“For in spite of itself any movement that thinks and acts in terms of an ‘ism becomes so involved in reaction against other ‘isms that it is unwittingly controlled by them. For it then forms its principles by reaction against them instead of by a comprehensive, constructive survey of actual needs, problems, and possibilities.”

- John Dewey

“Architecture and urban design, both in their formal and spatial aspects, are seen as fundamentally configurational in that the way the parts are put together to form the whole is more important than any of the parts taken in isolation.”

- Bill Hillier


“if you can’t draw something, you probably can’t make it.”

- Laurie Olin

Urbanism, Quantified:
modalities of mapping and modeling in contemporary design practice

Schedule: Tuesdays, 1-4 pm, Gund Hall Gropius Room
Instructor: Andrea Hansen (ahansen@gsd.harvard.edu)
Office Hours: Th 1-3 pm or by appointment at doodle.com/andreahansen

course description.
Contemporary design practice has a habit of qualifying the word “urbanism” with any number of modifiers: Ecological Urbanism. Landscape Urbanism. Relational Urbanism. Tactical Urbanism. These terms allow us to see a set of design practices and practitioners through a particular critical lens, but the actual design methodologies emerging from various schools of thought are not often quantified. This seminar aims to consider these contemporary urbanist frameworks pragmatically, in order to develop a catalogue of mapping, modeling, and design techniques which will be applied to a semester-long research project.

To be clear, the seminar is not meant to dwell on criticisms of the intellectual tropes inherent in these urbanist modalities, nor the designers and academics who espouse them—indeed these figures, as well the projects and techniques they have developed will serve a central role in weekly discussion. That said, the seminar is primarily concerned with pragmatic rather than critical assessment of these schools of thought, as we seek to reveal and develop a toolkit of quantitative urbanist methods for the 21st century. Quantitative in this sense is meant broadly, and may range from algorithmic and parametric techniques for site selection and building massing, to data-driven methods of mapping and site suitability, to web-based forms crowd-sourcing and community outreach. In all cases, the knowledge and ability to be critical of different modes of urbanism, and the legacies they are built upon, will prove enormously helpful, as the development of these methods will require us to look not only objectively at current trends in urbanism, but also to reveal our own subjective biases.

While this course is open to students in all design programs at the GSD and there are no prerequisites, a strong facility with digital design is recommended. In addition, a general enthusiasm for experimentation is recommended, as this course will demand a great deal of flexibility, given the wide number of topics and techniques covered.
topics covered + software.

- urban geometry and notions of subdividing space (zoning & codification)
- mapping and data-driven design
- site selection and suitability
- parametric & associative modeling
- crowd-sourcing and web/mobile applications for urbanism
- scripting & programming (basic)
- etc. (additional topics as unpacked through weekly discussion, precedents, student-selected readings, and term projects)

Students should have a basic understanding of Rhino, Grasshopper, and ArcGIS. A very general understanding of coding concepts is useful, but not necessary, as Processing, HTML, CSS and Javascript will be used in some lab exercises. All labs will cover material in-depth, as such a lack of experience in any of these programs should not be a major issue.

format.

After the first week, the course will be divided into four 2-3 week modules, each devoted to one of four primary modalities of urbanism: 1) Ecological / Agrarian, 2) Landscape & Infrastructural, 3) Relational / Parametric / Associative and 4) Tactical / Guerrilla / Virtual. For the final two weeks of the semester, students will select one of these four modalities to explore in greater depth for the final project.

Within each of the four modules, the first week’s class will introduce the topic at hand with a lecture, followed by case study presentations by students and a discussion of readings. The second week of the module (and third week, for 3-week modules) will consist of a hands-on lab session covering different mapping and modeling techniques, followed by student presentations of weekly modeling techniques. Toward the end of the semester, more class time will be devoted to student presentations and desk critiques.

readings.

In addition to the weekly assigned readings, each week one student will be responsible for selecting an additional reading for discussion. Students will sign up for reading duty during the first week of class, and should scan and email the reading to the class by 12 pm on the Friday prior to their assigned class date.
Schedule.

