A4815 - X-Information Modeling 1: Parametric Site Analysis
A4829 - X-Information Modeling 2: Urban Analytics

Instructor: Luc Wilson
Thursday | 9-11am | Room Avery 115

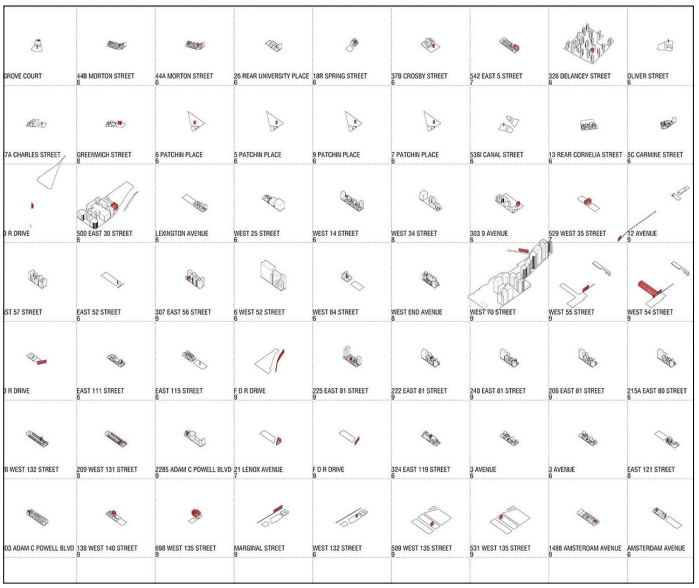
Summary:

This course will examine the maturity of the 21st century metropolis by moving past conventional benchmarks and preconceptions of growth to develop flexible data-driven, design systems. The X-Information Modeling or XIM methodology will allow students to leverage parametric design tools to create systems that integrate diverse objectives, and through Grasshopper for Rhino, analyze and visualize potential scenarios for a more informed decision making process. This is achieved through the creation of a data driven 3D modeling system focused on four primary points: integration of competing objectives, visualization of data, iteration of multiple options, and ultimately, design decision making. This methodology is analogous to the introduction of the MRI or X-Ray to medicine. They allow the doctor to make more informed decisions faster while still relying on their expertise and judgement. Similarly, XIM speeds up the design and development process while allowing for smarter decision making.

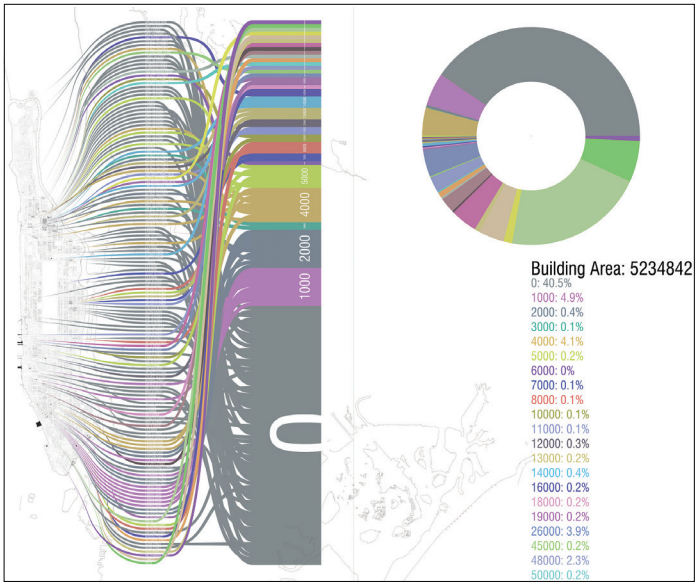
In teams of 2-4, students will develop projects investigating issues of density, value, and the environment. We will reverse engineer key relationships influencing design and development in order to 1) find new relationships between traditionally separate or competing objectives, 2) to iterate many design options, and 3) reposition and reorganize those relationships through a visualized evaluation process that challenges design and development preconceptions. Through this process students are asked to create new drawing types (static and animate) that can effectively communicate the intent of their parametric design systems for evaluation and critique..

Technically, students will learn how to build custom evaluation tools and data visualization in Grasshopper for Rhino and an integrated workflow that includes Excel, Google Earth, Galapagos, Ecotect, and any Geotagged Data. Additionally, we will introduce social data from sources such as flickr and twitter into the grasshopper definitions. Conceptually, students will learn how to evaluate and use data, how to visualize metrics, and, most importantly, how to define and translate simple concepts into powerful parametric relationships.

Students must know some Rhino. Grasshopper proficiency is not required, but a basic understanding will help. Grading for each session will be 30% attendance, 30% weekly assignments, and 40% for the final project.



