

Politics and Culture of the Global Future

Fall

IDH 3931/POS 4931

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About the course

How will political and cultural life will be transformed over the coming decades as it becomes impacted by global threats such as climate change, political responses to these threats, and the deployment of emerging technologies such as genetic modification, synthetic biology, nanotechnology, robotics, cyborg technology, information technology, augmented and virtual reality, and artificial intelligence?

Politics and Culture of the Global Future prepares students to grapple with the political, cultural, and technological developments that will increasingly impact their lives and careers. It is interdisciplinary, integrative and practical. Students will practice forecasting techniques to develop reasonable expectations about the challenges and opportunities they will face and explore the historical and contemporary data that ground these expectations. Being prepared for the future entails building the skill sets that allow for productive collaboration. The development of teamwork skills accordingly will be emphasized.

Notwithstanding the merits and benefits of the best forecasting efforts, we should remember Master Yoda's wise counsel: "Impossible to see, the future is!" (from *Attack of the Clones*) and "Careful you must be when sensing the future....The fear of loss is a path to the Dark Side" (from *Revenge of the Sith*).

Student Learning Outcomes

Students taking this course will learn how to:

1. Identify and explain global interdependencies in the context of a quickly changing world.
2. Critically analyze national and international challenges, threats, and opportunities.
3. Engage and understand diverse cultural perspectives in an age of globalization.
4. Think responsibly and creatively about the future and practice sophisticated forecasting techniques.
5. Communicate and collaborate with diverse individuals to develop practical solutions to complex social, political and technological problems.

Work expectations

Students will be reading books and journal articles, listening to podcasts, and viewing films and videos. Classes will be discussion based. Each week, students will submit online discussion posts, respond to classmates' posts in class, and work in teams to practice forecasting techniques, and craft a class presentation.

Required Readings:

Rob Reid, *After On* (Del Rey, 2017; audible version is recommended)

Other online required readings and resources are listed in the Course Schedule

Values of Assignments: 100 points

ePortfolio: 5 points

Participation: 15 points

Weekly online discussion posts and in-class responses: (10 x 2%) 20 points

Letter from My Future Self: 20 points

Collaborative PowerPoint Presentation: 40 points

Explanation of Assignments

ePortfolio

Develop and submit an ePortfolio that captures your achievements and aspirations as a budding professional in a globalized, high-tech economy and culture. This should include photo-documentation of your TeamWork experiences. Examples of ePortfolios can be found here:

<https://internationalcenter.ufl.edu/global-learning/international-scholars-program/eportfolios>

Due November 1, 10PM; Tardy submissions will be docked a letter grade for each day late.

Participation

The benefits you receive from this course will largely be determined by the diligence and thoroughness with which you and your classmates engage the assigned resources and are consistently well prepared for class discussions and TeamWork sessions. Consequently, your preparation and participation are evaluated. Attendance is required at all of the scheduled classroom sessions. You will be assessed and graded not only on your attendance, however, but also on your active engagement.

To receive an A for participation, you will need to contribute thoughtful questions, observations, and well-grounded assertions to virtually every class session based on insights and information gained from assigned resources and readings, prompts, and discussions. Only students who consistently, constructively and enthusiastically engage themselves and are well informed will receive strong grades for participation. It will be impossible to receive a grade higher than a B+ in this course without getting a strong grade for participation.

Weekly online discussion posts and in-class responses

Submit your post in the Discussion box below under the correct date. To receive credit, it must be submitted each Monday at noon, September 3-November 12 with the exception of October 8. Late posts will not count for credit.

Begin your post with your name, a title and the date, and follow with a brief essay that addresses in 150-200 words a particular aspect of the week's reading/viewing/listening assignments. Review a good sampling of your classmates' posts and be prepared constructively and critically to address two of them during each Tuesday class.

Your grade for the assignment will be based both on your written submission and your oral remarks regarding student colleagues' posts in class.

Letter from My Future Self

Pick a specific date (day/month/year) between 20 and 30 years in the future.

