

Microbial Geographies

Tuesdays, 2:45 - 5:30 pm

Shanahan 2465

Prof. Christy Spackman

1249 Parsons

Office hours: Wednesdays 2:00 – 4:30 pm, by appointment, and over lunch

Course Description

Mapping the microbiome. Microbial fingerprints. Microbial prospecting. Recently, scientists, social scientists and humanists have declared it is time to rethink the relationships between human and non-humans. Although scholars of science and technology in society and geographers have a long history of thinking with and about materiality, they have only recently turned their attention to the microscopic co-inhabitants of the planet. What happens when the material, too, is living?

In this class we will grow our own microbial companion species, working with cheese, kombucha, and kimchi, to think about how bodies are, as geographers Dixon and Jones III (2015) suggest, “stretched across space and time” through their relationships with microbial life. Through hands-on fermentation practice, microbiological culturing and analysis, readings, discussions, writings, and tastings, students will not only gain familiarity with the basic concepts and theories of microbiology, as well as microbiological culturing techniques, they will gain a deep understanding of ongoing debates in cultural geography, anthropology, and science and technology studies, about our human responsibilities in a more-than-human world.

Required Texts:

Sandor Katz. 2012. *The Art of Fermentation*. White River Junction, VT: Chelsea Green Publishing.

Bruce Braun, Sarah J. Whatmore, eds. 2010. *Political Matter: Technoscience, Democracy, and Public Life*. [also available as an e-book]

Bruno Latour. 1993. *The Pasteurization of France*. Cambridge: Harvard University Press.

Michael Doyle, Robert Buchanan. 2013. *Food Microbiology: Fundamentals and Frontiers, 4th edition*. Washington DC: ASM Press. (Available via the library as an e-book)

Course Evaluation

Participation: [10%]

Quizzes: [30%]

Public Fermentation Workshop: [10%]

Course Project [50%]: Pick a fermentation project drawn from *The Art of Fermentation*; you will spend at least seven weeks building and shepherding your microbial companion. I will have at

least one cookbook available in my office for your use, in addition to the recipes present in *The Art of Fermentation*. During this time, you will take field notes on your interactions with your microbiological companion; at the end of the semester you will hand in field notes (20%) as well as a 2500-3000 word reflection (+ references; 30%) synthesizing your experience and microbiological findings along with course readings.

Attendance:

I allow a maximum of two absences per student over the course of the semester; more than two absences for any reason will result in a 2.5% final grade deduction for each additional absence, unless you provide a doctor's notice, in which case you will be assigned additional work to make up for the missed class time. Please notify me in advance if you will not be in attendance prior to class.

If there are social justice demonstrations that will coincide with our class meeting time, and you wish to take part, I am willing to accommodate reasonable participation in such events. However, you need to coordinate with me *AND* your lab group at least 24 hours in advance of our scheduled class meeting time. Participation in such events will not change due dates or times for assignments.

Classroom Conduct and Accommodations

The goals of this course can only be accomplished in a setting of mutual respect. As your instructor, I am committed to creating a classroom environment that welcomes all students, regardless of all the various boxes we each may fit in. We all have worldviews and cultural frames we are unaware of. I will do my best to create a course setting where you all feel welcome. I request that you each do the same. Please reach out to me immediately if you feel the classroom has become a hostile environment, or just to let me know if there is anything I can do to better promote a successful learning environment.

To request academic accommodations due to a disability, students should contact our Coordinator of Student Support.

Part 1: Ways of knowing and modes of being

Week 1/ January 16: Framing the question

- Anna Tsing. "Unruly Edges: Mushrooms as Companion Species: Party Writing for Donna Haraway." <http://tsingmushrooms.blogspot.com/2010/11/anna-tsing-anthropology-university-of.html>
- Sandor Katz. 2012. *The Art of Fermentation*. White River Junction, VT: Chelsea Green Publishing. [Ch. 1, "Fermentation as a Coevolutionary Force"]
- Gregory P. Donaldson, S. Melanie Lee, Sarkis K. Mazmanian. 2016. "Gut biogeography of the bacterial microbiota." *Nature Reviews Microbiology* 14: 20-32.

