



STS 1900 – Fall 2023

## Senior Seminar

Dr. Xan Chacko

Day and Time: Wednesday 3-5:30pm

Office Hours: Wednesday 1-3pm

[Office Hours Appointment Link](#)

Classroom: Page-Robinson Hall 401

Office: Room 206, [67 George Street](#)

### Course Description

This course aims to provide an opportunity to explore some of the issues, themes, and approaches in the field of Science and Technology Studies through reading and discussion, and to allow students opportunities to decide how to fruitfully use such ideas and approaches in their own projects. STS is largely understood as a discipline that seeks to engage the physical, biological, and social sciences and to contextualize the production, reception, and dissemination of scientific knowledge in its full social, historical, political, philosophical, economic, human, and cultural contexts. We will discuss various issues in STS using a case study approach focusing on specific examples and controversies.

### Course Objectives

- Describe significant historical and ongoing controversies that emerge from the creation of scientific knowledge and its application in society. Categorize, connect, and contrast the social forces that both inspire and result from controversy in the scientific domain. Further, to identify how science interacts with and demarcates itself from other realms of value/knowledge such as religion, history, politics, and economics, among others.
- Discuss and debate challenging social and scientific concepts while building a supporting learning community that advances the critical thinking practice of all members.
- Identify a socio-scientific problem that matters, select a method, and generate a project plan to interrogate that problem. Further, to know how to find and synthesize the relevant scholarship on the issue to support a more profound engagement with it. To enhance the quality of their cohort's work through a dedicated peer review practice.

## Accessibility and Accommodations Statement

Brown University is committed to full inclusion of all students. Please inform me early in the term if you may require accommodations or modification of any of course procedures. You may speak with me after class, during office hours, or by appointment. If you need accommodations around online learning or in classroom accommodations, please be sure to reach out to Student Accessibility Services (SAS) for their assistance ([sas@brown.edu](mailto:sas@brown.edu), 401-863-9588). Undergraduates in need of short-term academic advice or support can contact an academic dean in the College by emailing [college@brown.edu](mailto:college@brown.edu). Graduate students may contact one of the deans in the Graduate School by emailing [graduate\\_school@brown.edu](mailto:graduate_school@brown.edu).

## Academic Integrity Statement

A student's name on any exercise (e.g., a theme, report, notebook, performance, computer program, course paper, quiz, or examination) is regarded as assurance that the exercise is the result of the student's own thoughts and study, stated in her or his own words, and produced without assistance, except as quotation marks, references, and footnotes acknowledge the use of printed sources or other outside help. ([Academic Code](#), p. 5)

## Credit Hours

Total time spent in and out of class for this course is estimated at 180 hours. Over the 15 weeks of this course, students will spend 3 in class each week (40 hours of class in total). Each class session will require 8 hours of reading, annotating, and commenting in preparation (100 hours total). In addition to this ongoing preparation time, students are expected to allocate about 40 hours over the course of the term to writing assignments and for an oral presentation.

## Course Requirements

Attendance & Participation	20%
In-Class Discussion and Handout	10%
In-Class Workshops and Peer Reviews	30%
Final Paper	40%
<hr/> Total	<hr/> 100%

## Attendance and Participation 20%

Attendance is mandatory. Please note that some of the class sessions will be conducted in different locations like the Brown University Herbarium or John Hay Library. Those sessions are mandatory too. If you are unable to attend class due to a valid reason, please let me know in advance. Your class participation grade will be based on the *quality* of your personal engagement with the material of the course during class, which means coming prepared to class having read the assigned articles, posing and answering questions, and participating in discussions.

## **In-Class Discussion and Handout 10%**

Starting from **1: Whose Knowledge?**, September 13, each of you (or a pair) will be responsible for preparing a short (2-page) review/introduction to the required readings assigned for one day of the semester. Take a look at the schedule of readings and sign up for a week where you will be responsible for leading discussion during the first class. Some of you will have to double up, I encourage you to coordinate and only submit one précis that you have worked on together.

In your handout tell us the ideas or concepts that you found most fascinating from the reading. Pull out some quotes that you would like us to think through. Include questions that you would like to pose to the class to provoke conversation. While you are in-charge of starting the discussion off, remember that you are not alone, I'm here to help the conversation and to clarify (to the best of my ability) any confusion.

Submit your précis or summary handout on the class canvas site before Noon on the day when the readings are assigned.

## **In-Class Workshops and Peer Reviews 30%**

For several class sessions students will bring in draft components of a Research Proposal. These are 1) The Research Problem, 2) Methodology, and 3) Annotated Bibliography. Students will see examples of each these beginning in Week 2, be expected to craft their own, and submit them to the class canvas under assignments. In class we will workshop these individual pieces and give each other feedback on their submissions.