1. Craft a 2-page resume of your future self at your chosen date. Employ a standard resume template and include at a minimum the following: Personal information, including but not limited to: your age, family status (single, married, divorced, children, etc); your place of residence; your hobbies/pastimes and cultural/religious involvements. Professional information, including but not limited to: your career/job history and other professional accomplishments; your current position; your current job duties and responsibilities, your current annual salary; your skill sets, your professional goals.
2. Write a 300-400 word Status Report that describes the status and interactive effects of two emerging technologies at this future date. The technologies that you select should have a significant impact on your future self's personal and/or professional life, but CANNOT be the technology assigned to you for your Collaborative Presentation.
3. Provide a dated, 600-800 word "Letter from my Future Self." This letter should be addressed to your current self from your future self (e.g. your 2040 self is writing to your 2018 self). The letter should counsel you on how to engage in robust planning in order to anticipate future prospects and be resilient in the face of unknowns, with particular attention to the impacts of the emerging technologies that you have selected. Be sure to address specific skill sets that your current self should develop and experiences to seek out in the years to come. The goal is to be realistic, persuasive, and imaginative. You are encouraged to hold onto the Letter and re-read it on the day it is dated to assess the pertinence and helpfulness of your counsel.

You will be assessed by the clarity of your resume and Status Report, and the cohesiveness, creativity and persuasiveness of your letter. In turn, the quality of your writing will be evaluated. Review this guide: www.bristol.ac.uk/arts/skills/grammar/grammar_tutorial/index.htm

Due October 11, 10PM. Tardy submissions will be docked a letter grade for each day late.

Collaborative PowerPoint Presentation

This assignment consists of:

1. A 1-page addendum of Consulted Sources, MLA style (5 points). You are encouraged to employ and list some of the resources found on the syllabus. However, there must be at least one book, three academic journal articles, three videos/podcasts, and two websites of organizations listed in your Consulted Sources which are NOT found among the resources on the course syllabus. Your

Consulted Sources are to be submitted as a discussion post 72 hours prior to your presentation, with 1-3 of the sources bolded. The bolded sources, which should take a total of 20-30 minutes to read/hear/view, will serve as the week's required readings for your classmates. Your sources will be evaluated based on their quality and relevance.

2. A script for your PowerPoint presentation (15 points). This is to be submitted to Canvas 72 hours prior to your presentation. While you are not required to read your script verbatim during your presentation, it should contain all the information necessary to clearly and fully explain the slide presentation.
3. A 35-minute PowerPoint presentation of 30-40 slides (20 points). This is to be submitted to Canvas 72 hours prior to your presentation. Your slides should consist mostly of photos and images, short video clips, short quotations, and bullet points (i.e. no paragraphs of writing; your script contains that material). Presentations that are under 32 minutes or over 38 minutes will be docked half a letter grade. Do a couple trial runs to make sure you've got the right number of slides and a script that is the correct length, and to ensure a fluid presentation. You will be evaluated based on the quality of your slides and the skill and articulateness with which they are presented. The PowerPoint presentation (and accompanying script) should have the following components, in this order:
 1. The history and current state of the art of the emerging technology.
 2. The future trajectory of your emerging technology, with 2 realistic scenarios for its development and deployment over the next 30 years.
 3. Based on one of your scenarios, the likely short-term (5 year) and long-term (30-70 years) global impacts of your emerging technology in the arenas of a) ethics b) politics and c) culture.
 4. Concluding remarks

Each presentation will be followed by a brief Q&A session, which will also be part of your evaluation.

Teams will be assigned one of the following topics: 1) augmented and virtual reality; 2) artificial intelligence; 3) cyborg technology; 4) genetic engineering of human beings; 5) synthetic biology and genetic engineering of non-human lifeforms; 6) information technology (including surveillance, big data mining/predictive analytics, and social media); 7) nanotechnology; 8) robotics; 9) quantum computing; 10) next generation sustainability-related technologies 11) effective forecasting techniques and exercises.

Due dates are based on the Presentation date assigned to your team.

Late submissions of any of the components will be docked a letter grade for each day they are late.