Week 2/ January 23: Making known

- Bruno Latour. 1993. *The Pasteurization of France*. Cambridge: Harvard University Press. [Section 1: War and Peace of Microbes] (skip pages 94-110; skim chapter 3)

Week 3/ January 30: Between human and not—theorizing borders [**Quiz 1**]

- Gilles Deleuze and Félix Guattari. 1987. "Introduction: Rhizome." *A Thousand Plateaus: Capitalism and Schizophrenia*. New York: Continuum. [pp. 3-28]

- Bruce Braun, Sarah J. Whatmore, eds. 2010. *Political Matter: Technoscience, Democracy, and Public Life*. Minneapolis: University of Minnesota Press.
 - Isabelle Stengers. "Including Nonhumans in Political Theory: Opening Pandora's Box?" [pp. 3-31]
 - Jane Bennett. "Thing-Power." [pp. 35-62]
- Tiana Bakic Hayden. March 17, 2013. Kiseli Kupus: the Balkan hardcore pickle guide. <http://bturn.com/10067/balkan-hardcore-pickle-guide>

Week 4/ February 6: Where theory meets practice I [**start fermentation project**]

Laboratory exercise: microbiological culturing I

- Donna Haraway. 2008. *When Species Meet*. Minneapolis: University of Minnesota Press. [Ch. 11, 12; available as an e-book through the library]
- Sandor Katz. 2012. *The Art of Fermentation*. White River Junction, VT: Chelsea Green Publishing. [Ch. 2, "Practical Benefits"]
- Michael Doyle, Robert Buchanan. 2013. *Food Microbiology: Fundamentals and Frontiers, 4th edition*. Washington DC: ASM Press.
 - Thomas Montville and Karl Matthews. "Physiology, Growth, and Inhibition of Microbes in Foods." [pp. 3-18]

Week 5/ February 13: Where theory meets practice II [**Quiz 2**]

Laboratory exercise: microbiological culturing II

- Ben Anderson, Colin McFarlane. 2011. "Assemblage and geography." *Area* 43(2): 124-127.
- Sandor Katz. 2012. *The Art of Fermentation*. White River Junction, VT: Chelsea Green Publishing. [Ch. 3, "Basic Concepts": pp. 37-54 only]
- Michael Doyle, Robert Buchanan. 2013. *Food Microbiology: Fundamentals and Frontiers, 4th edition*. Washington DC: ASM Press.
 - Jean-Louis Cordier & the International Commission on Microbiological Specifications for Foods. "Microbiological Criteria and Indicator Microorganisms." [pp. 81-90]

Part 2: Mobile Microbes

Week 6/ February 20: Microbial Identities? [**Take sample**]

Laboratory exercise: cheesemaking

- Episode 4, *Cooked*, Netflix.com; start at 18:20-42:40
- Sandor Katz. 2012. *The Art of Fermentation*. White River Junction, VT: Chelsea Green Publishing. [Ch. 7, "Fermenting Milk"]
- Michael Doyle, Robert Buchanan. 2013. *Food Microbiology: Fundamentals and Frontiers, 4th edition*. Washington DC: ASM Press.
 - Mark Johnson, James Steele. "Fermented Dairy Products." [pp. 825-840]
- Recommended: *The Cheese Nun*. DVD. Directed by Pat Thompson. PBS. 2006.
- Recommended: Robin Sloane, *Sourdough*, 2017.

Week 7/ February 27: Microbiopolitics

- Paxson, Heather. 2008. "Post-Pasteurian Cultures: the microbiopolitics of raw-milk cheese in the United States." *Cultural Anthropology* 23 (1): 15-47.

- Hilda Kutz, Amy Trauger, Catarina Passidomo. 2013. "The contested terrain of biological citizenship in the seizure of raw milk in Athens, Georgia." *Geoforum* 48: 136-144.

