

SENSE AND SCIENTIFIC SENSIBILITY: Beyond Vision, From the Scientific Revolution to Now

Brown University
Gender & Sexuality Studies
GNSS1960M / Spring 2011

Tuesdays, 4-6:20 PM
J. Walter Wilson 301
Instructor: Sophia Roosth

Course Description

Scientific inquiry is generally considered to be an endeavor conducted primarily using one's sense of vision: researchers peer into microscopes, gaze through telescopes, and stare at charts, graphs, diagrams, photographs, and glowing screens. But what other senses do scientists rely upon in their work? Might scientists also gather evidence of natural phenomena using their senses of smell, taste, hearing, and touch? Or, for that matter, the other perceptual systems that physiologists and cognitive scientists have posited in recent years — among them, our senses of balance, temperature, movement, pain, and time? Central questions addressed in this class include: why non-visual senses historically have been devalued in the sciences, what a sensuous and embodied approach to scientific practice might be, and how an attention to such sensory epistemologies might contribute to a feminist approach to science studies.

This course offers a historical overview of the status of the senses in technoscientific disciplines such as physics, primatology, microbiology, medicine, chemistry, mathematics, and computer science, as well as tracks more recent investigations into non-visual senses in ethnographic treatments of fields such as nanotechnology and marine biology. In addition to discussing how scientists like Darwin, Galton, Hooke, and Helmholtz investigated and evaluated perceptual systems, students will learn how human senses and their mediations constitute and precipitate different modes of apprehending scientific objects. Each week, students will focus on a different sense: after two introductory weeks on sensuous approaches to the social study of science, students will spend weeks 3 through 7 examining the canonical five senses. The next unit delves into less acknowledged senses (pain, kinaesthesia, and chronoception) and the final unit appraises how synaesthesia (the cognitive referral of a stimulus from one sense to another), extrasensory perception, and psychedelic experiences may operate as both tools and objects of scientific investigation in, for example, quantum information sciences, nuclear weapons design, and biotech research. In addition to reading ethnographic and historical texts and philosophical treatises (e.g. Bergson, Foucault, Merleau-Ponty) on the senses and scientific inquiry, students will examine critical questions regarding how the senses are culturally and historically constructed, technologically mediated, and epistemologically evaluated as trustworthy, suspect, refined, base, or cultivated.

Requirements

Participation. Classes will combine lecture and discussion. Each week is keyed to a set of readings (4 to 5 articles or book chapters), and it is crucial that you keep up with the readings and are prepared to present and discuss them in class. Some lectures will directly engage the readings while others may provide contextualizing historical and theoretical information and/or offer case study illustrations.

Each week, one student will be responsible for leading class discussion, in which he or she presents the readings, offers a critical evaluation of the positions represented in the assigned texts, and poses questions to the class. Consult the “Discussion Leader Guidelines” handout for further instructions.

Every student other than the discussion leader must write a brief (about one page) reading response and post it on the course website no later than 5 pm the day before class. Your paper should reflect your critical response to the readings. It should be neither a straight summary nor an account of related personal experiences, but rather a close engagement and analysis of the assigned readings. Consult the “How to Read Well” handout for more guidance on how to critically engage with the assigned readings.

Class participation — regular attendance, seminar presentation, reading responses, and thoughtful participation in discussion — will account for 25% of the final grade.

Written Assignments. Students will complete two short (5-7 page) assignments, which will allow you to engage with class readings to explore firsthand how the senses are situated in sociocultural arrangements and applied in scientific settings. These two assignments will each be worth 20% of the final grade. One longer research paper (12-15 pages) on a topic of your choosing, due at the end of the semester, will be worth 35% of the final grade. In the final two weeks, students will give oral presentations on their final papers.

February 1: INTRODUCTIONS

Topic: How many senses are there?

Group Activity: Designing an updated allegory of the senses.

