This studio focuses on the development of urban form as driven by ecology and environmental dynamics—a landscape-based urbanism.

The studio will introduce methods and representational techniques for describing urban form and the dynamic underlying and adapted ecologies that might be invoked to shape urban infrastructure and the urban fabric. Representational strategies begin with mapping and diagramming larger ecological processes and dynamics on an urban brownfield site, and then focus on the description of local and regional infrastructures, building form and fabric, and the various dynamic relationships between the city and its reconstituted riverine setting.

In so doing, we will be developing fully rounded landscape urbanist strategies, conceived in relation to the broader ecological, environmental, infrastructural, and social-cultural processes and systems that constitute them. While the proposals developed for the urban fabric will be specific and concrete, they will rely on principles that are flexible, dynamic, and adaptive—able to accommodate and respond to varying inputs over time.

We will support this agenda with targeted research and urban design studies at multiple scales and in multiple formats, which will accumulate over the semester and which will be calibrated with one another. Most broadly, we will address fundamental questions of what it means to be urban, actively engaged within an environmental context.

**FLUX**

Most traditional Western cities are founded on principles of stability and permanence: where change or uncertainty are present—often in the form of rich and complex landscape systems—they are typically erased, filled, leveled, denuded, marginalized, and/or stabilized.

This studio will take a different approach to city-making—or, in this case, to urban renovation: we will assume change is the norm. In doing so, we will build on ecologists’ reconceptualization of their field over the past quarter-century, in which ecology has moved from a classical Newtonian concern with stability, certainty, and order in favor of more contemporary understandings of dynamic, systemic change. With this reconceptualization comes the related phenomena of adaptability, resilience, and flexibility—phenomena applicable not only to ecological systems (whether native or adapted), but also applicable to city-system, infrastructure, and city-building writ large.

In this sense, then, we will move away from traditions of master-planning, which value the comprehensive and fixed vision, in favor of more dynamic and responsive frameworks for small- and large-scale civic change. We will also explore multiple development scenarios (deployments) over time—rather than a singular and totalizing plan; these scenarios will operate according to set a rules or parameters, but will be programmed to respond to a range of differing inputs across time. In this way, our proposals can aspire to a level of resiliency with regard to long-term environmental, social, political, and economic shifts—and therefore be made truly sustainable over the long term.
FORMAT

The studio is organized into 4 major topics / components, which collectively address issues of ecology, infrastructure, site, and building form. Topics and exercises will accumulate over the semester; by the end, your work for the semester will essentially describe one multi-layered, multi-scalar proposal for the various components and systems that constitute urban form and fabric.

Two workshops will focus on the development of new software skills and strategies that will help to inform the work at hand; the emphasis will be on describing conditions and relationships (parameters) and the multiple ways elements can be assembled, as well as expressing dynamics and flexibility.

A collaborative workshop with students in the fourth-semester architecture core studio will allow for cross-disciplinary collaboration on topics of mutual interest. Work will be analytical in nature, describing the various codes and systems that have given rise to a series of touchstone projects. Students and faculty from both departments will work together, allowing the disciplinary perspectives each bring to inform one another.

A series of lectures and tutorials by designers, engineers, and ecologists will punctuate the semester. These are designed to bring broad disciplinary knowledge to bear on project proposals, and to give students opportunities to work directly, in tutorial format, with visiting professionals.

Precedents and case studies have been selected to reinforce studio themes; collectively, they represent the best examples of work at a similar scale and that engage topics central to the studio. For most of these, they are as important for the ways in which the proposals have been drawn as they are for these ways in which their embedded ideas have been realized.

TOOLS

Drawing, including three-and four-dimensional modeling, will be primary tools for exploration and communication. To the extent possible, we will work analogously with the various media we engage. This means our work will privilege change and dynamism; we will operationalize design strategies; and we will work at multiple scales simultaneously. Parametrics, scripting, and dynamic modeling will be utilized extensively, though more typical illustrative and operational sections, mappings, and illustrative views will also be in play. We will review and introduce a range of design software, including Rhino, Aquaveo, Grasshopper, and Paracloud.

