

Syllabus

I • Overview

A. Coordinates

1. Course: INF3001H — Research in Information: Foundations
2. Time & place: Wednesday, 1:00–4:00 p.m., Bissell 307
3. Instructor: Brian Cantwell Smith
4. Email: brian.cantwell.smith@utoronto.ca
5. Phone: 416·946·5402
6. Office: Bissell Bldg., Room 633
7. Office hours: By appointment

B. Description:

1. An introduction to, exploration of, and examination of the fundamental intellectual landscape of information research. Topics include:
 - a. An historically, conceptually and methodologically grounded understanding of the use of concepts of information and knowledge across the academy (in philosophy, history, social science, politics, engineering, etc.); and
 - b. Contemporary uses of 'information' as a substantial theoretical notion, both in the world in general (e.g., in public political discourse, in such constructions as "the information or knowledge age, economy, society, etc."), and in such fields as political theory, biology, medicine, computing, etc.
2. *Or in other words:*
 - a. Each year, a new PhD cohort enters the iSchool to undertake a doctorate in the field of Information. But what is this field? Compared with other academic disciplines, it is a radically multi-disciplinary fabric of theories and approaches drawing on the social sciences, the humanities, the sciences, and engineering. This substantive and methodological diversity of the information "field" is one of the Information community's greatest strengths, but it makes it difficult for those entering the field to develop a sense of intellectual grounding.
 - b. The purpose of this course is to uncover, explore and interpret a few of these cross-cutting theoretical and methodological currents, in an attempt to render intelligible the richness of the field's underlying texture, and to explore a bit of the diverse literature base.

C. Objectives: to develop

1. An intellectual/historical/conceptual map of the intellectual terrain comprising information research/studies;
2. A methodologically neutral (non-ideological) approach to the study of information, in order to be able to appreciate contributions to understandings of information from diverse academic disciplines and sectors;

3. A reflexively critical appreciation of one's own and other's methods, approaches, perspectives, insights, normative standards, and professional practices;
4. Familiarity with a representative sample of foundational literature involving the use of information as a theoretical concept in those aspects of the intellectual landscape relevant to the areas in which you imagine conducting your doctoral research; and
5. Through participation in a safe and open environment, recognition, strength, and power in your unique scholarly voice (written and spoken).

D. *Outcomes*—to be able to:

1. Compare and contrast different notions of information.
2. Compare and contrast different traditions of information studies.
3. Identify different epistemological traditions.
4. Lead and engage in discussions with peers.
5. Justify a conceptual tradition for your own research agenda.

E. *Students*

1. Tamara	Tamara · Bahr	t.bahr@utoronto.ca
2. Twylla	Twylla · Bird-Gayson	t.bird.gayson@utoronto.ca
3. Allen	Allen · Kempton	allen.kempton@mail.utoronto.ca
4. Gabrielle	Gabrielle · LaFortune	gabi.lafortune@mail.utoronto.ca
5. Jessica	Jessica · Lapp	jessica.lapp@mail.utoronto.ca
6. Michel	Michel · Mersereau	m.mersereau@utoronto.ca
7. Sandrena	Sandrena · Raymond	sandrena.raymond@mail.utoronto.ca
8. Rianka	Rianka · Singh	noemail@utoronto.ca
9. Brian	Brian · Sutherland	b.sutherland@utoronto.ca
10. Hillary	Hillary · Walker Gugan	hillary.walkergugan@mail.utoronto.ca
11. Vanessa	Vanessa · Yuille	nes.yuille@mail.utoronto.ca

II • Assignments

A. *Participation* Participation in class discussion (worth 15%).

INF3001 is intended to be an intensive seminar. Everyone is expected to participate actively (and come prepared!); the course will be successful only if everyone takes part in the learning and in the discussions.

Participation does not just mean showing up. It requires that you engage in the material and contribute to the collective work in a constructive and critical way. It will be evaluated in part on quantity (how often you engage in discussions, how often you start a discussion, how often you comment on other people's discussion contributions, etc.—but don't take over the class!), but more on quality. Quality is a matter of whether you offer insights that bring discussions forward, whether you ask questions that help the class think constructively about the issues, whether you offer insights when the discussion is stuck or off on a tangent, etc.

