

FALL 2014 UTA 1.204 M 9-12

# OBJECTS, MODELS, AND REPRESENTATIONS

a doctoral seminar at The University of Texas at Austin's School of Information

instructor: Diane E. Bailey, [diane.bailey@ischool.utexas.edu](mailto:diane.bailey@ischool.utexas.edu) (email only, no vm)

ca: Eryn Whitworth, [erynwhitworth@gmail.com](mailto:erynwhitworth@gmail.com)

## why objects, models, and representations?

In this doctoral seminar we will explore the role that physical objects play in human understanding and how that role may be usurped or transformed as physical objects undergo processes of abstraction inherent in models and representations. Specifically, we seek to learn what happens as digitization permits the increasing virtualization of physical objects. We will consider research and ideas from various disciplines and realms of human interaction. Our focus, however, will be on objects, models, and representations in the realm of work. Scientists and engineers have long used models and representations to study phenomena whose size (e.g., too small, as in molecules, or too big, as in buildings) do not lend themselves to ready physical examination or whose complexity (e.g., too many interdependencies, as in factory production) do not facilitate easy manipulation. Today, with modern computer technologies, a broad range of physical objects is susceptible to such processes of abstraction. Consequently, people in many occupations find themselves working increasingly with models or representations of physical objects rather than with the objects themselves, calling into question the continued importance of materiality in everyday work. Our intent is to understand the changes that may accompany this transition from the physical or material to the digital or virtual.

## what you will gain

As we develop domain knowledge in objects, models, and representations, we will also work to hone your scholarly skills in these areas:

Exploring	<ul style="list-style-type: none"><li>• finding worthwhile literature in a new topic</li></ul>
Analyzing	<ul style="list-style-type: none"><li>• integrating ideas across readings while building analytical and critical insights</li><li>• identifying unanswered questions of value in a literature</li><li>• posing a research question or hypothesis</li></ul>
Organizing	<ul style="list-style-type: none"><li>• developing good writing and time management habits</li><li>• outlining a paper and working through drafts to completion</li></ul>
Writing	<ul style="list-style-type: none"><li>• crafting arguments to motivate or frame an inquiry</li><li>• writing a well-crafted research paper that meaningfully extends the literature</li></ul>
Participating in a Community	<ul style="list-style-type: none"><li>• reviewing a submitted manuscript to provide helpful, specific, and developmental advice</li><li>• replying to an editor and reviewers in a straightforward and mature manner</li></ul>
Leading	<ul style="list-style-type: none"><li>• guiding a discussion of academic readings</li></ul>

## rules of the endeavor

### *attendance and participation*

You are expected to attend every class and to have completed the reading and any assignments so that you can actively engage in discussions. Your attendance and participation in class, including your willingness to discuss topics and your genuine, collaborative, and friendly behavior towards your classmates, may affect your grade at my discretion.

### *grading*

See below for description of assignments in this list.

two pages of text	5%
leading of class discussion	10%
integration paper	10%
research question or hypothesis	10%
outline	10%
review of a submitted manuscript	15%
presentation of final paper	15%
<u>final paper</u>	<u>25%</u>
total	100%

### *late work policy*

Meeting deadlines is good preparation for being a researcher: Conferences, journal special issues, offers to revise and resubmit manuscripts, and tenure and promotion reviews all demand on-time submission of work. Moreover, many of the assignments in this class will serve as the basis for a class exercise or discussion and thus cannot be late. Not least of all, being late inconveniences me because I set aside time for grading; finding time to grade singletons is irksome and hampers my own productivity. For these reasons, **only three assignments can be late**: the integration paper, the manuscript review, and your final paper. For these assignments, you will lose a letter grade if your assignments are not ready by the beginning of class on their due date. You will lose half a grade per additional day late. These penalties are severe because being late is not a good outcome. If you are ill, please notify me by email in advance of class, and then stay home to get better.