Jan 27 //
(class canceled due to snowstorm)

Feb 3 //
Course introduction
Exercise: urbanist word association
Sign up for precedents and readings

Feb 10 //
Ecological / Agrarian Urbanism 1 (lecture, case studies & discussion)

Feb 17 //
Ecological / Agrarian Urbanism 2 (lab and project presentations)
Modeling Technique #1 due

Feb 24 //
Landscape & Infrastructural Urbanism 1 (lecture, case studies & discussion)
Landscape & Infrastructural Urbanism 2 (lab and project presentations)
Modeling Technique #2 due

Relational and Parametric Urbanism 1 (lecture, case studies & discussion)

No class (spring recess)

Relational and Parametric Urbanism 2 (lab part 1)
Review modeling technique #3 in progress
Introduce final project

Relational and Parametric Urbanism 3 (lab part 2 and project presentations)
Modeling Technique #3 due

Tactical / Guerrilla / Virtual Urbanism 1 (lecture, case studies & discussion)
- Katz, Bruce and Jennifer Bradley. The Metropolitan Revolution: How Cities and Metros are Fixing Our Broken Politics and Fragile Economy
- Townsend, Anthony. *Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia*. 
Tactical / Guerrilla / Virtual Urbanism (lab and project presentations/final project desk critiques)

Final project desk critiques (additional make-up class for desk critiques to be scheduled during the week of April 21)

Final project presentations

assignments.

1. **Assignment 1: Case studies.** Each student is responsible for signing up to present two case studies, ideally from different modules. Students will select their own case study, with an emphasis on finding interesting projects with clear use of quantitative techniques (modeling & mapping techniques or other methods that can be modified and adapted to other sites) that have not already been widely discussed. Students should prepare a 10-15 minute presentation for each case study, showing conceptual images and built photos (if a built project), analyzing the quantitative technique(s) used, and covering analysis and critique of the project from other sources (if relevant).

2. **Assignment 2: Modeling techniques.** Based on precedents covered in class and through the Case Studies assignment, students should prepare one modeling technique for each module, for a total of four techniques (one every two weeks). These techniques will be discussed more in class, but can range from a Grasshopper script to a mapping method. During the second week of each module, students should prepare a 5 minute presentation of their method. Students may use powerpoints, videos, on-screen demonstrations, or other visuals to demonstrate their technique.

3. **Assignment 3: Final project.** The final term project asks students to select one of their modeling techniques for expansion and adaptation to site. Students are also welcome to develop a hybrid method, or to create an entirely new technique. More details on the final assignment will be provided in class on March 24th (the week after Spring Recess).
Grading & Attendance

Participation & Reading Moderation 25%
Case Studies (2x) 10% (5% each)
Modeling Techniques (4x) 40% (10% each)
Final Project 25%

Given the pace of this seminar and the breadth of the subject matter, attendance each week is critical. Excessive or unexplained absences may result in a reduction in your course participation grade, and more than two unexcused absences will result in a failing grade. If you miss class, you are responsible for making up any work and for knowing the material covered. Please notify me as soon as possible if you are unable to attend class for any reason.

Late assignments will be accepted for full credit only with evidence of a legitimate health or personal issue. Otherwise, late hand-ins are subject to a 10% deduction for each day the assignment is late (up to a maximum 50% deduction).

References


_ Gissen, David “Territory: Architecture Beyond Environment” Wiley; 2010


_ Ibañez, Daniel “Retroactive Reading of Urban Metabolism in the Emergence of the Modern City”, Geo-Architecture - Harvard Graduate School of Design, 2013


_ Natoli, Salvatore J. “Zoning and the Development of Urban Land Use Patterns” Economic Geography. Volume 47, Number 2, pp. 171-184, 1971

_ Odum, T. “The Ecology of Urbanization”


_ Stinetz, Carl “Landscape Planning: A Brief History of Influential Ideas”, Harvard University Press

_ Waugh Emily (Editor) “Landscape Architecture Core” Harvard Design Magazine, Harvard University Press 2013

_ Williams, Rosalind “Cultural Origins & Environmental Implications of Large Technological Systems” 1993


_ Reas, Casey and Ben Fry. Getting Started with Processing.