Here is a useful characterization of participation, borrowed from Haverford College (via a previous INF3001 instructor, Prof. Jenna Hartel):

- a. *Outstanding Contributor* [A or A+]: Contributions in class are frequent and reflect exceptional preparation in nearly every class. Consistently volunteers an-

swers and asks questions that assist the learning of the class as a whole. Class activities are always approached with enthusiasm and diligence. Attends every class session. If this person were not a member of the class, the quality of the course as a whole would be diminished significantly.

- b. *Good Contributor [A-]:* Contributions in class are frequent and reflect thorough preparation in nearly every class. Often volunteers answers to questions. Frequently asks questions that assist the learning of the class as a whole. Class activities are almost always approached with seriousness and diligence. Attends nearly every class session. If this person were not a member of the class, the quality of the course as a whole would be diminished.
- c. *Adequate Contributor [B or B+]:* Contributions in class are infrequent but reflect adequate preparation. Rarely volunteers answers to questions. Infrequently asks questions, but they are appropriate and helpful to class. Class activities are usually approached with diligence. Absent from a few class sessions. If this person were not a member of the class, the quality of discussion would not be changed.
- d. *Non-Participant [B-]:* This person participates not at all in class. Absenteeism is a problem. Hence, there is not an adequate basis for evaluation. If this person were not a member of the class, the quality of discussion would not be changed.

B. *Reflections*

Short reflections on readings (worth: 20%)

For each week for which new primary readings are assigned,¹ write a brief reflection (short list or 1–2 paragraphs) about each of the assigned primary readings, covering the following points:

- a. Paper's main insights,
- b. Points of agreement,
- c. Points of disagreement, and
- d. Questions for discussion.

These reflections are to be posted on the weekly discussion page (on Black Board) by the end of the day on Monday.² Before class, students should read the reflections of the other seminar members, and come to class prepared to engage.

Reflections should be a few hundred words—something on the order of a page or so (and in no case more than 2 pages). Thus: something like $\frac{1}{3}$ or $\frac{1}{2}$ of a page per reading, typically.

C. *Leadership*

Leadership of one class discussion (worth: 15%).

Each week, two students will lead the seminar (likely one before the break and one after, though they are free to decide on any appropriate division of labour between them). They should very briefly (1-3 min.?) summarize each of the readings (remembering that all other students will already have read it), provide a critical appraisal, and introduce questions and points for discussion.

In preparation, the session leader should read all of the reflections that other class members will have posted on Blackboard, and use them in shaping and organizing the

¹I.e., not including any readings listed as “secondary.”

²I.e., about 36 hours before class.

seminar. Doing so will go a long way towards ensuring lively engagement and a meaningful discussion that resonates with the interests of the group as a whole.

D. Paper

1. Topic

Write a review and interpretation of the work of a scholar who has made a significant contribution in the theoretical foundations of information studies. The review should take the form of a critical evaluation of the scholar's contributions, the intellectual background from which they have been made, and your interpretation of the substance of their views, their impact on the field, and their relevance to your own research. (The review should be accompanied by an appropriate bibliography of the scholar's works.)

Alternatively—if you are ambitious—instead of focusing on the work of a particular scholar, you may choose to write about a particular *idea* that has played a significant role in the development of the field of information studies. In this case you should review the idea's genesis, substance, reception, interpretation, evolution, and role in the development of the field.

2. Skeleton

The first step is to submit, on 1 or 2 pages (maximum!), what I call a **skeleton**—a conceptual distillation of the argument to which your full paper will give voice. *It should not be in prose!* Rather, it should instead be a clear, condensed, skeletal version of the argument to be advanced.

As described in the accompanying handout, skeletons are not intended to be *outlines*; nor are they designed for public consumption (with definitions, introductions, etc.). Outlines typically identify topics or areas for discussion, organized by the thread that the paper will follow—and thus typically consist of *noun phrases* identifying issues to be discussed, points to be brought forward, etc. In contrast, a skeleton should consist of *sentences* or *claims*—brief distillations, in structured and highly abbreviated form, of the argument to be made. The entire conceptual structure (including assumptions, theses, arguments—and flaws!) of the paper should be revealed.

