

HPSC0087

Science in the 20th Century and Beyond

Course Syllabus

2023-24 session | Prof Charlotte Sleigh c.sleigh@ucl.ac.uk and Prof Jon Agar jonathan.agar@ucl.ac.uk

Course Information

This course on history and historiography of twentieth century science is for Masters students. More science was done, and more scientists lived, in the twentieth century than in any other century of human history. Furthermore, there were major changes in the framing ideas and organisation of major disciplines. Physics, for example, grappled with the new ideas of quantum theory and relativity. The life sciences responded to genetics and molecular approaches to life science. Social science experimented with new methods to measure society and the individual within it. These intellectual developments were intimately connected to social, economic, political and cultural trends and events, not least global conflicts, ideological clashes and economic transformations. This course introduces and guides the student through accounts of these changes produced by historians and other commentators. The aim is not so much to cover all the 'important' episodes in scientific events (the focus is primarily on Western science), as to highlight the historiographic lenses through which their history has been written. The assessment is designed so that the student learns, develops and applies skills to explore primary sources (primarily archives of twentieth century science), relating interpretation to an understanding of context based on historiographic secondary sources.

Basic course information

Moodle Web site:	https://moodle.ucl.ac.uk/course/view.php?id=7490
Assessment:	Two essays
Timetable:	See online timetable
Prerequisites:	None
Required texts:	Readings listed below
Course tutor(s):	Dr Charlotte Sleigh (convenor) and Prof Jon Agar
Contact:	c.sleigh@ucl.ac.uk and jonathan.agar@ucl.ac.uk
Web:	See STS staff pages
Office location:	22 Gordon Square

Schedule

	Date	Lead tutor	Topic	Activity
1	8 Jan	JA and CS	What is History of 20 th -century Science?	Read: Galison (2000) Read (optional): Evelyn Fox Keller (2009) Read (optional): Agar (2012)
2	15 Jan	CS	Imagination	Read: Robinson (2021) Read: Bowler (2017) Read Primary Source (optional): Wells (1902)
3	22 Jan	JA	Scale and State	Read: Capshew and Rader (1992) Read Primary Source: Science, the Endless Frontier (1945) Watch Primary Source: FAST Read (optional): Delbourgo
4	29 Jan	CS	Life	Read: Rader (2004) Read (optional): Poskett (2022); Read (optional): Kohler (1999); Read (optional): Strasser; Read (optional): Wright (1986); Read (optional): Radick (2023)
5	5 Feb	JA and CS with guests	Assessment Advice	Activity: Identifying primary sources and visit from Special Collections team
			Reading Week	no lectures
6	19 Feb	CS	Humanity	Read: Igo (2007) Read: Weidman (2011) Read (optional): Pauly (2000); Read (optional): Proctor (2003); Read (optional): Kevles (2009); Read (optional): Milam (2019) Read Primary Source (optional): UNESCO statements on race Read Primary Source (optional): Kinsey Report
7	26 Feb	JA	Cold War	Read: Edwards (1996) Watch Primary Source: Eisenhower's farewell address Read (optional): van Keuren (2001)
8	4 Mar	JA	Post-colonial Science	Read: Arnold (2013) Short read: Deb Roy (2018) Read (optional): Osseo-Asare (2013) Read (optional): Raj (2013)
9	11 Mar	CS	Mental Powers	Read: Hayward (2008) Read (optional): Nicholson (2011) Read (optional): Igo (2007)

				Read (optional): Bouk (2015)
10	18 Mar	JA	Environment	Read: Warde (2018) Read Short primary source extract: Carson (1962) and responses Read (optional): Woodhouse (2018)

Assessments

Summary

	Description	Deadline	Word limit	Deadline for Tutors to provide Feedback
0%	Title, identification of primary source collection, and short sample bibliography	20th March 2024	n/a	One week later
50%	Essay 1	23rd April 2024	2,000	As advised in class
50%	Essay 2	23rd April 2024	2,000	As advised in class

Assignments

The essays are designed so that you learn and demonstrate the skills to explore primary sources related to the history of 20th century science, and the knowledge of the broader scientific, social, political and cultural context necessary to interpret and understand such sources.