SITE

Willetts Point, Flushing, + the Flushing River, Queens, New York

All drawing and design studies will utilize the same site, an urbanized river / river mouth and adjacent lands on the margins of the Flushing and Corona neighborhoods in Queens, New York. It is a series of industrialized and contaminated properties on the fringes of some vibrant, ethnically diverse communities; adjacent to the New York Mets’ home, CitiField, the US Tennis Center, and Flushing Park, the former home to two World’s Fairs; and pierced by extensive transportation infrastructure that connects the boroughs of New York City to Long Island and New England, and all to nearby LaGuardia Airport. It is one of the Bloomberg administration’s focus redevelopment projects, and it is a site where densification seems inevitable.

The site is subject to high water tables, to seasonal variations in river flow, and to daily tidal fluctuation; and it is vulnerable to potential sea level rise over the coming decades. The Flushing River is a tidal estuary but in its current condition does not realize its potential for ecological productivity. As a glaciated landscape, it is part of a regional geology that extends from Pennsylvania and New Jersey across Long Island to Martha’s Vineyard and Nantucket, off the coast of Massachusetts. As part of the northeast flyway, it is caught up in ecological systems that extend south to Florida, the Caribbean, and Central/South America.
Importantly, the site is not large enough to simply restore a native marsh and floodplain; even if this was possible, the site’s urbanized surroundings, contaminated soils and groundwater, and inputs from storm water runoff and CSO effluent would not allow it. Local and regional infrastructures—roads, bridges, highways, subway lines, and commuter rail tracks—are threaded through the site, creating single-minded barriers to social and ecological flows. All of this is to be reconsidered, all of this is up for grabs.

**STUDIO OUTLINE**
Each workshop and topic will be 1-3 weeks in length and will conclude with a pin-up. Exercises will accumulate over the semester and will be reviewed en suite at midterm and at end of term. Individual briefs for each exercise will be distributed over the course of the semester.

**J-term workshop: Parametric surfaces, dynamic flow modeling**

**David Mah / GSD, asensio_mah**

This workshop will review principles of three-dimensional modeling techniques of surfaces and forms, using a set of parameters that can be assembled and deployed according to a set of discrete rules or operations. Students will then be introduced to dynamic flow modeling software, like that used by hydraulic engineers, to test flow scenarios; the goal is to have students become comfortable using the basic tools for modeling dynamic conditions. Software will include a review of Rhino and Grasshopper, and introduction of Aquaveo.

**01 Dynamic + adapted ecologies (weeks 1-3)**

We will begin by studying the underlying and adapted ecologies that could come to shape our urban proposals. To this end, this first module of the studio will introduce relationships between large-scale urban ecologies of the river, succession dynamics, and the specific physical and spatial parameters that will support ecological re-establishment. Focus will be the overall site and its connections to larger-scale ecological networks. Studies will be both analytic and projective in nature, and will emphasize the dynamic nature of the various denuded,
altered, and adapted ecologies at work, or potentially at work. Topics of study will include continental and regional geologies and ecologies; seasonal flooding scenarios associated with the Flushing River; tidal fluctuation; stormwater runoff; the high water table; potential sea level rise; underlying contaminants; plant and wildlife habitat parameters and networks; and the various armored and porous surfaces that might give rise to a new set of distinctly urbanized yet open-ended, adaptive processes. Emphasis will be placed on the physical and “operational” parameters (size, shape, adjacency, connection, catalyst) that can be utilized to seed dynamics and succession.

**Collaborative workshop: code, flux, + the city (weeks 3-4)**

Given the interdisciplinary nature of large-scale work on urban projects in especially fluid environmental settings, we will engage with the architecture department’s fourth semester core studio in a collaborative workshop around the topics of urban and architectural code and ecological flux. (The architecture core studio will be utilizing a portion of the same site in Queens.) Studies will build on the independent work of each department’s studio over the first few weeks, and will use a series of specifically focused precedent projects as vehicles for collaborative analysis and scale comparison. Interdisciplinary teams of architecture and landscape architecture students and faculty will also touch on potential re-formulations of the codes and rules that govern the precedents’ ecological frameworks and build form.

**02 Site samplings (weeks 4-5)**

A trip will be organized to visit the site. Prior to leaving, students should develop an agenda as to which parts of the site, and which issues about the site, are most critical. As a group, we will have an opportunity to experience the site from a bus along the highways and streets, and on foot along the river and in the various urban fabrics on and adjacent to the site. Students should also ride the subway lines that pass through the site, and even the commuter rail line, if possible. Students will follow up with specific drawing exercises on site intended to test and verify orientation studies, and to catalog materiality and flows along and across site transects. Each student should also compile a personal journal of photographs and sketches that emphasize one’s dynamic experience of the site from the various infrastructural corridors that move through it.

