YSS3235: Urban Spatial Representation
Prof. Joshua Comaroff, comaroff@yale-nus.edu.sg

Course Schedule: Tuesday, 9:00am – 12:00pm

Location: Elm Common Lounge, Fabrication Studio

Office Hours: Thursday, 2-5pm (or by appointment)
via Zoom / Saga RC1-01-03K
Booking at www.calendly.com/comaroff

Outline
This course is an introduction to spatial visualization tools for the analysis and representation of urban spaces, infrastructures and social phenomena. Class will be conducted as a mixture of lecture (1 hour) and discussion/tutorial (1.5 hours). Weeks 9-13 will follow the conventions of an urban design studio course. Coursework includes reading and discussion, as well as project work and skills tutorials in 2D and 3D representation of urban spaces.

Students will learn about the history and principles of urban representation (projections, data, plan, perspective), and gain hands-on experience with a number of current tools (digital model-building and plan/map, representation and analytical toolkits). They will acquire, interrogate and manipulate digital data relevant for urban spatial analysis, and gain an initial understanding of how to effectively communicate three-dimensional urban spatial conditions.

This course can be taken to meet the methods (spatial reasoning) requirements in Urban Studies. It is especially well-suited to students who have an interest in urban design and architectural analysis and representation, and learning about persuasive representation applications in social and spatial studies.

The course has three emphases:

1) Understanding the diversity and complexity of urban spaces
Cities are complex systems comprising built forms (architecture, roads and other infrastructure), open spaces and landscape. Such physical factors are given life by a vast array of social and economic functions and institutions, as well as cultural practices. Following from YSS3250: Cityscapes and Urban Forms, this course will enhance students' appreciation of these features and their combinations in the production of urban spaces.

2) Spatial representation
In this course, students will be introduced to range of representational methods that will help them to discern more clearly the character of urban spaces, as well as the social life and institutions they support. Those lenses include projection, analytical visualizations, plan, perspective and modeling. Each of these provide critical tools for reading and evaluating the city, and must be understood as forming a common, inter-dependent skillset.

3) Skills acquisition
Through the production of various representations of particular urban spaces in Singapore, students will be introduced to some of the key techniques and software packages used to gather, manage and visualize data in urban planning and design (see Software, below). Students will also learn how to conceptualize and fabricate physical models of city precincts.

They will also learn how to use a range of tools in the Fabrication Studio, including laser cutting and 3D printing machines.

There will be a course guide (PDF format) entitled **"USR: Cheat Guide"** (distributed in chapters via Canvas) that offers an introduction/FAQ, weekly summaries, definitions, explanations and instructions for common technical issues.

Learning Objectives
On successful completion of the course a student should be able to:

- source and evaluate the relevance of data to 3d modelling and analysis
- apply existing public data to create urban 3d models
- construct dimensioned 3d models using Sketchup/ Rhinoceros
- Export model data to Adobe Suite for editing and presentation.
- apply these tools to specific urban locations in a guided project

Modes of Learning

- Laboratory/fabrication studio– by which we mean guided small group and independent inquiry, in either the computer lab or fabrication studio, working with relevant visualization tools
- Seminar discussion (of readings, in classroom)
- Site visits as needed

Assessment Criteria
Individual in-class participation – 10%
Group assignments A1/A2/A3/A4 – 10% each (40% total)
Final Site Analysis/Design Proposal – 50%

All assignment prompts will be distributed in studio brief format via Canvas Assignment.

Software
In the hands-on production of 2D and 3D urban representations, students will gain an initial exposure to a range of key software packages used in urban planning and design. This includes QGIS, as well as Adobe Suite and Rhinoceros 3D for modelling. Rhinoceros software will be installed in students' own laptop/computer at the outset of the course, for independent use. Other software and data are freely available from these sources:

Cadmapper: www.cadmapper.com
QGIS: www.qgis.org
OpenStreetMap: www.openstreetmap.org
Geospatial data: data.gov.sg; geospatial.sg

Adobe CC is available to students via the computer labs and via laptop trolleys (in class).

Week		Lecture/ Tutorial	Reading	Assignment Due
1	Tue, 11 Jan	**Lecture** What is "Urban Space"? **Tutorial** Adobe Illustrator photo-annotation	1. Scott, *Seeing like a State*, 53-63, 76-83 2. Manaugh, *A Burglar's Guide to the City*, 45-59 3. Spiro Kostof, "His Majesty the Pick: The Aesthetics of Demolition," from Celik, *Streets*, 9-22	___
2	Tue, 18 Jan	**Lecture** Representing Urban Space: An Introduction **Tutorial** Site plan capture with Cadmapper, conversion to figure-ground with Adobe Illustrator	1. Hebbert, "Figure-Ground: A History and Practice of a Planning Technique" 2. Trancik, *Finding Lost Space*, 97-124.	A1. Online submission/ sharing of photo-annotations (via Canvas and in class) Site visits
3	Tue, 25 Jan	**No Class** Fablab introduction/ Safety briefing	Film: *The Social Life of Small Urban Spaces* (W.H. Whyte, 1980)	___
4	Tue, 1 Feb	**Lecture** Representing Landscape and Public Space **Tutorial** Maps vs urban analysis drawings	1. Whyte, *The Social Life of Small Urban Spaces*, 16-39 *2.* Soetiko, *Typologies of Open Space in Singapore* (skim*)* 3. Halrprin, *RSVP Cycles*, 39-47.	___