The first essay will be broad and contextual: a survey of the secondary literature relating to the science, without yet discussing the primary sources in detail.

The second essay will be a detailed exploration of the primary sources, offering an interpretation based on the context discussed in the first essay.

Guidance about choosing and researching the essays will be given in a whole session (the 5th session, just before Reading Week).

Before starting the essays, the title, primary sources and sample bibliography need to have been submitted and approved.

Specific Criteria for Assessment for this Module:

Specific criteria for assessment will be discussed in class.

Aims & objectives

Aims:

Understanding of the history, and historiography, of science in the twentieth century.

Objectives:

By the end of this module students should be able to:

- Have an overview of some of the main developments and themes of science in the twentieth century
- Possess an understanding of the historiography of science in the twentieth century
- Be able to critically read historical scholarship, perceiving the methods of research and interpretation that have been used

Reading list

Best General Introductions:

Agar, Jon (2012) *Science in the Twentieth Century and Beyond*. Cambridge: Polity.

Krige, John and Dominique Pestre (eds) (1997), *Science in the Twentieth Century*, Amsterdam: Harwood Academic Press

Poskett, James (2022), *Horizons: A Global History of Science*, London: Viking, (part 4)

The *Cambridge History of Science* volumes, in particular:

Volume 5, *The Modern Physical and Mathematical Sciences*, Edited by Mary Jo Nye

Volume 6, *Modern Life and Earth Sciences*, Edited by Peter J. Bowler, John V. Pickstone

Volume 7, *The Modern Social Sciences*, Edited by Theodore M. Porter, Dorothy Ross

Seminar Readings:

Arnold, David (2013) 'Nehruvian science and postcolonial India', *Isis*, 104, pp. 360–370.

Barbrook, Richard. Andy Cameron. (1996) "The Californian Ideology". *Science as Culture* 6.1: 44-72.

Bowler, Peter J. (2017), 'Introduction' (pp. 1-15) in *A History of the Future: Prophets of Progress from H. G. Wells to Isaac Asimov*, Cambridge: Cambridge University Press

Bouk, Dan (2015) "Valuing Lives in Four Movements" *How Our Days Became Numbered*. Chicago: University of Chicago Press.

Capshew, James H. and Karen A. Rader (1992) 'Big Science: Price to the present', *Osiris*, 2nd Series, 7, pp. 2-25

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

Deb Roy, Rohan (2018), 'Decolonise science – time to end another imperial era', *The Conversation*, <https://theconversation.com/decolonise-science-time-to-end-another-imperial-era-89189>

Delbourgo, James (2019) 'The knowing world: a new global history of science', *History of Science* 57(3), pp. 373–399

Edwards, Paul (1996) 'Chapter One: "We defend every place": building the Cold War world', *The Closed World: Computers and the Politics of Discourse in Cold War America*, Cambridge, MA: MIT Press, pp. 1-42.

Forman, Paul (1987) 'Behind quantum electronics: National security as basis for physical research in the United States, 1940-1960', *Historical Studies in the Physical and Biological Sciences*, 18(1), pp. 149-229

Galison, Peter (2000) 'Einstein's clocks: the place of time', *Critical Inquiry*, 26(2), pp. 355-389

Gordin, Michael D. (2018) 'Lysenko unemployed: Soviet genetics after the aftermath', *Isis*, 109, pp. 56-78

Hayward, Rhodri (2008). Desperate housewives and model amoebae: The invention of suburban neurosis in inter-war Britain. In *Health and the Modern Home*, ed. Jackson, (Routledge), pp. 52-72

Igo, Sarah (2007) "Surveying Normal Selves" and "The Private Lives of the Public", in *Averaged American*, Cambridge MA: Harvard University Press, pp. 191-280. NB Introduction is good for historiography.