### *the University of Texas honor code*

The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Source: <http://www.utexas.edu/welcome/mission.html>

### *documented disability statement*

Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or 1-866-329-3986 (video phone). Faculty are not required to provide accommodations without an official accommodation letter from SSD. Please notify me as quickly as possible if the material being presented in class is not accessible (e.g., course materials are not readable for proper alternative text conversion). Contact SSD at 471-6259 (voice) or 1-866-329-3986 (video phone) or reference SSD's website for more information: <http://ddce.utexas.edu/disability/current-students/>

## the “work”

Before providing details of your assignments, I offer these two notes about what I expect:

*formatting.* For all assignments, spacing must be at least 1.15 lines (except for the final paper, whose spacing must be two lines), font must be at least 12 point, and margins must be at least 1 inch top, bottom, and left and two inches on the right side. I prefer double-sided printing and staples. In no circumstances should you use cover sheets, plastic binders, ring binding, or small clips (except for the final paper, which may have a cover sheet and a clip if a staple is insufficient, but still no plastic). Do not condense font, use footnotes excessively, or otherwise attempt to squeeze more content in under each page limit. Instead, learn to edit, cut, chop, prune, and pare down your writing. Trust me, it will be better for the effort.

*content.* In grading the content of your work, I will look for clarity of presentation; integration of ideas from class readings and, where appropriate, beyond; good writing; creativity; depth of analysis and criticism; and conformance to the specific instructions for each assignment (including the formatting instructions above).

### *two pages of text, due Sept 15 (week 2)*

You will come to class with the first two pages of any academic paper you wrote for a previous class or other endeavor. You should not alter these two pages in any way from their original presentation (my formatting requirements do not apply here); specifically, do not rewrite them.

### *leading of class discussion, anytime beginning Sept 22 (week 3) and before Dec 1 (week 13)*

You will lead one week’s discussion of the class readings for about one and half hours. Note that leading a discussion is not the same as doing all the talking, nor is it simply pointing to one person and then another and another after that. On no account should you prepare a handout or text-based slides. You may, if you like, show us a handful (no more) of images if the images will provoke discussion. Do not give more than five minutes of verbal introduction; we have no interest in hearing you read from prepared material or lecture us, but it would be nice if you could set the stage a bit, and for that you should practice so that you do not meander or drag on. To that end, it would help if you do some extra reading on the topic, perhaps by snowballing from the set of readings. You need not do a lot of extra reading, but a few papers or a book or parts thereof would be helpful. You should find these extra materials on your own; the exploration will build your skills. You should not transfer any part of your job to another student by “cold calling” someone to summarize one or more of the readings. A good strategy might be to begin by posing a question of interest based on the readings, explaining how some set of the readings prompted this question and asking the class to address it. As the conversation progresses, you should integrate your peers’ comments, using phrases such as “I’d like to build on what Sameer and Anne said” or “Returning to Alexis’s comment” or “How can we balance Mark’s observation against Maya’s claim?” You can also

push the conversation in new directions with comments like “One aspect of the readings that has not come up yet in our conversations is...” You must prevent any one person from dominating the conversation and you should put the conversation back on track whenever it veers treacherously into unproductive territory. Do what you can to gently prompt quiet students to participate, perhaps by saying, “We haven’t heard from some of you and I’m curious if you agree with the conclusions we seem to be drawing.” I will try to model good leadership of class discussion for you in the first two sessions, after which you are free to pick a session to lead. Learning how to lead a conversation is a skill you will need if you become a professor; it is also a useful skill to have whenever you participate in a scholarly discussion.

*integration paper, due Sept 29 (week 4)*

You will write a short three-page or less paper in which you develop a single idea or concept, drawing upon at least two of our readings. You should discuss how consideration of this idea or concept is similar or different across the set of readings you chose, why the idea or concept is intriguing, and what more one might usefully care to learn about it. A good approach might be to envision this paper as a subsection of a literature review for a journal length paper. One intention of the paper is to develop your skills in integrating material and drawing analytical and critical insights as preparation for your final paper. The integration paper, however, need not build towards your final paper. Another intention of this paper is to hone your ability to craft arguments. Of course, you should also use this paper as an opportunity to improve your writing.

*research question or hypothesis, due Oct 13 (week 6)*

On no more than two pages, provide the motivation or support for a single research question or hypothesis that you pose based on the class readings. At the end of your document, write succinctly the research question or hypothesis, formatted so as to set it off cleanly from the text. This research question or hypothesis need not build towards your final paper. The point of this exercise is to help you develop an idea of what a well-formed research question or a testable hypothesis looks like. In addition, this exercise is aimed at helping you identify a worthwhile unanswered question in the literature. Bring enough copies for each person in the class and me.

