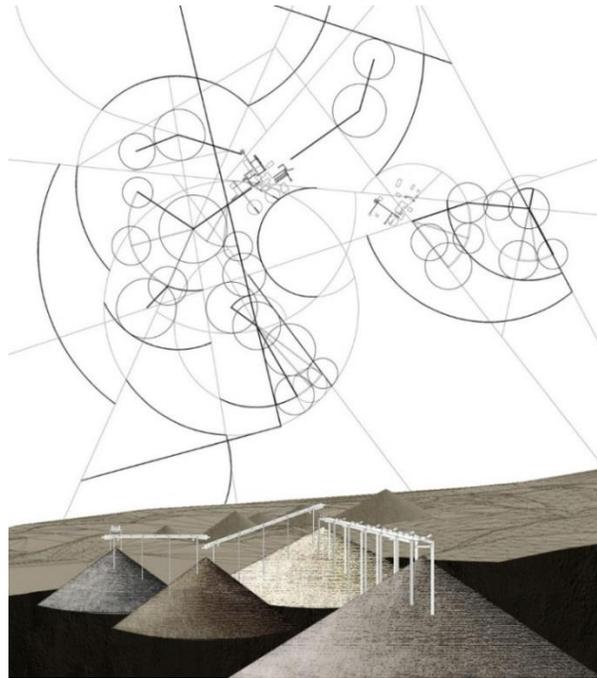


Studio: Geodesign for the Urban Desert Environment

- Professor: Nicholas Bauch
- Graduate level course
- We meet on Mondays from 10-12am, and on Thursdays from 9am-3pm



(Source: Maria Bourdi, at <http://panosdragonas.net/>)

Course Description

In this studio you will practice design while learning how to conduct the geographic research that happens “before design.” You will learn how to visualize and present relevant data at the macro scale that informs what you make at the micro scale in one of the world’s most sensitive and critical environments: the desert. Desertification marks one of the worldwide ecological battles of the 21st century, one for which Geodesign promises new solutions.

Geodesign is a burgeoning field that is the combination of geography and design. What are these two disciplines, and what defines their union? Geography is the study of the surface of the Earth as it is home to humans. Geographers are driven by two major concerns: describing the relationship between people and their material surroundings, and describing the spatial manifestations of those relationships. Design is the transformation of existing conditions into preferred ones. Designers think prospectively, imagining the way the world could be, and act to make things function better. Most generally, then, the missing link between geography and design can be characterized as a heretofore unrealized confluence of empirical description with imaginative proscription. If design is the tool that geographers need to effect change, then geography is the tool that designers need to inform their solutions in form and function. Making a clearer spatial picture of relevant social and natural elements that lie beyond the design site is the benefit of bringing a geographical perspective to bear on Landscape Architecture.

Landscape Architecture is a design field that is, and will continue to be, especially impacted by Geodesign. Landscape Architecture already shares with Geography a propensity to think spatially, a critical consideration of the human experience of place, and a deep investment in the intellectual traditions surrounding the concept landscape. Up to now, Geodesign has focused on the application of geo-spatial technologies, i.e. GIS software, to design problems. In this course you will gain skills in ESRI's ArcGIS, and will learn how that software in particular can influence the way you practice Landscape Architecture. But we also go further than this, taking seriously the full force of environmental and spatial theory born from geographical scholarship. Digging deep into the concepts of "nature" and "space," we will interrogate the core of why it is so important to integrate geographical thought into landscape design plans.

To that end, a major theme this semester is finding new, lateral connections among seemingly disparate and disconnected things, both in local landscape scenes as well as at spatial scales that span larger areas. Assemblage theory has left us with grand ideas about how objects co-constitute one another in a networked, geographic plane, e.g. a water well is connected to the health of the people who use it. Now it is up to us to put those ideas into practice, to visualize, represent, and design the "lateral" connections that we live with as we make landscapes that allow us to see the consequences of our decisions in real time. Having applied geographic ideas in this way will grant you a valuable perspective that you can bring to any type of design team in the future.

Activities

Research and design process, studio critiques, site visits, lectures, discussions, readings, and short essays

Skills Objectives

- Research and visualize spatial information relevant to a socio-natural design problem
- Design a map that tells stories about the region (a much bigger area than your site), using cartographic design software
- Create a site design proposal for an urban desert environment
- Apply humanistic-geographic methods of landscape interpretation to your design proposal
- Articulate how geographical information impacts the design of your specific site
- Integrate geographic theory and history into design process

Semester Projects

This is really one project with two major components: 1) a site design of a 90-acre plot, and 2) a map depicting a larger territory that justifies your site design solution. Taken together, these components give you practice in Geodesign as applied to an urban desert environment.