- a. Due: Nov. 4; (I am not going to grade the skeletons, not only because the form is likely to be unfamiliar, but also, and more seriously, because skeletons are *deucedly difficult* to develop. Still, do the best you can. There will be time during subsequent weeks for you to refine and improve your skeleton. (I believe that developing skill with this skeletal form will prove invaluable as preparation for writing your dissertation, and papers for the rest of your life.)
- b. Some (many?) people will not be able to produce anything resembling a skeleton without first writing a rough draft, in order to know what they are arguing. Fair enough. But the skeleton should not be that rough draft; rather, it should consist only of the paper's distilled argument structure—extracted, if this is the approach you select, from the draft.
- c. Developing skeletons requires a tremendous amount of work. Don't be misled by the fact that the skeleton may be no longer than 1-2 pages. If all goes well, producing the skeleton, short as it is, will be the bulk of the work of writing the paper. If a skeleton is done well, writing the subsequent prose will be easy.

³To the extent that your paper differs from that length (in either direction), it should be correspondingly fabulous.

3. First draft Upon submission, each person's first full draft will be distributed (on a random basis) to three other students, for comments.
- Due: Nov 25; worth 10%
4. Comments Comments due on the 3 first drafts that have been assigned to you. You should write detailed annotations, throughout the text, plus some paragraphs of general remarks, as appropriate. I would expect the textual commentary to run to two or three pages (500–1,000 words). Be critical, but in the most helpful and supportive way. If you see room for improvement, or have suggestions, feel free to give voice to them (the author can always ignore them!).
- Due: Dec. 2; worth 10%
5. Final draft Due: Dec 16; worth 30%.
- E. *Grading* Grades will be based on clarity, imagination, power, and coherence of arguments and insights. I am especially interested in people struggling to give voice to substantial views and problems, rather than mere citing of views published by others, “logic-chopping,” or piece-wise rearrangement of already established positions. That said, clarity and articulateness are of the very greatest importance.⁴
- I won't be reticent in presenting and defending positions, nor do I expect you to be.

III • Methodologies

A. One of the purposes of this course is to develop familiarity with multiple perspectives and methodologies—since “information” is a notion that has been theorized in just about every corner of the academy. Depending on your background, various of the readings we are going to examine may seem dense, obscure, technical, irrelevant, arcane, hopelessly unsocial or apolitical, etc. Your task is to see through these detriments and infelicities (remarking on them is easy), in order to figure out what, of substance and value, the author was in fact giving voice to—and then to assess that, from a charitable as well as critical perspective.

B. In case it is helpful, I will quote a couple of paragraphs from a paper I wrote some years back.⁵

“Everyone's right.” Or anyway that's what I tell my students. “Look,” I say; “this paper you are reading was written by a dedicated, intelligent person, who has devoted their life to studying these issues. The author's had an insight, uncovered some subtlety, which they're trying to tell us about. Imagine that they're showing us a path through the forest. Problem is, people write in *words*; and words are blunt instruments: intellectual bulldozers, Caterpillar D9s—big bruisers, that cut wide swaths. Rare persons—poets, mostly—can wield words with enough finesse to clear a delicate trail, without doing too much collateral damage. But most of us, when we write, even when we think we are navigating a exquisite line, are



A Caterpillar D9

⁴In passing: In undergraduate seminars, I often tell students that I will down-grade, by one grade level (from A to A–, from A– to B+, etc.) any paper that presents a view with which I agree, especially one with which we have become familiar in class⁴—in order to discourage attempts to parrot back what I or others said. The goal is to encourage students to manifest ferocious intellectual autonomy in their work. Since you are doctoral students, however, I do not expect any problems in this regard ;-).

⁵Smith, Brian Cantwell. “Cummins—or Something Isomorphic to Him,” in Hugh Clapin (ed.), *Philosophy of Mental Representation*, Oxford Univ. Press, 2002, pp. 170–90 (commentary through p. 218).

in fact unwittingly mowing down trees, ripping up the earth, sewing all kinds of destruction.

“So here’s my advice,” I go on. “Don’t assume this text is written in a language you know, and take your task to be one of figuring out whether what they’ve written is true or false. You will almost certainly judge it false. Be more generous! Assume what you are reading is true, and tell me what language it is written in. Ignore the ancillary damage; pointing that out is easy, and anyway that stuff will grow back. Figure out what the author was on to—what they were excited about, what wonder they have seen. Tell me, if we were to follow their path further, where it would lead.”

