Pedagogical Approaches to Geodesign: Teaching Geodesign to Non-designers

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Geodesign Summit 2016
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Chair of the American Planning Association- Technology Division
**Course:** Geodesign Studio

**Level:** Undergraduate

**Program:** Environmental Studies

**Project:** Designing a transit oriented village

**Client:** University of Redlands
Geodesign process

Visioning → Regional and city scale analysis → Local scale analysis → Re-visioning and making goals → Feasibility analysis and modeling → Scenario making, Site design and guideline development

Analyzing natural, social, financial, informational systems
First Week

High income Res.

Last Week

The Future is Here: U of R South Campus Transit Village

EVST-250 DESIGN STUDIO FALL 2015

Erica Beaulieu, Tyler Griffin, Nick Nassir, Marshall Webb

VISON

Vistas from new residential neighborhood outline a campus that is diverse in character and population, providing a strong sense of community. The site is a key location for the development of a stronger, more connected campus. It offers an opportunity to create a vibrant, mixed-use neighborhood that will attract a diverse community. The project will enhance the existing infrastructure and provide new amenities that will strengthen the existing campus.

GOALS

- **Site:**
  - Transformation of underutilized land
  - Creation of a pedestrian-friendly campus
  - Development of a mixed-use neighborhood

- **Student Housing:**
  - Residential buildings with apartments
  - Community centers
  - Cafeterias
  - Laboratories
  - Studios

- **Commercial Space:**
  - Offices
  - Retail
  - Restaurants

- **Public Space:**
  - Pedestrian paths
  - Bike lanes
  - Open spaces

DESIGN GUIDELINES

- **Site Design:**
  - Integration of site analysis with urban design
  - Consideration of pedestrian and bicycle traffic
  - Accessibility

- **Building Design:**
  - Energy efficiency
  - Sustainability

- **Community Engagement:**
  - Participation of local residents

SUITABILITY ANALYSIS

- **Natural Resources:**
  - Vegetation
  - Water

- **Infrastructure:**
  - Utilities
  - Transportation

- **Economic Feasibility:**
  - Cost analysis

INFLUENCES ON DESIGN

- **Technological Advances:**
  - Building automation
  - Energy management

- **Community Engagement:**
  - Public meetings
  - Surveys

- **Environmental Factors:**
  - Climate change
  - Natural hazards
Formal or verified data set
(Census data, City of Redlands Shapefile)

Citizen generated and social media data
(311 or Facebook data)
Ethnicity

Hispanic Population in Redlands

Percent Hispanic Population

- 13.26% - 9.02%
- 21.18% - 13.27%
- 28.78% - 21.19%
- 43.97% - 28.79%
- 80.56% - 43.98%

SCA
UoR Footprint
Redlands City Limits
Incidents of Reported Flood or Irrigation Issue around SCA

Citizen generated data
Facebook data: Community engagement

Identify potential active stakeholders in Redlands
Facebook data: Citizens interest
Analyzed community groups, engaged faculty from various departments and city staff
<table>
<thead>
<tr>
<th>Teaching challenges</th>
<th>Teaching Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 &amp; 2 ≠ 4</td>
<td>Focus on design feasibility</td>
</tr>
<tr>
<td>Can have multiple correct answers</td>
<td>Super technology Savvy</td>
</tr>
<tr>
<td>Design process is iterative and messy</td>
<td>Detailed environmental science knowledge</td>
</tr>
</tbody>
</table>
MS GIS Program & Center for Spatial Studies

- Biology
- Environmental Studies
- Religious studies
- History
- Anthropology
- Chemistry
- Business
- English
- Political science
- Education
System interaction Feasibility

Economic Feasibility

Residential Apartment's Financial Analysis

<table>
<thead>
<tr>
<th># of Units</th>
<th>Unit Type Studios</th>
<th>Total Cost</th>
<th>Rent Per Sq ft</th>
<th>Rev 1 Mo.</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>1 Bed (1000 Sq ft)</td>
<td>$8,000,000</td>
<td>$1.50</td>
<td>$48,000</td>
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<tr>
<td>40</td>
<td>2bed 1Br (1200 Sq ft)</td>
<td>$10,000,000</td>
<td>$1.50</td>
<td>$60,000</td>
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<tr>
<td>15</td>
<td>2Bed 2Br (1400 Sq ft)</td>
<td>$4,500,000</td>
<td>$1.50</td>
<td>$27,000</td>
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<tr>
<td>13</td>
<td>Total:</td>
<td>$27,050,000</td>
<td></td>
<td>$162,300</td>
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</tbody>
</table>

