-Traumatic Stress Disorder: Is it Wrong to Erase the ‘Sting’ of Bad Memories?,”](#)  *American Journal of Bioethics*, Sept. 1, 2007.

Oct. 3: Ethical frameworks: Utility and dignity

Debating the ethics of new technologies confronts us with competing moral principles. For example: Is the right thing to do whatever will maximize happiness, understood as the overall balance of pleasure over pain? Or does morality require that we respect the dignity and autonomy of each person, even if doing so would reduce the overall level of happiness, or utility?

The first answer was proposed by utilitarian philosophers, the second by Immanuel Kant.

How do these competing principles shed light on the debates about genetic engineering we have considered in previous weeks, such as sex selection, cognitive enhancement, and forced sterilization? Which principle best enables you to articulate and defend your views on these questions?

Part I:


What is Jeremy Bentham's principle of utility? How, if at all, does John Stuart Mill's version differ? Which do you find more convincing?

Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation* (1789), chapters [I \(Links to an external site.\)](#) and [IV \(Links to an external site.\)](#).

John Stuart Mill, *Utilitarianism*(1863)

Part II:

On what grounds does Kant reject utilitarianism? What does Kant mean by the “categorical imperative”?

Immanuel Kant, [Grounding for the Metaphysics of Morals \(Links to an external site.\)](#) (1785). (excerpts)

Optional reading:

[Immanuel Kant, “Of Duties to the Body in Regard to Sexual Impulse,” *Lectures on Ethics* \(Links to an external site.\)](#)

Oct. 10: The ethics of AI and the Internet

With [Jonathan ZittrainLinks to an external site.](#) and [Danielle Citron \(Links to an external site.\)](#)

Part I:

(a) Is it objectionable for social media companies to use your personal data for targeted advertising? Should they be prohibited from doing so?

Jonathan Zittrain, [“How to Exercise the Power You Didn’t Ask For,” \(Links to an external site.\)](#) *Harvard Business Review*, September 19, 2018.

Jack Balkin and Jonathan Zittrain, [“A Grand Bargain to Make Tech Companies Trustworthy,” \(Links to an external site.\)](#) *The Atlantic*, Oct. 3, 2016.

(b) If a machine learning model generates useful predictions (in medicine, for example, or in criminal law), does it matter if we cannot explain or understand how it arrives at its predictions? Consider this question in relation to the use of algorithms in criminal sentencing.

Jonathan Zittrain, [“The Hidden Costs of Automated Thinking,” \(Links to an external site.\)](#) *The New Yorker*, July 23, 2019.

Frank Pasquale, [“Secret Algorithms Threaten the Rule of Law,”](#) (Links to an external site.) MIT Technology Review, June 1, 2017.


Anna Maria Barry-Jester, Ben Casselman and Dana Goldstein, [“The New Science of Sentencing: Should prison sentences be based on crimes that haven’t been committed yet?”](#) (Links to an external site.) The Marshall Project, Aug. 4, 2015.

Yi Shu Ng, [“China is using AI to predict who will commit crime next,”](#) (Links to an external site.) Mashable, July 24, 2017.

Part II:

Why do the internet and social media platforms lend themselves to the creation and spread of fake news and now, “deep fakes”? Are the internet and AI contributing to an age of post-truth politics? What if anything should be done about it?

David Lazer, et al, [“The science of fake news,”](#)  Science, March 9, 2018.
<https://perma.cc/PHP5-5TXW>

Will Knight, [“Fake America Great Again,”](#)  MIT Technology Review, Sept/Oct 2018.

Robert Chesney and Danielle Keats Citron, [“Deep Fakes: A Looming Challenge for Privacy, Democracy, and National Security”](#)  107 California Law Review (2019); U of Texas Law, Public Law Research Paper No. 692; U of Maryland Legal Studies Research Paper No. 2018-21.

Oct. 17: Algorithmic fairness and discrimination

With [Latanya Sweeney](#) (Links to an external site.) and [Cynthia Dwork](#) (Links to an external site.)

Can algorithms be fair? Does algorithmic decision-making overcome the biases to which human decision-making is prone? What is the source of bias in algorithmic predictions and decision-making? Is such bias inherent in AI tools, or can it be eliminated?

Cynthia Dwork, Moritz Hardt, Toniann Pitassi, Omer Reingold and Richard Zemel, [“Fairness through Awareness”, arXiv:1104.3913, 2011](#) (Links to an external site.).

Julia Angwin and Jeff Larson, [“The Tiger Mom Tax: Asians Are Nearly Twice as Likely to Get a Higher Price from Princeton Review,”](#) (Links to an external site.) ProPublica, Sept. 1, 2015.

Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, [“Machine Bias: \(Links to an external site.\) There’s software used across the country to predict future criminals. And it’s biased against blacks,” \(Links to an external site.\)](#) ProPublica May 23, 2016.