IV • Practical Issues

- A. *Communications:* If you have questions, suggestions, observations, etc. about the course, there is a good chance that others in the class will have the same question—or at least will benefit from the answer. Please therefore either: (i) post questions to Blackboard (in the “Discussion Board” section), or (ii) copy the rest of the class in an email, so that everyone in the class can benefit from your questions and from our answers.
- B. *Academic integrity:* The essence of academic life revolves around respect not only for the ideas of others, but also their rights to those ideas and their promulgation. It is therefore essential that all of us engaged in the life of the mind take the utmost care that the ideas and expressions of ideas of other people always be appropriately handled, and, where necessary, cited. For writing assignments, when ideas or materials of others are used, *they must be cited*. Such attention to ideas and acknowledgment of their sources is central not only to academic life, but life in general.

Use of material by others without proper citation—called **plagiarism**—is absolutely forbidden, and considered to be a very grave academic offence. Note that *neither the instructor nor either TA has any discretion whatsoever in dealing with cases of plagiarism. All cases must be reported*. This is a very strict U.of.T rule, to which we, as instructors, are bound. In particular, we are explicitly forbidden from “deciding charitably to let a confused or repentant student off,” no matter how much we might otherwise be tempted.

Please acquaint yourself with U.of.T’s [Code of Behaviour on Academic Matters](#).⁶

Note that citation is critical whether or not the cited passage or idea has been published. If you rely on an idea suggested by someone else (including any of your classmates), make sure to cite the person and to give them full and appropriate credit (e.g.: Ebenezer Le Page, personal communication, Feb 30, 2015).

- C. *Students with a disability or diverse learning styles:* Students with diverse learning styles and needs are welcome in this course. If you have a disability or health consideration that may require accommodations, please approach the instructor and/or the [Accessibility Services Office](#)⁷ as soon as possible. The Accessibility Services staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know about your needs, the more quickly we can assist you in achieving your learning goals in this course.

⁶ <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>

⁷ <http://www.accessibility.utoronto.ca/>

Schedule⁸

I • Backgrounds

Sept. 16

A. The first class will be dedicated to finding out where each of us have come from, what matters to us, what we are interested in, what we are looking for, etc. We will be working closely together all fall, and you will be a “cohort” together for a number of years to come. Especially because we are such an interdisciplinary community, it will be useful to have a sense of each person’s background, perspective, and intellectual predilections. I would therefore like to speak briefly (for 10 minutes?) on how you see yourself approaching your PhD. Among other things, I will ask you to address the following five issues:

1. *Background*: Previous educational focus (undergraduate, master's, etc.), including department or discipline, topic, claim(s) you argued for in any theses you have written, and the methods or style of work you used and/or are comfortable with—e.g., science, social science (quantitative, qualitative, ethnographic, etc.), humanities, engineering, programming, or whatever.

You should also mention expertise you come with, which might be of use to others in the class (e.g., you are a master statistician, have translated Hegel into Japanese, can design dynamite web sites and help people with CSS, etc.)

2. *Plans*: What you expect to focus on, wrestle with, conduct research about, or investigate in the course of your doctoral work—and also, and not incidentally, what *standards* you would like to meet, and what you would like your work to *stand for*.

(Needless to say, it is early days, so your ideas may well change, over the next couple of years. In fact I hope they do! If they don't, I will feel that the iSchool has let you down. Don't worry, therefore, whether you know what project, topic or even area you want to focus on. I'm just looking for a sense of what *matters* to you, intellectually.)

3. *Lacunae*: What sorts of education, understanding, and insight you do *not yet have*—what you do not yet know—that you think you will need to know or understand, in order to do the work you are aiming at to a high standard. I.e., what are you looking for—what can we help you with?

4. *Foundations*: What literatures and research (books, papers, projects, etc.) you expect to play a fundamental role in the research you intend to focus on. Though this will include works you have already known, I am especially interested in things you have *not yet read*, but would like to—things you know will be important. We may be able to include some of these in the final syllabus.

After each presentation, we will have some time for others in the class to ask questions and have a bit of discussion.

II • The Academic Context

Sept. 23

1. iSchools and Information Research

- a. Banse, Peter (2011). Becoming academic: a reflection on doctoral candidacy. *Studies in Higher Education* (August), 36(5): 543-556

⁸The readings for the semester build on versions of INF3001 offered at the iSchool in previous years by Profs. Siobhan Stevenson, Jens-Erik Mai, and Jenna Harte, and also on reflections on and suggestions for the course by students in INF3008 in the spring of 2015—particularly those of Brian Griffin. My thanks and appreciation to all.

