
URBAN_ISMS
EMERGING URBAN TYPOLOGIES
MANAGING FLOWS AND NETWORKS
Designing the Metapolis
PARAMETRIC PROTOTYPES
NETWORKS AND COUPLED SYSTEMS
MANGING URBAN GROWTH
RECYCLING TERRITORIES ADAPTING SPACES
BIG DATA AND PATTERNS OF TRANSFORMATION
INTERDISCIPLINARY DESIGN RESEARCH

Title: URBAN_ISMS *Designing the Metapolis*
Instructor: Assoc. Prof. Dr. Mona El Khafif
Course: Thesis Research + Design 692-02 Graduate Studio and Seminar

URBAN_ISMS //

"If there is to be a 'new urbanism' it will not be based on the twin fantasies of order and omnipotence; it will be the staging of uncertainty; it will no longer be concerned with the arrangement of more or less permanent objects but with the irrigation of territories with potentials; it will no longer aim for stable configurations but for the creation of enabling fields that accommodate processes that refuse to be crystallized into definitive form; it will no longer be about meticulous definition, the imposition of limits, but about expanding notions, denying boundaries, about separating […] entities, but about discovering unnamable hybrids; it will no longer be obsessed with the city but with the manipulation of infrastructure for endless intensifications and diversifications, shortcuts and redistributions - the reinvention of psychological space. Since the urban is now pervasive, urbanism will never again be about the new only about the 'more' and the 'modified'.[1]

[Rem Koolhaas]

1995, when Rem Koolhaas published his article "What Ever Happened to Urbanism" he pointed at the *"paradox that urbanism, as a profession has disappeared at the moment when urbanization everywhere – after decades of constant acceleration – is on its way to establishing a definitive global 'triumph' of the urban condition".* He further stated that the city with its traditional hierarchical order disappeared and that this concept would be replaced by a multiplicity of cities that exist simultaneously within urban aggregations.
Koolhaas's speculations of a new emerging urbanism had been accurate but instead of the predicted disappearance of the discipline a multitude of urban approaches had been generated in which the traditional understanding of the a city dominated by urban form had been extended by theories and design strategies generating a diversity of urbanisms.
Charles Waldheim's *Landscape Urbanism* for example, addresses Koolhaas's idea of uncertainty, hybridization and infrastructure to suggest process above form; Stan Allen's *Infrastructural Urbanism* understands architecture as a site specific system enabling a dynamic response to its environment; *Ecological Urbanism* by Mohsen Mostafavi and Gareth Doherty considers the city as a place with multiple instruments and with an approach that is fluid in scale and its disciplinary focus. *Tactical Urbanism* on the other hand though rooted in the ideas of the Situationist City describes an urbanism that is nurtured through a hacker mentality allowing citizens to take back the city and to shape their environment through direct involvement, while *Typological Urbanism*, pursues and develops the strategies of typological reasoning in order to re-engage architecture with the city in a critical and speculative manner. In these varied contexts the architectural object and urbanism are no longer seen as opposing domains but as synthesizing devices in which the architectural typology operates to integrate and control the city and its environmental effects.[2]
Urbanism is expanding. It blurs with natural landscapes and creates hybrid places in which cities and geographies converge in a multiplicity of narratives, identities and values. Contemporary urbanization – as described by Nikos Katsikis in *Geographical Urbanism* – today shapes our planet's surface[3], which is a radical shift from former theories that claimed that natural geography shaped urban patterns.
The polarity between urban areas and natural landscapes has become obsolete and been replaced with a pervasive urbanization merely differentiated by its intensity and specificity.

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[1] Rem Koolhaas, *What Ever Happened to Urbanism*, in S, M, L, XL, OMA, Rem Koolhaas and Bruce Mau, 1995, p. 122
[2] Sam Jacoby and Christopher CM Lee, AD *Typological Urbanism: Projective Cities*: Architectural Design, Wiley Publisher, 2011
[3] Nikos Katsikis, *On the Geographical Organization of World Urbanization*, in Geographical Urbanism, Monu 20, April 2014

DESIGNING THE METAPOLIS //

"Beyond the Metropolis of the industrial era emerges the Metapolis of the digital era. The city is now place of places, where numerous urban models coexist, each with its own qualities that make it different from the rest"

[Vincente Guallart, 2003]