*outline, due Oct 27 (week 8)*

You will write an outline for your final paper in this class. (Make sure to read the final paper description below before writing your outline.) I appreciate that many of you write without using an outline. In this class, however, you will use one. Outlines are useful because they help you trace the logic of your argument. If a particular sentence seems awkward in a certain position in your outline, not rightly grouped with the other sentences around it, then that is a clue that your organization of ideas is flagging. Your outline must contain only full sentences and no bulleted lists. Each sentence must be its own entry in your outline (hence, having its own specification, such as “ii” or “A” or “II”). At a minimum, your outline must identify the main sections and subsections of your paper. You should include paragraph topic sentences, but you may use fillers beneath them along the lines of “Here I will discuss the role of objects in communication among people from the same

knowledge domain” and “I will follow that discussion with a consideration of the role of objects in communication among people from different knowledge domains.” I expect an outline of no less than four pages; it should include no references but may include citations in the text if you like to give me an idea of what literature you are drawing upon. Bring two copies of your outline, one for me and one for a to-be-determined student.

*manuscript review, due Nov 10 (week 10)*

You will write a detailed review of a submitted manuscript that I will provide (on which I was not an author, but for which I have permission). Your aim is to be developmental, with the goal of pointing out how and where the author(s) might improve the paper. Speak directly to the author(s) by saying “you” rather than “the authors.” You should apply the skills of analysis and criticism that you are honing in this class, yet you should do so in a gentle way to encourage improvement. Begin with a positive note, telling the author(s) what you like about the topic, the approach to the topic, the writing, or some other aspect(s) of the paper. Then transition to the problems that you see in the paper, perhaps with a comment like “You might improve your paper by...,” “Your paper would be stronger...,” or “One place I struggled...” For this exercise, limit yourself to no more than four problems or areas in need of improvement; more may prove daunting and discouraging. You may skip minor comments about grammar or similar errors, though in a normal review you would perhaps append such comments to the end of your review. Explain the problem, including the specific parts of the paper (or the missing parts) that prompted it. The best reviews do not end at problem identification. Instead, offer ideas for how the author might resolve the problem. If you can, provide references that might help. Your review should be at least three pages and ideally no more than five pages long.

*presentation of final paper, due Dec 1 (week 13)*

On the last day of class, you will present your paper as if to a conference audience. That is to say, you will use slides, you will stand, and you will speak professionally for 10-15 minutes depending on class size. Your goal will be to convey the main ideas of your paper. If your paper contains data, you may include some data in your talk, but beware of the tight time limit: I would not expect you to devote more than 20% of your talking time to your data because this class has focused on theories and ideas, not methods and data. We will go over in class pointers for preparing for and giving talks. We understand that you may be nervous and we will forgive you for that, but we will not forgive you if you ramble on or proceed without a clear roadmap. After your presentation, you will field questions for another 5-10 minutes depending on class size. Your aim in answering questions is never to be defensive (e.g., explaining why you could not do what the questioner suggests or why the questioner’s point of view does not apply), but to engage your questioner in an intellectual discourse. Be careful not to respond by saying, “That is a great question!” because you risk making others worry that, in comparison, their question was pedestrian. Instead, try phrases like “I have given this question a lot of thought” or “I never considered this idea. What prompted it for you? [alternatively, How do you think it might help me?].” Remember, always, that we are your supporters and we intend to see you do well.

*final paper, due Dec 1 (week 13)*

Your final paper should be at least 15 pages long exclusive of references and any graphics that you might employ. It should address a topic in the area of objects, models, or representations. You should focus on writing well to express clearly and logically your ideas and arguments. You should draw on a literature that extends well beyond what we read in class. You may write your paper as a literature review, as an essay on a particular construct or concept, or as the preface for an empirical study. In the last case, I do not expect you to have data or findings, but if you do that is fine; if you do not, you might at least include a research design. If you prefer some other genre or format, please discuss your preference with me **before** writing your outline.