## **Final Paper 40%**

The Final Project invites students to identify and develop a research project for the course. This could be a problem in STS that motivates their interest and to devise a plan of research to address that problem. The first half of the course builds up the student's capacity to create the components of a research proposal, the latter half gives them the space to explore, read, conduct research in the ways that best suit the problem chosen by them. The first step towards conducting this research is a research proposal which will be shared within and peer reviewed by the class. Once some research has been conducted, students will present their problem and findings to the class on December 6. With feedback from the class on their presentation and proposal, the students write a 15-20 page paper that presents an analysis of the research that they have conducted for the course. The paper should identify key questions, themes, methods, and significance of the project.

The final paper is due on Canvas, at 4pm on Friday, December 15.

# Course Schedule

## Introduction - September 6

*What is STS? What can we do in/through STS?*

Introductions, Syllabus Review, Choose week for In-Class Discussion and Handout.

---

## 1: Whose Knowledge? - September 13

*How is science made? What kinds of knowledge can be made about the world? Who can (only) be a subject/author?*

In-Class:

Research Problem: What is a research problem and how do I come up with just one?

In Class Activity: Showcase Research Problem & Annotated Bibliography

Read:

Ursula K. Le Guin. “She Unnames Them.” *The New Yorker* January 21, 1985 (2 pages)

C Marie Fuhrman. “A poem to acknowledge that the land itself—along with the people whose language, culture and religion were born of it—is rarely acknowledged.” *Inlander* October 07, 2021 (2 pages)

Helen Verran. “Engagements between disparate knowledge traditions: Toward doing difference generatively and in good faith.” in Lesley Green (ed.) *Contested Ecologies: Dialogues in the South on Nature and Knowledge* HSRC Press: 141-161.

Warwick Anderson, “The Possession of Kuru: Medical Science and Biocolonial Exchange,” *Comparative Studies in Society and History*, 42.4 (2000): 713–744.

Listen:

Matika Wilbur, Desi Small-Rodriguez & Adrienne Keene “Healing The Land IS Healing Ourselves with Kim Smith,” *All My Relations* 1 hour 13 mins

Supplementary Reading:

Eve Tuck and K. Wayne Yang. “Decolonization is not a metaphor.” *Tabula Rasa* 38 (2021): 61–111.

---

## 2: Residues & Chemicals - September 20

*Who polices the boundary between purity and toxicity? Can we imagine a future emerging out of the toxic present?*

In Class:

Methods: What are they and how do we choose them?

Read:

Soraya Boudia, Angela N. H. Creager, Scott Frickel, Emmanuel Henry, Nathalie Jas, Carsten Reinhardt, and Jody A. Roberts, "Chapter 1: Residue Properties," in *Residues: Thinking Through Chemical Environments*. 2021. 1-20.

Fernando J. Gomez and Simonetta Rima, "[Setting the facts straight on plastics](#)," *World Economic Forum*, October 4, 2019.

Warren Cornwall. "The Plastic Eaters." *Science* (American Association for the Advancement of Science) 373, no. 6550 (2021): 36–39.

Carl Zimmer, "Forever Chemicals No More? PFAS Are Destroyed with New Technique," *New York Times*, August 18, 2022.

Watch:

*Plastic Planet*. Directed by Werner Boote. First Run Features, 2010. [Kanopy](#)

### 3: Archive Fever - September 27

*What are the limits and affordances of historical archives? Who makes them? What can they reveal/erase?*

In-Class:

[Special Collections and Rare Books Visit - Meet at John Hay Library](#)

Read: Selections from *Invisible Labour in Modern Science*, Rowman and Littlefield: 2022.

Lan A. Li, "Chapter 2: Escaping Immortality Science, Civilization, and Lu Gwei-djen," 51-60.

Margaret M. Bruchac, "Chapter 4: Of Animacy and Afterlives Material Memories in Indigenous Collections," 71-80.

Joanna Radin, "Chapter 20: Collecting Human Subjects Ethics and the Archive," 265-274.

Supplementary Reading:

Jenny Bangham, Xan Chacko, and Judith Kaplan (eds.) *Invisible Labour in Modern Science*, Rowman and Littlefield: 2022.

---

### 4: Experts and Expertise - October 4

*Whose knowledge counts? Who has the authority to discredit or give credit in science, technology, and medicine? What is the role of STS in mediating expert knowledge?*

In Class:

[Class visit from Leo Lovemore](#)

Read:

Mario Biagioli, “Ghosts, Brands, and Influencers: Emergent Trends in Scientific Authorship.” *Social studies of science* 52.3 (2022): 463–487.