Grading Scale

A	95 – 100%	B-	80 – 82%	D+	67 – 69%
A-	90 – 94%	C+	77 – 79%	D	63 – 66%
B+	87 – 89%	C	73 – 76%	D-	60 – 62%
B	83 – 86%	C-	70 – 72%	E	59% or below

For more information about grading and grading policies, see <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Plagiarism

Plagiarism in presentations or term papers will result in failure of the course. All students are required to abide by UF's Academic Honesty Guidelines, which may be viewed at <http://www.dso.ufl.edu/judicial/procedures/honestybrochure.php>

Disabilities

Students requesting classroom accommodation for disabilities must provide documentation from the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) early in the semester.

Academic Resources

Library Support: <http://cms.uflib.ufl.edu/ask>

Teaching Center, Broward Hall, General study skills and tutoring: <http://teachingcenter.ufl.edu/>

Writing Studio, 302 Tigert Hall, Help brainstorming, formatting, and writing papers:

<https://writing.ufl.edu/writing-studio/>

Course Schedule

August 23: Introduction to class: The Nature of the Future and the Future of Nature:

August 28: The Ethics and Politics of Technology

Readings: Leslie Paul Thiele, "Technology and the Human Prospect" (PDF will be provided); Eli Pariser, TED Talk "Beware Online Filter Bubbles," https://www.ted.com/talks/eli_pariser_beware_online_filter_bubbles; TED Talk Scott Galloway on "How Amazon, Apple, Facebook and Google manipulate our emotions": https://www.ted.com/talks/scott_galloway_how_amazon_apple_facebook_and_google_manipulate_our_emotions; Maureen Dowd, "Elon Musk's Billion-Dollar Crusade to Stop the A.I. Apocalypse," *Vanity Fair*, March 1, 2017: <https://www.vanityfair.com/news/2017/03/elon-musk-billion-dollar-crusade-to-stop-ai-space-x>

August 30: Futurism and Prediction

Readings: Crow, M. 2007. "None Dare Call It Hubris: The Limits of Knowledge." *Issues in Science and Technology*, Winter: 1-4: https://www.ocf.berkeley.edu/~step/Journal_Club/paper3_092210.pdf; Michael, D. 2000. "Some Observations with Regards to a Missing Elephant." *Journal of Humanistic Psychology*, 40(1): 8-16; Rejeski, D, Olson, R. L., "Has Futurism Failed?" *Wilson Quarterly*, Winter 2006, Vol. 30, Issue 1, pp. 14-21.

September 4 & 6: Augmented Reality and Introduction to TeamWork

Readings: *After On*, up to p. 53 (Audible through Chapter 4); *After On podcast*: Meron Gribetz on Augmented Reality; "Recognizr: Facial Recognition Coming to Android Phones" at https://readwrite.com/2010/02/24/recognizr_facial_recognition_coming_to_android_phones; NeoScribe, "Augmented Reality 2030" at <https://www.youtube.com/watch?v=sgj9mRET8gA>; Understand the findings of Google's *Project Aristotle* -- <https://rework.withgoogle.com/print/guides/5721312655835136/>; Read Charles Duhigg's *New York Times* article "What Google Learned in their Quest to Build a Perfect Team," available at: <https://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html?smid=pl-share>

September 11: Consciousness and Neuroscience; Forecasting and Robust Planning

Readings: *After On*, 53-121 (Audible through Chapter 9); *After On podcast*: Adam Gazzaley on Consciousness and Neuroscience and Mary Lou Jepsen on Neural Imaging and Telepathy; Leslie Paul Thiele, "The Case for Robust Climate Policy" (PDF will be provided).

September 13: TeamWork session: Forecasting exercise employing the Cube of Uncertainty

September 18: Privacy and Surveillance

Readings: *After On*, 121-196 (Audible through Chapter 17); *After On podcast*: Cindy Cohn on Privacy and Government Intrusion; Zeynep Tufekci, "We're Building a Dystopia Just to Make People Click on Ads" - https://www.ted.com/talks/zeynep_tufekci_we_re_building_a_dystopia_just_to_make_people_click_on_ads#t-667783