## **readings**

*required books (purchase on line or at a bookstore)*

1. de Chadarevian, S., & Hopwood, N. (Eds.). (2004). *Models: The Third Dimension of Science*. Palo Alto, Ca: Stanford University Press. (<http://amzn.com/0804739722>)
2. Kevles, B. (1997). *Naked to the Bone: Medical Imaging in the Twentieth Century*. New Brunswick, NJ: Rutgers University Press. (<http://amzn.com/020132833X>)

*required articles and book chapters (on Canvas, see schedule below)*

*books on writing, not required (the stuff of personal library building)*

1. Becker, H. S. (2008). *Tricks of the Trade: How to Think about Your Research While You're Doing It*. Chicago: University of Chicago Press.
2. Becker, H. S. (2008). *Writing for Social Scientists: How to Start and Finish Your Thesis, Book, or Article*. Chicago: University of Chicago Press.
3. Knowles, C., & Sweetman, P. (2004). *Picturing the Social Landscape: Visual Methods and the Sociological Imagination*. New York: Routledge.
4. Thurman, S., & Shea, L. (2003). *The Only Grammar Book You'll Ever Need: A One-Stop Source for Every Writing Assignment*. Avon, MA: Adams Media.
5. Zinsser, W., (2001). *On Writing Well: The Classic Guide to Writing Nonfiction*. New York: Harper Collins.

our map

week	topic	due
week 1 sept 8	<p><i>evocative objects and meaning in objects</i></p> <ul style="list-style-type: none"> <li>• Daston, L. J. (2007). The Glass Flowers. In L. J. Daston (Ed.), <i>Things That Talk: Object Lessons from Art and Science</i> (pp. 223–256). New York: Zone Books.</li> <li>• Kürti, L. (2004). Picture perfect community and commemoration in postcards. In S. Pink, L. Kürti, &amp; A. I. Alfonso (Eds.), <i>Working Images: Visual Research and Representation in Ethnography</i> (pp. 47–71). London: Psychology Press.</li> <li>• Newell, J. (2012). Old objects, new media: Historical collections, digitization and affect. <i>Journal of Material Culture</i>, 17(3), 287–306.</li> <li>• Pollock, S. (2007). The Rolling Pin. In S. Turkle (Ed.), <i>Evocative Objects: Things We Think With</i> (pp. 225–232). Boston, MA: MIT Press.</li> <li>• Streeck, J. (2011). The Changing Meanings of Things: Found Objects and Inscriptions in Social Interaction. In J. Streeck, C. Goodwin, &amp; C. LeBaron (Eds.), <i>Embodied Interaction: Language and Body in the Material World</i> (pp. 67–78). Cambridge, U.K.: Cambridge University Press.</li> </ul>	
week 2 sept 15	<p><i>pictures and paintings (art history, psychology)</i></p> <ul style="list-style-type: none"> <li>• Elkins, J. (2001a). What is a Picture? In <i>The Domain of Images</i> (pp. 52–67). Ithaca, NY: Cornell University Press.</li> <li>• Elkins, J. (2001b). Schemata. In <i>The Domain of Images</i> (pp. 213–232). Ithaca, NY: Cornell University Press.</li> <li>• Fish, J., &amp; Scrivener, S. (1990). Amplifying the mind's eye: Sketching and visual cognition. <i>Leonardo</i>, 23(1), 117–126.</li> <li>• Gibson, J. J. (1978). The ecological approach to the visual perception of pictures. <i>Leonardo</i>, 11(3), 227–235.</li> <li>• Nelson, R. (2000). The slide lecture, or the work of art history in the age of mechanical reproduction. <i>Critical Inquiry</i>, 26(3), 414–434.</li> </ul>	two pages of text