**03 Hybrid infrastructures / Dynamic urban frameworks (weeks 5-7)**

With an understanding of underlying and potential ecologies in hand, and a sense of the various scales of the site in play, students will engage in an extended study of the various infrastructures that shape urban fabrics: sidewalks, roads, urban spaces, rail, subways, highways, airports, sewers, storm water systems, energy generation and transmission systems, sport fields, etc. A portion of the work will be devoted to modifying or re-figuring a number of infrastructural corridors that exist, or to which connections will be made. But an equal portion of the work will be devoted to the development of various new infrastructure typologies—infrastructures that carry ecological and social agendas as well. Work will extend across the larger site and will emphasize regional connections; it will also deal with the various roles of “soft” engineering strategies that allow for environmental dynamics to play out in constructed urban environments. Emphasis will be on the inherent rules of each infrastructural or ecological system, as well as testing of various deployment strategies to create robust but responsive urban-ecological frameworks for a new kind of city fabric. Exercises will introduce the full range of tools used to scale and design the public realm, including edge and interior public spaces, and corridors for people, vehicles, recreation, and stormwater. Street and public space typology sections, orientation studies, sizing parameters, soil and infiltration requirements, and typical urban elements will all be addressed.

-**Midreview- (week 7)**

-**Spring Break- (week 8)**

A short assignment will be developed and distributed at the end of midreview.
Mid-semester Workshop: Relational Urbanism (weeks 9-10)
Eduardo Rico + Enriqueta Llabres / AA, Berlage Institute, Relational Urbanism
This workshop will introduce design methodologies linking contemporary parametric software to views of collective form in urbanism. Students will be introduced to the fabrication typological variability linked to wider urban dynamics, temporal logics and a large scale management of metropolitan form, but studies will be focused on their realization at the neighborhood and block/building scale. Here, we will take advantage of the ability to encode variation and variability with a digital tool that can simultaneously establish overall continuity and seriality. Outcomes will challenge traditional documentation techniques, prioritizing the understanding of relationships and allowing the final formalization to be defined from architectural decisions thought at the local scale. Paracloud and Grasshopper software packages will be utilized.

04A Elaboration of urban form (weeks 10-12)
This module will continue the work of the workshop; exercises will elaborate parametric building and block models and will refine the proposed parameters for urban and building form, including sizing, setback, and orientations. Focus will remain at the multi-block scale—as a way to study the potentials of strategic urban intervention without resorting to totalizing, prescriptive master-planning. Work will include multi-block massing, setbacks, building heights, FARs, alternate densities, environmental orientations (light, sun, wind, etc.), edges, and sectional variation; all will be studied as conditions of or parameters for a robust urban fabric. Students will also utilize some of the typical tools of urban designers, including composite building + landscape detail sections, yield capacities and distribution, and three- and four-dimensional vignettes and variations.

04B Deployments / scenarios / the dynamic city (weeks 12-14)
The final weeks of the semester will focus on the refinement of various interfaces between ecological, infrastructural, and building components at multiple scales. Emphasis will be on setting up a range of adjacencies between the ecological-infrastructural frameworks established in the first half of the semester, and the building block typologies established in the second half. Also, flexibility will be key in testing deployment scenarios on a portion of the larger site: deployments that respond to different potential inputs (sea level rise, economic upturns and downturns, the privileging of one set of contributing factors over others, etc.) will demonstrate the longer-term viability of build-out strategies relative to conditions and dynamics beyond our control. Assembles, interfaces, and alternate future scenarios will be critical for depicting the city in flux—intensely engaged in social and ecological currents, operating at multiple scales of time and space.

-Final Review-
All work to be handed in and pinned up at 10p the night prior to final review.
Architecture 4th semester core studio reviews will be the day before ours, on Wednesday 27 April; you are encouraged to listen in on a few of them over the course of the day, as there will be many issues in common.
STUDIO SCHEDULE

subject to change

J-Term workshop                      F 14, M 17, Tu 18, Th 20 January
Review of workshop                   Th 20 January

Studio Introduction, Part 1     Tu 25 January
Adaptation, Succession, Resilience Th 27 January
Lecture + tutorial by Nina-Marie Lister, ecologist + environmental planner
Review of Part 1                    Tu 8 February

Workshop with architecture        Th 10 – Th 17 February
Review of Workshop                 Th 17 February

Introduction of Part 2, Studio Selections       Th 17 February
Site Visit to New York              Su 20 February