Rather being limited only to the design of objects, our discipline is expanding into the field of strategies, methods and processes that are restructuring the city, the territories that it occupies, the networks that circulate through it, the fabric that is generated by it and the spaces we will occupy on a daily basis.[4] As such, the design of urbanism is not a question of scale but defined by its relationship to the urban and its capacity to transform and understand the systems, networks and places of the city.
This Thesis R+D studio seeks to engage students interested in the agencies of urbanism to develop new tools, methods, and design strategies that address the contemporary city. Designing Metapolis is based on the understanding that the Metapolis according to Gausa is a type of urban agglomeration made of multiplied, heterogeneous and discontinuous spaces and relationships[5]. Metapolis investigates the political, economical, cultural, ecological and social reality that lives beyond the production of the urban. It seeks opportunistic cartographies and uncovers a new set of theoretical frameworks and design interventions that shape the urban locally and globally.

Thesis projects in this section might range from networked small-scale interventions in public spaces designed to harvest data for the smart city, to infill projects transforming urban fields, the design of architectural hybrid typologies, time-based master plans or regional design strategies. The studio will support the discussions around multiple scales of urbanism or architecture within urban context and will invite students to test alternative narratives and new realities. These investigations can be conducted as a design project ranging in scale, a theoretical analysis or be based on the development of new tools and methodologies.

As Bruce Mau states, a massive change will ask designers and architects to expand their professional practice and to take advantage of new opportunities before us. For Mau, the future is *"not about the world of design, but about the design of this* [new] *world*"[6].

The class intends to establish a set of critical investigations dedicated to the development of emerging urban strategies. Themes investigated in this Thesis Research + Design studio are not defined by a specific topic or scale, but will be provoked by the described paradigm shift defining the city as our ultimate habitat. These themes are not understood as a final list yet it hopes to encourage students to position their theses within the described thematic trajectory.

1. RECYCLING TERRITORIES ADAPTING SPACES
2. MANAGING UBAN GROWTH AND SHRINKAGE
3. NETWORKS, INFRASTRUCTURE AND COUPLED SYSTEMS
4. BIG DATA AND SMART CITY
5. TACITACAL URBANISM AND THE SUDDEN CITY
6. EMERGING HYBRID URBAN TYPOLOGIES
7. RESILLIENT SYSTEMS AND DESINING POST DISASTER

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[4] Manuel Gausa, *Architecture*, in The Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, M. Gausa, V. Guallart, W. Mueller, F. Soriano, F. Porras, J. Morales, Susanna Cros (coordinator) Actor Publisher, Barcelona, 2003, p. 56
[5] Manuel Gausa, *Metapolis*, in The Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, M. Gausa, V. Guallart, W. Mueller, F. Soriano, F. Porras, J. Morales, Susanna Cros (coordinator) Actor Publisher, Barcelona, 2003, p. 430
[6] Bruce Mau and the Institute without Boundaries, Massive Change, Phaidon Publisher, 2004

SCHEDULE //

MONTH	WEEK	TUESDAY	THURSDAY
SEPTEMBER Orientation Week	**0**		**4/9** **THESIS PREP INTRODUCTION** Lottery / Selection of Section / Umbrella Topics
Classes Begin	**1**	**09/9** **S1 AFFILIATIONS// THESIS CLOUD** Hand-out Assignment A1, Lecture S1 Presentation of 10 min Thesis Abstract	**11/9** **DESK CRITS** All School Meeting
Lecture// Louis Becker // Henning Larsen Architects	**2**	**16/9** Group Review and Individual Work	**18/9** **DESK CRITS**
	3	**23/9** **S2 PRECEDENTS// MANIPULATION** Internal Review A1, Hand-out Assignment A2, Lecture S2	**25/9** **DESK CRITS**
OCTOBER	**4**	**30/9** Group Review and Individual Work	**02/10** **L1 GUEST LECTURE DESIGN RESEARCH I** Desk Crits
	5	**07/10** **S3 METHOD// OPERATIONS** Internal Review A2, Hand-out Assignment A3, Lecture S3	**09/10** **LITERATURE REVIEW W1 WORKSHOP** Lecture// Nader Tehrani // nadaa
	6	**14/10** Group Review and Individual Work	**16/10** **DESK CRITS** Lecture// Jesse Reiser // RUR
	7	**21/10** **MID REVIEW** Presentation of A1-A3	**23/10** **S4 SITE ANALYSIS** Hand-out Assignment A4, **W2 GIS WORKSHOP**
	8	**28/10** **W3 GIS WORKSHOP** Lecture S4	**30/10** **DESK CRITS** Lecture// Joel Sanders // JSA Architects
NOVEMBER	**9**	**04/11** **S5a STRATEGIES//PROGRAM** Hand-out Assignment A5 a, Lecture S5	**06/11**
	10	**11/11** Group Review and Individual Work	**13/11** **DESK CRITS** Lecture// Sean Lally Weathers //
	11	**18/11** **S5b APPLICATION// TEST DRIVE** Hand-out Assignment A5 b	**20/11** **DESK CRITS** Lecture// Meejin Yoon // Howeler & Yoon
	12	**25/11** Group Review and Individual Work	**27/11** **L2 GUEST LECTURE DESIGN RESEARCH II** Desk Crits
DECEMBER	**13**	**02/12** **S6 ARGUMENT//THESIS OUTLINE** Review A5, Assignment A6,	**04/12** **DESK CRITS** Lecture S6 *Exams Start* **06/12** **REVIEW THESIS TALKS** With external Guests
	14	**09/12** Group Review and Individual Work	**11/12** **DESK CRITS**
	15	**16/12** **DESK CRITS**	**18/12** **THESIS OPEN STUDIO** Digital Submission