Week 8/ March 6: Biopolitical geographies--intoxication and regulation [**Quiz 3**]

Laboratory exercise guided by kombucha brewmaster

- Spackman, Christy. 2017. "Formulating Citizenship: the microbiopolitics of the malfunctioning functional beverage." *BioSocieties*.
- Larisa Jasarevic. 2015. The thing in a jar: mushrooms and ontological speculations in post-Yugoslavia. *Cultural Anthropology* 30(1): 36-64.
- Sandor Katz. 2012. *The Art of Fermentation*. White River Junction, VT: Chelsea Green Publishing. [Ch. 6, "Fermenting Sour Tonic Beverages"]

Week 9: Spring break

Week 10/ March 20: Culturing identity in the face of globalization [**take sample**]

Laboratory exercise: Kimchi

- Francis Leo Collins. 2008. "Of kimchi and coffee: globalization, transnationalism, and familiarity in culinary consumption. *Social and Cultural Geography* 9(2): 151-169.
- Ji Young Jung, Se Hee Lee, Che Ok Jeon. 2014. "Kimchi microflora: history, current status, and perspectives for industrial kimchi production." *Applied Microbiology and Biotechnology* 98(6): 2385-2393.
- Sandor Katz. 2012. *The Art of Fermentation*. White River Junction, VT: Chelsea Green Publishing. [Ch. 5, "Fermenting Vegetables"]
- Michael Doyle, Robert Buchanan. 2013. *Food Microbiology: Fundamentals and Frontiers, 4th edition*. Washington DC: ASM Press.
 - Fred Breidt et al. "Fermented Vegetables." [pp. 841-856]

Part 3: From Biopolitics to Borders and Biosecurity

Week 11/ March 27: Peripatetic microbes and their problems

- Frederick Attenborough. 2011. "The monad and the nomad: medical microbiology and the politics and possibilities of the mobile microbe." *Cultural Geographies* 18: 91-114.
- Bruce Braun, Sarah J. Whatmore, eds. 2010. *Political Matter: Technoscience, Democracy, and Public Life*. Minneapolis: University of Minnesota Press.
 - Andrew Lakoff and Stephen Collier. "Infrastructure and Event: The Political Technology of Preparedness." [pp. 243-266]
- Michael Doyle, Robert Buchanan. 2013. *Food Microbiology: Fundamentals and Frontiers, 4th edition*. Washington DC: ASM Press.
 - Shaun Kennedy, Frank Busta. "Biosecurity: Food Protection and Defense." [pp. 91-108]

Week 12/ April 3: Borders, boundaries, biosecurity and their ethical entanglements [**lab notebook due**]

- Steve Hinchliffe, John Allen, Stephanie Lavau, Nick Bingham, Simon Carter. 2013. "Biosecurity and the topologies of infected life: from borderlines to borderlands." *Transactions of the Institute of British Geographers* 38(4): 531-543.
- Steve Hinchliffe, Kim Ward. 2014. "Geographies of folded life: How immunity reframes biosecurity." *Geoforum* 53: 136-144.

Optional, but highly recommended:

- John Law, Annemarie Mol. 2008. "Globalisation in practice: on the politics of boiling pigswill." *Geoforum* 39(1): 133-143.

Week 13/ April 10: Topological danger [**Quiz 4**]

- Scott Z. Burns. *Contagion*. DVD. Directed by Steven Soderbergh. 2011.
- Deborah Dixon, John Paul Jones III. 2015. The tactile topologies of "Contagion". *Transactions of the Institute of British Geographers* 40(2): 223-234.

Part 4: In Conclusion, Wherefore Materiality?

Week 14/ April 17: Interspecies ethics [**paper draft due**]

- Jamie Lorimer. 2016. "Probiotic Legalities: De-Domestication and Rewilding Before the Law." In Irus Braverman, ed., *Animals, Biopolitics, Law: Lively Legalities*. New York: Routledge. [pp. 39-58]
- Heather Paxson, Stefan Helmreich. 2014. "The perils and promises of microbial abundance: Novel natures and model ecosystems, from artisanal cheese to alien seas." *Social Studies of Science* 44(2): 165-193.

Week 15/ April 24:

Final Laboratory Exercise: A Fermented Meal

Final papers are due via dropbox **for seniors** on May 4th @ 11:59 pm

Final papers are due via dropbox **for non-seniors** on Thursday, May 10th @ 11:59 pm.