Introduction of Part 3            Th 24 February
Life/Support: Urban Forest Canopy Tu 1 March
Lecture by Gary Hilderbrand, landscape architect

Midreview of Parts 1-3            Th 10 March
-spring break- -short assignment tbd- week of 13 March

Parametric Urbanism workshop      Tu 22 – Tu 29 March
Models, Cities and Systemic Utopias W 23 March
School lecture by Eduardo Rico, civil engineer
Review of workshop                 Tu 29 March

Introduction of Part 4            Tu 29 March
Urban cases pin-up                 Th 31 March
Environmental Parametrics          Tu 5 April 3:45p
Tutorial by Christoph Reinhart, assoc. prof. of environmental technology
Review of Part 4                   Tu 12 April

Introduction of Part 5            Tu 12 April
Urban Hydrologies + Ecologies      Th 14 April
Talk + tutorial by Tim Dekker, environmental and water resources engineer, and Steven Apfelbaum, ecologist

Final Review materials submitted and hung Tu 26 April 10p

Final Review of Parts 1-5         Th 28 April
DIGITAL WORKSHOPS

Digital workshops will be held every Thursday evening during the semester, except during midreview and final review weeks. They will be held in room 516 at Gund Hall, from 7-9p. Workshop topics will be announced in advance, and will be coordinated with ongoing studio work. Workshop attendance is not required but is highly encouraged. David Mah will oversee workshop tutorial content; workshops will be run by TA Charlie Howe. Please use the workshops as a vehicle for refreshing your skills, learning new ones, and honing.

LOGISTICS

Students will work in small groups for the first couple of weeks; faculty will rotate, so that everyone has an opportunity to work with each member of the studio faculty. During the collaboration with the architecture department, small groups of landscape architects and architects will work with faculty teams from each department.

The remainder of the semester will consist of individual student work, under the guidance of a single studio faculty member. At this point in the semester, immediately following the collaborative workshop with the architecture department, each studio faculty member will present their background design interests to the students, and will talk about their own perspectives on the studio brief: the ways they are thinking about the project at hand, and the distinct perspectives they might bring to the table. Students will then be allowed to express a preference for which faculty member with whom they wish to work, in rank order 1 through 3. With these preferences, the studio coordinator will work with the Dean of Students, Laura Snowden, to make studio / faculty assignments. It is important to understand that this is not a random lottery, like the option studio and electives lottery: it is simply a vehicle for students to express their preferences for faculty members. These preferences will then be overlaid with program affiliations (MLA I vs. MLA I AP) and grade point averages to ensure an even distribution of students across each teaching group.

Course iSites will be the primary vehicle for disseminating information; be sure you have access, and check regularly for information and updates.

Mobile phones, texting, and/or extraneous email will not be allowed or tolerated in class, except in emergencies.

Site field trip to New York will take place on the weekend of 19/20 February; details will follow.

Grading will consist of J-term performance (5%); work to midreview (20%); mid-semester workshop performance (5%); work to final review (60%); and attendance and participation (10%).

Attendance is mandatory. More than two unjustified absences from studio will result in the student being asked to withdraw from the studio. All students should attend reviews for all members of your studio group unless otherwise instructed.

Teaching assistants for the studio are Kelly Fleming, Charlie Howe, and Fiona Luhrmann. They will be available for technical assistance over the course of the semester, and will be responsible for organizing and distributing studio base files. We will post regular consultation hours for each of them during the course of the semester, but please realize that they are all carrying full student workloads, too.
CASE STUDY + PRECEDENT PROJECTS

Case studies of exemplary historical and contemporary projects that derive urban form from ecological or landscape frameworks (or are simply good touchstones) will be presented, both in terms of the various representational techniques used in their design process and in terms of how they were realized. All students to keep a personal digital notebook of all precedent work, at equivalent scales.

Precedent projects
Buckthorn City proposal, Coast of Holland / West 8
Longgang Town Center, Shenzhen, China / Groundlab, Plasma Studio, et.al.
Lower Don Lands, Toronto / Stoss et. al.
Emerald Necklace, Muddy River, + Fens, Boston / Olmsted
North Delaware Riverfront / Field Operations et. al.
Lafayette Park, Detroit / Mies van der Rohe
TGV and Urban Forest Projects / Michel Desvigne
Ville Nouvelle Melun Senart, France / OMA, Rem Koolhaas
Borneo-Sporenburg, Amsterdam / West 8
IJburg, Amsterdam (2006-2012)
BedZED (Beddington Zero Energy Development), Sutton UK / BioRegional, Bill Dunster Architects, the Peabody Trust, Arup
Hammarby Sjostad, Stockholm
East River Esplanade / SHoP et. al.