February 8: TOWARDS A SENSUOUS STUDY OF SCIENCE

McLuhan, Marshall. 2005. “Inside the Five Sense Sensorium.” In *Empire of the Senses: The Sensual Culture Reader*, ed. David Howes. Oxford: Berg, 43-52.

Stewart, Susan. 2005. “Remembering the Senses.” In *Empire of the Senses: The Sensual Culture Reader*, ed. David Howes. Oxford: Berg, 59-69.

Synnott, Anthony. 1991. “Puzzling over the Senses: From Plato to Marx.” In *The Varieties of Sensory Experience: A Sourcebook in the Anthropology of the Senses*, ed. David Howes. Toronto: University of Toronto Press, 61-76.

Vinge, Louise. 2009. “The Five Senses in Classical Science and Ethics.” In *The Sixth Sense Reader*, ed. David Howes. Oxford: Berg, 107-118.

Classen, Constance. 2005. "The Witch's Senses: Sensory Ideologies and Transgressive Femininities from the Renaissance to Modernity." In *Empire of the Senses: The Sensual Culture Reader*, ed. David Howes. Oxford: Berg, 70-84.

February 15: VISION

- Beer, Gillian. 1996. "'Authentic Tidings of Invisible Things:' Vision and the Invisible in the Later Nineteenth Century." In *Vision in Context: Historical and Contemporary Perspectives on Sight*, ed. Teresa Brennan and Martin Jay. New York: Routledge, 83-100.
- Crary, Jonathan. 1990. "Subjective Vision and the Separation of the Senses" and "Techniques of the Observer." In *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century*. Cambridge: MIT Press, 67-136.
- Hayward, Eva. 2005. "Enfolded Vision: Refracting *The Love Life of the Octopus*." *Octopus: A Visual Studies Journal* 1: 29-44.
- Hooke, Robert. 1665. Preface to *Micrographia*. <http://www.roberthooke.org.uk/micro2.htm>

VIEW: Jean Painlevé. 1965. *The Love Life of the Octopus*.

Long Weekend: No class February 22.

March 1: SOUND

- Helmreich, Stefan. 2007. "An Anthropologist Underwater: Immersive Soundscapes, Submarine Cyborgs, and Transductive Ethnography." *American Ethnologist* 34(4): 621-641.
- Mody, Cyrus C. M. 2005 "The Sounds of Science: Listening to Laboratory Practice." *Science, Technology, and Human Values* 30(2): 175-198.
- Roosth, Sophia. 2009. "Sonic Eukaryotes: Sonocytology, Cytoplasmic Milieus, and Cellular Subjectivities." *Critical Inquiry* 35(2): 332-350.
- Sterne, Jonathan. 2003. *The Audible Past: Cultural Origins of Sound Reproduction*. Durham: Duke, excerpts.

LISTEN:

- Anne Niemetz and Andrew Pelling. 2004. *The Dark Side of the Cell*.
<http://www.darksideofcell.info/about.html>
- ESA/NASA/JPL/University of Arizona. 2005. *Radar echoes from Titan's surface*.
http://saturn.jpl.nasa.gov/multimedia/videos/movies/alien_winds_descent_radar.mp3
- ESA/NASA/JPL/University of Arizona. 2005. Speeding through Titan's haze.
http://saturn.jpl.nasa.gov/multimedia/videos/movies/alien_winds_descent.mp3
- Jon Cooper. 2010. The sound of Brownian motion.
<http://news.bbc.co.uk/2/hi/technology/8529232.stm>

March 8: SMELL

Corbin, Alain. 1986. "Air and the Threat of the Putrid." In *The Foul and the Fragrant: Odor and the French Social Imagination*. Cambridge: Harvard University Press, 11-21.

- Latour, Bruno. 2004. "How to Talk About the Body? The Normative Dimension of Science Studies." *Body and Society* 10(2-3).
- LeGuerer, Annick. 1992. "The Philosophical Nose." In *Scent*. Turtle Bay, 141-203.
- Palmer, Richard. 1993. "In Bad Odour: Smell and its Significance in Medicine from Antiquity to the Seventeenth Century." In *Medicine and the Five Senses*, ed. W.F. Bynum and Roy Porter. Cambridge: Cambridge University Press, 61-68.
- Paterson, Mark. 2006. "Digital Scratch and Virtual Sniff." In *The Smell Culture Reader*, ed. Jim Drobnik. Oxford: Berg, 358-367.

