

Technology and World Politics
POLI 444
McGill University
Fall 2023

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Office hours: Wednesdays, 10:30am-11:30am, or by appointment.

Course description

This course examines the interactive relationship between technology and world politics: how states and politics drive technological innovation, the impact of technological change on international relations, and key issues and debates in the international regulation and governance of technology. Specific topics to be examined include approaches to the governance of technology, internet and cybersecurity threats, military and industrial innovation, and international rivalry over technological industries and production. By the end of the course, students should gain an understanding of key issues and debates in the politics and governance of technology.

The course is structured in three parts. The first portion deals with basic concepts that help to better understand what technology is and what it does, drawing on work in science and technology studies and social theory. We then move towards political and governance questions broadly conceived, addressing issues such as industrial and innovation policy, internet governance, and implications for classic international relations issues like national security and political economy. The final portion of the class digs into specific technological areas and examines the future as a political concept.

Assessment

- **Reading responses** (30%; 3 responses worth 10% each)
Maximum 800 words. Students must submit one response for weeks 1-5, weeks 6-9, and weeks 10-13. This can take the form of posing questions that arise as you read, a response to class discussion, connecting themes and ideas between the readings, or critiques of arguments made by readings.
- **Research essay**
Your essay will examine current debates around an issue of the politics or governance of technology. You should apply the following broad questions to a technology area or technology policy issue of your choice, such as renewable energy, artificial intelligence, killer robots, social media, innovation policy, cybersecurity, digital currencies, or something else (you are not limited to those covered in the course). What is being done to regulate, promote, or govern emerging technologies? What problems do technologies and current approaches to them raise? Are existing policies appropriate, or what should be done instead?
 - **Outline** (5%, due **October 6**)
This outline will identify the issue being studied, specify a thesis statement of 40 words or less beginning with the words “I argue that...”, explain the context and importance of your argument, and what would be evidence for *and* against your argument.
Maximum 600 words.
 - **Final draft** (40%, due **December 5**)

Maximum 5000 words (not including bibliography). Key criteria for a high grade on the research essay are:

- a clear, developed, and well-substantiated argument
 - good breadth and depth of research
 - appropriate summary and reference to the relevant literature
 - clear and concise writing that meets scholarly standards, with proper citations, spelling and grammar, and that does not exceed the word limit.
- **Participation** – 10%
This grade assesses active engagement in the class, most importantly during the discussion sessions each week.

There is no required textbook for this course. All readings are academic journal articles or portions of books which are accessible from the McGill University Library. Please inform the instructor **immediately** if there is any problem accessing an assigned reading so that I can find it or assign an alternative.

Communications

Please note that any class-wide announcements will be made through myCourses or to student McGill email accounts. Furthermore, to ensure protection of student privacy, only mcgill.ca email address should be used.

Language of submission

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.

Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue).

Academic integrity

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures" (see McGill's guide to academic honesty for more information). Text-matching software may be used to ensure academic integrity by checking submitted assignments for plagiarism or the unauthorized use of text-generating software (such as ChatGPT and similar tools).

Students found to have represented another person's work as their own, or to have contributed or aided another student in doing so, may be subject to disciplinary measures according to university policy. See <https://www.mcgill.ca/students/srr/academicrights/integrity/cheating>

Content generation tools (also known as "generative AI") are very new and the full implications for educators are yet to be fully understood. The key concern is that the mental and cognitive exercise of producing written work is a key part of learning and cognitive training that students will not fully benefit from if they resort to such tools as replacements for their own efforts. Consistent

with university policy, text generated by tools like ChatGPT **may not be submitted in any assignment in this course.**

Extraordinary circumstances statement

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

Copyright of course content

All slides, video recordings, lecture notes, class handouts, etc. are and remain the instructor's intellectual property. You may use these only for your own learning and research (with proper citation/referencing). You may not disseminate or share these materials. Doing so may violate copyright and could be cause for disciplinary action.

Indigenous land statement

McGill University is on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which peoples of the world now gather.

Inclusive learning environment

As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Students with Disabilities, 514-398-6009.