Reference projects
Early green infrastructures
Buffalo Park System, Buffalo / Olmsted, Vaux
Grand Rounds, Minneapolis / Cleveland and others
Dispersed density / landscape urbanism referents
Hilberseimer’s New Regional Pattern
Brasilia, Brazil / Lucia Costa
Broadacre City, North America / Frank Lloyd Wright
Ecology- and landscape-based urbanisms
Lower Don Lands, Toronto / MVVA
Taichung Gateway, Taiwan / Stan Allen et. al.
Zorrotzaurre Peninsula, Bilbao / Zaha Hadid + GrossMax
Dynamic ecologies
Parc Downsview Park, Toronto / All finalist competition entries
Freshkills Park, New York / Field Operations and Mathur-da Cunha entries, FO scheme
Red Ribbon Tange River Park, China / Turenscape
Ephemeral Fields, West Flanders / Stoss
Code-based urbanism
Functionmixer / MVRDV (scripting software initiative for urban design)
High Line District Zoning, New York (focus on development, zoning, urban fabric)/ Friends of the High Line,
James Corner Field Operations, Diller Scofidio + Renfro, HR&A real estate
Infrastructure
Lille Masterplan, France (1994) / OMA
Casey Trees Washington DC Green Infrastructure
Minneapolis Riverfront, Minnesota / Stoss
Sustainable city
Forum Vaubin, Freiburg, Germany
Masdar Eco-city, UAE / Foster et. al.
Port development
Hafen-City / Old Port, Hamburg / EMBT, Beth Galí + BB + GG arquitectes, BHF Landschaftsarchitekten, WES & Partner Landschaftsarchitekten, HafenCity Hamburg GmbH, Kees Christiaanse / ASTOC
**BIBLIOGRAPHY / URBANISM + DESIGN + THEORY**


   “Field Conditions.” 90-103.
   “Infrastructural Urbanism.” 46-89.

Almy, Dean, ed. On Landscape Urbanism: Center 14. (Center for American Architecture and Design, The University of Texas at Austin School of Architecture, 2007.)


   Wall, Alex. “Programming the Urban Surface.” 233-250.

Corner, James, and Alex S. MacLean. Taking Measures Across the American Landscape. (New Haven: Yale University Press, 1996).

Czerniak, Julia, ed. CASE: Downsview Park Toronto. (Munich: Prestel Publishers / Harvard Design School, 2002). See especially:
   Hill, Kristina. "Urban Design and Biodiversity."

Daskalakis, Georgia, Charles Waldheim, Jason Young, eds. Stalking Detroit. (Barcelona: ACTAR. 2001).


Kwinter, Sanford. Far from Equilibrium: Essays on Technology and Design Culture edited by Cynthia Davidson (Barcelona: Actar, 2008). See especially:
   “Wildness (Prolegomena to a New Urbanism).” 186-193.
Institute for Landscape Architecture / ETH Zurich. *Landscape Architecture In Mutation.* Zurich: gta Verlag, 2005). See especially:


Mostafavi, Mohsen and Gareth Doherty, eds. *Ecological Urbanism* (Baden, Switzerland: Lars Muller Publishers, 2010). See especially:

Cucinella, Mario. “Progetto Bioclimatico.” 598-599.


MVRDV. *FARMAX: Excursions on Density.* (Rotterdam: 010 Publishers, 1998.)


- Smithson, Alison, “How to Recognize and Read Mat-Building.” 90-103.


- Palmboom, Frits. “Landscape Urbanism: Conflation or Coalition?” 43-49.


Varnelis, Kazys. *The Infrastructural City: Networked Ecologies in Los Angeles.* (Barcelona: Actar, 2009). See especially:


- Corner, James, “Terra Fluxus.” 21-34.


ECOLOGIES + TECHNOLOGIES


Dion, Thomas R. Land Development for Civil Engineers. (New York: J. Wiley & Sons, 1993).


Innovative Technologies website, US Environmental Protection Agency: http://www.epa.gov/tio/remed.htm
See especially the “Brownfields / Roadmap to Redevelopment” and “Technology Descriptions” sections.


*Please also consult syllabus for GSD6242 for additional references.*