STSC 364-401/HIST 305-401
Technologies of Research

Course Information:
Spring 2015
Wednesday 2:00 – 5:00
Cohen TBD
upenn.instructure.com/courses/120TBD

Instructor Information:
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Office Hours: W 12:00-1:00

Course Introduction

This course asks three questions: What is technology? What is research? And how does technology aid research? These three questions beg a fourth: how can we spend a semester on three questions? Well, the answers to each of these questions may seem apparent, but think about them for more than a few seconds and you'll be hard pressed to offer a satisfactory answer. The term technology conjures images of recent, micro-processors, robots, or the Internet. But think deeper about the term's meaning for a moment and you'll see that such ancient, elemental things as mathematics and the alphabet are technologies, too. Likewise, you'll find that something we have all done before—research—is an opaque and contestable term. The question of research gets at the very processes through which knowledge is produced.

Even though we'll deeply consider the concept of technology and the concept of research, this course will primarily be a space in which to actively and collaboratively practice using technology to do research and present results. This course is, at heart, a methodological practicum. We will study the history and structure of technology and research, but while studying that history and structure we will *do* research *using* technology.

To gain an appreciation of the history of technology and the historical practice of research we will explore technologies both old and new. Yes, we'll use the latest and greatest digital tools such as TEI, Gephi, Qualtrics, Scalar, wikis, arcGIS, and Twitter, but we'll also transcribe manuscripts using candlelight, conduct foundational research with Enlightenment-era dictionaries and encyclopedias, and program an early computers using hand-punched cards—all in an effort to better understand the process of research and the elemental structures of technology. This course is hands on, participatory, and collaborative and includes "weekly making" in-class projects and five field trips, including visits to the Penn Museum, the Kislak Center, the Archives of American Philosophical Association, the ENIAC at the School of Engineering, and the Institutional Review Board. By the end of this course you will be able to construct a methodological plan for a sociological or historical research project and will have an expansive tool kit of analog and digital technologies that to help you conduct research in future courses and your future careers.

Course Materials

All articles and chapter selections are available for download for free through course reserves in the "modules" section of the Canvas course site.

Assignments
Required Discussion Questions

Before each class, I will post a prompt relating to the readings. Your assignment is to post a response to the prompt. To receive full credit for the post, you must use at least one quotation from the reading to make your argument. There is no length requirement for the post. Succinct writing is often better than its alternative, so if you can respond to the prompt fully with only a few sentences, do so. After you craft and post your response, read over your classmate's responses and *comment on at least three post*s. Please be respectful of their views, though, do not be afraid to offer a well-defended counterargument.

Weekly Making
Each week you will make something in this course. In some weeks you will construct physical objects, in most weeks you will make digital ones. Every week we will study a method and a technology. Your weekly making assignment will challenge you to put the featured method into practice and to make something with the technology. Each week's making assignment details are in the "modules" of the Canvas course site. Below are the methods and technologies we will explore:

- **Week 2:** Phenomenology – Primitive tools, alphabets, film
- **Week 3:** Empiricism, Historicism, Positivism – Method (as a technology)
- **Week 4:** Literature Review – Google Scholar, Google Books, Google Ngram, JSTOR, MUSE
- **Week 5:** Transcription – Candlelight, Microsoft Word, Text Encoding Initiative
- **Week 6:** Archival research – Metadata
- **Week 7:** Etymology, Lexicography – A Table Alphabeticall, Oxford English Dictionary Online
- **Week 8:** Spring Break
- **Week 9:** Centralized editing, Community-sourcing - Wikis
- **Week 10:** Tagging, Annotating – Social Science Research Network, Academia.edu, Twitter, Genius
- **Week 11:** Sampling, Surveying, Coding – Punched Cards, Qualtrics
- **Week 12:** Corpus analytics, distant reading – WordHoard
- **Week 13:** Actor-Network Theory – Gephi
- **Week 14:** Post-structuralism – Scalar
- **Week 15:** Public Intellectualism – StoryMapJS, Creative Commons licensing

Team Project:
The final assignment of the semester asks you to work in teams of three to four to craft a digital research project. Topically, this project should focus on the history or structure of a technology that is used in scholarly research. There are four items teams will need to turn in:

- Statement of Method: How are you researching your technology?
- Outline of Technologies Used: What technologies are you using in your project and why?
- Concept of Publics: What publics are you addressing and how are digital technologies insuring you reach those publics?
- The Project Itself: Likely a digital, open-access object, to be presented to the class in the last session.

