Undergraduate Elective Syllabus

Contact Hours: 2/week
Credit: 1.5
Time: Tuesdays 18:30 – 20:10

Quantifying the Immeasurable: Parameterizing Urban and Architectural Aesthetics and Culture using Mapping and Multi-Disciplinary Design Optimization Methodologies

Submitted by:

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01_Introduction

Building Information Modeling (BIM) and Virtual Design and Construction might be the biggest development in architectural representation since the invention of drawing. As they powerfully transforming the fields of architecture, engineering and construction (AEC), they also gain a much broader meaning towards to a more versatile experience of architecture and urbanism that can be more realizable than ever before. More recently BIM and virtual construction methods are applied on simulating many aspects of building and further expanding to neighborhood or city scale, helping us to assess the existence and efficiency of many different parameters and variables.
As a joint effort between Tongji University and Disney Research China, this course will investigate parts less studied in virtual design and construction: The impact of aesthetics and culture.

02_Objective

What is the meaning of "Immeasurable"? And how can we quantify the immeasurable? We will approach this on 2 main course. When talking about "Immeasurable":
   1) Is it because we do not know what it is therefore we cannot measure it?
      and/ or
   2) Is it because there are no proper measurement tools currently or the existing ones are not sufficient to measure it?
This course is designed to be the second episode of a two-part research-oriented course and studio that will span through two semesters and aim to continue multiple years, to systematically investigate and develop methods and custom tools to index, measure and rate aesthetics and design excellence in architecture and urban space experience in residential and mixed use areas.

The aim is to develop a base for metrics based on analysis, observation and fieldwork, document these findings and ultimately test these using virtual design and construction methods. Through teamwork, mapping, multi-disciplinary design analysis and using cross-platform tools, students will develop reports and prototypes documenting the development of tools measuring aesthetics.

03_Goals

Class will have 5 main goals:
1) Learning parametric thinking and design methodology
2) Learning to undertake and carry on research
3) Learn extract data, based on observation and fieldwork
4) Develop models that synthesize cross-platform information for optimization and visualization
5) Develop tools and measurement techniques through mapping and multi-disciplinary design optimization methods

04_Methodology

The course initial success will rely on high number of participation of students from different disciplines. Students will read and summarize existing research and literature on urban aesthetics, Conduct field work, through observation and interviews. Methods such GIS based mapping, self organizing maps and other multi disciplinary analysis methods used to develop results that might turn into prototypes.

05_Requirements

Students are required to come to course and rigorously develop their assignments based on their research. Some out of class time is required for learning software, attending some lectures and completing certain requirements.

Recommended Software:

- Phoenix integration ModelCenter
- modeFRONTIER
- Autodesk Ecotect
- Autodesk Revit MEP, Structure and Architecture packages
- Rhino + Grasshopper and add ons
- Adobe Illustrator
- Adobe Photoshop

06_Deliverables

- Reports
- Response papers
- Essays
- Field research
- Diagrams
- Maps
- Prototypes

07_Weekly Schedule (subject to change)

WEEK 周	DATE 日期	STUDIO + DISCUSSION + LAB	SPECIAL EVENT	READING / ASSIGNMENT 阅读 / 作业
1 第一周	09 月 14 – 20	Class 01 Introductory Lecture and Q&A	Lecture by Helen Chen, Disney Research China	Reading Assignment 1
2 第二周	09 月 21 – 27	Workshop Part 01: Mapping	Lecture by Ignacio Lopez Buson, Co-founder, MAPS	GIS, Rhino GH

3 第三周	09 月 28 – 10 月 04	Workshop Part 02: <u>Mapping</u> with Ignacio Lopez Buson	National Day Holiday	GIS, Rhino GH
4 第四周	10 月 05 – 11	National Day Holiday / Golden week (Reading Week)		
5 第五周	10 月 12 – 18	Presentation of workshop, existing conditions, problems, and research methodology and assignments	Site Visit: Research Area Former French Concession Puxi	(Choosing Topic and making general plan)
6 第六周	10 月 19 – 25	Lecture / discussion Definition of variables and brief research schedule	Site visit: Disney Research China Lecture by Dr. Ben Schwegler, Lead Scientist, Disney Imagineering	
7 第七周	10 月 26 – 11 月 01	Review of Assignments	Lecture by Dr. Ben Schwegler, Lead Scientist, Disney Imagineering	
8 第八周	11 月 02 – 08	Group Critique/ Preparation for midterm		
9 第九周	11 月 09 – 15	Meeting 06: **<u>Midterm presentation</u>**		
10 第十周	11 月 16 – 22	Software introduction and workshop 1	Guest Lecture: Disney Research Team	
11 第十一周	11 月 23 – 29	Software introduction and workshop 2	Thanksgiving	
12 第十二周	11 月 30 – 12 月 06	Precedents and Case studies / Discussion of Case studies	Group presentation: Presentation diagram, maps, graphs	

13 第十三周	12 月 07 – 13	Precedents and Case studies/ Discussion of Case studies	Guest Lecture: Disney Research Team	
14 第十四周	12 月 14 – 20	Precedents and Case studies/ Discussion of Case studies	Group presentation and discussion	
15 第十五周	12 月 21 – 27	Review and Critique: Group presentations	Christmas	
16 第十六周	12 月 28 – 01 月 03	Individual Tutorials	New Year	
17 第十七周	01 月 04 – 10	Individual Tutorials		
18 第十七周	01 月 11 – 17	**Final Presentation (Date TBD)**		

08_Resources

Student will have access to various type of equipment to collect data and facilitate research. Trial and educational software will be provided. Details TBA

09_References

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Kirillova, Ksenia, et al. "What makes a destination beautiful? Dimensions of tourist aesthetic judgment." Tourism Management 42 (2014): 282-293.

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Aldo Rossi, Architecture and the City.

Armin Linke, Limits to Growth.

Atelier van Lisehout, Slave City.

Banksy, Wall and Piece.

David Harvey, Spaces of Capital: Towards a Critical Geography.

Dolores Hayden, The Power of Place: Urban Landscapes as Public History.

Greg Girard, Phantom Shanghai.

Ida Susser, Norman Street, Poverty and Politics in an Urban Neighborhood

Italo Calvino, Invisible Cities,

John Logan and Harvey Molotch. "Urban Fortunes: The Political economies of Place"

Kevin Lynch, The Image of the City

Le Corbusier, La Ville Radieuse (The Radiant City)

Le Corbusier, The City of Tomorrow and Its Planning

Lewis Mumford, What is a City?

Manfredo Tafuri, Architecture and Utopia.

Manuel DeLanda, The Non-Linear Development of Cities.

Michiel Dehaene, Lieven De Cauter, eds, Heterotopia and the City: Public Space in a Postcivil

Society

Mike Davis, City of Quartz

Reyner Banham, Los Angeles.

Saskia Sassen, The Global City: New York, London, Tokyo.

Stanley Milgram, The Experience of Living in Cities.

Steve Pile, The Body and the City: Psychoanalysis, Space and Subjectivity

Weiping Wu and Shahid Yusuf, Shanghai: Remaking China's Future Global City,

Wolfgang Natter, The City as Cinematic Space.