week	topic	due
week 3 sept 22	<p><i>photographs (visual culture, material culture)</i></p> <ul style="list-style-type: none"> <li>• Daston, L. J., &amp; Galison, P. L. (2007). Mechanical Objectivity. In <i>Objectivity</i> (pp. 115–183). New York; Cambridge, MA: Zone Books.</li> <li>• Keightley, E., &amp; Pickering, M. (2014). Technologies of memory: Practices of remembering in analogue and digital photography. <i>New Media &amp; Society</i>, 16(4), 576–593.</li> <li>• Murray, S. (2008). Digital images, photo-sharing, and our shifting notions of everyday aesthetics. <i>Journal of Visual Culture</i>, 7(2), 147–163.</li> <li>• Schwarz, O. (2013). The past next door: Neighbourly relations with digital memory-artefacts. <i>Memory Studies</i>, 7(1), 7–21.</li> <li>• Van House, N. A. (2011). Personal photography, digital technologies and the uses of the visual. <i>Visual Studies</i>, 26(2), 125–134.</li> <li>•</li> </ul>	you may start leading here
week 4 sept 29	<p><i>maps (human geography)</i></p> <ul style="list-style-type: none"> <li>• Crampton, J. W. (2003). Cartographic rationality and the politics of geosurveillance and security. <i>Cartography and Geographic Information Science</i>, 30(2), 135–148.</li> <li>• Harley, J. B. (1989). Deconstructing the map. <i>Cartographica</i>, 26(2), 1–20.</li> <li>• MacEachren, A. (1995). A Lexical Approach to Map Representation: Map Pragmatics. In <i>How Maps Work : Representation, Visualization, and Design</i> (pp. 310–354). New York: Guilford Press.</li> <li>• Pickles, J. (2004). What Do Maps Represent? The Crisis of Representation and the Critique of Cartographic Reason. In <i>A History of Spaces: Cartographic Reason, Mapping, and the Geo-Coded World</i> (pp. 27–59). New York: Routledge.</li> <li>• Schuurman, N. (2000). Trouble in the heartland: GIS and its critics in the 1990s. <i>Progress in Human Geography</i>, 24(4), 569–590.</li> </ul>	integration paper

week	topic	due
week 5 oct 6	<p data-bbox="337 254 1214 289"><i>objects in workplace interaction (communication, organizational studies)</i></p> <ul data-bbox="345 338 1252 930" style="list-style-type: none"> <li data-bbox="345 338 1252 443">• Carlile, P. R. (2002). A pragmatic view of knowledge and boundaries: Boundary objects in new product development. <i>Organization Science</i>, 13(4), 442-455.</li> <li data-bbox="345 464 1252 569">• Hindmarsh, J., &amp; Heath, C. (2000). Sharing the tools of the trade: The interactional constitution of workplace objects. <i>Journal of Contemporary Ethnography</i>, 29(5), 523–562.</li> <li data-bbox="345 590 1252 695">• Star, S. L. (2010). This is not a boundary object: reflections on the origin of a concept. <i>Science, Technology &amp; Human Values</i>, 35(5), 601–617.</li> <li data-bbox="345 716 1252 842">• Star, S. L., &amp; Griesemer, J. R. (1989). Institutional ecology, `translations' and boundary objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. <i>Social Studies of Science</i>, 19(3), 387–420.</li> <li data-bbox="345 863 1252 930">• Streeck, J. (1996). How to do things with things. <i>Human Studies</i>, 19(4), 365-384.</li> </ul>	
week 6 oct 13	<p data-bbox="337 1010 1008 1045"><i>design drawings and artifacts (architecture, engineering)</i></p> <ul data-bbox="345 1094 1252 1686" style="list-style-type: none"> <li data-bbox="345 1094 1252 1199">• Ewenstein, B., &amp; Whyte, J. (2009). Knowledge practices in design: The role of visual representations as 'epistemic objects'. <i>Organization Studies</i>, 30(1), 7–30.</li> <li data-bbox="345 1220 1252 1287">• Ferguson, E. S. (1992). The Tools of Visualization. In <i>Engineering and the Mind's Eye</i> (pp. 75–113). Cambridge, MA: MIT Press.</li> <li data-bbox="345 1308 1252 1413">• Gross, M. D. (1996). The Electronic Cocktail Napkin—A computational environment for working with design diagrams. <i>Design Studies</i>, 17(1), 53–69.</li> <li data-bbox="345 1434 1252 1560">• Henderson, K. (1991). Flexible sketches and inflexible data bases: Visual communication, conscription devices, and boundary objects in design engineering. <i>Science, Technology &amp; Human Values</i>, 16(4), 448–473.</li> <li data-bbox="345 1581 1252 1686">• Schmidt, K., &amp; Wagner, I. (2004). Ordering systems: Coordinative practices and artifacts in architectural design and planning. <i>Computer Supported Cooperative Work (CSCW)</i>, 13(5-6), 349-408.</li> </ul>	RQ or hypothesis