Besides the required topical focus, there is a great degree of freedom in this project. You and your group should feel free to take advantage of any of the methods and technologies we explore in class and should also feel free to bring in methods or technologies from your outside experience. Be sure to keep the scope of the project manageable, define your aims at the outside of the project, and consistently remember the audiences your project hopes to address. Beginning in week 4, the last twenty minutes of each class will be dedicated to collaborative work on these projects, though, do plan to get together outside of class occasionally, too.

<u>Grading</u>

Assignments	Submission method	Grade points
Attendance and Active Class Participation	Come to **class**; your engagement is your submission.	1 each x 15
Weekly Required Discussion Question	Post to appropriate Canvas **forum thread.**	2 each x 14

Weekly Making Assignment	Each of these assignments will be begun in class, and due two days later. Completed "makings" should be submitted in Canvas in **modules** or through **assignments**.	2 each x 13
Team Project	Submit in Canvas via **modules** or through **assignments**.	32

The grading policy in this course conforms to Penn Arts & Sciences guidelines.

A grade of incomplete ("I") is given only in a genuine emergency, and for no more than the work due during the last two weeks of the course. You must make arrangements with me before the last day of class in order to receive an incomplete.

All grades and feedback will be distributed through Canvas. You will receive an email when new feedback is available.

A note on participation: You are expected to attend every class and complete each reading and viewing. If you miss more than one class or consistently demonstrate a lack of engagement with the required texts during our seminar discussions, I reserve the right to penalize your grade.

Course Policies
Late assignments: Not accepted

Extra credit: None

Students with disabilities: The University of Pennsylvania, provides reasonable accommodations to students with disabilities who have self-identified and been approved by the office of Student Disabilities Services (SDS). Please make an appointment to meet with me as soon as possible in order to discuss your accommodations and your needs. If you have not yet contacted SDS, and would like to request accommodations or have questions, you can make an appointment by calling SDS 215.573.9235. The office is located in the Weingarten Learning Resources Center at Stouffer Commons 3702 Spruce Street, Suite 300. All services are confidential.

Student Conduct: The University of Pennsylvania's Code of Student Conduct governs all activities in the University, including this course. Students who engage in behavior that disrupts the learning environment for others may be subject to disciplinary action under the Code. This includes any behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities. Students responsible for such behavior may have their registration cancelled.

Scholastic Dishonesty: Cheating is unacceptable. You know this. But just so you are clear about what exactly constitutes cheating, please read and abide by the University of Pennsylvania's Code of Academic Integrity.

Course Schedule

Unit 1: Technologies of Research
Jan. 21st: Introductions

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Jan. 28th: What Is Technology?

- **Read:** Gilbert Simondon, "The Genesis of the Technical Object: The Process of Concretization" from *On the Mode of Technical Objects* (1958); Andre-Leroi Gourhan, "Gesture and Program" and "The Expanding Memory" from *Gesture and Speech* (1964); Bernard Stiegler, "Who? What? The Invention of the Human" from *Technics and Time: The Fault of Epimethius* (1998); Bernard Stiegler, "Cinematic Time" from *Technics and Time: Cinematic Time and the Question of Malaise* (2010); Peter Dear and Shelia Jasanoff "Dismantling Boundaries in Science and Technology Studies" from *Isis* (2012).
- **Visit:** Penn Museum of Archeology and Anthropology
- **Featured Method:** Phenomenology
- **Featured Technologies:** Primitive tools, alphabets, film

Feb 4th: What Is Research?

- **Read:** Samir Okasha, "What is Science" from *The Philosophy of Science: A Very Short Introduction* (2006); Rene Descartes, "Various Considerations Touching on the Science" and "The Principal Rules of the Method which the Author has Discovered" from *Discourse on the Method* (1637); Alexandre Escudier, "Theory and Methodology of History from Chladenius to Droysen" from *History of Scholarship* (2006); Uwe Flick, "Why Social Research?" and "World Views in Social Research" from *Introducing Research Methodology* (2015); Loraine Daston, "On Scientific Observation" from *Isis* (2008).
- **Featured Methods:** Empiricism, Historicism, Positivism
- **Featured Technologies:** Method