September 20: TeamWork session: Forecasting exercise employing decision trees

September 25: Synthetic Biology and Bioengineering

Readings: *After On*, 196-252 (Audible through Chapter 22). *After On podcast*: Andy Hessel on Synthetic Biology and George Church on Bioengineering; Kees Van Der Jeijden, "Scenarios and Forecasting: Two Perspectives," *Technological Forecasting and Social Change*, 65 (1): 31-36. Chermack, T. 2004, "Improving decision-making with scenario planning." *Futures*, 36:3, 295-309. Jamais Cascio (2012) "Ten Rules for Writing Awful Scenarios." Open the Future blog: http://www.openthefuture.com/2012/08/ten_rules_for_creating_awesome.html

September 27: TeamWork session: Forecasting exercise employing Scenario Planning

October 2: Quantum Computing, Predictive Analytics and the Internet of Things

Readings: *After On*, 252-285 (Audible through Chapter 25); *After On podcast*: Steve Jurvelton on Quantum Computing and Daniel Kraft on Exponential Medicine; Chris Anderson, "The End of Theory: The Data Deluge Makes the Scientific Method Obsolete" *Wired*, June 23, 2008, <https://www.wired.com/2008/06/pb-theory/>;

October 4: TeamWork session: Forecasting exercise employing ensembles

There will be no classes October 9 and 11: Professor Thiele will be at an Artificial Intelligence Conference in Amsterdam. Letter from my Future Self due October 11 at 10PM.

October 16: Terrorism and Human Rights at the End of Nature

Readings: *After On*, 289-382 (Audible through Chapter 31); *After On podcast*: Sam Harris on Terrorism; Leslie Paul Thiele, "Human Rights at the End of Nature" (PDF will be provided).

October 18: Collaborative Presentation development

October 23: Superintelligence

Readings: *After On*, 382-489 (Audible through Chapter 35); *After On podcast*: James Barrat on Dangers of Superintelligence; Deep Learning: <https://www.youtube.com/watch?v=TnUYcTuZjPM>; Wait But Why? on "The AI Revolution": <https://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html>; AI Codes its own 'AI Child': <https://www.youtube.com/watch?v=YNLC0wJSHxI>

October 25: TeamWork session: Collaborative Presentation development

October 30: Saving Humanity and other Endangered Species: Aliens, Annihilation and the Decline of Yuck

Readings: *After On*, 489-547 (Audible through Chapter 38): Steven Webb on Fermi's Paradox/Where are all the aliens?; Wait But Why? on "The Fermi Paradox": <https://waitbutwhy.com/2014/05/fermi-paradox.html>; Terry Bison, "They're Made Out of Meat," *Omni*, 1990: <http://www.terrybisson.com/page6/page6.html>; Leslie Paul Thiele, "The Decline of Yuck" (PDF will be provided).

November 1: TeamWork session: Collaborative Presentation development. Meeting times for Tuesday announced. ePortfolio due at 10PM

November 6: TeamWork session: Collaborative Presentation development. In this class period, each team will meet with Professor Thiele for 15 minutes to discuss progress on its class presentation. Each team should present to Prof. Thiele in class a 1-page written summary of its topic, sources, readings/viewings, approach, and presentation format, and be prepared to discuss it.

Nov. 6: Rob Reid Talk, 3-4PM in Turlington L005

November 8: *After On*, Rob Reid, and the Power of Narrative

Readings: Leslie Paul Thiele and Marshall Young, "Practical Judgment, Narrative Experience, and Wicked Problems," *Theoria*, Issue 148, Vol. 63, No. 3 (September 2016): 35-52; Leslie Paul Thiele, "Against our Better Judgment: Practical Wisdom in an Age of Smart(er) Machines" (PDFs will be provided).