Awkward Lots - Mondrian Hsieh, Louis Jin, Julien Gonzalez, and Joan Kim

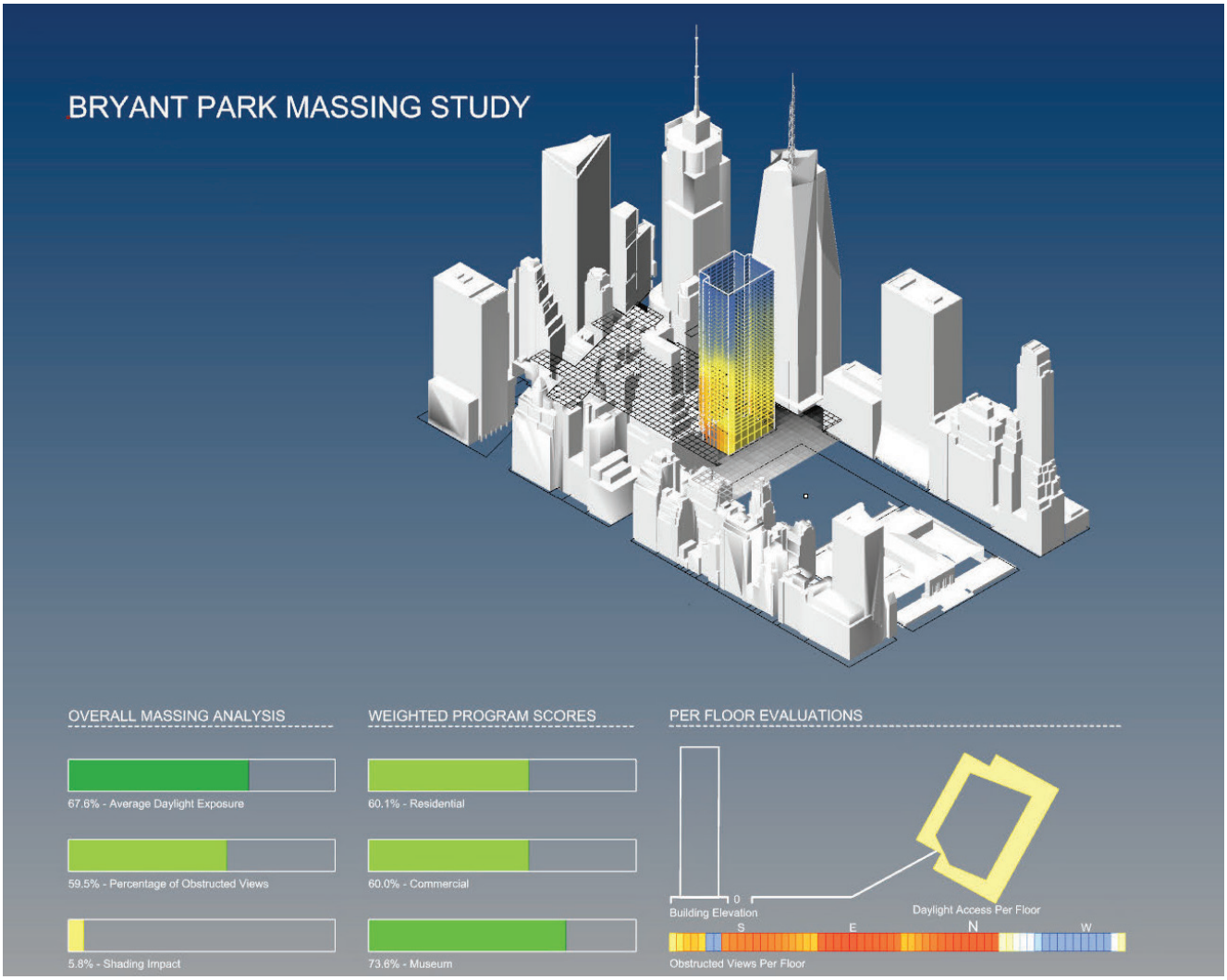


Awkward Lot Analysis - Mondrian Hsieh, Louis Jin, Julien Gonzalez, and Joan Kim

Session A - Parametric Evaluation and Massing Optimization

In session A students will focus on learning the fundamentals of the integrated XIM methodology. This will include spatial evaluation techniques, parametric massing basics, optimization, and data based decision-making. Teams will work together to create a custom evaluation system, measuring criteria such as daylight access and views, and use it to explore hypothetical development scenarios across several block in New York City. Using their custom evaluation tools they will benchmark successful urban conditions and use those metrics to inform the development of their site. As part of this process students will be asked to define their own criteria for evaluation and create grasshopper tools to measure them.