The schedule is open for adjustments. Please see schedule announced in assignments. Changes will be discussed during class time. Further information: http://gradcalendar.uwaterloo.ca/page/GSO-Academic-Deadlines-and-Events

CHALLENGES //

While the approaches to urbanism diversified, cities globally are likewise challenged by economic, ecological, political and social factors triggered by an urbanization process unprecedented in human history:

Rapid Growth I Shrinking Cities I Wasted Land //
In 1961, Jean Gottmann's study Megalopolis identified urbanization in the U.S. northeastern seaboard[7] and argued that the region of 30 million inhabitants was the beginning of a new order in the organization of urban territories. Since then North America alone is today defined by 11 Mega-regions that expand Gottmann's term of Megalopolis and asked theorists to re-articulate orders of urban aggregations.
Globally the urban population - as stated in *The Endless City*[8] - will explode from currently 50% to 75% by 2050 – a condition that radical thinkers like Hsiang and Mendis describe as the "*City of 7 Billion*"[9] reinventing the world as a single urban entity. On an everyday basis this abstract figure might be better understood in conceivable dimensions: to accommodate this growth, it will be necessary to build a city the size of Seattle every three days.

While in Western countries, we might consider these processes occurring "under control," higher rates of rapid urbanization are happening in the mega cities of the global south. According to the 2010 FIG report on Rapid Urbanization and Mega Cities,[10] around 70% of current urbanization takes place outside of the formal planning process and 30% of urban populations in developing countries are living in informal settlements a radically unequal and explosively unstable urban world, which according to Davis[11] seems disconnected from economic growth. In most of these sprawling informal settlements there is a lack of reliable data or any form of economy that might employ traditional design.

However, according to Philip Oswalt[12] we are likewise exposed to the opposite phenomenon, urban shrinkage, through migrating populations and the insurgence of vacant urban areas. In the last 50 years, about 370 cities with more than 100,000 residents have temporarily or lastingly undergone population losses of more than 10%. In extreme cases, the rate of loss reached peaks of up to 90%. Thus, despite all the predictions of constant growth, the number of cities showing symptoms of shrinkage increased faster than the number of boomtowns, leaving behind abandoned wastelands: territories of opportunity and reactivation.

Resource Shortage I Unstable Economies I Lack of Agency //
The upcoming surge of urban growth, shrinkage, and wasteland production will be challenged by global climate change, extreme weather conditions, water and energy shortage, economic and social instability, aging infrastructural systems lacking any kind of resilience or capability to manage increasing traffic, and an absence of agency to alter the patterns of development. Cities and governments, which continue to rely on traditional processes of planning, zoning codes and other urban development tools, are liable to lose their economical and administrative power to drive agendas for development.
As Alex Steffen calls out, scientists can measure the current crisis. The planet's biocapacity, which consists of nine major natural systems, is pushed to the edge of what is necessary to sustain life as we know it. Four of those systems – greenhouse gas concentrations in the