Julia Angwin and Jeff Larson, [“Bias in Criminal Risk Scores Is Mathematically Inevitable, Researchers Say,” \(Links to an external site.\)](#) ProPublica, Dec. 30, 2016.


Jeffrey Dastin, [“Amazon scraps secret AI recruiting tool that showed bias against women,” \(Links to an external site.\)](#) Reuters, Oct. 9, 2018.

Jack Gillum and Ariana Tobin, [“Facebook Won’t Let Employers, Landlords or Lenders Discriminate in Ads Anymore,” \(Links to an external site.\)](#) ProPublica, March 19, 2019.

Yael Eisenstat, [“The Real Reason Tech Struggles with Algorithmic Bias,” \(Links to an external site.\)](#) Wired, Feb. 12, 2019.

Latanya Sweeney, [“Discrimination in Online Ad Delivery,”](#)[Links to an external site.](#) Communications of the ACM, May 2013.

Cynthia Dwork, Hardt, Picasso, Reingold, and Zemel, ["Fairness through Awareness"](#) 

Jon Kleinberg, Jens Ludwig, Sendhil Mullainathan, and Cass R. Sunstein, [“Discrimination in the Age of Algorithms,”](#)  NBER Working Paper Series, Feb. 5, 2019, sections IV-VI.

Oct. 24: Surveillance capitalism

With [Shoshanah Zuboff \(Links to an external site.\)](#) and [Thomas Friedman \(Links to an external site.\)](#)

Part I: Explaining the rise of surveillance capitalism

What, according to Zuboff, is “surveillance capitalism”? Is it the result of inevitable technological change or a deliberate commercial project devised by tech companies such as Google and Facebook? What exactly is the product that Google, Facebook, and other tech companies sell? Is the loss of privacy inherent in digital technologies or the result of the business model that tech companies have promoted and embraced?

Part II: Moral and political implications

Are digital technologies helpful or harmful to democracy? What are the implications of surveillance capitalism for freedom and for human self-understanding? Can it be reversed, or is it an inevitable feature of contemporary life?


Shoshana Zuboff, *The Age of Surveillance Capitalism* (2019)


[Introduction, pp. 3-17](#) 


[Ch. 3, pp. 63-97](#) 

[Ch. 6, pp. 183-195](#) 


[Ch. 7, pp. 199-204, 221-232](#) 

[Ch. 9, pp. 255-269](#) 

[Ch. 12, pp. 351-360](#) 

[Ch. 13](#) 

[Ch. 16, pp. 465-474](#) 

[Ch. 17, pp. 488-492](#) 

[Ch. 18, pp. 516-519](#) 

[Note: The book is available for purchase at the Harvard COOP.]

Thomas Friedman, "[Hong Kong's Protests Could be Another Social Media Revolution that Ends in Failure \(Links to an external site.\)](#)," *New York Times*, Sept. 17, 2019.

Thomas Friedman, "[Social Media: Destroyer or Creator? \(Links to an external site.\)](#)" *New York Times*, Feb. 3, 2016.

Oct. 31 Genetically altered athletes and animals

Part I: Athletes

Provided they are safe, should performance-enhancing drugs and genetic technologies be permitted in the Olympics and professional sports? Do natural genetic differences give some athletes an unfair advantage?

Zoltan Istvan, "[The Brave New World of Sports \(Links to an external site.\)](#)," *New York Times*, Sept. 14, 2019.

Christina Farr, “[Do Olympians Have Better Genes Than You and Me? \(Links to an external site.\)](#),” Fast Company, August 6, 2016.

“[Future humans could be much faster than Usain Bolt or Michael Phelps \(Links to an external site.\)](#),” South China Morning Post, August 23, 2016.

Helen Thompson, “[Performance enhancement: Superhuman athletes.](#)” Nature, vol. 487, 19 July 2012.

Theodore Friedmann, “[How Close Are We to Gene Doping?](#)” Hastings Center Report, March-April 2010.

Savulescu, B. Foddy, M. Clayton , “[Why We Should Allow Performance Enhancing Drugs in Sports](#),” British Journal of Sports Medicine, 2004.

Michael J. Sandel, The Case against Perfection, ch. 2 (“Bionic Athletes”).

Thomas H. Murray, “[Making Sense of Fairness in Sports](#),” Hastings Center Report, March-April 2010.

Jere Longman, “[Debate on Amputee Sprinter: Is He Disabled or Too-Abled? \(Links to an external site.\)](#),” The New York Times, May 15, 2007.

Joshua Robinson, “[Ruling Halts Amputee Sprinter’s Olympic Bid \(Links to an external site.\)](#),” The New York Times, January 15, 2008.