- b. Van Fleet, Connie and Danny Wallace (2002). “The i-word: semantics and substance in library and information studies education.” *Reference and User Services Quarterly*, 42(2): 104–109.
- c. Wiggins, Andrea and Sawyer, Steven (2012). “Intellectual Diversity and the Faculty Composition of iSchools.” *Journal of the American Society for Information Science*, 63 (1): 8–21.
- 1. Academy
 - d. Chan, Adrienne; Fisher, Donald. 2008. The Exchange University (Chapter 1). In Chan and Fisher (Eds). *The Exchange University: Corporatization of Academic Culture*. Vancouver, BC: UBC Press, pp. 1–18.
 - e. Slaughter, Sheila and Leslie, Larry. 1997. Entrepreneurial Knowledge. (Chapter 6). In *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Baltimore: John Hopkins University Press, pp. 178–207.
 - f. Collini, Stefan (2012). *What Universities are For*. Penguin. Introduction and Part I.

III • History of Information Studies

Sept. 30

A. Primary

- 1. Day, Ronald (2001). “European documentation: Paul Otlet and Suzanne Briet.” In Day, Ronald. *The Modern Invention of Information: Discourse, History, and Power*. Edwardsville: Southern Illinois Press, Introduction and Chapter 1, pp. 1–37.
- 2. Bush, Vannevar (July 1945). “As we may think.” *Atlantic Monthly*, pp. 101-108
- 3. Shera, Jesse (1973). “Towards a theory of library and information science. Knowing books and knowing men, knowing computers, too.” Littleton, CO: Libraries Unlimited, pp.93-110.
- 4. Rayward, W. Boyd (1994). “Vision of Xanadu: Paul Otlet (1868-1944) and Hypertext.” *Journal of the American Society for Information Science*, 45(4): 235-250.
- 5. Nunberg, Geoffrey (1996), “Farewell to the Information Age.” In Nunberg, Geoffrey (ed.), *The Future of the Book*, U. California Press.

B. Secondary

- 1. Budd, John (2002). “Jesse Shera, social epistemology and praxis.” *Social Epistemology*, 16 (1), 93–98.
- 2. Burke, Colin (2008). “History of Information Science.” *Annual Review of Information Science and Technology* 41(1), 3–53.
- 3. Butler, Pierce (1933). *An introduction to library science*. University of Chicago Press. (Forward plus pp.1–101). <http://archive.org/details/introductionto11501mbp>
- 4. Olson, Gary M. and Grudin, Jonathan (2009). *Interactions*, March & April 2009: 16:15–19. In Timelines section.
- 5. Rayward, W. Boyd (1996). “The history and historiography of information science: Some reflections,” *Information Processing & Management*, Vol. 32, No. 1, pp. 3-17.

IV • Information in IS

Oct. 7

- 1. Buckland, M. (1991). “Information as thing.” *Journal of the American Society for Information Science* 42(5), 351-360.

2. Frohmann, Bernd (2004). *Deflating Information from Science Studies to Documentation*. Toronto: Toronto University Press. Introduction and Chapter 2, pp.53-91.⁹
3. Hayles, Katherine (1993). "The materiality of informatics." *Configurations* 1.1 (1993) 147-170.
4. Furner, J. (2004). "Information studies without information." *Library Trends*, 52(3), 427– 446.

V • Knowledge**Oct. 14**

1. Fleck, Ludwik (2012). *Genesis and Development of a Scientific Fact*. University of Chicago Press. Chapters 1 & 2.
2. Kuhn, Thomas S. (1996). *The Structure of Scientific Revolutions*. 3rd. ed. Chicago: University of Chicago Press. Chapters 1-5.
3. Foucault, Michel. (1980). *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977*. Random House LLC. Pages 78-108.
4. Latour, Bruno (2004). "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern." *Critical Inquiry* 30: 225–248.

VI • Philosophy**Oct. 21****A. Primary**

1. Floridi, Luciano (2010). *Information: A Very Short Introduction*. Oxford University Press
2. Floridi, Luciano (2008). "Trends in the Philosophy of Information." *Handbook of the Philosophy of Science* 8: 117–35
3. Adriaans, Peter (2012). "Information," in the *Stanford Encyclopedia of Philosophy*
<http://plato.stanford.edu/entries/information>
4. Adriaans, Peter (2010), "A Critical Analysis of Floridi's Theory of Semantic Information," *Knowledge, Technology, and Policy*, 23:41–56.