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[7] Jean Gottman & August Heckscher, *Megalopolis. The Urbanized Northeastern Seaboard of the United States* Jean Gottmann (Whitefish: Literary Licensing, LLC, 2012).
[8] Ricky Brudett & Dyan Sudjic, *The Endless City. The Urban Age Project by the London School of Economics and Deutsche Bank's Alfred Herrhausen Society* (London: Phaidon, 2008).
[9] Joyce Hsiang, Bimal Mendis, "*The City of 7 Billion: an Index*", in ACSA 102 Proceedings, 2013
[10] Research Study by FIG Commission 3, *Rapid Urbanization and Mega Cities: The Need for Spatial Information Management,* (Copenhagen: The International Federation of Surveyors, 2010).
[11] Mike Davis, *Planet of Slums*, Verso Publisher, 2007
[12] http://www.shrinkingcities.com/globaler_kontext.0.html

atmosphere; freshwater consumption; deforestation; and terrestrial biodiversity – will be immensely affected by the shape that urban growth will take in the next 50 years.[13]

What are the questions we need to ask and where can we intervene? How can we build new agencies? What are the tools and methods that will be needed to address different conditions of urbanisms? What are opportunities and design projects that have the capacity to support, transform and manipulate the contemporary city?

The ecologies of the 20th century will be in need of new relationships that, as Gausa argues, are a *"prospective reformulating disposition of this* [old] *reality".*

THESIS R+D OBJECTIVES AND STRUCTURE

TRD Motivation and Thesis Context//

This Thesis Research + Design studio seminar will guide students in the development of an individualized research topic as a preparation for their thesis in architecture. The course will use written, verbal and visual presentation to develop a critical argument that sets the stage for the thesis research project culminating in the production of a thesis outline at the end of the semester.
The course's goals and learning objectives will be supported by an assignment structure and can be described as:

- The formulation of a focused research agenda and questions within the selected topic
- The development of an intellectual and critical method to achieve the thesis proposal
- An understanding of ideas and strategies contained in critical precedents
- The development of expertise in history and theory published on the given topic
- The development of an original thesis that is grounded in the discipline

TRD Course Structure//

The Thesis Research and Design studio will be taught twice a week on Tuesdays and Thursdays from 9:30 am to 5:30 pm. Within the period of 15 weeks students will work on 6 sequentially titled projects ['S1' to 'S6'] that will operate as a methodical framework to achieve the class objectives and the development of an independent thesis topic. Each sequence is accompanied by a 2 or 3 weeks assignment that allows students to work on their own topic while following a methodical roadmap. Each assignment is introduced through a lecture and will be discussed as a group. Individual desk crits and group discussions will provide feedback for students to develop their individual projects. The results of the assignments will be discussed during review sessions that are scheduled for Tuesdays. During the semester the course will be enriched by seminar like in-puts, round table discussions, guest lectures and a software workshop. In addition, students will be able to participate in the Path to Practice Event, which will offer an excellent opportunity to be exposed to experts in the field.

Sequence S5 will conclude with a review titled **" TRD Thesis Talks"**. Students will give a 20-30 minute poster presentation on their thesis research to external guests. The resulting feedback will help to synthesize the semester's work into a thesis abstract [S6] that will serve as a completed roadmap for the following semester. At this last stage that will be submitted to the instructor, it will be critical to articulate a clear and focused thesis question, a summary of the research demonstrating a level of expertise on the topic, an analysis of the findings, an articulation of first design implementations, and a complete outline of the individual thesis syllabus. The semester will end with a social event titled **"TRD Open Studio",** in which students will present a poster to their peers to introduce their thesis research to the Waterloo Architecture Grad Program.

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[13] *"World Changing. A User Guide for the 21st Century"*, Alex Steffens, Abrams Publisher New York, 2011, p. 17

TRD ASSIGNMENT STRUCTURE//
Throughout the semester, students will be exposed to 6 assignments that will help to develop a critical body of work for the final thesis outline.