Session A schedule
Week 1: Introduction to spatial evaluation techniques - September 8th
Week 2: Basic parametric massing - September 15th
Week 3: Introduction to iteration, data collection, and evaluation - September 22nd
Saturday Help Session - September 24th
Week 4: Review assignment 1a - September 29th
Week 5: Data visualiztion and metric dashboards- October 6th
Week 6: Data exploration tools - October 13th
Week 7: Review assignment 1b - October 20th

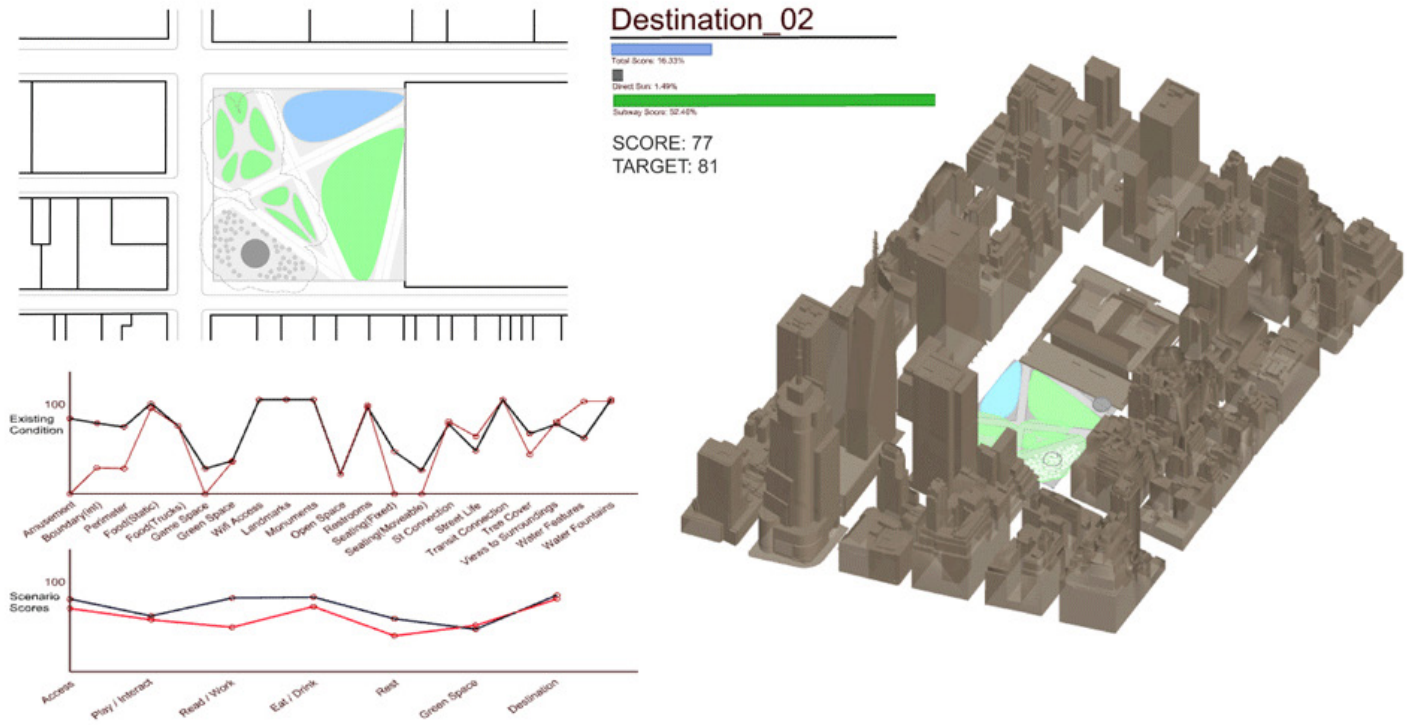


XIM System. Juan Pablo Azares, Eileen Chen, Jim Stoddart, RayWang

Session B - Integrating and Analyzing Urban Data

Session B will advance the topics of session A (evaluation techniques, parametric massing and iteration) and introduce grasshopper techniques focused at the city scale. Teams will pair geotagged data sets, including GIS, PLUTO, 311, Twitter, and Flickr, with the systems developed in session B. These techniques will be applied to the proposed Queens Light Rail line from locating subway stops to increasing density to introducing affordable housing.

Session B Schedule:
Week 1: Pairing external geo-located data sets with evaluation tools - October 27th
Week 2: Urban filtering & evaluation - November 3rd
Saturday Help Session - November 5th
Week 3: Review assignment 2 and assignment 3 proposal. - November 10th
Week 4: Urban scale parametric massing techniques - November 17th
Thanksgiving
Week 5: Advanced visualization techniques - December 1st
Week 6: Individual project desk crits - coordinated around final reviews
Week 7: Final Review (assignment 3) - December 15th



Bryant Park Iteration. Christopher Botham & Sangyoon Kim