First Assignment Due. Gain access to a research laboratory on the Brown campus. Perform a brief ethnographic exercise in the laboratory: describe your surroundings, offering a "thick description" of the place, who occupies it, and what they are doing, without relying on your sense of sight. What does the laboratory sound like? What smells, textures, or other sensations might you notice? What do they tell you about the social space that you have entered? Draw upon readings from the class to analyze your experience. Feel free to record your experience using non-visual recording equipment (i.e., no cameras or video equipment).

March 15: TASTE

- Korsmeyer, Carolyn. "The Science of Taste." In *Making Sense of Taste: Food and Philosophy*. Ithaca: Cornell University Press, 68-102.
- Paxson, Heather. 2008. "Post-Pasteurian Cultures: The Microbiopolitics of Raw-Milk Cheese in the United States." *Cultural Anthropology* 23(1): 15-47.
- Roberts, Lissa. 1995. "The Death of the Sensuous Chemist: The 'New' Chemistry and the Transformation of Sensuous Technology." *Studies in the History and Philosophy of Science* 26(4): 503-529.
- Williams, Raymond. 1985. "Taste." In *Keywords: A Vocabulary of Culture and Society*. Oxford: Oxford University Press, 313-315.

March 22: TOUCH

- Gilman, Sander. 1993. "Touch, Sexuality, and Disease." In *Medicine and the Five Senses*, ed. William Bynum and Roy Porter. Cambridge: Cambridge University Press, 198-224.
- Keller, Eve. 2002. "The Subject of Touch: Medical Authority in Early Modern Midwifery." In *Sensible Flesh: On Touch in Early Modern Culture*, ed. Elizabeth Harvey. Philadelphia: University of Pennsylvania Press, 62-80.
- Kuriyama, Shigehisa. 1999. "Styles of Touching." In *The Expressiveness of the Body: The Divergence of Greek and Chinese Medicine*. Cambridge: Zone, 15-108.
- Paterson, Mark. 2007. "The Forgetting of Touch: Geometry with Eyes and Hands." In *The Senses of Touch: Haptics, Affects, and Technologies*. Oxford: Berg, 59-77.
- Castañeda, Claudia. 2001. "Robotic Skin: The Future of Touch?" In *Thinking Through the Skin*, ed. Sarah Ahmed and Jackie Stacey. New York: Routledge, 223-236.

Spring Recess: No class March 29.

April 5: PAIN

- Elkins, James. "Membranes." In *Pictures of the Body: Pain and Metamorphosis*. Stanford: Stanford University Press, 35-70.
- Herzig, Rebecca. 1999. "Removing Roots: 'North American Hiroshima Maidens' and the X-Ray." *Technology and Culture* 40(4): 723-745.
- Scarry, Elaine. 1985. "Pain and Imagining" and "The Interior Structure of the Artifact." In *The Body in Pain*. Oxford: Oxford University Press, 161-180, 278-326.
- Winter, Alison. 1998. Ada Lovelace and the Bodily Constraints on Women's Knowledge in Early Victorian England." In *Science Incarnate*, ed. Christopher Lawrence and Steven Shapin. Chicago: Chicago University Press, 202-239.