Sequence S1_AFFILIATIONS// THESIS CLOUD
An architectural design thesis requires students to formulate a tightly focused research agenda within the discipline of architecture / urbanism and to test this agenda through a specific design proposal in a second stage that follows the Thesis Research and Design studio. Though the thesis will ultimately employ the tools of architectural production and will be centered on a narrowly focused question founded on an explicit body of research, the first assignment in S1 will ask students to embed their initial thesis thoughts into a larger context. Allow yourself to open your mind and diversify your interests, spread your net and capture a wide range of sources within and outside the conventional architectural discourse. Create a thesis cloud that will offer a landscape of ideas, thoughts, concepts, precedents, theories and affiliations from within and outside of architecture. *Hand-out Assignment A1*

Sequence S2_PRECEDENTS// MANIPULATION
Your thesis project will not stand-alone and you should learn from precedents that need to be carefully analyzed. Who worked on similar topics? What are the critical projects that had been tested either realized or through virtual contributions? What are the precedents you need to understand in order to contribute to the broader discussion about your chosen topic in the discipline of architecture? And finally, what are potential manipulations and extractions that might be useful for your own thesis approach? *Hand-out Assignment A2*

Sequence S3_METHODS//OPERATIONS
Given these precedents and your initial research, what are the operational methods and techniques of exploration best suited for your thesis investigation? What are the right tools for your exploration and how can you develop these methods extracted from precedents for your own purposes? The development of your design method will be essential to your thesis project and distinguishes a thesis from a studio project. During this sequence literature review will be crucial and will be facilitated through a workshop held by our librarian. We will begin with this investigation in sequence 3, but expect that it will be redefined and developed throughout sequences 4 through 6, incorporating site, context, data and program. *Hand-out Assignment A3*

Sequence S4_SITE[S] // SOFTWARE TOOLS AND ANALYSIS
Though your site might not define yet or you might work on multiple sites, we will start to investigate and analyze the physical environment where your project might be located. During this sequence, you will be exposed to GIS software tools that will help to compile site- and context-relevant data and to analyze those in support of your project [see annex workshops]. The assignment will consist of multiple components including the development of a digital archive, analytical maps, diagrams, and datascapes. *Hand-out Assignment A4*

Sequence S5_STRATEGIES// PROGRAM// TEST DRIVE
The site investigation will allow for an understanding and analysis of the context and potential applications of your thesis project. As such, the application of your project might be much broader than the final -probably single- site you will select for the next phase. During sequence 5, we will work on opportunity maps and program outlines as well as a first draft of your thesis application. The test drive will help you to jump into the cold water. This first draft will not be the outline of your final thesis project, but will serve as an iteration. You will work on a 3.5 -week design assignment that moves your work from “research” to “design”. The main purpose of assignment A5 is to operate as a test drive whose critique will help to fine-tune the requested thesis statement. *Hand-out Assignment A5*

Sequence S6_ARGUMENT// THESIS OUTLINE
The final assignment will ask you to compile all research into a deeply grounded thesis outline. This outline articulates a clear thesis statement including your argument and a detailed plan that describes how you are planning to continue working on your project during the next phase. This will operate as your self-generated syllabus and will help you to structure the independent design work that will follow in the next months. *Hand-out Assignment A6*

The phases shown in this outline will be updated by formal assignments issued during the term. Details shown here may change according to the development over the semester and students' needs. Students will be asked to submit their work a night before the review via "dropbox" online file space that can be used for digital hand-ins.

Students are asked to properly and consistently quote and cite work developed by others. Please use the Chicago Manual of Styles for these purposes. More information under http://www.chicagomanualofstyle.org/tools_citationguide.html

TRD Participation and Students' Involvement//
Students will be asked to continually participate in discussions throughout the semester. Readings and in-class brainstorming sessions will allow students to engage directly with the content. In addition, students are invited to further develop the ThesisLab Manifesto as briefly described in the introduction. This umbrella Manifesto will unfold over the duration of the semester under the guidance of the instructor and in cooperation with peers in the section.
The two guest lectures L1 and L2 are currently scheduled within the sequence S2 Precedents// Manipulation and S5 Strategies// Operations. Experts visiting the class to present their work are tremendous resources for your research. In addition we are looking forward to invite critiques, to visit related events in Toronto. Students are invited to make suggestions and to organize round table discussions with local experts. This process will be discussed at the beginning of the semester and will allow students to actively participate in the shaping of the course and to start networking.

TRD Documentation and Learning Resources//
The class will be organized through the UWThesisLab14 PBworkspace. Students are invited to organize their own blogs in order to communicate their research with the broader public. This blog will be understood as a growing entity and resource that will help to structure the outline of students' respective thesis projects.

In addition, you will be asked to complete the semester with a thesis research book, printed through Lulu Print. The class will have access to a template [US letter] that can be manipulated for personal purposes. However, the format of the final book will be limited to 11" x 8.5" portrait. This book will include all findings and assignments of the semester and will operate as your individual "thesis guide", supporting the next phase of your project. At the end of the thesis completion we intent to publish all final thesis work in form of a thesis publication printed with Riverside Press in Waterloo.