Feb. 11th: How to Research

- **Read:** Wayne Booth, Gregory Colomb, and Joseph Williams, "Research, Researchers, and Readers and "Asking Questions, Finding Answers" from *The Craft of Research* (2008); Uwe Flick, "From Research Idea to Research Question," "Planning Social Research," "Deciding on Your Methods," and "Designing Social Research" from *Introducing Research Methodology* (2015);
- **Watch:** Katie Rawson, "Searching for Scholarly Articles" (2014); Sam Kirk, "An Introduction to Google Books" (2014).
- **Visit:** Van Pelt Library/Online Learning 'Library Lounge', "How to Research, An Adaptive Learning Tool" (2015).
- **Featured Method:** Literature Review
- **Featured Technologies:** Google Scholar, Google Books, Google Ngram, JSTOR, Project MUSE

Unit 2: Repositories
Feb. 18th: Libraries

- **Read:** Patrick Valentine, "Written Information and Beyond," "Early Libraries," "Books and Printing" and "Modern Print and Computers" from *A Social History of Libraries from Cuneiform to Bytes* (2012); Uwe Flick, "Reading and Reviewing Literature" from *Introducing Research Methodology* (2015).
- **Watch:** John Pollack, "Kislak Center: Registration, Rules, and Requesting Information," "Kislak Center: Guidelines for Readers," "Kislak Center: Making Use of Your Time" (2014).
- **Visit:** Kislak Center for Rare Book Manuscripts and Special Collections
- **Featured Method:** Transcription
- **Featured Technologies:** Candlelight, Microsoft Word, Text Encoding Initiative

Feb. 25th: Archives, Analog and Digital

- **Read:** John Zammito, "Doing Kuhn One Better? The (Failed) Marriage of History and the Philosophy of Science from *A Nice Derangement of Epistemes: Post-Positivism in the Study of Science* (2004); Jacques Derrida, "Archive Fever: A Freudian Impression" from *Diacritics* (1995); Martha Howell and Walter Prevenier, "The Source: The Basis of Our Knowledge about the Past" and "The Nature of

Historical Knowledge" from *From Reliable Sources: An Introduction to Historical Methods* (2001); American Historical Association, A Survival Guide to Archival Research" from *Perspectives on History* (2004); Lewis Gaddis, "The Landscape of History" from *The Landscape of History: How Historians Map the Past* (2004); Society of American Archivists, "Using Archives: A Guide to Effective Research" (2015).

- **Visit:** Archives of the American Philosophical Society
- **Featured Method:** Archival Research
- **Featured Technology:** Metadata

Unit 3: Networks
Mar. 4th: On Words, Meaning
- **Read:** Noah Webster, "Author's Preface" from An American Dictionary of the English Language (1850); Simon Winchester, *The Meaning of Everything: The History of the Oxford English Dictionary* (2004); David Foster Wallace, "Tense Present" from *Harpers* (2001).
- **Watch:** Katie Rawson "Tracing Word Histories with the Oxford English Dictionary (2014).
- **Featured Methods:** Etymology, Lexicography
- **Featured Technologies:** A Table Alphabeticall, Oxford English Dictionary Online

Mar. 11th: Spring Break

Mar. 18th: From the Encyclopédie to Wikipedia
- **Read:** Denis Diderot and Jean le Rond d'Alembert "Preliminary Discourse," "Automation," and "Inscription" from *Encyclopédie* (1751); Glenn Roe, "Mining Eighteenth Century Ontologies: Machine Learning and Knowledge Classification in the Encyclopédie" from Digital Humanities Quarterly (2009); Colin Allen and the InPhO Group, "Ordering the Discipline: Cross-Cutting Categorization Schemes in the Digital Humanities" from *Isis* (2013); Wikipedia Foundation, "Wikipedia Manual of Style" (2001; 2015); Wikipedia Foundation, "Good Article Criteria" (2001; 2015).
- **Visit:** ARTFL Encyclopedié Project, Stanford Encyclopedia of Philosophy, Wikipedia
- **Featured Methods:** Centralized editing, Community-sourcing
- **Featured Technology:** Wikis