November 13: Gaians and Prometheans: The Future of Climate Change

Readings: Leslie Paul Thiele, "Geoengineering and Sustainability," *Environmental Politics*, (PDF will be provided); Worldwatch, 51-72; Paul J. Crutzen and Christian Schwägerl, "Living in the Anthropocene: Toward a New Global Ethos," *YaleEnvironment360*, January 24, 2011: https://e360.yale.edu/features/living_in_the_anthropocene_toward_a_new_global_ethos; Gerst, M.D., Raskin, P.D. and Rockström, J., 2014. "Contours of a Resilient Global Future", *Sustainability*, 6: 123-135: <http://www.mdpi.com/2071-1050/6/1/123/htm>; Kirtman et al, "Future Climate Change Scenarios for Florida," in *Florida's climate: Changes, variations, & impacts* (pp. 533-555): <http://floridaclimateinstitute.org/docs/climatebook/Ch18-Kirtman.pdf>

November 15: TeamWork session: Collaborative Presentation development

November 20: *Ex Machina*

Students who are not in class to watch and discuss this film must post a 300-word critical review of *Ex Machina* by November 26 at 10pm in the Discussion section. Failure to submit this assignment on time will result in a letter grade deduction on the Participation grade.

November 22: No class: Thanksgiving

November 27: Collaborative PowerPoint Presentations

Readings: TBA by presenting teams

November 29: Q&As for Teams 1, 2, 3, and Collaborative PowerPoint Presentation

Readings: TBA by presenting team

December 4: Collaborative PowerPoint Presentations

Readings: TBA by presenting teams

Resources:

Non-fiction Books

Allenby, Bradley, and Daniel Sarewitz. 2011. *The Techno-Human Condition*
Barrat, James. 2015. *Our Final Invention: Artificial Intelligence and the End of the Human Era*
Berry, Wendell. *What are People For?*
Bess, Michael. 2015. *Our Grandchildren Redesigned: Live in the Bioengineered Society of the Future*
Brynjolfsson, Erik and Andrew McAfee. 2014. *The Second Machine Age*
Bostrom, Nick. *Superintelligence*.
Butler, Samuel, *Erewhon*
Ellul, Jacques. *The Technological Society*
Fukuyama, Francis. 2002. *Our Posthuman Future: Consequences of the Biotechnology Revolution*
Garreau, Joel. 2005. *Radical Evolution*
Harraway, Donna. *Simians, Cyborgs, and Women: The Reinvention of Nature*
Harri, Yuval Noah. 2016. *Homo Deus*
Heidegger, Martin. 1954. *The Question Concerning Technology*
Howard, Philip. 2015. *Pax Technica: How the Internet of Things May Set Us Free or Lock Us Up*
Hughes, James. 2004. *Citizen Cyborg*
Kelly, Kevin. 2011. *What Technology Wants*
Lewis, C. S. 1944. *The Abolition of Man*
Lilley, Stephen, ed. 2013. *Transhumanism and Society: The Social Debate over Human Enhancement*
McKibben, Bill. 2004. *Enough: Staying Human in an Engineered Age*
Mumford, Lewis. *The Myth of the Machine*
Nietzsche, Friedrich. 1885. *Thus Spoke Zarathustra* Noble, David. *The Religion of Technology: The Divinity of Man and the Spirit of Invention*
Postrel, Virginia. *The future and its enemies*
Ross, Alec. 2016. *The Industries of the Future*
Silver, Lee. *Remaking Eden*
Tegmark, Max. 2017. *Life 3.0*
Tenner, Edward. *Why Things Bite Back: Technology and the Revenge of Unintended Consequences*
Tofler, Alvin. 1970. *Future Shock*
Winner, Langdon. 1989. *The Whale and the Reactor*

Peruse articles in the journal *Futures*

Fiction

“Modern science fiction is the only form of literature that consistently considers the nature of the changes that face us, the possible consequences, and the possible solutions.” Isaac Assimov

Assimov, Isaac. *I, Robot*
Atwood, Margaret. *Oryx and Crake*, and *In the Year of the Flood*
Butler, Octavia, *Parable of the Sower*
Card, Orson Scott. *Ender's Game*
Clarke, Authur C. *2001: A Space Odyssey* and *Childhood's End*
Cline, Ernest. *Ready Player One*
Dick, Philip K. *Do Androids Dream of Electric Sheep*
Herbert, Frank. *Dune*
Forster, E. M. *The Machine Stops*, available at: <http://archive.ncsa.illinois.edu/prajlich/forster.html>