BIBLIOGRAPHY

Individual research bibliographies are determined by each student and are understood as a "growing" database that is collected over the duration of the semester and they will contribute to the final thesis layout and research agenda. Under the guidance of the instructor, students will build their bibliography, which is expected to consist of books, essays, documentaries, interviews and online resources. Students are asked to visit the library on a regular basis and to use online archives such as http://www.jstor.org for scholarly research.
Readings will also be assigned during the semester. Among these will be:

THESIS RESEARCH READINGS

• Manuel Gausa, *Dynamic Time – [in]formal order: [un]disciplined trajectories,* in Quaderns 222: Elastic Time by Actar Editors, Barcelona 1999
• Stan Allen, *Mapping the Unmappable. On Notation,* in Practice: Architecture and Representation, NL, 2000
• Manuel De Landa, *"Uniformity and Variability. An Essay in The Philosophy of Matter,"* http://www.t0.or.at/delanda/
• Sanford Kwinter, "*Landscapes of Change*", ed. Umberto Boccioni, in Assemblage, No. 19, pp. 50-65, MIT Press, 1992
• Antoine Picon, *Architecture, Science, Technology and the Virtual Realm*, in Architecture and Sciences: Exchanging Metaphors, ed. Antoine Picon + Alessandra Ponte PAPress, 2003, p. 292-313

Note: The literature readings are an ongoing resource. Please see listings in assignments.

RECOMMENDED LITERATURE

• Charles Waldheim, *Landscape Urbanism Reader*, Princeton Architectural Press, 2006
• Almy, D., [editor] *On Landscape Urbanism. Volume 14*, The Center for American Architecture and design, 2007
• Mohsen Mostafavi, Gareth Doherty, *Ecological Urbanism*, Lars Muller Publisher, 2010
• Stan Allen, Marc McQuade*, Landform Building: Architecture's New Terrain,* Lars Muller Publisher, 2011
• Stan Allen, Marc McQuade*, Landform Building: Architecture's New Terrain,* Lars Muller Publisher, 2011
• Rem Koolhaas, *Delirious New York: A Retroactive Manifesto for Manhattan,* The Monacelli Press, 1997
• Doug Saunders, *Arrival City. How the Largest Migration in History Is Reshaping Our World*, Vintage Publisher, 2012
• Mario Gandelsonas, *X-Urbanism: Architecture and the American City*, Princeton Architectural Press, 1999
• Mario Gandelsonas, *The Urban Text*, MIT Press, 1991
• Monu 20 Magazine, *Geographical Urbanism*, April 2014
• Ila Berman and Ed Mitchell [editors], *New Constellations / New Ecologies*, Proceedings ACSA Conference 101, San Francisco, 2013
• Mike Davis, *Planet of Slums,* Verso Publisher, 2007
• Joyce Hsiang, Bimal Mendis, *The City of 7 Billion: an Index,* in ACSA 102 Proceedings, 2013
• Philip Oswalt, *Urban Catalyst: The Power of Temporary Use*, DOM Publisher, 2013
• Klaus Overmeyer, *Urban Pioneers: Temporary Use and Urban Development in Berlin*, Jovis Publisher, 2007
• Peter Bishop and Lesley Williams, *The Temporary City*, Routledge, 2012
• Alan Berger, *Drosscape. Wasting Land in Urban America*, Princeton Architectural Press, 2007
•Terry Schwarz, *Water Craft. Urban Infill*, Cleveland Urban Design Collaborative, 2012
• Pamela Blais, *Perverse Cities: Hidden Subsidies, Wonky Policy, and Urban Sprawl*, UBC Press, 2011
• Jean Gottmann, Harper, R. *Since Megalopolis: Urban Writings of Jean Gottmann*, Johns Hopkins University Press, 1990
• Jean Gottmann, J., *Megalopolis: The Urbanized Northeastern Seaboard of the United States*, The MIT Press, 1964
• Joel Garreau, *Edge City: Life on the New Frontier*, Anchor Publisher 1992
• James Kunstler, *Geography of Nowhere: The Rise And Decline of America's Man-Made Landscape*, Free Press, 1994
• Alfredo Brillemburg, Hubert Klumpner, *Torre David: Informal Vertical Communities,* Lars Muller, 2012
• Sassen, S. "Global Networks, Linked Cities", Routledge Publisher, 2002