Students who are unable to meet academic obligations because of a religious commitment are responsible for informing the instructor with two weeks' notice of any conflicts. See the university policy for the accommodation of religious holy days: https://www.mcgill.ca/secretariat/files/secretariat/religious_holy_days_policy_on_accomodation_of.pdf

Schedule and readings

We have two class meetings each week. The first meeting will be a lecture while the second meeting will be a conference-style open discussion based on the listed readings. Required readings are listed under the week's title heading and students are required to have read all of them so as to be able to debate and expand upon them in the discussion segment. Supplementary readings are optional and highlight works that students wishing to explore particular topics in greater depth may wish to engage with on their own time, and/or refer to in their written assignments.

Week 1: Starting points

- Matthias Leese & Marijn Huijtsink. 2019. "How (not) to talk about technology: International Relations and the question of agency". In *Technology and Agency in International Relations*, eds. Marijn Huijtsink & Matthias Leese, 1-23. Routledge (pp. 1-14).
- David Edgerton. 2007. *The Shock of the Old: Technology and Global History since 1990*. Oxford University Press (chp. 5).
- Ruth Schwartz Cowan. 1999. "How the refrigerator got its hum". In *The Social Shaping of Technology*, 2nd edition, Donald Mackenzie & Judy Wajcman, eds., 202-218. Open University Press.

Supplementary

- Alf Hornborg. 2014. "Technology as Fetish: Marx, Latour, and the Cultural Foundations of Capitalism", *Theory, Culture, and Society*, 31(4): 119-140.

Sep 6: Discussion questions

How do you define "technology"? What is the nature of technology? What makes one technology more important or better than others?

Week 2: What is technology?

- Bruno Latour. 1990. "Technology is society made durable". *The Sociological Review*, 38(1): 103-131.
- Neil C. Renick. 2023. "Superweapons and the myth of technological peace", *European Journal of International Relations*, 29(1): 129-152.
- W. Brian Arthur. 2009. *The Nature of Technology: What it is and how it evolves*. Free Press ("Combination and Structure", pp. 27-43)

Supplementary

- Stefan Fritsch. 2011. "Technology and global affairs", *International Studies Perspectives*, 12(1): 27-45.
- Meghan O'Gieblyn. 2022. *God, Human, Animal, Machine: Technology, Metaphor, and the Search for Meaning*. Penguin Random House.
- Robert Gordon. 2016. *The Rise and Fall of American Growth*. Princeton University Press (chp. 17).

Sep 13

Why and when is technology desirable or valuable? When should technological change take priority over other values? Is technological change necessarily progress?

Week 3: Technology and the state

- Sandra Braman. 2006. *Change of State: Information, Policy, and Power*. MIT Press. <https://direct.mit.edu/books/oa-monograph/5135/Change-of-StateInformation-Policy-and-Power>
- Susana Borrás and Jakob Edler. 2020. "The roles of the state in the governance of socio-technical systems' transformation", *Research Policy* 49(5): <https://doi.org/10.1016/j.respol.2020.103971>
- Gregory F. Nemet. 2009. "Demand-pull, technology-push, and government-led incentives for non-incremental technical change", *Research Policy*, 38(5): 700-709.
- Stephen Hilgartner, J. Benjamin Hurlbut, and Sheila Jasanoff. 2021. "Was 'science' on the ballot?" *Science*, 371(6532): 893-894. <https://doi.org/10.1126/science.abf8762>

Supplementary

- Laura DeNardis and Mark Raymond. 2017. "The Internet of Things as a Global Policy Frontier". *University of California Davis Law Review*, 51: 475.

Sep 20

What does it mean for policy to "follow the science"? What role should scientific and technical expertise play in governance? How should technology be governed and with what objectives?

Week 5: Innovation and development policy

- Gregory Tassef. 2008. "Globalization of technology-based growth: the policy imperative", *Journal of Technology Transfer*, 33: 560-578.

- Mark Z. Taylor. 2016. *The Politics of Innovation: Why Some Countries are Better than Others at Science and Technology*. Oxford University Press (pp. 69-179).
- Stroikos, Dimitros. 2020. "China, India, and the social construction of technology in international studies", *Review of International Studies*, 46(5): 713-731.