Paige L Sweet, “The bad expert,” *Social Studies of Science* 2021, Vol. 51(3): 313–338.

Watch:

Robert Kenner “[Merchants of Doubt](#)” 2015

Supplementary Reading:

Robert N. Proctor, and Londa Schiebinger. *Agnotology: The making and unmaking of ignorance*. Stanford, Calif: Stanford University Press, 2008.

---

## 5: Anthropocene Studies - October 11

*How do we make sense of the human impact on the environment while holding in tension the diversity of ways that the impact takes shape?*

Due:

[Research Problem - Upload to Canvas by Noon](#)

In Class:

[Research Problem Peer Review Workshop](#)

Read:

Will Steffen. “[The Great Acceleration: The Collision of Human and Earth History](#)” *Feral Atlas* Stanford University Press, 2021.

Russell Ngadiyali Ashley. “[Before, goannas were here forever.](#)” *Feral Atlas* Stanford University Press, 2021.

Courtney Addison. “1080” Chapter 1 in Timothy Neale, Courtney Addison, and Thao Phan eds. *An Anthropogenic Table of Elements: Experiments in the Fundamental*. Toronto: University of Toronto Press. 2022. 22-33.

Alison Kenner and Sarah Stalcup. “Mould” Chapter 9 in Timothy Neale, Courtney Addison, and Thao Phan eds. *An Anthropogenic Table of Elements: Experiments in the Fundamental*. Toronto: University of Toronto Press. 2022. 121-131.

Watch:

[“Meet The Man Who Shoots At Birds All Day To Keep Them Off A Toxic Pit”](#) *Business Insider* November 24, 2021 (11 minutes)

Supplementary Reading:

Max Liboiron. *Pollution is colonialism* (Durham, NC: Duke University Press, 2021)

Rachel Carson. *Silent Spring* (Boston: Houghton Mifflin, 1962)

---

## 6: Making Kin - October 18

*How to balance the calls for multi-species justice with the ongoing injustices facing humanity? How does feminist practice offer a way of living with the past while imagining a more just future?*

Due:

Methodology - Upload to Canvas by Noon

In Class:

Methodology Peer Review Workshop

Read:

Donna Haraway, “Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin,” *Environmental Humanities*, vol. 6, 2015, pp. 159-165

Marilyn Strathern, Jade S. Sasser, Adele Clarke, Ruha Benjamin, Kim Tallbear, Michelle Murphy, Donna Haraway, Yu-Ling Huang and Chia-Ling Wu, “Forum on Making Kin Not Population: Reconceiving Generations,” *Feminist Studies* 45, no. 1. 159-172.

Mila Fenner and Wendy Harcourt. “Chapter 10. Debating Population in and Beyond Feminist Political Ecology,” in Wendy Harcourt, Ana Agostino, Rebecca Elmhirst, Marlene Gómez, and Panagiota Kotsila. (eds.) *Contours of Feminist Political Ecology*. Springer Nature, 2023. 231-257.

Watch:

Bruno Latour “Facing Gaia” 2016

*Donna Haraway: Story Telling for Earthly Survival* (2018)

Supplementary Reading:

*Making Kin Not Population*. Edited by Adele E Clarke and Donna Haraway. Prickly Paradigm Press, 2018.

Nicholas A Brown and Sarah E Kanouse. “An Anti-Racist and Anti-Colonial Anthropocene for Compromised Times.” *The Anthropocene Review* 8.2 (2021): 159–168.

---

## 7: Nuclear Temporalities - October 25

*How does STS deal with disasters? Some projects look backwards and others to the far future.*

Due:

Annotated Bibliography - Upload to Canvas by Noon

In Class:

Annotated Bibliography Peer Review Workshop

Read:

Traci Brynne Voyles, “Introduction: Sacrificial Land,” in *Wastelanding: Legacies of Uranium Mining in Navajo Country*. Minnesota: University of Minnesota Press, 2015. 1-26.

Gabrielle Hecht, “Invisible Production and the Production of Invisibility: Cleaning, Maintenance, and Mining in the Nuclear Sector.” *Routledge Handbook of Science, Technology, and Society*. Routledge, 2014. 353–368.

Watch:

Peter Galison and Robb Moss, [Containment](#) (2015)

Supplementary Watching:

Jon H. Else. [The Day After Trinity: J. Robert Oppenheimer and the Atomic Bomb](#). 1980.

