A Mixed Salad:

Even distribution of race and income in Columbia, MD.

Sandra Oh Boun

2/5/2016

James W. Rouse dreamed of creating a racially diverse “garden for the growing city”. Columbia’s village neighborhoods are culturally diverse in race and income. With income ranging from $50,000 and under, $100,000, $150,000, $200,000, $250,000.

Each dot represents 2000 people of different races (White, African American, Asian, and Hispanic) and are evenly distributed throughout Columbia.

References

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Quote except from Columbia and the New Cities, Gurney Breckenfeld.
CONTENTS

reACT: Solar Decathlon 2017

The Generator: Re-Charging Owen Brown

Life Lab: A Living Campus
**reACT: Resilient Adaptive Climate Technology**

**ARCH 601 Graduate Architecture Design Studio VI**
Solar Decathlon, Department of Energy
Role: Student Project Architect
Fall 2016-Fall 2017

Student Architects: Sandra Oh Boun, Alla Elmahadi, Greg Goldstein, Sophie Habib, Malik Johnson-Williams
Faculty: Mike Binder, Garth Rockcastle, Ray Adomaitis, Patti Cossard
Overall 30 Core members: Architecture, Engineering, Landscape, Communications, Environmental Science, Mentors.


**Solar Decathlon** is an international, intercollegiate competition that is sponsored by the U.S. Department of Energy. The competition challenges student teams to design and construct a full scale solar powered house. The Solar Decathlon not only challenges students, but provides an opportunity for homeowners, consumers, industry professionals and educators to learn about renewable resources and energy efficiency.
Team Maryland’s solar-powered house entry into the U.S. Department of Energy Solar Decathlon 2017, features 993 SF of built interior, surrounding a spacious 160 SF glazed courtyard, with 400 SF of outdoor deck area, on about 8000 SF of developed site for the competition. Besides providing additional dining and lounging space, the courtyard aids in regulating light, temperature and humidity in the home, operating in sync with a mechanical core at the heart of the interior. The core contains high-performance, environmentally sensitive systems that interact with one another, managing the flow of water, air and energy throughout the home, both function together to advance the entire building as more self-sustaining.

- 995 SF of built interior
- 225 SF of glazed courtyard
- 400 SF of outdoor deck area
- 8000 SF of developed site for the competition.
The architecture is a kit-of-parts with a central core and modules that plug in. Disentanglement is a key feature in the design, that enables efficient construction.
Capitalizing on the idea of a courtyard as a solar collector, reACT’s mechanical systems utilize passive strategies to optimize performance.

1. Heat Pump Hot Water Heater
   Located in a modular attic, reACT’s heat pump hot water heater pulls air from the greencourt to preheat water for the home and its occupants.

2. Condenser
   Working alongside the heat pump hot water heater, reACT’s condenser and preheats refrigerant in the winter, while heat from the heat pump hot water heater’s exhaust system is diverted in the summer to allow for cooling.

3. Minisplits
   Positioned at various points around the home, minisplit conditioning units allow refrigerant from the centralized condenser to provide flexible conditioning year round.

4. Louvers
   Designed to respond to air temperatures, mechanically operated louver systems regulate air intake to reACT’s attic & HVAC system.

5. Greencourt
   Extending from reACT’s South face, the Greencourt operates as a solar collector. Through heat stratification, the hottest air is skimmed from the top to increase energy efficiency. The glazed roof and box units operate to expel heat in the summer.

6. Solar Appliances
   reACT employs a pair of prototype Solar Chambers - one operates as an oven while the other dries clothing. Located on the South face of the attic, broad skylights allow plenty of sunlight into the chambers, raising internal temperatures to suitable levels.

Source: U.S. Department of Energy
The Generator: Re-charging Owen Brown
ARCH 407 Graduate Architecture Design Studio IV
Owen Brown, Columbia, MD
Spring 2016
Team Members: Sandra oh Boun, Peter Cunningham, Joseph Mckenley, Anil Moore

ARCH 407 is a collaboration studio – that is, a studio that joins graduate students from Architecture with graduate students from Real Estate Development to work collaboratively on a design project. The project for the Spring 2016 semester is to work with community stakeholders and practitioners to come up with a plan for redevelopment of the Owen Brown Village Center in Columbia, Maryland. An exploration of relationships between cultural, social, and ecological systems in the built environment.
A MIXED SALAD: EVEN DISTRIBUTION OF RACE AND INCOME IN COLUMBIA, MD.

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**Arch 407 Urban and Architectural Design Studio**

**EXISTING CONDITION**

- Bioswale
- Lake Elkhorn
- Cradlerock Way

**PLACES**

- The Hub
- East Columbia Library
- Birch Forest
- The Canal
- Lake Elkhorn
- Sports Grounds
- Community Center
- Elkhorn Plaza
- Wetlands

**Owen Brown School District:**

- Cradlerock Elementary
- Lake Elkhorn Middle School
- Owen Brown High School

**OWEN BROWN VILLAGE CENTER PHASE THREE**

- Proposed boundaries of important regions and neighborhoods within Owen Brown, Columbia, MD

**THE FIELDS**

- Trade School
- Academic Quad
- Cradlerock Way

**VILLAGE**

- East Columbia Library
- Residence Quarters
- Trade School

**ELKHORN**

- Academic Quad
- Lake
- Elkhorn Plaza
- Elkhorn Playground

**SUPERMARKET**

- Giant

**INTERFAITH CENTER**

- Interfaith

**ECOSYSTEM: information infrastructure**

- Proposed network of wired and wireless internet connection. Dashed black lines represent hard wired beroptic connections and the red rings represent the wireless range of each wireless hub placed within each utility folly.

**ECOSYSTEM: utilities infrastructure**

- Proposed network of utilities. The bold lines represent the collection of solar energy, black and grey water, and horizontal loop ground source heating and cooling through the Hub. The light lines represent the distribution of these utilities.

**ECOSYSTEM: vegetation infrastructure**

- Trees and shrubs serve both as infrastructure and architecture. The fruit and nut bearing trees yield an annual harvest that would become a town ritual, in addition to bolstering an ecosystem for woodland creatures. Large coniferous trees buffer unwanted noises or sights from neighbors, traffic, or service areas all year-round. The street trees reinforce the ordered, spatial qualities of the street, as well as softening the hard edges of the buildings.
ARCH 601 Graduate Architecture Design Studio VI
Joyland School
Kisumu, Kenya
Spring 2017
Team Members: Sandra Oh Boun, Greg Goldstein, Christiane Machado

ARCH 407 is a collaboration studio – Students partnered with students at Joyland School, a school that caters to students with disabilities in Kenya. The studio had to design a masterplan for the campus where ADA requirements were crucial and sustainability strategies were encouraged. The Life Lab group created a masterplan that included a physical therapy playground, lookout tower, outdoor classrooms, a new dining hall, dormitories, health clinic, and administration buildings. The team had to look closely at climate, native materials, water management, infrastructure and agriculture.
The overall design concept looked at the campus as a series of inputs and outputs. Programs on campus would help promote self-sufficiency. The students, campus, and surrounding community would benefit from on-site programs.
The school in its current condition does not have a functional dining hall, designing a dining hall that accommodated all students was an important part of the masterplan. Taking inspiration from traditional building methods, the dining hall is made from compact mud walls and timber framing.

A look out tower served as a water tower and an anaerobic digester. The design was inspired by the Baobab Tree which stores water within its trunk.
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