week	topic	due
week 7 oct 20	<p data-bbox="337 258 1096 289"><i>simulation (organizational studies, social studies of technology)</i></p> <ul data-bbox="345 338 1252 827" style="list-style-type: none"> <li data-bbox="345 338 1252 443">• Dodgson, M., Gann, D., &amp; Phillips, N. (2013). Organizational learning and the technology of foolishness: The case of virtual worlds at IBM. <i>Organization Science</i>, 24(5), 1358–1376.</li> <li data-bbox="345 464 1252 569">• Dodgson, M., Gann, D. M., &amp; Salter, A. (2007). “In case of fire, please use the elevator”: Simulation technology and organization in fire engineering. <i>Organization Science</i>, 18(5), 849–864.</li> <li data-bbox="345 590 1252 653">• Bailey, D. E., Leonardi, P. M., &amp; Barley, S. R. (2012). The lure of the virtual. <i>Organization Science</i>, 23(5), 1485–1504.</li> <li data-bbox="345 674 1252 737">• Turkle, S. (2009a). The View from the 1980s. In <i>Simulation and Its Discontents</i> (pp. 9-42) Cambridge, MA: MIT Press.</li> <li data-bbox="345 758 1252 827">• Turkle, S. (2009b). Design and Science at the Millennium. In <i>Simulation and Its Discontents</i> (pp. 43-70). Cambridge, MA: MIT Press.</li> </ul>	
week 8 oct 27	<p data-bbox="337 936 706 968"><i>theories of models (philosophy)</i></p> <ul data-bbox="345 1016 1252 1612" style="list-style-type: none"> <li data-bbox="345 1016 1252 1121">• Baird, D. (2004). Models: Representing Things. In <i>Thing Knowledge: A Philosophy of Scientific Instruments</i> (pp. 1–20). Berkley, CA: University of California Press.</li> <li data-bbox="345 1142 1252 1247">• Black, M. (1962). Models and Archetypes. In <i>Models and Metaphors: Studies in Language and Philosophy</i> (pp. 219–243). Ithaca, NY: Cornell University Press.</li> <li data-bbox="345 1268 1252 1373">• Wartofsky, M. W. (1979a). The Model Muddle: Proposals for an Immodest Realism. In <i>Models: Representation and the Scientific Understanding</i> (pp. 1–11). Dordrecht, the Netherlands: Reidel.</li> <li data-bbox="345 1394 1252 1499">• Wartofsky, M. W. (1979b). Models, Metaphysics, and the Vagaries of Empiricism. In <i>Models: Representation and the Scientific Understanding</i> (pp. 24–39). Dordrecht, the Netherlands: Reidel.</li> <li data-bbox="345 1520 1252 1612">• Wartofsky, M. W. (1979c). Telos and Technique: Models as Modes of Action. In <i>Models: Representation and the Scientific Understanding</i> (pp. 140–153). Dordrecht, the Netherlands: Reidel.</li> </ul>	outline