Site: Dry lake bed of Coahuila Lake on the southern exurban fringe of Phoenix, Ariz. A natural topographic depression, this site collected water from the Salt River (drainage basin = 13,700 mi sq), where a low-desert ecosystem thrived until recently. With the tremendous growth of the Phoenix area (1950 pop. = 106,000), Coahuila Lake is now a dry lake bed, a victim of urban desertification.

Site details:

- 90 acres of undeveloped, loose, sandy topsoil, subject to Aeolian (wind) erosion.
- Mostly flat topography, with a 0.25-0.5% slope trending toward the middle of the dry lake.
- Average summer high temp = 102 F / average winter high temp = 74 F / average annual rainfall = 9 in.
- Winter rains bring small crops of Desert Marigolds and Blackfoot Daisies, along with seasonal populations of Burrowing Owls and Rattle Snakes.

Program (requirements that your design must satisfy):

The Phoenix Unified School District was granted the land from the city after the city council admitted an inability to restore flow to the Salt River. The dry lake itself fenced off, its fringes have, over the past 3-4 years, begun to attract a mixture of residents and housing types, from mobile homes to a small, but growing, subdivision of housing stock. The majority (78%) of this population speaks Spanish as a first language, with connections to the northern regions of Mexico, the American Southwest, Guatemala, and El Salvador. As is common, ample space and low prices are driving this migration to Coahuila Lake. Now around 15,000 residents – both permanent and itinerant – at issue is what to do with the dry lake bed. Because of the overwhelmingly great distance to the nearest elementary and high schools, the School District has decided to turn the 90-acre site into an educational K-12 campus, and is also negotiating with the Phoenix Area Community College Association to build a new branch: the Coahuila Community College. The entire campus must be designed with the ecological legacy of the dry lake in mind, as environmental education has been deemed the cornerstone theme for the campus, around which all other classes in the experimental curriculum revolve.

Program details:

- Footprint and heights for one of each:
 - elementary school (55,000 sq. ft.)
 - middle school (94,000 sq. ft.)
 - high school (126,000 sq. ft.)
 - community college (168,000 sq. ft.)
- Three environmental education / research areas and/or structures
- Paradigm-setting water conservation techniques must be employed
- Elements and legacy of Coahuila Lake ecosystem must be restored
- Stop and prevent further wind erosion
- Transportation solution to/from the campus and within the campus. Connect with Arizona State University and Phoenix city center
- Build for expanded lines of sight such that infrastructural processes are uncovered
- Account for multi-lingual, multi-cultural constituency
- Public space for relatives of students, residents, and other community members

Questions / Themes:

Desertification in global cities. Phoenix is now the fifth largest city in the United States, with a global economy and a cosmopolitan population. It is a region that exemplifies modern urban desert sprawl, and all the opportunities, mistakes, and challenges that go along with it, like fresh water scarcity, habitat loss, and soil degradation. We are far past the point of hoping that people stop moving to deserts in large numbers, as around the globe both ancient desert cities and newly-desertified urban centers are becoming dominant (e.g. think of Seville, Spain; Bamako, Mali; Ankara, Turkey; Ulaanbaatar, Mongolia; and Las Vegas, Nevada). How can we design these areas to preserve their fragile environmental integrity while accounting for an enormous, multi-cultural influx of people?

A particular challenge in this site design is how to maintain lines of sight on a dry lake bed. Vision can play an influential role in helping people see the effects of their actions, for example, their use of water resources. Rather than hide infrastructure, let's see what we can do to expose it. Keep in mind that in this class we directly approach the **topic of water**, but not until week 10. This is not, as it might seem, to underplay the importance of fresh water in desert landscape architecture but, rather, to emphasize it. The complexity of water & human culture is such that students need to build their own geographical vocabulary for the site itself, and need to learn the possibilities for what is actually happening at this vital nexus where people and water meet before we can address the topic "water." Much more than the chemical designation H₂O, water is also the composite of religious meaning, political maneuvering, climatic considerations, and demographic changes. Students must be conscious of all these before being able to fully address water in their landscape design proposal.