• Saskia Sassen, *Cities in a World Economy. Sociology for a New Century Series*, SAGE Publications, Fourth Edition edition, 2011
• Townsend, A., *Smart Cities. Big Data, Civic Hackers, and the Quest for a new Utopia*, W. W. Norton & Company, 2013
• IAAC Metapolis, *HICAT Hypercatalunia. What are the limits of Catalonia? Territorial Research and Design Speculations*, IAAC, 2004
• Burdett, R., Sudjic, D. *The Endless City.* The Urban Age Project by the London School of Economics and Deutsche Bank's Alfred Herrhausen Society, Phaidon Press, 2009
• Burdett, R., Sudjic, D. *Living in the Endless City.* The Urban Age Project by the London School of Economics and Deutsche Bank's Alfred Herrhausen Society, Phaidon Press, 2009
• Mau, B. Leonard, J. Institute Without Boundaries, *Massive Change,* Phaidon Publisher, 2004
• MVRDV, *KM3. Excursions on Capacities*, Actar Publisher 1999
• MVRDV, *FARMAX*, 010 Publisher, 2006
• MVRDV, *MetaCity DataTown*,101 Publishers, 1999
• Beyer, E., Hagemann, A. Rieniets, T., Philipp Oswalt, P., *Atlas of Shrinking Cities*, Hatje Cantz Publishers, 2006
• Klanten, R. Bourquin, N. Ehmann, S. Van Heerden, F., *Data Flow: Visualizing Information in Graphic Design*, Gestalten Verlag, 2008
• Mirko Zardini, Wolfgang Schivelbusch, *Sense of the City. An Alternative Approach to the City*, Lars Müller Publishers, 2005
• Peter Moertenboeck, Helge Mooshammer, *Networked Cultures. Parallel Architectures and the Politics of Space*, NAI Publishers, 2008

Note: The literature list is an ongoing resource. During the semester critical sources will be added and listed on the pbworks page.

DOCUMENTARIES

• Gary Hustwit, *Urbanized*, 2011, Interviews with Rem Koolhaas, Jan Gehl, Michael Sorkin, James Corner among others.
• Gary Burns and Jim Brown, *Radiant City*, 2008
• Gregory Greene, *The End of Suburbia*, by 2004
• Mai Iskaner, *Garbage Dreams,* 2009

SEMESTER WORKSHOP // GIS Site Analysis [Mona El Khafif]

Mapping the Future with Big Data

"If we can avoid the temptation to view any map as complete, if we can remind ourselves not to simply layer a map of housing subsidies on top of the crime map and call it a day, if we can find the energy to instead go one map further, and then another, and then another, then perhaps GIS will live up to its fullest potential. It will become a tool to take knowledge that's been accumulated across disciplines and recombine it in a way that's useful to an ever-growing sphere of people. Uniting the world and all the data we've gathered about it through a shared geographical understanding, and then creating maps that go backward and forward in time: This is the promise Dangermond sees in the future of ESRI."

[Patrick Tucker, The Futurist, Aug 2013]

During this workshop session, students will be introduced to the general applications of ESRI 's mapping software ArcGIS, and explore this software as a tool for collecting digital geospatial data and the analysis of complex urban environments. Geographic Information Systems (GIS) compatible shapefiles, geodatabases and raster imagery are accessible in diverse online data archives. The workshop will teach methods for collecting and organizing a variety of geospatial data in order to build a GIS archive. Each student will be able to compile datasets related to his or her site utilizing publicly available databases. In addition, students will learn methods for building their own datasets. Participants will learn to activate and use the embedded datasets for urban network analysis and Census data analysis. In the second part of the workshop, students will explore the most commonly used tools in ArcGIS toolbox in order to identify the tools of interest to architects, particularly those suited to understanding and exploring the natural and urban environment. Students will additionally explore the ArcGIS 3D Analyst extension that facilitates the display and analysis of terrain and surface data using ArcScene. Users can query the attributes of a surface (e.g. elevation, slope) and create contour lines of any given terrain on the globe. Further, students will explore ESRI's newest product CityEngine.

Software:

The class will use ESRI ArcGIS Desktop 10.1 with extensions. The software runs on PCs, or on Macs possessing a Windows XP, Windows Vista, or Windows 7 partition. A 60 day trial versions are available on the ESRI website. Additional the UW main campus offers 1-year ArcGIS licenses for a small fee.