week	topic	due
week 9 nov 3	<p><i>scientific models (social studies of science)</i></p> <ul style="list-style-type: none"> <li>• De Chadarevian, S., &amp; Hopwood, N. (2004). <i>Models: The Third Dimension of Science</i>. Palo Alto, CA: Stanford University Press. <ul style="list-style-type: none"> <li>◦ Ch 1. Hopwood, N., &amp; De Chadarevian, S. Dimensions of Modeling (pp. 1-15).</li> <li>◦ Ch. 3. Mazzolini, R.G. Plastic Anatomies and Artificial Dissections (pp. 43-70).</li> <li>◦ Ch. 7. Hopwood, N. Plastic Publishing in Embryology (pp. 170-206).</li> <li>◦ Ch. 8. Schnalke, T. Casting Skin: Meanings for Doctors, Artists, and Patients (pp. 207-241).</li> <li>◦ Ch. 9. Meinel, C. Molecules and Croquet Balls (pp. 242-275).</li> <li>◦ Ch. 14. Francoeur, E., &amp; Segal, J. From Model Kits to Interactive Computer Graphics (402-432).</li> <li>◦ Ch. 15 Griesemer, J. Three-Dimensional Models in Philosophical Perspective (pp. 433- 442).</li> <li>◦ Ch. 16. Jordanova, L. Material Models as Visual Culture (pp.443-451).</li> </ul> </li> </ul>	
week 10 nov 10	<p><i>scientific images (social studies of science)</i></p> <ul style="list-style-type: none"> <li>• Burri, R. V., &amp; Dumit, J. (2008). Social Studies of Scientific Imaging and Visualization. In E. J. Hackett, O. Amsterdamska, M. E. Lynch, &amp; J. Wajcman (Eds.), <i>The New Handbook of Science and Technology Studies</i> (Third., pp. 297–317). Cambridge, MA: MIT Press.</li> <li>• Lynch, M. (1985). Discipline and the material form of images: An analysis of scientific visibility. <i>Social Studies of Science</i> 15(1), 37–66.</li> <li>• Lynch, M. (1988). The externalized retina: Selection and mathematization in the visual documentation of objects in the life sciences. <i>Human Studies</i>, 11(2-3), 201–234.</li> <li>• Ruivenkamp, M., &amp; Rip, A. (2014). Nanonimages as Hybrid Monsters. In C. Coopmans, J. Vertesi, M. Lynch, &amp; S. Woolgar (Eds.), <i>Representation in Scientific Practice Revisited</i> (pp. 177–200). Cambridge, MA: MIT Press.</li> <li>• Vertesi, J. (2014). Drawing as: Distinctions and Disambiguation in Digital Images of Mars. In C. Coopmans, J. Vertesi, M. Lynch, &amp; S. Woolgar (Eds.), <i>Representation in Scientific Practice Revisited</i> (pp. 15–36). Cambridge, MA: MIT Press.</li> </ul>	MS review

week	topic	due
week 11 nov 17	<p data-bbox="332 254 1193 289"><i>seeing and modeling the human body – part i (science/ medical history)</i></p> <ul data-bbox="344 338 1193 405" style="list-style-type: none"> <li data-bbox="344 338 1193 405">• Kevles, B. (1997). <i>Naked to the Bone: Medical Imaging in the Twentieth Century</i>. New Brunswick, NJ: Rutgers University Press.</li> </ul>	
week 12 nov 24	<p data-bbox="332 453 1182 531"><i>seeing and modeling the human body – part ii (STS, cultural studies, engineering, art history)</i></p> <ul data-bbox="344 579 1242 1171" style="list-style-type: none"> <li data-bbox="344 579 1242 646">• Elkins, J. (1997). Seeing Bodies. In <i>The Object Stares Back: On the Nature of Seeing</i> (pp. 125–159). New York: Harcourt Brace.</li> <li data-bbox="344 667 1242 772">• Joyce, K. (2005). Appealing images: Magnetic resonance imaging and the production of authoritative knowledge. <i>Social Studies of Science</i>, 35(3), 437–462.</li> <li data-bbox="344 793 1242 930">• Luximon, A., &amp; Goonetilleke, R. S. (2008). Foot Modeling and Footwear Development. In V. G. Duffy (Ed.), <i>Handbook of Digital Human Modeling: Research for Applied Ergonomics and Human Factors Engineering</i> (Vol. 20, pp. 13-1 to 13-21). Boca Raton, FL: CRC Press.</li> <li data-bbox="344 951 1242 1056">• Waldby, C. (2003a). Posthuman Spectacle. In <i>The Visible Human Project: Informatic Bodies and Posthuman Medicine</i> (pp. 1–22). New York: Routledge.</li> <li data-bbox="344 1077 1242 1171">• Waldby, C. (2003b). An Initial History. In <i>The Visible Human Project: Informatic Bodies and Posthuman Medicine</i> (pp. 24–50). New York: Routledge.</li> </ul>	you may lead until here
week 13 dec 1	<i>student presentations and summary</i>	presentation final paper