Gibson, William. 1984. *Neuromancer*
Huxley, Aldous. 1932. *Brave New World*
Marlowe, Christopher. *Dr. Faustus*
McKibben, Bill. *Radio Free Vermont*
Orwell, George. 1949. 1984
Shelley, Mary Wollstencraft. *Frankenstein, or the Modern Prometheus*
Skinner, B.F. 1948. *Walden Two*
Stephenson, Neal. *Snow Crash* (and see: <http://www.metaverseroadmap.org/overview/02.html#vw>)
Suarez, Daniel. *Daemon*
Vinge, Vernon. *A Fire upon the Deep*
Wells, H.G. *The Island of Dr. Moreau*

Films

Highly Recommended:

Ex Machina. – We'll be watching this in class
Black Mirror (Netflix series)
Metropolis (Fritz Lang, 1926)
Colossus: The Forbin Project
The Machine
Blade Runner (original, not Blade Runner 2049)
Her
The Singularity is Near
Supersapiens (documentary)
Manchurian Candidate (2004 version – good; 1962 – better)
The Matrix
The Terminator
Gattaca
2001: A Space Odyssey
Self/less
The Circle
Minority Report
Wall-E
Westworld (Netflix series)
The Future 360 (Discovery Channel documentary)

Acceptable, if you have nothing better to watch:

A Clockwork Orange Bicentennial Man
Transcendent Man
The Boys from Brazil (cloning Hitler)
I, Robot
Splice
Transcendence
A.I. Artificial Intelligence
The Island
Elyseum
Ender's Game
Transcendence
HUMANS (UK series on AMC)
Morgan

Cyborgs. Should We Be Better Than We Are? (2017)

Online videos and Podcasts (available free on iTunes)

Ford, Martin. "How we'll earn money in a future without jobs"

https://www.ted.com/talks/martin_ford_how_we_ll_earn_money_in_a_future_without_jobs

Harris, Sam. "Can We Build AI Without Losing Control Over It?"

https://www.ted.com/talks/sam_harris_can_we_build_ai_without_losing_control_over_it

Long Now Foundation, Seminars about Long-term Thinking Podcast: almost all of these are worthwhile, e.g.

Paul Saffo: The Creator Economy; Michael Shermer: The Long Arc of Moral Progress; Ramez Naam:

Enhancing Humans, Advancing Humanity; Drew Endy and Jim Thomas on Synthetic Biology; Michael West

and Ken Dychtwald on Human Life Extension

Robots: Boston Dynamics robot:

<https://www.youtube.com/watch?v=rVlhMG0gDkY> And see:

http://www.nytimes.com/2015/05/21/technology/a-bionic-approach-to-prosthetics-controlled-by-thought.html?emc=edit_th_20150521&nl=todaysheadlines&nlid=70697315&r=0

Darnofsky, Marcy vs Nita Farahani, "Should we Design our Babies" podcast or video

<https://www.youtube.com/watch?v=VQso93V2wLs>

"Slaughterbots," fictional depiction of flying killer drones the size of beetles:

<https://www.youtube.com/watch?v=9CO6M2HsoIA>

Reports and articles

Annas, George et al. 2002. "Protecting the Endangered Human: Toward an International Treaty Prohibiting Cloning and Inheritable Alterations," *American Journal of Law and Medicine* 28/2-3

Bison, Terry. "They're Made Out of Meat," <http://www.terrybisson.com/page6/page6.html>

Bostrom, Nick. 2001. "The Future of Humanity" *The New Republic* (May 21, 2001), 265-76.

Gerst, M.D., Raskin, P.D. and Rockström, J., 2014. "Contours of a Resilient Global Future", *Sustainability*, 6: 123-135. <http://www.mdpi.com/2071-1050/6/1/123/htm>

Haldane, J.B.S. 1923. *Daedalus, or, Science and the Future*

<https://www.marxists.org/archive/haldane/works/1920s/daedalus.htm>

Joy, Bill. 2000. "Why the Future Doesn't Need Us," *Wired* 8.04, April 2000

<http://archive.wired.com/wired/archive/8.04/joy.html>

Kaczynski, Ted. "Industrial Society and its Future/The Unabomber Manifesto,"

<https://www.washingtonpost.com/wp-srv/national/longterm/unabomber/manifesto.text.htm>

