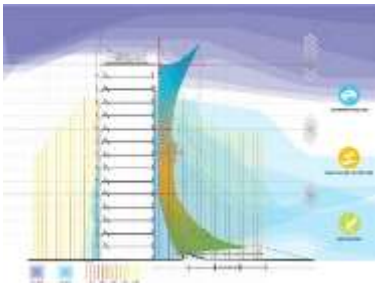
University of Oregon – School of Architecture and Allied Arts – Department of Architecture
ARCH 484 / 584 ARCHITECTURAL DESIGN – Envisioning the Future
Nancy Yen-wen Cheng

Assignment 5:
SITE DESIGN & ASSESSMENT

Hand-in: Mon 11/2 at 1pm



Epiphyte Lab

Your challenge is to situate your community into its location. Keeping your approach to neighborhood clusters in mind, experiment with ways to mass building forms on the site around public and semi-public spaces. You can tailor public amenities to a vision of community. The way organisms aggregate through natural processes could provide inspiration for non-standard configurations.

1. Physical Play

Option A: Create a design toolkit to enrich the design process and reveal unexpected possibilities.
Option B: Use your modular cluster idea to build up urban forms, complementing them with open spaces and carved connections. (i.e. Olympic Sculpture Park, Yokahama Ferry Terminal)

It is essential to work in 3D and manipulate topography. Moving game pieces on aerial maps is a quick way to get started, but rather than a flat gameboard, carve into or shift the groundplane. Sculpting sand, clay or cutting thin layers of modeling foam or balsawood invites playing with topography. Embed markers and objects to stimulate ideas.

Try a wide range of forms, starting with key urban connections, solar access, views and privacy gradients, then exploring landscape to create public spaces, paths and landmarks, supporting stormwater management and habitat continuity. Record the experiments with images, then use the photos as underlays for diagrams or amended versions.

2. Digital Analysis

Evaluate how **three** of the most promising massing options work with sun, wind and water. For each, create a simplified exterior massing model and use it to show how the schemes maximize thermal comfort and solar power.

A. Show **Solar Radiation** for
Summer analysis period of July to August
Winter analysis period of January to February

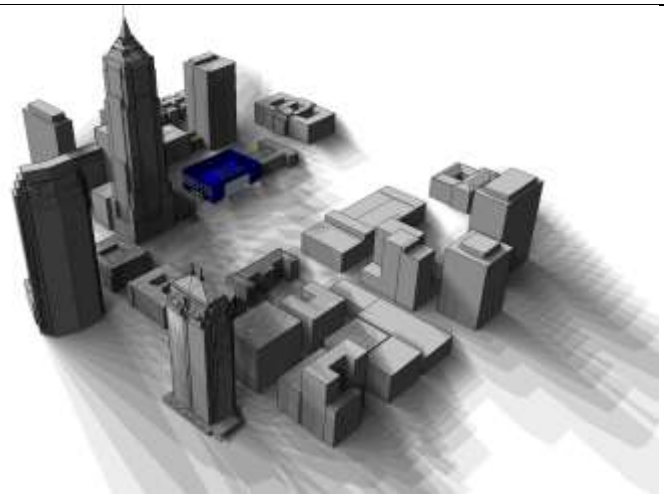
B. Create **Sun-shadows for winter, equinox and summer** (composite of different times of the day at least 9am, noon, 3pm) on a site plan. Are plazas and units suitable sunny or shaded? What locations are good for solar panels, planting?

C. Create a schematic site section and plan showing **stormwater** movement and storage. Locate potential detention ponds, swales and storage cisterns.

For the Ambitious: Use Autodesk FlowDesign to show and examine wind patterns in plan and section

SCHEDULE

Mon 10/26:	Print site plan to scale, start site massing models with topography. Install Ladybug software.
Wed 10/28:	Bring at least 3 physical site massing models to class.
Fri 10/30:	Bring a Rhino massing model built in meters to the computer lab to drop into Ladybug.
Mon 11/2:	Review Massing, Sun-shadow diagrams, schematic site section and plans



Sun-shadow diagrams from Scott Crawford, LMN Tech Studio

DESIGN EXAMPLES:
LMN Medical Mart: http://lmnarchitects.com/tech-studio/featured/mm-intro/
Epiphyte Lab's Green Negligee: http://www.epiphyte-lab.com/research/green-negligee/

TECHNICAL REFERENCES:
Ladybug / Honeybee by Mostapha Sadeghipour Roudsari
http://www.grasshopper3d.com/group/ladybug
Learning Ladybug and Honeybee: http://www.grasshopper3d.com/group/ladybug/page/ladybug-teaching-resources

Christopher Rheinhart's Introduction to Daylighting:
http://web.mit.edu/sustainabledesignlab/projects/DaylightingHandbook/resources.htm
Prof. Christopher Reinhardt of MIT's resources for daylighting. Topics range from basic to advanced, including design-oriented examples as well as detailed techniques.

Daylight Pattern Design Guidelines: http://patternguide.advancedbuildings.net/
Using a combination of case studies and computer simulations, the Pattern Guide shows how to use site, building, aperture and appliance design to improve natural lighting in terms of both visual comfort and energy efficiency. The intention is to provide visual shortcuts to strategies for specific building types such as offices, schools, retail, etc. Notes accompanying image comparisons explain why specific design choices work better.