April 12: KINAESTHESIA

- Çelik, Zeynep. 2006. "Kinaesthesia." In *Sensorium: Embodied Experience, Technology, and Contemporary Art*, ed. Caroline A. Jones. Cambridge: MIT Press.
- Foucault, Michel. 2006. "Utopian Body." In *Sensorium: Embodied Experience, Technology, and Contemporary Art*, ed. Caroline A. Jones, Cambridge: MIT Press.
- Merleau-Ponty, Maurice. 2002. "The Spatiality of One's Own Body and Motility." In *Phenomenology of Perception*. New York: Routledge, 112-170.
- Schwartz, Hillel. 1992. "Torque: The New Kinaesthetic of the 20th Century." In *Incorporations*, ed. Jonathan Crary and Sanford Kwinter. Cambridge: Zone, 70-127.
- Listen to Podcast: "Where Am I?" 2006. *Radiolab*. Season 2, Episode 4 (05 May). WNYC. Available Online: <http://www.radiolab.org/2006/may/05/>

Second Assignment Due. Choose a popular science article that offers a journalistic account of contemporary research related to the senses, either human or animal (likely sources include *Scientific American*, *The New York Times*, *Discover*, *New Scientist*). What about the senses is being assumed in the article? What sensory epistemology does the journalist or researcher invoke and how, if at all, does it relate to the sensory hierarchy? Use at least three of the readings from this semester to analyze the narratives and metaphors deployed in your article.

April 19: CHRONOCEPTION

- Bergson, Henri. 2001 [1889]. *Time and Free Will: An Essay on the Immediate Data of Consciousness*. Mineola: Dover, 90-121.
- Canales, Jimena. 2009. *A Tenth of a Second: A History*. Chicago: University of Chicago Press, excerpts.
- Doane, Mary Ann. 2002. "Temporality, Storage, Legibility: Freud, Marey, and the Cinema." In *The Emergence of Cinematic Time*. Cambridge: Harvard University Press, 33-68.
- Landecker, Hannah. 2005. "Cellular Features: Microcinematography and Film Theory." *Critical Inquiry* 31(4): 903-937.

VIEW:

- Kelty, Chris and Hannah Landecker. 2004. *News about Cells*.

- Marey, Étienne-Jules. 1882-1901. Selected animations of his chronophotographic experiments.
- Muybridge, Eadweard. 1872-1893. Selected animations of Muybridge's photographic sequences. Tate/Corcoran Gallery of Art, Washington, D.C.

April 26: SYNAESTHESIA

- Connor, Steven. 2004. "Edison's Teeth: Touching Hearing." In *Hearing Cultures: Essays on Sound, Listening and Modernity*, ed. Veit Erlmann. Oxford: Berg, 153-172.
- Dann, Kevin. 1998. "From *un Truc* to Occult Truth: The Fascination with Synaesthesia in Fin de Siècle France." In *Bright Colors Falsely Seen: Synaesthesia and the Search for Transcendental Knowledge*, ed. Kevin Dann. New Haven: Yale, 17-45.
- Galton, Francis. 1881. "Visualized Numerals." *Journal of the Anthropological Institute* 10: 85-102.
- Jones, Caroline A. 2006. "Synaesthesia." In *Sensorium: Embodied Experience, Technology, and Contemporary Art*. Cambridge: MIT Press, 216-218.

LISTEN/VIEW:

- Selections from *Malinowski's Music Animation Machine*
- Colored Letters and Numbers

May 3: EXTRASENSORY PERCEPTION, TECHNOAESTHETICS, AND PSYCHEDELICS

- Doyle, Rich. Forthcoming. "LSDNA: Creative Problem Solving, Consciousness Expansion and the Emergence of Biotechnology." In *The Ecodeleic Hypothesis*.
- Masco, Joseph P. 2006. "Nuclear Technoesthetics: The Sensory Politics of the Bomb in Los Alamos." In *The Nuclear Borderlands*. Princeton: Princeton University Press, 43-98.
- Riskin, Jessica. "The Mesmerism Investigation and the Crisis of Sensibilist Science." In *Science in the Age of Sensibility*. Chicago: Chicago University Press, 189-225.
- Thurschwell, Pamela. 2009. "The Erotics of Telepathy: The British SPR's Experiments in Intimacy." In *The Sixth Sense Reader*, ed. David Howes. Oxford: Berg, 183-207.

May 10: STUDENT PRESENTATIONS AND PARTY

Final papers due on May 20.