Supplementary

- Suzanne M. Moon. 1998. "Takeoff or Self-Sufficiency? Ideologies of Development in Indonesia, 1957-1961". *Technology and Culture*, 38(2): 187-212.
- Chris Miller. 2022. *Chip War: The Fight for the World's Most Critical Technology*. Scribner.
- Clive Dewey. 2014. *Steamboats on the Indus: The Limits of Western Technological Superiority in South Asia*. Oxford University Press.

Sep 27

What does it mean for a country to be "technologically advanced"? Do states need to invest in technology? Why and how should they do so?

Week 6: Digital political economy

- Milton L. Mueller & Karim Farhat. 2022. "Regulation of platform market access by the United States and China: Neo-mercantilism in digital services," *Policy & Internet*, 14(2): 348-367.
- Malcolm Campbell-Verduyn & Moritz Hutten. 2022. "Governing techno-futures: OECD anticipation of automation and the multiplication of managerialism," *Global Society*, 36(2): 240-260.
- Philip M. Napoli & Robyn Caplan. 2017. "Why media companies insist they're not media companies, why they're wrong, and what it matters," *First Monday*, 22(5), <http://dx.doi.org/10.5210/fm.v22i15.7051>

Supplementary

- David A. Wolfe. 2019. "A Digital Strategy for Canada: The Current Challenge." Institute for Research on Public Policy. <https://irpp.org/wp-content/uploads/2019/01/A-Digital-Strategy-for-Canada.pdf>
- Thomas D. Lairsen. 2020. "The international political economy of Huawei's global and domestic environment". In *Huawei Goes Global*, vol. 1., edited by Wenxian Zhang, Ilan Alon, and Christoph Lattemann, 13-40. Palgrave Macmillan.

Discussion – Oct 4

Are technology industries the most important part of an economy? What makes a company a "technology" company? Have digital industries made other industries like steel and manufacturing obsolete?

[Thanksgiving/Fall break: October 6 to 11]

Week 7: Networks and complexity

- John Urry. 2016. *What is the Future?* Polity Press (chp. 4).
- Donald Mackenzie. 2021. *Trading at the Speed of Light: How Ultrafast Algorithms are Transforming Financial Markets*. Princeton University Press (chp. 5).
- Marieke de Goede and Carola Westermeier. 2022. "Infrastructural geopolitics", *International Studies Quarterly*, 66: sqac033.
- Richard Barbrook & Andy Cameron. 1995. "The Californian Ideology," *Mute* 1(3). <https://www.metamute.org/editorial/articles/californian-ideology>

Further reading

- Martin Müller. 2015. "Assemblages and actor-networks: Rethinking socio-material power, politics, and space", *Geography Compass*, 9(1).
- Mark de Reuver and Jan Ondrus. 2017. "When technological superiority is not enough: The struggle to impose the SIM card as the NFC Secure Element for mobile payment platforms", *Telecommunications Policy*, 41(4): 253-262. <https://doi.org/10.1016/j.telpol.2017.01.004>
- David Easley and Jon Kleinberg. 2010. *Networks, Crowds, and Markets: Reasoning about a Highly Connected World*. Cambridge University Press.

Discussion – Oct 18

What does network thinking change about how we usually think about the world? Has technology allowed humans to transcend geography and physical space?

Week 8: Cyberspace and the internet

- Monroe Price. 2018. "The Global Politics of Internet Governance: A case study in closure and technological design", in *Technology and World Politics: An Introduction*, edited by Daniel R. McCarthy, 126-145. Routledge.
- Roxana Radu. 2019. *Negotiating Internet Governance*. Oxford University Press (chp. 6).
- Laura DeNardis. 2020. *The Internet in Everything: Freedom and Security in a World with No Off Switch*. Yale University Press (chp. 5-6).