Kass, Leon. "Preventing a Brave New World" <https://web.stanford.edu/~mvr2j/sfsu09/extra/Kass3.pdf>

Kurzweil, Ray. On becoming "Godlike," *Huffington Post*,

http://www.huffingtonpost.com/entry/ray-kurzweil-nanobots-brain-godlike_560555a0e4b0af3706dbe1e2

Lanier, Jaron. 2000 "One Half a Manifesto," *Edge*

https://edge.org/conversation/jaron_lanier-one-half-a-manifesto

Latour, Bruno. 2012. "Love Your Monster"

<https://thebreakthrough.org/index.php/journal/past-issues/issue-2/love-your-monsters>

More, Max. "The Proactionary Principle," <http://www.extropy.org/proactionaryprinciple.htm>

National Science Foundation. 2003, "Converging Technologies for Improving Human Performance: nanotechnology, biotechnology, information technology and cognitive science"

http://www.wtec.org/ConvergingTechnologies/Report/NBIC_report.pdf

New York Times, Banning military robots:

http://www.nytimes.com/2015/07/28/technology/elon-musk-and-stephen-hawking-among-hundreds-to-urge-ban-on-military-robots.html?emc=edit_th_20150728&nl=todaysheadlines&nid=71023177; see as well:

http://www.nytimes.com/2015/08/17/opinion/robot-weapons-whats-the-harm.html?emc=edit_th_20150817&nl=todaysheadlines&nid=70697315&r=0

President's Council on Bioethics. 2003. *Beyond Therapy: Biotechnology and the Pursuit of Happiness*

https://repository.library.georgetown.edu/bitstream/handle/10822/547367/beyond_therapy_final_report_pcbe.pdf?sequence=1&isAllowed=y

Rejeski, D. & R. L. Olson. 2006. "Has Futurism Failed?" *The Wilson Quarterly*. pp. 14-21.

Sandel, Michael. 2004. "The Case Against Perfection," *The Atlantic*, April 2004.

Soares, Nate and Benja Fallenstein, "Aligning Superintelligence with Human Interests: A Technical Research Agenda," Machine Intelligence Research Institute <https://intelligence.org/files/TechnicalAgenda.pdf>

Urban, Tim. "AI Revolution: The Road to Superintelligence"

<https://waitbutwhy.com/2015/01/artificial-intelligence-revolution-1.html>

Vinge, Vernor. "The Coming Technological Singularity."

<https://www-rohan.sdsu.edu/faculty/vinge/misc/singularity.html>

Institutes and Journals:

Acceleration Studies Foundation: <http://www.accelerating.org/about.html>

Centre for the Study of Existential Risk: <https://www.cser.ac.uk/>

Foresight Institute, <http://www.foresight.org>

Future of Humanity Institute: <https://www.fhi.ox.ac.uk/>

Future of Life Institute: <https://futureoflife.org/>

In Pursuit of the Future, Cardiff University: <http://www.cardiff.ac.uk/socsci/futures/index.html>

Institute for Ethics and Emerging Technologies, <http://www.ieet.org>

Kurzweil Accelerating Intelligence, www.kurzweilai.net

Machine Intelligence Research Institute, <https://intelligence.org/>

Singularity University: <https://su.org/>; <https://singularityhub.com/#sm.000cmo9vh1clff9dxpr1qck6xyy6d>

Society for the Study of New and Emerging Technologies, S.NET <http://www.thesnet.net/>

The New Atlantis: A Journal of Technology and Society: <https://www.thenewatlantis.com/>

Food for Thought:

"The best way to predict the future is to create it."

Alan Kay (Kay created the computer interface for the first Apple Macintosh.)

"When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong. The only way of discovering the limits of the possible is to venture a little way past them into the impossible. Any sufficiently advanced technology is indistinguishable from magic."

Arthur C. Clarke ("Three laws of prediction")

"An economist is an expert who will know tomorrow why the things he predicted yesterday didn't happen"

Earl Wilson

"Predictive analytics ... is right at the fulcrum point of utopian and dystopian visions of the future."

Andrew Frank (Gartner)