5	Tue, 8 Feb	**Lecture** Data and Mapping **Tutorial** Mapping (QGIS), data gathering, urban research	1. Tufte, *Visual and Statistical Thinking* 2. Corner, "The Agency of Mapping" from Cosgrove, *Mappings*, 213-252 3. Explore Sam Conrad Joyce and Metadatalab, "Jurong East Twitter Sentiment Analysis" http://metadesignlab.com/demo/JurongEast/	A2. Online submission/ sharing of figure-ground maps (via Canvas and in class)
6	Tue, 15 Feb	**Lecture** Analysis and Diagram **Tutorial** urban analysis drawing, continued	1. Allen, "Diagrams Matter," in ANY 23, 16-19 2. Monmonier, *How to Lie with Maps*, 71-86.	___
Recess Week 19- 27 Feb				
7	Tue, 1 Mar	**Lecture** Streetscapes/ Mobility **Rhino Training**	1. de Certeau, "Walking in the City" 2. Bassett, "Walkng as an Aesthetic Practice and Critical Tool"	On-site "derive" A3. Online sharing of site maps
8	Tue, 8 Mar	**Lecture** Volumetric Urbanism **Rhino Training**	1. Koolhaas, Singapore Songlines, in "SMLXL" 2. Manaugh, *A Burglar's Guide to the City*, 81- 115	A4. Sharing of "derive" (via Canvas)
9	Tue, 15 Mar	**Lecture** Building and Typology **Rhino Training**	1. Rossi, *Architecture of the City*, 10-11, 35-48 2. Rowe and Koetter, *Collage City*, PAGES	___
10	Tue, 22 Mar	**Studio**	___	
11	Tue, 29 Mar	**Studio**	___	Modelling in progress
12	Wed, 5 Apr	**Tutorial**	___	Modelling in progress

		Graphic presentation (Adobe InDesign) **Studio**		
13	Wed, 12 Apr	**Studio**	___	Final project boards draft preview
Reading Week 16 – 22 Apr				
Exam Week 30 April – 7 May: Submission of Final Case Study				

Resources:
Students will also need a sketchbook, and **a computer mouse is highly recommended** for use of Rhino (use of trackpad and keyboard only will significantly increase the time taken to complete Rhino class exercises).

Grading system
You will be assigned a letter grade for your assignments (A+, A, A-, B+, B, B-, C+, C, D+, D, F).

Late Assignments
Your assignment will be considered late if it misses the set deadline.
You have *one free pass*, which allows you to submit an assignment within 24 hours after the deadline without any penalty. This pass is nontransferable. To reiterate, you can use this free pass **only once**.

For every other late assignment, you will pay a penalty: Your grade for the assignment will go down by 10% if you do not submit by the deadline, and then continue to fall by 10% per 24 hours after the deadline.

Plagiarism
Plagiarism is very serious offence that goes against the ethos of academic honesty. You are also reminded of the serious consequences in case you are caught plagiarizing. See: http://studentlife.yale-nus.edu.sg/policies/academic-regulations/academic-integrity/ (Links to an external site.)

Nondiscriminatory Language and Conduct
This course has a policy of non-discriminatory language and conduct. Students should not use racist, sexist or other discriminatory language in class discussions or written work. This includes using “he” as a generic term to stand for men and women. See this useful set of suggested guidelines.
http://www.hamilton.edu/writing/writing-resources/avoiding-sexist-language (Links to an external site.)

Learning Disability
Students with learning disabilities (such as dyslexia) should contact the Vice Rector's office for support and guidance, but please let Prof Comaroff know if you have specific requirements for class participation and activities.

Coordination and communication
Communication, submission of assignments and distribution of readings will be done with the support of the CANVAS online system.

Health & Safety
You will be using the Fabrication Studio, which includes machinery. You will be receiving training on use of the machinery and the Health & Safety requirements of the Studio. Please abide by these requirements and wear appropriate footwear and protective wear as required.

Reading List (additional/supplementary):

Allen, Stan, 1996. "Field conditions." *Architectural Design*, 66, pp.21-21.

Carpo, Mario 2008 'Introduction' and 'Alberti's media lab', *Perspective, Projections and Design: Technologies of Architectural Representation*

Lynch, Kevin 1960 *The Image of the City*. MIT Press. Cambridge, MA.

Otto, Frei., 2003. *Occupying and connecting*. Burkhardt, B. ed. Edition Axel Menges, Vancouver, Canada.

Rowe, Peter 2017 *Design Thinking in the Digital Age*. Sternberg Press, Berlin.

Rowe, Peter 2013 *Methodological Notes on the Spatial Analysis of Urban Formation*. Harvard GSD, Cambridge, MA.

Rowe, Colin and Fred Koetter 1978 "Crisis of the Object: Predicament of Texture", *Collage City*, MIT Press, Cambridge, MA, pp.86-117.