Further reading

- Lucas Kello. 2017. *The Virtual Weapon and International Order*. Yale University Press (pp. 58-115).
- Laura DeNardis. 2023. "Interplanetary Internet Governance", *CIGI Papers*, no. 277. https://www.cigionline.org/documents/2349/no.277_3w07uxr.pdf
- Danny Steed. 2019. *The Politics and Technology of Cyberspace*. Routledge.
- Hannah Bloch-Wehba. 2019. "Global Platform Governance: Private Power in the Shadow of the State", *SMU Law Review*, 72.
- Philip Balsiger et al. 2023. "Coping with digital market re-organization: How the hotel industry strategically responds to digital platform power", *Competition & Change*, 27(1): 163-183.

Discussion – Oct 25

Is the internet getting worse? In what ways should the internet be controlled? What do you think the most important benefits of the internet are, and what extent of disadvantages and harms are acceptable trade-offs?

Week 8: Military technology

- Andrea Gilli & Mauro Gilli. 2019. "Why China has not caught up yet: Military-technological superiority and the limits of imitation, reverse engineering, and cyber-espionage", *International Security* 43(3): 141-189.
- Ingvild Bode. 2023. "Emergent Normativity: Communities of practice, technology, and lethal autonomous weapon systems". *Global Studies Quarterly*, advance.
- Avi Goldfarb and Jon R. Lindsay. 2022. "Prediction and Judgment: Why Artificial Intelligence Increases the Importance of Humans in War", *International Security*, 46(3): 7-50. https://doi.org/10.1162/isec_a_00425

- Jacquelyn Schneider. 2023. “Does Technology Win Wars?” *Foreign Affairs*, March 4.

Supplementary

- Ingvild Bode, Hendrik Huelss, and Anna Nadibaidze. 2023. “Written evidence submitted to the UK House of Lords AI in Weapon Systems committee”
<https://committees.parliament.uk/writtenevidence/120184/pdf/>
- Michael C. Horowitz. 2010. *The Diffusion of Military Power: Causes and Consequences for World Politics*. Princeton University Press.
- Steve Biddle. 2004. *Military Power: Explaining Victory and Defeat in Modern Battle*. Princeton University Press (chp. 4).
- Kendrick Kuo. 2022. “Dangerous Changes: When Military Innovation Harms Combat Effectiveness”, *International Security*, 47(2): 48-87.

Discussion – Nov 1

What does it mean to have technological security? What makes a technology strategic?

Week 9: Surveillance

- Taylor Owen. 2015. “The Violence of Algorithms”, *Foreign Affairs*, May 25.
- Josef Teboho Ansorge. 2016. *Identify and Sort: How Digital Power Changed World Politics*. Oxford University Press (chp. 4).
- Antoine Bousquet 2018. *The Eye of War: Military Perception from the Telescope to the Drone*. University of Minnesota Press (pp. 1-20).
- Shoshana Zuboff. 2019. *The Age of Surveillance Capitalism*. PublicAffairs.

Supplementary

- Michel Foucault. 2012. *Discipline and Punish: The Birth of the Prison*. Vintage (pp. 213-228; 243-248).
- Huub Dijstelbloem. 2021. *Borders as Infrastructure: The Technopolitics of Border Control*. MIT Press (chp. 5).
- Amy B. Zegart. 2022. *Spies, Lies, and Algorithms: The History and Future of American Intelligence*. Penguin Random House.

Discussion – Nov 8

What is a panopticon and what impact does it have on society? Are worries about privacy and surveillance technologies justified? Are the risks an acceptable price to pay for the advantages of those same technologies?

Week 10: Artificial intelligence

- Jenna Burrell and Marion Fourcade. 2021. “The Society of Algorithms”. *Annual Review of Sociology*, 47: 213-237.
- Miriam C. Buiten. 2019. “Towards intelligent regulation of artificial intelligence”, *European Journal of Risk Regulation*, 10(1): 41-59.
- Justin Jope. *Revolutionary Mathematics: Artificial Intelligence, Statistics, and the Logic of Capitalism*. Verso (pp. 37-58).
- Brian Christian. 2020. *The Alignment Problem: Machine Learning and Human Values*. W.W. Norton (pp. 277-310).