Celeste Biever, “[Disability in a Different Light: Artificial Ways of Restoring Body Function Are Challenging Ideas of What It Means To Be ‘Normal.’](#)” New Scientist, May 26, 2007.

Part II: Animals

What, if anything, is wrong with the genetic modification of animals, or the creation of human-animal hybrids? Do we have an ethical obligation to preserve the diversity of species? Should we use genetic engineering to eradicate mosquitoes?

Gina Kolata, “[N.I.H. May Fund Human-Animal Stem Cell Research \(Links to an external site.\)](#),” New York Times, Aug. 4, 2016:

Rob Stein, “[In Search for Cures, Scientists Create Embryos That Are Both Animal and Human \(Links to an external site.\)](#),” NPR, May 18, 2016.

Antonio Regalado, "[Human-Animal Chimeras are Gestating on U.S. Research Farms \(Links to an external site.\)](#)," MIT Technology Review, Jan. 6, 2016.

Mary Midgley, "[Biotechnology and Monstrosity: Why We Should Pay Attention to the 'Yuk Factor.'](#)" Hastings Center Report, Sept.-Oct. 2000.

James Bennet, "[Rehovot Journal: Cluck! Cluck! Chickens in their Birthday Suits \(Links to an external site.\)](#)," The New York Times, May 24, 2002.

Bernice Bovenkerk, et al., "[Brave new Birds: The Use of 'Animal Integrity' in Animal Ethics](#)" Hastings Center Report, January-February, 2002, pp. 16-22.

Archie Bland, "[Should we wipe mosquitoes off the face of the Earth? \(Links to an external site.\)](#)," The Guardian, 10 Feb. 2016.

[Optional reading]

Franz Kafka, "A Report for an Academy," in Kafka, *The Metamorphosis, In the Penal Colony, and Other Stories* (New York: Scribner Paperback Fiction, 2000).

Nov. 7: Emotion AI, affective computing, companionate robots

With [Rosalind Picard \(Links to an external site.\)](#) and [Jeannie Suk Gerson \(Links to an external site.\)](#)

Can AI read your emotions? What uses of emotion AI are desirable, and what uses are undesirable? Will AI change the meaning of friendship, companionship, and intimacy? If so, for better or worse? Can a robot be a friend?

Meredith Somers, "[Emotion AI, explained, \(Links to an external site.\)](#)" MIT Management Sloan School, March 8, 2019

[Affective Computing Group \(Links to an external site.\)](#), MIT Media Lab - Projects

Tim Lewis, "[AI can read your emotions. Should it? \(Links to an external site.\)](#)," The Guardian, 17 Aug. 2019.

Taylor Telford, "['Emotion detection' AI is a \\$20 billion industry. New research says it can't do what it claims](#)" Washington Post, July 31, 2019.

Jeannie Suk Gerson, "[Sex Lex Machina: Intimacy and Artificial Intelligence.](#)" Columbia Law Review, 2019 (forthcoming)

Judith Shulevitz, "[Alexa, Should We Trust You? \(Links to an external site.\)](#)," The Atlantic, Nov. 2018.

Khari Johnson, "[Amazon's Alexa wants to know more about your feelings \(Links to an external site.\)](#)," VentureBeat, Dec. 22, 2017.

Heather Murphy, "[Why Stanford Researchers Tried to Create a 'Gaydar' Machine \(Links to an external site.\)](#)," New York Times, October 9, 2017.

"[Putting the data into dating](#)," The Economist, Aug. 18, 2018.

Shoshana Zuboff, The Age of Surveillance Capitalism, pp. 282-292.

Companionate robots, AI dolls

Adam Satariano and Elian Peltier, "[Meet Zora, The Robot Caregiver \(Links to an external site.\)](#)," New York Times, Nov. 27, 2018.

Jeremy D. Larson, "[Letter of Recommendation: Hasbro Joy for All \(Links to an external site.\)](#)," New York Times, March 24, 2016.

Lauren Walker, "[Hello Barbie, Your Child's Chattiest and Riskiest Christmas Present, \(Links to an external site.\)](#)" Newsweek, Dec. 15, 2015:

James Vlahos, "[Barbie Wants to Get to Know Your Child \(Links to an external site.\)](#)," New York Times Magazine, Sept. 16, 2016.

[Hell No Barbie: 8 reasons to leave Hello Barbie on the shelf \(Links to an external site.\)](#), Campaign for a Commercial-Free Childhood.

Nov. 14: Frontiers of biomedical ethics: Stem cells and life extension

With [George Q. Daley](#)[Links to an external site.](#), Dean of the Harvard Medical School

Part I: The ethics of stem cell research

Is human embryonic stem cell research morally objectionable? To answer that question, is it necessary to determine the moral status of the embryo? Is the moral status of the embryo a religious, philosophical, or scientific question?