Los Angeles Times. [Parts of the Marshall Islands just as radioactive as Chernobyl and Fukushima](#). 2019.

---

## 8: Everyday Militarism - November 1

*How do ordinary and domestic objects, technologies, spaces, and infrastructures make violence feel at home in the world? War requires STS interventions not only in terms of how we understand what it is or where and when it manifests but also in relation to the practices, methodologies, and disciplinary forms we bring to its study.*

Due:

[Research Proposal - Upload to Canvas by Noon](#)

In Class:

[Research Proposal Peer Review Workshop](#)

Read: Selections from Roundtable: Housewife’s Secret Arsenal, *Catalyst: Feminism, Theory, Technoscience* 9(1) 2023.

Heather Davis, “Teflon: Slipperiness and the Domestication of Toxicity,”

Kaitlin Stack Whitney, “Ladybugs: The (Natural) Enemy of My Enemy Is My Friend? Enlisting Ladybugs into the War on Insect Pests.”

Michael Richardson and J.D. Schnepf, “Home Drone: How to Militarize the Smart Home with the Ring Always Home Camera.”

Barbara Sutton, “ ‘Loved by Moms and Law Enforcement Alike’: Militarizing Civilian Bodies through Bulletproof Fashion.”

Supplementary Reading:

The Domestication of War, Special Section of *Catalyst: Feminism, Theory, Technoscience* 9(1) 2023.

## Research Week - No Class - November 8

Use this week to conduct research for your project.

---

### 9: Critical Code/Data/AI Studies - November 15

*The recent turn in STS has taken the need to critique algorithmic reality seriously. How can STS scholars intervene in the increasingly data driven world?*

Read:

Craig Dalton and Jim Thatcher, [“What Does A Critical Data Studies Look Like, And Why Do We Care?”](#) *Society and Space* (May 12, 2014).

Adrienne Williams, Milagros Miceli, and Timnit Gebru. [“The Exploited Labor Behind Artificial Intelligence,”](#) *Noema* (October 13, 2022)

Rita Raley and Jennifer Rhee. “Critical AI: A Field in Formation,” *American Literature*, Volume 95, Number 2, June 2023, 185-204

Kate Crawford and Vladan Joler. 2018. [“Anatomy of an AI System.”](#)

Watch:

Alex Rivera, [Sleep Dealer](#) (2009)

Supplementary Reading:

Benjamin, Ruha. 2019. *Race after Technology: Abolitionist Tools for the New Jim Code*. Medford, MA: Polity.

Broussard, Meredith. 2018. *Artificial Unintelligence: How Computers Misunderstand the World*. Cambridge, MA: MIT Press.

Chun, Wendy Hui Kyong. 2021. *Discriminating Data: Correlation, Neighborhoods, and the New Politics of Recognition*. Cambridge, MA: MIT Press.

Crawford, Kate. 2021. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. New Haven, CT: Yale Univ. Press.

Eubanks, Virginia. 2017. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. New York: St. Martin’s Press.

Hayles, N. Katherine. 2017. *Unthought: The Power of the Cognitive Nonconscious*. Chicago: Univ. of Chicago Press.

Katz, Yarden. 2020. *Artificial Whiteness: Politics and Ideology in Artificial Intelligence*. New York: Columbia Univ. Press.

O’Neil, Cathy. 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Crown Books.

---

## Thanksgiving Break - No Class - November 22

---

### 10: Speculative Fabulation - November 29

*The stories we tell about the world open the possibilities of certain futures, while foreclosing other imaginable ones. How do we incorporate storytelling as a part of our STS repertoire?*

Read:

Amy Leach. “[Memorandum to the Animals](#)” *Catapult* December 01, 2016 (2 pages)

Ursula K. Le Guin. “Vaster than Empires and More Slow” in Robert Silverberg (ed.) *New Dimensions 1* 99-133

Ted Chiang. “Exhalation” in Jonathan Strahan (ed.) *Eclipse Two: New Science Fiction and Fantasy* Night Shade Books. 1-29. or listen [Audio podcast](#) published by Escape Pod.

Michael Shenyahshe. “Strike and Bolt” in *Moonshot: the indigenous comics collection*. (12 pages)

Supplementary Reading:

Ursula K. Le Guin. *The Dispossessed: An Ambiguous Utopia*, Harper & Row, 1974.

Octavia E. Butler. *Parable of the Sower* Four Walls Eight Windows, 1993.

Kim Stanley Robinson. *The Ministry for the Future*, Orbit, 2020.

---

### Project In-Class Presentations: December 6

---

Paper Due: December 15, 4pm on Canvas