Supplementary

- Laura Preston. 2022. “Becoming a chatbot: My life as a real estate AI’s human backup”, *The Guardian*, December 13. <https://www.theguardian.com/technology/2022/dec/13/becoming-a-chatbot-my-life-as-a-real-estate-ais-human-backup>

- Araz Taeihagh. 2021. "Governance of artificial intelligence", *Policy and Society*, 40(2): 137-157.
- Kate Crawford. 2021. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press.
- Megan Finn and Katie Shilton. 2023. "Ethics governance development: The case of the Menlo Report", *Social Studies of Science*. 53(3).

Discussion – Nov 15

How can we maximize paperclips? What are human values? How can machines be made to align with them?

Week 11: Climate and ecological crisis

Guest lecturer – Dr. Amy Janzwood

- Frances Westley et al. 2011. "Tipping Toward Sustainability: Emerging Pathways of Transformation", *AMBIO*, 40: 762-780.
- J.R. McNeil & Peter Engelke. 2014. *The Great Acceleration: An Environmental History of the Anthropocene since 1945*. Belknap Press (pp. 7-61).
- Jonathan Symons. *Ecomodernism: Technology, Politics, and the Climate Crisis*. Polity (pp. 1-12)
- Jeremy Baskin. 2019. *Geoengineering, the Anthropocene, and the End of Nature*. Palgrave MacMillan (chp. 1).

Supplementary

- Clark A. Miller 2001. *Changing the Atmosphere: Expert Knowledge and Environmental Governance*. MIT Press.
- Rob Dunn. 2021. "The Earth After Humans", *Noema*, November 9, <https://www.noemamag.com/the-earth-after-humans/>
- Jonas Meckling and Jonas Nahm. 2019. "The politics of technology bans: Industrial policy competition and green goals for the auto industry", *Energy Policy*, 126: 470-479.

Discussion – Nov 22

What is nature? How has technology changed relationships between humans and nature? What would a sustainable solution to climate change look like? Is there a technological fix to environmental problems?

Week 12: Space

- Daniel Deudney. 2020. *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity*. Oxford University Press (pp. 108-128; 331-344).
- Michael Byers and Aaron Boley. 2023. *Who Owns Outer Space? International Law, Astrophysics, and the Sustainable Development of Space*. Cambridge University Press (pp. 46-76).
- Bleddyn E. Bowen. 2023. *Original Sin: Power, Technology, and War in Outer Space*. Oxford University Press (chp. 7).

Supplementary

- BBC Ideas. "Could we have babies in space?", <https://www.bbc.co.uk/ideas/videos/could-we-have-babies-in-space/p0fkxyn9>

Discussion – Nov 29

Is space expansion necessary for human survival, or a waste of our limited resources?

Week 13: The politics of the future

Note: Nov 30 is a Monday schedule – there is a lecture!

- Émile P. Torres. 2021. “Against Longtermism”, *Aeon*, October 19. <https://aeon.co/essays/why-longtermism-is-the-worlds-most-dangerous-secular-credo>
- Guillaume Beaumier and Kevin Kalomeni. 2022. “Ruling through technology: politicizing blockchain services”, *Review of International Political Economy*, 29(6): 2135-2158.
- Owen Cotton-Barratt, Max Daniel, and Anders Sandberg. 2020. “Defence in Depth Against Human Extinction: Prevention, Response, Resilience, and Why They All Matter”. *Global Policy*, 11(3): 271-282. <https://doi.org/10.1111/1758-5899.12786>

Supplementary

- Dan Olson. 2023. “The Future is a Dead Mall – Decentraland and the Metaverse”, *Folding Ideas*, March 26. YouTube video, <https://www.youtube.com/watch?v=EiZhdpLXZ8Q> (watch from 1:22:14)
- Marcella Atzori. 2015. “Blockchain Technology and Decentralized Governance: Is the State Still Necessary?” SSRN.

Discussion – Dec 4

Can technology improve politics? How do beliefs about the future impact politics? What is existential risk? How is the issue different when applied at the individual level (risk to single persons) as opposed to the level of society (risk to humans as a whole)?

Updated August 3, 2023.

Further reading

This is a list of works that may be useful starting points for your research papers. You are not required to read them for class.

