

SUMA PS4030: Hungry City Workshop

Mondays, 4:10-6:00 PM

Professor Lynnette Widder - lw268

Office Hours: Mondays 2:00-4:00 PM and By Appointment

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Office Hours: By Appointment Only

Fulfills SUMA Graduation Requirement:

- Physical Dimensions of Sustainability Management
- Integrative Courses

Overview:

The city has historically served to gather and leverage the hinterland's production: it was in cities that craft guilds were formed to add value to raw materials, crops and piecework were monetized, knowledge was assembled and disseminated. Within sustainability studies, cities are often cited for their efficiency, but the importance of their relationship to their hinterlands in a globalized world is often obscure. Nothing – whether a living creature or a settlement – can have a metabolic rate of zero. This course will look to the knowledge base of urban metabolism to ask questions about how cities supply and off-load their metabolic processes, and how that metabolism shapes and is shaped by each city's specific spatial and cultural characteristics. Our work presumes that each individual resource flow can tell a different story about a city's working, and that by studying a well-chosen flow, we can find subtle, location-specific ways to talk about that city's metabolism.

The current discourse of “circularity”, especially circular cities, is often unspecific about geographic and spatial limitations on manufacturing and re-manufacturing. Learning to estimate the inputs, sinks and outputs that characterize cities from existing data and records, and to read the places and spaces where these processes reside provides a rare skill-set for improving the resource sustainability of cities.

We will review documents to help understand the premises of urban metabolism, a relatively new practice within the field of industrial ecology. We will test these premises against a case study city, Los Angeles, to see how they apply historically and currently. Reference to the course textbook, *Sustainable Urban Metabolism*, in concert with other readings and in-class diagramming exercises, will allow each student to develop a flexible methodology through which to track and study the interaction of resource flows and urban culture. In the second half of the semester, class time will also be devoted to developing and discussing the students' individual term research projects, in which they will identify and examine a resource flow that explains best their cities of origin.

Together, we will engage the problem of finding appropriate metrics and proxies that can quantify city/hinterland interaction but can also support the development of alternate infrastructure and sustainable practices, from the bottom up and the top down.

Work in this course will involve considerable amounts of reading, writing and in-class discussion. You will complete shorter collaborative assignments based upon the readings. To support your work on these assignments and on your term projects, we will also spend time developing skills for the visual communication of analytic and quantitative information. By the end of the semester, each student will present a final briefing, supported by a formal research paper for submission, on the city of her or his origin.

Lectures and in-class exercises will provide you with the specialized knowledge you will need, but you will be asked to learn actively through interpolation, research and visual representation.

By the end of this course, you should be able to:

- Define the primary concepts of urban metabolism;
- Understand the significance of the primary urban resource flows and how they can impact the shape of each city differently;
- Understand the interplay between standard metrics and other kinds of quantification in evaluating urban systems and supporting sustainable practices;
- Be conversant with the DPSIR methodology for describing urban metabolism and its application to a sustainability agenda;
- Use creatively tools of urban analysis;
- Use visual communication methods to define and address problems, and to convey complex proposals.

Required Course Work and Evaluation:

Attendance 5% of grade

- **Class attendance:** Attendance in person is mandatory unless otherwise noted, as in the case of zoom guest lectures during which remote attendance may be requested in advance. You may email me or make an appointment to discuss concerns and clarifications. *If you cannot attend any given class session, you must inform the professor **and** TA via email no later than 24 hours before class; otherwise, each missed class will be deducted from the final grade. Individual, 5% of grade.*

Part I: Principles of Urban Metabolism 35% of grade

- **Preparation for and participation in discussion:** Discussions of assigned readings will be a large portion of the workshop. I will provide a set of questions in advance of class that covers what I believe to be the most important content in each reading. These questions are a starting point, not the entire content, of our in-class discussions. I expect evidence of solid preparation and willingness to invest your own expertise into understanding the material. Please participate in discussion in a way that you'd wish for your colleagues to do so: thoughtfully, concisely and to the point. If you are not comfortable speaking in class, talk to me directly so we can find alternatives. *Individual, 10% of grade*
- **Posts on courseworks in advance of class and response to others' comments:** No later than 6PM on Sunday night, you must post a brief response to the readings for the coming week, between 200 and 400 words is expected. You may base this response on the questions provided or use it to raise other points that struck you as important. I will be reading these posts prior to class and will pitch our conversation based upon the threads developed. In addition to posting, you will be expected to respond to at least one post or comment left by a classmate. These comments are evidence that you, too, have looked at your colleagues' thoughts. The comments are due Monday by class time; I will not always be able to read all of them. NB: the first student to post is exempted each week from the need to comment on another's work. *10% of grade*
- **Students Have to Eat assignment:** In Weeks 2-5, you'll get together with a small group of others from the class, in whatever combination you choose, and cook a meal together. You'll be tracking the inputs and outflows of the meal, then describing your findings in visual terms. This assignment should be fun and social, but also gives us all a head start on visual communication and resource flow tracking. *Group, 15% of grade*

Part II: Los Angeles Case Study 10% of grade

- **Reading Response/Diagramming:** In weeks 8-11, when the class transitions to the Los Angeles

case study, you will be assigned to a working group. In the working group, you will prepare a weekly analysis of one of the readings assigned. You will be asked to depict your findings in visual form. The purpose is to cultivate your ability to represent urban flows visually. Additionally, the working groups will allow students support one another on their research projects.