Cartographic Design and Scale

In addition to your site design, you will take the spatial information that you gather from research, and using cartographic design software, create a map that offers a macro-scale geographic rationale for your architectural solution to the problem of desertification at Coahuila Lake. While students choose exactly how to interpret "macro scale," it must be a region significantly larger than the 90-acre site.

Course Policies

Treat this studio like a full-time job. Because you make a site proposal *and* a cartographic justification for your design, a number of skills must be acquired and applied. Therefore, attendance is required at every meeting, and no late work will be accepted. Remember that the studio work-space is both educational and professional. It represents your personal office as well as a public, democratic space. Work in the studio rather than at home on all assignments. Talk to each other, commiserate, share your ideas; this collaboration is an integral part of the learning process in a studio.

Schedule of Classes

Week 1

Monday (10-12am)

- In class

Lecture: "Landscape at Two Scales: Putting the Greek *Geos* in conversation with *Topos*."

- Due today
Watch the following video: "GeoDesign Summit 2010" <http://bit.ly/1DgOsfm>
and
Read: Curry, Michael R. 2005. Toward a Geography of a World Without Maps: Lessons from Ptolemy and Postal Codes. *Annals of the Association of American Geographers* 95 (3):680-691.

Thursday (9am-3pm)

- In class
First site visit to Coahuila Lake. Focus on practicing landscape interpretation
- Due today
Read: Meinig, D.W., ed. 1979. *The Interpretation of Ordinary Landscapes: Geographical essays*. New York: Oxford University Press. (See especially essays by J.B. Jackson, Yi-Fu Tuan, and Peirce Lewis.)

Week 2

Monday (10-12am)

- In class
Site visit debrief. Discussion: how can landscape interpretation influence your site design?
- Due today
Essay (400-500 words) on one method of landscape interpretation from Meinig's book, and how it helps you connect geographic scales.

Thursday (9am-3pm)

- In class
Group Crit: Pin Up of initial sketches
- Due today
Group Pin-Up: Concept sketches based on site visit that represent the specific challenges you will address in your design

Week 3

Monday (10-12am)

- In class
Lecture: "Socio-natural hybrids and relational spaces"
- Due today
Read: Castree, Noel, and Tom MacMillan. 2001. Dissolving Dualisms: Actor-networks and the Reimagination of Nature. In *Social Nature: Theory, Practice, and Politics*, edited by N. Castree and B. Braun. Malden, MA: Blackwell.

Thursday (9am-3pm)

- In class

Desk Crit: 1 on 1 between professor and individual students

- Due today
Bring three different concept sketches for site proposals. Drawn by hand. Must incorporate our discussion of hybrid theory. Reminder to start preparing for schematic plans (due week 6)

Week 4

Monday (10-12am)

- In class
Lecture: “Historical and contemporary methods for understanding spatial data”
- Due today
Read: Abrams, Janet, and Peter Hall. 2006. Else/where: Mapping new cartographies of networks and territories. Minneapolis: University of Minnesota Press.

Thursday (9am-3pm)

- In class
Skills lab: Mapping nature in ArcGIS
- Due today
By the end of class: Compile and georeference relevant layers of natural systems. Choose relevant spatial extent that will inform your site design.

Week 5

Monday (10-12am)

- In class
Lecture: “Elements of cartographic design”
- Due today
Read: MacEachren, Alan M. 1995. How Maps Work. Representation, Visualization, and Design. New York: The Guilford Press.

Thursday (9am-3pm)

- In class
Skills lab: Cartographic design
- Due today
Come with your GIS files ready to manipulate to make maps

Week 6

Monday (10-12am)

- In class
Lecture: "How would a human geographer design a dry lake bed?"
- Due today

Read: Geodesign in Practice: Designing a better world, 2013. ESRI Press.
<http://bit.ly/1rmzcIK>

Thursday (9am-3pm)

- In class
 Juried Review: Preliminary schematic designs incorporating "mapping nature" research
- Due today
 Full set of schematic plans and sections. You must demonstrate how geographic data has been integrated with your site proposal.

Week 7

Monday (10-12am)

- In class
 Lecture: "Desertification and Cultural Ecology"
- Due today
 At home: watch film *The Last Village*, 2013, dir. Xiaojun Qiu. Description: In Gansu Province, China, the Minquin community struggles with the effects of desertification.