- Chris Miller. 2022. *Chip War: The Fight for the World's Most Critical Technology*. Scribner.
- Lulu Yilun Chen. 2022. *Influence Empire: Inside the Story of Tencent and China's Tech Ambition*. Hodder & Stoughton.
- Gabrielle Hecht. 2011. *Entangled Geographies: Empire and Technopolitics in the Global Cold War*. MIT Press.
- Martin Moore. 2020. *Democracy Hacked: How Technology is Destabilising Global Politics*. Simon and Schuster.
- Andreas Wenger, Ursula Jasper and Myriam Dunn Cavelty, eds. 2020. *The Politics and Science of Prevision: Governing and Probing the Future*. Routledge.
- David Mosco. 2005. *The Digital Sublime: Myth, Power, and Cyberspace*. MIT Press.
- Geoffrey L. Herrera. 2006. *Technology and International Transformation*. SUNY Press.
- Taylor Owen. 2015. *Disruptive Power: The Crisis of the State in the Digital Era*. Oxford University Press.
- Eglė Rindzevičiūtė. 2016. *The Power of Systems: How Policy Sciences Opened Up the Cold War World*. Cornell University Press.
- Aihwa Ong. 2016. *Fungible Life: Experiment in the Asian city of life*. Duke University Press.
- Kathryn C. Ibata-Arens. 2020. *Beyond Technonationalism: Biomedical Innovation and Entrepreneurship in Asia*. Stanford University Press (pp. 23-59).
- Wendy H.K. Chun. 2008. "On 'Sourcery', or Code as Fetish", *Configurations*, 16: 299-324.
- Scott Callon. 1995. *Divided Sun: MITI and the Breakdown of Japanese High-Tech Industrial Policy*. Stanford University Press.
- Bruno Latour. 1993. *We Have Never Been Modern*. Harvard University Press.
- Bruno Latour. 1996. *Aramis, or, the Love of Technology*. Harvard University Press.
- Jonathan Zittrain. 2008. *The Future of the Internet – And How to Stop It*. Yale University Press.
- Robert J. Gordon. 2014. *The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War*. Princeton University Press (pp. 577-604).
- James C. Scott. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. Yale University Press.
- Michael Adas. 1989. *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance*. Cornell University Press.
- David Golumbia. 2018. *The Politics of Bitcoin: Software as Right-Wing Extremism*. University of Minnesota Press.
- Adrian Daub. 2020. *What Tech Calls Thinking: An Inquiry into the Intellectual Bedrock of Silicon Valley*. Farrar, Straus and Giroux.
- Jonathan Finn. 2020. *Beyond the Finish Line: Images, Evidence, and the History of the Photo-Finish*. McGill-Queens University Press.
- Primavera De Filippi and Benjamin Loveluck. 2016. "The invisible politics of Bitcoin: governance crisis of a decentralised infrastructure", *Internet Policy Review*, 5(3).
- Milton Mueller. 2002. *Ruling the Root: Internet Governance and the Future of Cyberspace*. MIT Press.
- John Urry. 2016. *What is the Future?* Polity Press.
- Sydney E. Scott et al. 2018. "An overview of attitudes toward genetically-engineered food", *Annual Review of Nutrition*, 38, 459-479.

- Émile P. Torres. 2023. *Human Extinction: A History of the Science and Ethics of Annihilation*. Routledge.
- Mark A. Wood. “Rethinking how technologies harm”, *The British Journal of Criminology*, 61(3): 627-647.
- Virginia Eubanks. 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. St. Martin’s Press.
- Iain M. Cockburn, Rebecca Henderson, and Scott Stern. 2019. “The Impact of Artificial Intelligence on Innovation”, in *The Economics of Artificial Intelligence: An Agenda*, edited by Ajay Agrawal, Joshua Gans, and Avi Goldfarb. University of Chicago Press.
- Danny Steed. 2019. *The Politics and Technology of Cyberspace*. Routledge.
- Judy Wajcman. 2000. *Making Technology Masculine: Men, Women, and Modern Machines in America, 1870-1945*. University of Michigan Press.