CourseNo: ARCHA4741_001_2013_3

Meeting Location: FAYERWEATHER 202

Meeting Time: T 09:00A-11:00A

Instructor Information: Brian Brush

Field of Play: Territory This class will investigate techniques in GIS for visualizing spatial data as instrumental geometry for design. We will explore these techniques within the conceptual framework of "territory." No experience in GIS is required, however familiarity with Rhino and Max is suggested. Territory, in the historic sense, suggests the establishment, management, and documentation of political or administrative geographies; the quintessential representation of which has been, and continues to be, the map. In the context of contemporary architectural design, however, territory suggests a constructed condition that articulates the reciprocal spatial relationships between politics, environment, landscape, information, and architecture that define a site. Geographic Information Systems (GIS) is the primary digital platform for documenting these relationships through spatial mapping. But GIS can also be used as a powerful tool for design by creating instrumental geometry embedded with socio-geographic meaning that can qualify conditions of territory beyond what mapping alone can afford. The products of GIS can therefore be descriptive and analytical representations of a site that simultaneously perform as generative manifolds for the creation of architecture indelibly connected to place. This class will use GIS as the primary computational platform for collecting, creating, interpreting, and representing 2D and 3D geographic data in service of articulating spatial territories of a site for design. The class is structured as an exploration of successive territorial-topological dialectics including but not limited to: polygon areal-assemblages, volumetric-vertical compositions, point-density mapping, raster surface-topography, vector surface contouring, and point/line-network tracings. Class workflow will follow a procedure of 1) data gathering through virtual data mining, sensing with GPS, and data creation 2) data analysis and representation in GIS, 3) data translation through export/output to various design and visualization platforms such as Google Earth, Rhino, Max, Illustrator etc. The final product or deliverable of the class will be an image or series images which represent spatial data about a site through mapping in GIS, composited with a translation of the

map geometry re-purposed as a 3-dimensional scaffold for a design proposal. Construction of this "territory" should be considered an opportunity to assimilate and then challenge conventional mapping techniques. Through this line of inquiry students have potential to invent new modes of data representation that allows GIS to act as a design tool as well as a supporting system of

documentation. DEFINITIONS: MAPPING is a key component of site investigation because maps inform design by allowing designers to articulate spatial relationships that might not have been otherwise explored. DATA is the key component to making maps. The science of mapping is based of the idea of making data visually interpretable. In other words maps allow us to decipher the spatial nature of data. Data can be found or collected - we will explore finding both types. GIS is a visual database. It allows one to interpret and visualize spatial data. GIS files are database files, and therefore, act as a repository for a wealth of information about place. The power of GIS is therefore leveraging this information to form critical representations and manifestations of

site. SCHEDULE: CLASS # 1 - September 10, 2013: Class Introduction: What is GIS and how is it used? ArcGIS 10 Fundamentals, Class introduction and overview. We will cover what a Geographic Information System is and discuss the logical and technical aspects that create its structure which then influence its outputs. We will discuss how we as designers can leverage these outputs in a design process. We will also cover fundamental 2D cartographic techniques (Symbology!) to represent geographic entities at various scales to familiarize you with the ArcGIS interface.   ** Assignment: 2D Self-guided Tutorials   CLASS # 2 - September 17, 2013: Geometric Functions, 2D Exporting and Manipulation, We will use a number of geometric tools in GIS such as buffer, clip, merge, to create analytical 2D geographic entities for further representation. This will establish the baseline practices which will hopefully be innovated by everyone as we move forward. We will learn how to export 2D vector data for use in design softwares like Illustrator, Rhino, and 3DStudioMax. ** Assignment: 2D Self-guided

Tutorials   CLASS #3 - September 24, 2013: 3D Buildings, Google Earth, 3D Topographies and Surface Analysis We will cover the 3D ArcScene interface to generate "3D buildings" for export to 3D design softwares or to be visualized in Google Earth. We will also learn to generate 3D topographies that are both geographic and analytical in nature for exporting to other 3D softwares, which will also be demonstrated ** Assignment - 311 Noise Complaints in XY Data   CLASS # 4 - October 1, 2013: Geometric Transformations and Translations In this class we will explore numerous different techniques for transforming and translating data to create to analytical representations of varying geometry. **

Assignment - Transformation/Translation Catalogue   CLASS #5 - October 8, 2013: Harvesting XY Data Students will learn how to use a GPS device to harvest spatial data in the field. Students will learn how to take information collected and transfer it to X and Y coordinates in GIS for a variety of spatial visualization types already covered as well as additional forms of visualization TBD (convert paths etc). NOTE: Class will briefly meet OUTSIDE, location on Columbia Campus TBD ** Assignment - Students will be asked to create maps that document the data they collected using the GPS devices and to perform translations on the data using skills learned in the previous week. ** Assignment - For the next class, students should prepare a final assignment proposal for their site along with a sketch or storyboard of their final composite map/image(s). This will be the basis of the individual consulting in the final class session. CLASS # 6 - October 15, 2013: Territorial Strategies In this class students will work with the instructor on their Final Project due October 29. Students will have individual meetings with the Instructor to help refine how their data can construct the territory of their site. Mapping representation and map translation strategies for the final composite image will be discussed. FINAL ASSIGNMENT: Territory Composite Map DUE October 29 by midnight More information to follow later in the semester. GRADING: Weekly Attendance - 30% Completion of Assignments - 30% Final Project - 40%   Related Texts: Geo Logics by Vicente Guallart, "What Has Happened to Territory," by Antoine Picon and "Territory: Architecture Beyond Environment," by David Gissen, May/June 2010 issue of Architectural Design (available through Columbia e-link)