And

Read: Hutchinson, Charles F., and Stefanie M. Herrmann. 2008. *The Future of Arid Lands - Revisited: A review of 50 years of drylands research*. Paris, France: Springer/UNESCO.

Thursday (9am-3pm)

- In class
 Desk Crits: 1 on 1 between professor and individual students, and among students
- Due today
 A second iteration of schematic design that incorporates cultural elements

Week 8

Monday (10-12am)

- In class
 Prep for Midterm Review
- Due today
 None

Thursday (9am-3pm)

- In class
 Midterm Review: **Guest critic Erik Steiner** (Past-President, American Cartographic Society; Creative Director, Spatial History Project, Stanford University)
- Due today

A hand-built model of the schematic design + refined schematic drawings. Also, a well-designed map highlighting relevant geographic data that influences your proposal

Week 9

Monday (10-12am)

- In class
Lecture: "Landscape Interpretation: What to do when you're on site?"
- Due today
Read: Matless, David. 2010. Describing Landscape: Regional sites. *Performance Research* 15 (4):72-82.

Thursday (9am-3pm)

- In class
Second site visit to Coahuila Lake - focus on water
- Due today
Read: Cosgrove, Denis. 1990. An Elemental Division: Water control and engineered landscape. In *Water, Engineering and Landscape: Water control and landscape transformation in the modern period*, edited by D. Cosgrove and G. Petts. New York: Belhaven Press.

Week 10

Monday (10-12am)

- In class
Lecture: Designing for the desert
- Due today
Read: Larsson, Magnus. 2011. Dune: Arenaceous Anti-Desertification Architecture. In *Macro-engineering Seawater in Unique Environments: Arid lowlands and water bodies rehabilitation*, edited by V. Badescu and R. B. Cathcart. New York: Springer.
And
Larsson's Flickr site of images: <http://bit.ly/1u2xT2T>
And
Pasternak, Dov, and Arnold Schlissel, eds. 2001. *Combating Desertification with Plants*. New York: Plenum Publishers.

Thursday (9am-3pm)

- In class
Pin-Ups: groups critique each other
- Due today
Schematic Designs that incorporate Erik's critiques from week 8. Show week 8 designs along with the new ones so we can see what changed. Start design development phase. Work on details of site.

Week 11

Monday (10-12am)

- In class
Lecture and mini lab: geographic data about people
- Due today
Essay: 400-500 words on how you have addressed water resource design

Thursday (9am-3pm)

- In class
Skills Lab: Mapping social data in ArcGIS
- Due today
By the end of class: Compile and georeference relevant layers of social data.
Choose relevant spatial extent that will inform your site design.

Week 12

Monday (10-12am)

- In class
Lecture and discussion: “How geographers map human experience”
- Due today
Read: Pearce, Margaret Wickens. 2008. Framing the Days: Place and narrative in cartography. *Cartography and Geographic Information Science* 35 (1):17-32.

Thursday (9am-3pm)

- In class
Skills lab: Cartographic design II
- Due today
Pin-Up of designs of each program component area at a large scale (1:50)

Week 13

Monday (10-12am)

- In class
Discussion: Desert design details and water
- Due today
Read: Holzer, Sepp. 2012. Desert or Paradise: Restoring endangered landscapes using water management, including lake and pond construction. East Meon, UK: Permanent Publications.

Thursday (9am-3pm)

- In class
Group Crit Pin Up
- Due today

Design Development. Show each other details (e.g. plant groups, stones, etc.) and small-scale maps (1:1,000)

Week 14

Monday (10-12am)

- In class
Lecture: “Design Theory and Geography”
- Due today
Latour, Bruno. 1986. Visualization and Cognition: Thinking with eyes and hands. *Knowledge and Society* 6:1-40.

Thursday (9am-3pm)

- In class
Desk Crit: 1 on 1 between professor and groups
- Due today
Last critique with professor. Site proposal and map must be near complete.

Week 15

Monday (10-12am)

- In class
Prep for final review
- Due today
None

Thursday (9am-3pm)

- In class
Final review. Presentation of maps and site designs. **Guest critic Simon Swaffield** (Professor of Landscape Architecture, Lincoln University, New Zealand) and **Brian Giebink, AIA, LEED AP** (Registered architect in Arizona).
- Due today
Master site plan, area plans, sections, models and details, along with final maps.