Keller, Evelyn Fox (2009) *The Century of the Gene* (Cambridge, MA: Harvard University Press)

Kevles, Daniel J. (2009) 'Eugenics, the genome, and human rights', *Medicine Studies* 1(2), pp. 85-93

Kinsey, Alfred, with Wardell Pomeroy and Clyde Martin (1948), *Sexual Behavior in the Human Male* (1948), Philadelphia: W.B. Saunders. Kinsey and Paul Gebhard (1953), *Sexual Behavior in the Human Female*, Philadelphia: W.B. Saunders.

Kohler, Robert (1999) 'Moral economy, material culture, and community in *Drosophila* genetics', in Mario Biagioli (ed), *Science Studies Reader*, London: Routledge, pp. 243-257.

Milam, Erika (2019) *Creatures of Cain: The Hunt for Human Nature in Cold War America* (Princeton University Press), pp. 1-16 and choose another chapter if you can).

Nicholson, Ian (2011) "'Shocking" masculinity: Stanley Milgram, "obedience to authority," and the "crisis of manhood" in Cold War America', *Isis*, 102, pp. 238-268

Oreskes, Naomi and Erik Conway (2010) "Doubt is our product" "Strategic Defence, Phony Facts, and the creation of the George C. Marshall Institute" *Merchants of Doubt*. New York: Bloomsbury. pp. 10-65.

Osseo-Asare, Abena Dove (2013) 'Scientific equity experiments in laboratory education in Ghana', *Isis*, 104, pp. 713-741.

Philip J. Pauly (2000), *Biologists and the Promise of American Life: From Meriwether Lewis to Alfred Kinsey* (Princeton, NJ: Princeton University Press), chapter 9, 'Good Breeding in Modern America', pp. 214-238

Poskett, James (2022), *Horizons: A Global History of Science*, London: Viking, pp. 307-354 (see also other chapters in part 4)

Proctor, Robert (2000) 'Nazi science and Nazi medical ethics: some myths and misconceptions', *Perspectives in Biology and Medicine* 43(3), pp. 335-346

Proctor, Robert (2003) "Three roots of human recency: Molecular anthropology, the refigured Acheulean, and the UNESCO response to Auschwitz." *Current Anthropology* 44.2: 213-239

Rader, Karen (2004). *Making mice: Standardizing animals for American biomedical research, 1900-1955* (Princeton University Press), pp. 1-24

Radick, Gregory (2023). *Disputed inheritance: the battle over Mendel and the future of biology*. University of Chicago Press.

Robinson, Sam. "Scientific imaginaries and science diplomacy: The case of ocean exploitation." *Centaurus* 63.1 (2021): 150-170.

Science, the Endless Frontier. A Report to the President by Vannevar Bush, Director of the Office of Scientific Research and Development, July 1945. Washington: United States Government Printing Office. Copy here: <https://www.nsf.gov/od/lpa/nsf50/vbush1945.htm>

Strasser, Bruno J. (2011), 'The experimenter's museum: GenBank, natural history, and the moral economies of biomedicine', *Isis*, 102, pp. 60-96

van Keuren, David K. (2001) 'Cold War science in black and white: US Intelligence Gathering and its scientific cover at the Naval Research Laboratory, 1948–62', *Social Studies of Science* 31(2), pp. 207–229

Warde, Paul, Libby Robin, and Sverker Sörlin (2018). *The environment: A history of the idea*. (Johns Hopkins Press). Read introduction and chapter 'Ecology on the March'

Wells, H. G. *Anticipations Of The Reaction Of Mechanical And Scientific Progress Upon Human Life And Thought* (2nd edition, 1902) – this is the earliest edition Charlotte could find online but use the first edn if you can.

Weidman, Nadine. *Killer Instinct: The Popular Science of Human Nature in Twentieth-Century America*. Cambridge: Harvard University Press, 2021.

Weidman, Nadine. "Popularizing the ancestry of man: Robert Ardrey and the killer instinct." *Isis* 102.2 (2011): 269-299.

Woodhouse, Keith Makoto (2018), *The Ecocentrists : A History of Radical Environmentalism*, New York, NY : Columbia University Press – esp. chapter 2, 'Crisis Environmentalism'

Wright, Susan (1986) 'Recombinant DNA technology and its social transformation, 1972-1982', *Osiris* 2, pp. 303-360