B. Secondary

1. Shannon, Claude E and Weaver, Warren (1948/1971). *A mathematical theory of communication*. University of Illinois Press, 1971. Originally published in the *Bell System Technical Journal*, 27 (July and October, 1948), 379–423 & 623–656. Corrected version available at:¹⁰
<http://cm.bell-labs.com/cm/ms/what/shannonday/shannon1948.pdf>
2. Shannon, Claude E. (1956). "The Bandwagon," *IRE Transactions on Information Theory* 2:3.

VII • Semantics**Oct. 28****A. Primary**

1. (Dretske, Fred (2008). "Epistemology and information." In *Handbook of the Philosophy of Science*. Volume 8: *Philosophy of Information*, Pieter Adriaans and Johan van Benthem (eds.) Amsterdam: Elsevier. 33–51.)

⁹This book is available at (make sure you click on the "Read this book" tab): <http://simplelink.library.utoronto.ca/url.cfm/122278>

¹⁰Shannon's classic paper formulating his "theory of information," together with comments by Weaver. *I do not expect you to read and understand the mathematics*. Read them as far as you can—Weaver (P7)at least up to the middle of p. 8, for example—but at a certain point those of you who aren't mathematically inclined will run into inscrutable formulae. Nevertheless—and this is the important thing—even if you don't follow any of the subsequent mathematics, I strongly suggest that you to continue to "read through" the rest of both articles, in order to see what the two authors are concerned with, what notions are being bandied about, etc.

2. Barwise, Jon (1997). "Information Flow: A Review." Lecture 1 in Jon Barwise and Jerry Seligman, *Information Flow: The Logic of Distributed Systems*. Cambridge University Press. 3–25.
 3. Israel, David and Perry, John (1990). "What is Information? In Philip Hanson (ed.), *Information, Language and Cognition*. Vancouver: University of British Columbia Press. 1–19.¹¹
- B. Secondary
1. Dretske, Fred (1990). "Putting Information to Work." In P. Hanson (ed.), *Information, Language, and Cognition* (pp. 112–124); with reply by Smith, Brian Cantwell (1990), "Putting Dretske to Work" (pp. 125–140). Vancouver: University of British Columbia Press.
 2. Floridi, Luciano. Semantic Conceptions of Information. Stanford Encyclopedia of Philosophy.
<http://plato.stanford.edu/entries/information-semantic/>
 3. A collection of 19 papers on the philosophy of information, with many further links, is: Adriaans, Pieter & van Benthem, Johan, eds. (2008). *Philosophy of Information*. North Holland, which is available (for download) through the UofT library system at:
<http://simplelink.library.utoronto.ca/url.cfm/116073>

VIII • Discussion of papers & skeletons • A **Nov. 4**

IX • Discussion of papers & skeletons • B **Nov. 18**

X • Classification **Nov. 25**

1. Borges, Jorge Luis (1975). "The Analytical Language of John Wilkins." In Jorge Luis Borges, *Other Inquisitions*. University of Texas Press.
2. Bowker, Geoffrey C., and Susan Leigh Star (1999). *Sorting Things Out: Classification and Its Consequences*. MIT Press. Chapters 1–5 & 10.
3. Foucault, Michel (1970) *The Order of Things: An Archaeology of the Human Sciences*. Vintage Books. Pages xv–xxiv, 128–138, 157–162, 226–232.
4. Dupré, John (2006). "Scientific Classification." *Theory, Culture & Society* 23(2–3), 30–31.
5. Dupré, John (1993). *The Disorder of Things: Metaphysical Foundations of the Disunity of Science*. Harvard University Press. Chapter 1: 17–36.

XI • Media **Dec. 2**

1. McLuhan, Marshall (1964). *Understanding Media*. New York: McGraw-Hill. Introduction and pp. 3–107a.
2. Hayles, N. Katherine (2012). *How We Think: Digital Media and Contemporary Technogenesis*. University of Chicago Press. Chapters 1–5.

XII • Wrap-up **Dec. 9**



¹¹Don't worry about their formalism (i.e., the discussion on pages 7–15). You will want to look at their passages about the "helpfulness" of information, though, and about the circumstances in which one might need to use *representation* (15–18).