Total: 108 Units 108,200 Sq ft

Master's Student Housing Financial Analysis

<table>
<thead>
<tr>
<th># of Units</th>
<th>Unit Type 2Bed 2Br</th>
<th>Total Cost</th>
<th>Rent Per Sq ft</th>
<th>Rev 1 Mo.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>(1400 Sq ft)</td>
<td>$7,000,000</td>
<td>$2.50</td>
<td>$70,000</td>
</tr>
<tr>
<td>Total: 20</td>
<td>28,000 Sq ft</td>
<td>$7,000,000</td>
<td></td>
<td>$70,000</td>
</tr>
</tbody>
</table>

Building Use: Total Cost Per Square Ft: Cost

- Academic Building: 17,251 $421 $7,262,671
- Arcade: 57,211 $430 $24,600,730
- Arts Center: 39,610 $421 $16,675,810
- Car Rental: 9,045 $400 $3,618,000
- Conference Center: 88,810 $447 $39,608,670
- Convenience Store: 7,801 $400 $3,120,400
- Health Center: 249,000 $578 $143,922,000
- Hotel: 379,788 $463 $175,841,844
- IT Services: 2,021 $379 $765,959
- Maintenance: 21,606 $263 $5,682,378
- Mixed Retail: 168,975 $429 $72,490,275
- Office: 194,000 $455 $88,270,000
- Pub: 118,594 $429 $50,876,825

Estimated Total Cost: $632,735,563

Did the students learn drafting?

NO
First Week

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VISION

Goals

GOALS

• Visionary with关切
  • Promotion of mental and open space
  • Use of green spaces and green infrastructure
  • Pedestrian and cyclist-friendly
  • Optimal design for the compact city
  • Complementing neighboring urban centers

PHASE 1

- Mixed-use development
- Street-level open space
- Green roof
- Beltway extension
- Parking structure
- Mix-use development
- Green roof

PHASE 2

- Transportation oriented development
- Green roof
- Mix-use development
- Green roof

PHASE 3

- Transportation oriented development
- Green roof
- Mix-use development
- Green roof

DESIGN GUIDELINES

- Ten acres for larger U.S. Urban Certification
- Razed all perimeter lots and front with the developers
- Painting times varying for the island of R
- Elevation change
- Elevation change
- Building height limit of two stories (with certain exceptions)

Connecting Southern California to Redlands

TRANSIT VILLAGE

SUITABILITY ANALYSIS

- High income
- Low income

INFLUENCES ON DESIGN

- Traffic
- Pedestrian conditions
- Parking
- Road layout

ECONOMIC FEASIBILITY

- Office
- Retail
- Residential
- Open spaces

SITE USERS

- Community
- Engagement

Last Week

- Grafitti incidents
- Median Age
- Ethnic Diversity
- Environmental Assets
- 100-year Flood Risk

- Office
- Retail
- Residential
- Open spaces
How can we evaluate a geodesign product?

Product: design, plan, policy, guide
3 Fs of Geodesign products

- Feasible
- Futuristic
- Factual

- Can we implement this?
- Do we have time and resources to implement it?
3 Fs of Geodesign products

- Feasible
- Futuristic
- Factual

- What are its future impacts on different systems?
- Are these impacts sustainable?
The 3 Fs of Geodesign products:

- Feasible
- Futuristic
- Factual

- Is it developed based on the realities of current systems?
- Is it developed based on the desires and requirements of different stakeholders?
Suggestions
Geodesign product

Feasible

Futuristic

Factual
You may need to start with traditional tools
Engage all these based on your context
My 2 Cents

- Consider the **product** while designing the process.

- **Engage** various **methods**, **disciplines**, and **communities**.

- Look at the **context** of your institution.
Future work

- What are the criteria for evaluating the success of geodesign pedagogical approaches?

- What other disciplines should be engaged in geodesign? Business? Conflict resolution? Sociology?
Thank you
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