Andrew Pollack, [“Cloning is Used to Create Embryonic Stem Cells,”](#) (Links to an external site.) N.Y. Times, May 16, 2013:

Robert P. George, [“Don’t Destroy Human Life,”](#)Links to an external site. Wall Street Journal, July 30, 2001.

Michael Sandel, [“Embryo Ethics: The Moral Logic of Stem Cell Research,”](#)Links to an external site. New England Journal of Medicine, July 15, 2004.

Robert George and Patrick Lee, [“The Embryo Question: Acorns and Embryos,”](#) (Links to an external site.) The New Atlantis, Fall 2004/Winter 2005.

Carl Power and John E.J. Rasko, [“Will Cell Reprogramming Resolve the Embryonic Stem Cell Controversy? A Narrative Review,”](#)Links to an external site. Annals of Internal Medicine, July 19, 2011, vol. 115 no. 2, 114-121.

Part II: Life extension and immortality

Should biomedical research aim at substantially increasing the human life span? Would postponing death diminish the meaning of life?

Zoe Corbyn, [“Live for ever: Scientists say they’ll soon extend life ‘well beyond 120,’”](#) (Links to an external site.) The Observer (London), 11 Jan. 2015.

Betsy Isaacson, [“Silicon Valley is Trying to Make Humans Immortal—And Finding Some Success,”](#) (Links to an external site.) Newsweek, March 5, 2015.

Ariana Eujung Cha, [“Tech Titans’ Latest Project: Defy Death,”](#) (Links to an external site.) Washington Post, April 4, 2015:

David Gelles, [“Immortality 2.0,”](#)Links to an external site. The Futurist, Jan.-Feb. 2009.

Larry S. Tempkin, [“Is Living Longer Better?,”](#)Links to an external site. Journal of Applied Philosophy, vol. 25, no. 3, 2008.

Matti Hayry, [“Considerable Life Extension and Three Views on the Meaning of Life,”](#)Links to an external site. Cambridge Quarterly of Healthcare Ethics (2011), Volume 20, Issue 01, pp 21-29.

Leon Kass, [“L’Chaim and Its Limits: Why Not Immortality?”](#) (Links to an external site.) First Things, May 2001.

Scott Amyx, [“Can Wearables Help You Reach Immortality?”](#) (Links to an external site.) WIRED, Feb. 2015:

Nov. 21 Technology, big data, and democracy

Part I: China's social credit system

With [Xin Zhang](#)[Links to an external site.](#)

Describe and assess China's social credit system: Is it a morally objectionable attempt to use technology to exert social control and discourage dissent, or is it a justified attempt to encourage morality and promote socially desirable behavior? To what extent is it comparable to rating systems in the West that monitor, predict, and influence the behavior of consumers and citizens?

Simina Mistreanu, [“Life Inside China’s Social Credit Laboratory,”](#) [\(Links to an external site.\)](#) Foreign Policy, April 3, 2018.

Recent coverage of China's social credit system in *Global Times*, China's national English language newspaper, under the People's Daily:

[Social credit system to restore morality](#) [\(Links to an external site.\)](#)

[Social credit system to set market access limit for dishonest individuals, firms](#) [\(Links to an external site.\)](#)

[Xi'an residents who refuse to sort their garbage will lose social credit points](#) [\(Links to an external site.\)](#)

[City targets jaywalking with detailed social credit system](#) [\(Links to an external site.\)](#)

[Shanghai mulls deducting social credit points for bad dog owners](#) [\(Links to an external site.\)](#)

[Beijing to use social credit system to address subway behavior](#) [\(Links to an external site.\)](#)

[Ideology tints West's view of China's technology](#) [\(Links to an external site.\)](#)

Manya Koetse, [“Be as Good as your Word”: The Chinese Social Credit Song is Here,”](#) [\(Links to an external site.\)](#) What's on Weibo, April 30, 2019.

Mike Elgan, [“Uh-oh: Silicon Valley is building a Chinese-style social credit system,”](#) [\(Links to an external site.\)](#) Fast Company, Aug. 26, 2019.

Adam Greenfield, [“China’s Distopian Tech Could Be Contagious,”](#) [\(Links to an external site.\)](#) The Atlantic, Feb. 14, 2018.

Christina Larson, [“Who needs democracy when you have data?,”](#) [\(Links to an external site.\)](#) MIT Technology Review, Sept/Oct. 2018.

Part II: Do the internet, social media, and big data offer hope for democracy or pose a threat to it? What, if anything, should be done to make technology more hospitable to democracy? (Consider these questions in relation to examples drawn from previous weeks.)

Zeynep Tufekci, [“It’s the \(Democracy-Poisoning\) Golden Age of Free Speech,”](#) (Links to an external site.) WIRED, Jan. 16, 2018.

Yuval Noah Harari, [“Why Technology Favors Tyranny,”](#) (Links to an external site.) The Atlantic, October 2018.