Collaborative, 10% of grade

Part III: Hungry City Workshop 50% of grade

- **Term research project and presentation:** Using our analyses of Los Angeles as precedents, you will define a proxy resource flow and create a research database for the city in which you grew up or lived for a substantial amount of time. You will unearth information on its history, its infrastructure, its changing relationship to its hinterland and its current resource and waste flows. You will present this information using visual communication techniques and lead the class in discussion of your findings. In addition, to your in- class presentation, you will submit a final research paper ca. 20 pages in length. It will be due on the last day of university exams. NB: in fairness to everyone, students are not allowed to use New York as a case study. *Individual, 50% of grade*

Students will make intermediate submissions of their term project throughout the semester. Returned submissions will include both comments and letter grades so that students can improve their performance over the semester. However, final work may not be redone and resubmitted for a new grade. Requests for extensions will only be granted if made in advance and warranted by extenuating circumstances (sickness, personal or family matters, etc.). Failure to submit an assignment will result in an F for that portion of the grade. Plagiarism is an academic offense that will result in automatic failure for the course.

Your paper is due on the last day of exams.

Submission format:

All submissions can be submitted through the Courseworks site or via email. Do NOT send me a google doc or link unless we have specifically discussed this. The annotated bibliography should be submitted in searchable spreadsheet form. The final paper can be submitted in doc or pdf form.

Required Books:

Please be sure that you have a paper or digital copy of all readings for reference during class.

1) Paolo Ferrao and John Fernandez, *Sustainable Urban Metabolism* (Boston, Ma.: MIT Press, 2013) ISBN: 978-0-262-01936-1 (on order at **Bookculture**, 112th Street between Broadway and Amsterdam) or through clio.columbia.edu

2) Kazys Varnelis, ed., *The Infrastructural City: Networked Ecologies in Los Angeles* (Barcelona: Actar, 2013) [*pdf will be available on Courseworks, courtesy of editor*]

Recommended Books:

Although out of print, Mike Davis' *Ecology of Fear* is very strongly recommended for purchase for the L.A. case study portion of class; excerpts will be on Canvas.

Christopher Kennedy, *The Evolution of Great World Cities: Urban Wealth and Economic Growth* (University of Toronto Press, 2011). Written from the point of view of urban metabolism, this book uses historical case studies to describe the relationship between available resources, resource flows and urban wealth, and appropriate metrics for evaluating this relationship. We will read an excerpt from this book.

Additional Resources:

1) Online photo collection of Los Angeles' evolving landscapes and cityscapes:
<http://pstp-edison.com/>

2) UCLA Center for Sustainable Communities LA urban metabolism website; the second link listed is their methodology report:

<http://sustainablecommunities.environment.ucla.edu/2011/07/energy-baselines-the-urban-metabolism-of-los-angeles-county/> <http://sustainablecommunities.environment.ucla.edu/wp-content/uploads/2012/10/Methodology-to-Develop-Regional-Energy-Baselines-10-qud.pdf>

3) Stephanie Pincetl, Paul Bunje, Tisha Holmes, 'An Expanded Urban Metabolism Method: Toward a systems approach to assessing urban energy processes and causes', in: *Landscape and Urban Planning* 107 (2012) (digital resource on Canvas)

4) <http://mfadiagrams.blogspot.com> This website offers a series of diagrams of material flow analysis and metabolism scenarios.

5) <https://metabolismofcities.org> This is an amazing and thorough database fed by a network of researchers working on urban metabolism. Check to see whether cities you know are here! There are also well-maintained lists of resources on urban metabolism, including recent articles.

6) <https://placesjournal.org/series/reservoir-nature-culture-infrastructure/> A wonderful collection of essays on the New York City drinking water system.

Schedule:

Part I: Principles of Urban Metabolism

Week 1: September 11th

Lecture: Why Not Net Zero? Principles of Urban Metabolism

Reading: Edward Soja, 'Putting Cities First: Remapping the Origins of Urbanism'. In: Gary Bridge and Sophie Watson, *A Companion to the City* (Oxford, UK: Blackwell, 2000), 26-34.