Links:

ESRI Canada http://www.esri.ca/en/content/student-licenses
ESRI CityEngine http://www.esri.com/apps/products/cityengine2/index.cfm

ANNEX// GOVERNING DETAILS

TRD Class Agenda

Welcome to the Thesis Research + Design Graduate Studio and Seminar this fall semester. Please read the syllabus and the information below carefully. The preparation of your thesis research is a unique opportunity to conduct your own research and to position yourself within the discipline. As such the Thesis Research + Design studio requests not only requirements defined by the school policy but tries to prepare students for their professional life. Commitment to your work, collaboration among the group, self-motivation, participation and attendance in time will be critical.
If you run into problems during the semester or if you are concerned about your progress, please contact me at any time via email or request a meeting during the class. This class is meant to provide all support you need to develop your thesis outline and research agenda. However deadlines are critical tasks to take care of in our profession. Successful time management will be an important skill for your success.

In the moment when you step out of the academic environment you will need to offer the professional world not only a strong portfolio and good grades. In your future professional life it will be most essential to also understand the opportunities and responsibilities of our profession. The next generation of architects and designers will participate in an important paradigm shift. Use this class to strengthen your position and to develop your agenda.

TRD Class Meetings

Lectures and class meetings will be held throughout the term at the beginning of studio days and at the end. Be prepared to meet every studio day promptly at 9:30 a.m. Please be punctual. Specific dates will be established as the term evolves, responding to class progress. Check your email late evening on the day before or early morning on studio days for updates on meeting times and locations.

TRD Grading

The semester consists of brief two – three week exercises that ask students to probe their thesis topic through the lens of specific research areas and methods. To successfully complete the class each assignment needs to be accomplished and presented in time. Progress, participation and collaboration will effect the grades through out the semester. The assignments will be graded as follow:

A1, A2, A3, A4 [40%]
A5 a and A5b [20%]
A6 [30%]
Participation [10%]

TRD CLASS CULTURE

Maintain the Studio

Cooperate in maintaining the studio space. If you play audio material, use headphones.

Attend Lectures and Work In Studio

Attend all lectures. Work in studio on studio days. Be in full attendance in studio from 9:30-12 a.m. and 1- 5 p.m. on studio days. If you are planning to visit the library or conduct off site research, please talk to your instructor.

Complete all parts of the work; submit your work on time

All assigned parts of the work must be completed. Punctual completion is required. Grade penalties will be applied to late submissions and chronic lateness may result in disciplinary review including refusal of acceptance. Late submissions must be accompanied by formal

transmittal indicating reason for lateness. For submissions administered with evening deadlines, penalties would be assessed at 5% up to midnight, and 5% next day and each day afterward. 'Days' begin at midnight each day, and include weekends and holidays.

Accommodation for illness; not for travel
If you need to apply for accommodation of lateness or absence due for illness, make a formal application by using 'Verification of Illness' [VIF] forms or counseling letters, filed with the Architecture Office. Student travel plans are not considered acceptable grounds for granting alternative reviews and submission times.

Academic Integrity
In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences [e.g., plagiarism, cheating] or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Director. For information on categories of offences and types of penalties, students should refer to Policy 71, Student Discipline'. For typical penalties check Guidelines for the Assessment of Penalties. Note: "Plagiarism, which is the act of presenting the ideas, words or other intellectual property of another as one's own. The use of other people's work must be properly acknowledged and referenced […]. The properly acknowledged use of sources is an accepted and important part of scholarship. Use of such material without complete and unambiguous acknowledgement, however, is an offence under this policy."

References
www.uwaterloo.ca/academicintegrity/
www.adm.uwaterloo.ca/infosec/Policies/policy71.htm.
www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm.

Grievance
A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, www.adm.uwaterloo.ca/infosec/Policies/policy70.htm. When in doubt please contact the department's administrative assistant who may provide further assistance.

Appeals
A decision made or penalty imposed under Policy 70 [Student Petitions and Grievances] [other than a petition] or Policy 71 [Student Discipline] may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 [Student Appeals] www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Students with Disabilities
The Office for Persons with Disabilities [OPD], located in Needles Hall, Room 1132, collaborates with academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.

Faculty contact and office hours
Assoc. Prof. Dr. Mona El Khafif
melkhafif@uwaterloo.ca
Tuesdays 6:00 pm – 7:00 pm