Mar. 25th: Research Communities, Analog & Digital
- **Read:** Blaise Pascal to Pierre de Fermat, "Monday, August 24th, 1654" (1654); Keith Devlin, "Monday, August 24th, 1654," from *The Unfinished Game: Pascal, Fermat, and the Letter that Made the Modern World* (2010); Jurgen Habermas, "On the Genesis of the Bourgeois Public Sphere" and "The Basic Blueprint" from *The Structural Transformation of the Public Sphere* (1962); James Donovan and Carol Watson, "Digital Commons and SSRN: Turing Conflict into Synergy" from *Presentations* (2014); Jesse Stommel, "Twitter as the Locus of Research" from *Hybrid Pedagogy* (2015).
- **Featured Method:** Tagging, Annotating
- **Featured Technology:** Social Science Research Network, Academia.edu, Twitter, Genius

Unit 4: Computation
Apr. 1st: Social Research
- **Read:** Charles Babbage, "On the Mathematical Powers of the Calculating Engine" (1837); Uwe Flick, "Collecting Quantitative and Qualitative Data," "Analyzing Quantitative and Qualitative Data," and "Doing Social Research Online" from *Introducing Research Methodology* (2015); Laura Stark, "Behind Closed Doors," "Everyone's an Expert," "Documents and Deliberations," and "The Making of Ethical Research" from *Behind Closed Doors: IRBs and the Making of Ethical Research* (2012).
- **Visit:** ENIAC at School of Engineering and Applied Sciences, Institutional Review Board
- **Featured Methods:** Sampling, Surveying, Coding
- **Featured Technologies:** Punched Cards, Qualtrics

Apr. 8th: Inference

- **Read:** Ian Hacking, "Propensities, Statistics, and Inductive Logic" from *Logic, Methodology, and the Philosophy of Science* (1972); Frederick Mosteller and David Wallace, "Inference in an Authorship Problem: A Comparative Study of Discrimination Methods Applied to the Authorship of the Disputed Federalist Papers" from *Journal of the American Statistical Association* (1963); David Blei, "Topic Modeling and Digital Humanities" from *Journal of Digital Humanities* (2012); Stephen Ramsay, "An Algorithmic Criticism" and "'Patacomputing" from *Reading Machines: Toward an Algorithmic Criticism* (2012).
- **Watch:** Sam Kirk, "WordHoard and Corpus Analytics, Parts I and II" (2014).
- **Featured Methods:** Corpus Analytics, Distant Reading
- **Featured Technology:** WordHoard

Apr. 15th: Network Analysis

- **Read:** Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network Theory* (2005); Lev Manovich, "What is Vizualization" from *Visual Studies Journal* (2011).
- **Watch:** Katie Rawson, "Gephi and Network Analysis, Parts I and II" (2014).
- **Featured Method:** Actor-Network Theory
- **Featured Technology:** Gephi

Unit 5: Presentation

Apr. 22nd: The persistence of Arborescence and the Rise of Rhizomes in the Digital Age

- **Read:** Gilles Deleuze and Félix Guattari, "Rhizome" from *A Thousand Plateaus: Capitalism and Schizophrenia* (1980); Julia Kristeva, "Word, Dialogue and Novel" from *The Kristeva Reader* (1966); Ien Ang and Nayantara Pothen, "Between Promise and Practice: Web 2.0, Intercultural Dialogue and Digital Scholarship" from *The Fibreculture Journal* (2009); Aden Evens, "Web 2.0 and the Ontology of the Digital" from *Digital Humanities Quarterly* (2012); Daniel Trottier and David Lyon, "Key Features of Social Media Surveillance" from *Internet and Surveillance* (2013).
- **Featured Method:** Post-structuralism
- **Featured Technology:** Scalar

Apr. 29th: Sharing, Publics

- **Read:** Steve Fuller "Citizen Science: Cultivating a Life in STS" from *The Philosophy of Science and Technology Studies* (2005); Jeff Camhi, "The Web and Flow of University Ideas" from *A Dam in the River: Releasing the Flow of University Ideas* (2013); Judith Butler, "A 'Bad' Writer Writes Back" from *The New York Times* (1999); Christine Greenhow and Benjamin Gleason, "Social Scholarship: Reconsidering Scholarly Practices in an Age of Social Media" from *British Journal of Educational Technology* (2014); Creative Commons, "State of the Commons" and "About" from creativecommons.org (2015).
- **Featured Method:** Public Intellectualism
- **Featured Technology:** StoryMapJS, Creative Commons licensing