(optional – review what is available at

Metabolism of Cities - <https://metabolismofcities.org>)

[NB: unless otherwise marked, all readings are on *Courseworks*]

Week 2: September 18th

Panel: Hungry City Term Project

Readings: Ferrao and Fernandez, *Sustainable Urban Metabolism* Chapters 1, 2 and 5: methodology and terms [*required book*]

Haberl, Fischer-Kowolski, Krausmann, Martinez-Alier, Winiwarter, 'A Socio-metabolic Transition towards Sustainability? Challenges for Another Great Transformation', in *Sustainable Development* 19, 1-14 (2011)

Assignment: Begin research to determine topic for Hungry City Workshop research project

Meet with Professor and/or TA before Week 3's submission

Begin 'Students have to Eat' Assignment

Week 3: September 25th

Lecture: Reading Cities: Flows, Maps, Scale and Diagrams

Readings: Ferrao and Fernandez, *Sustainable Urban Metabolism* [*required book*], Chapters 3 and 4: research areas and toolbox

Wang, Li, Liu, Zhang, 'An Urban Material Flow Analysis Framework and Measurement Method from the Perspective of Urban Metabolism', in *Journal of Cleaner Production* 257 (2020) <https://doi.org/10.1016/j.jclepro.2020.120564>

Assignment: Ongoing work on Students Have to Eat

Submission: Initial proposal for research project: overview of city's history, configuration and challenges; potential proxy resources with sketches/versions of DPSIR analysis

Week 4: October 2nd

Presentations: 'Students Have to Eat' Assignments

Submission: 'Students Have to Eat' Assignment (**by 2:00 PM**); Initial bibliography and research/data acquisition plan

Week 5: October 9th

Guest Lecture: Sybil Derrible, University of Illinois Chicago

Readings: TBD

Assignment: Double-check/test proxy resource flow; update on image and data collection; ongoing research

Week 6: October 16th

Guest Lecture: Jessica Fanzo, Columbia Climate School

Readings: EAT Lancet Commission Brief for Cities

The Lancet Commission, 'Food in the Anthropocene: The EAT-Lancet Commission on healthy diets from sustainable food systems' *The Lancet* February 5, 2019, 417- 492, Introduction

Jessica Fanzo, *Can Fixing Dinner Fix the Planet?* Johns Hopkins University Press, 2021, Chapter 3 'Do We Have the Right to Eat Wrongly?'

Submission: Annotated bibliography

Assignment: Formation of working groups for final project peer support and reading responses/diagramming; ongoing research

Week 7: October 23rd

Readings: Ferrao and Fernandez, *Sustainable Urban Metabolism* [required book], Chapters 6, 7
[Fischer-Kowalski, 'Toward a Socioecological Concept of Human Labor' open access book chapter \(2016\)](#)

Submission: Intermediary Presentations (**by 2:00 PM**)

Presentations: In-class intermediary presentations of student projects/peer review (first 1/3 of students)

Assignment: Note-taking and critique summary for each member of your working group, to be circulated via email with cc to professor and TA before class time week 8;
Ongoing research and writing

Week 8: October 30th

Presentations: In-class intermediary presentations of student projects/peer review (final 2/3 of students)

Assignment: Note-taking and critique summary for each member of your working group, to be circulated via email with cc to professor and TA before class time week 8;
Ongoing research and writing

November 6th / 7th Election Day holiday

Part II: Los Angeles Case Study

Week 9: November 13th

Lecture: Nature/Not Nature: The Resource Costs of Environment '

Reading: Maneaters of the Sierra Madre' in Mike Davis, *Ecology of Fear* (New York: Vintage, 1998)
Introduction' in *The Infrastructural City*, ed. Kazys Varnelis (pdf)
'Los Angeles Against the Mountains' in, John McPhee, *The Control of Nature* (New York: Farrar, Straus and Giroux, 1989)

Week 10: November 20th

Lecture: Water and Waters

Readings: 'Los Angeles River Watershed' and 'Distribution', *The Infrastructural City*, ed. Kazys Varnelis (pdf)
Los Angeles County Countywide Siting Element, 'Multi-faceted long-term Solid Waste Management Plan', July 2021
Mike Davis, *City of Quartz* p. 196-219;
Aldous Huxley, 'Hyperion to A Satyr (1956);
Submission: [optional] Introductory paragraph and initial outline for paper

Week 11: November 27th

Lecture: Energy Only?: The Resource Costs of Topography
Readings: 'Oil', 'Traffic', 'Telecommunications' in *The Infrastructural City*, ed. Kazys Varnelis;
Juan Matute, 'Unraveling Petroleum: How Policy Drives California's Demand for Oil' (2013 report)
Austin Troy, 'Thirsty City' in *Places* journal, 2015
William L. Fox, '[Tracking Tar](#)' by, *Orion* magazine [see embedded link]
Mike Davis, 'The Case for Letting Malibu Burn' from *Ecology of Fear*
Marcus Renner, '[The People's Freeway](#)', *Orion* magazine [see embedded link]
Submission: 300 word executive summary and 5-7 selected images for sharing with expert panelists
[optional] Storyboard of final presentation including an image of each slide noting charts, images, maps, etc.

Part III: Hungry City Workshop

Presentations: Sunday, December 3rd 9:00 – 4:00 online or in person

Week 12: December 4th

Panel Discussion of Student Findings
Discussants: TBD

Final Papers Due December 22 11:59 PM