Deep Planning

Architectural Association School of Architecture, London
Jeroen van Ameijde and Brendon Carlin

CONTENTS:

01. CONTEXT
02. TECHNICAL STUDIES
03. CALENDAR OF THE YEAR
04. SEPARATE RESEARCH AND DESIGN BRIEFS
05. REFERENCES AND BIBLIOGRAPHY
When the term ‘deep planning’ was first introduced in 1999 to describe an ‘integral, time and user based approach’ to architecture and urbanism, it was from within a small league of architects exploring the implications of new information-based design methodologies. The term addressed architecture’s strategic role in guiding the complex realities of the urban condition, and the architect’s ability to projectively predict the success of their interventions. From the many unfulfilled ambitions of the ‘90s avant-garde, ‘deep planning’ is one of the most intriguing, for its potential to operate within some of the new societal challenges that have since emerged.

Inter 6 will this year adopt “deep planning” as a working method and ethos, using a detailed understanding of the organisational structures of the city to generate projects with the potential to initiate progressive shifts within the society. We will travel to Shanghai and Tokyo to collaborate with local universities and arm ourselves with insights and experiences of the inner workings of two vibrant epicentres which are challenging and driving global innovation. Using a programme of seminars and design agendas, we will explore ‘hyper-urban’ conditions capable of becoming catalysts within their surrounding context.

The Unit’s design work will develop around an in-depth mapping of a chosen site for the duration of the year. Working within the vibrant public spaces of London’s south bank, we will produce a collective information model of the area and use this as a laboratory to analyse and test enhancements of the existing urban ecologies. Individual design proposals will emerge from these data-scapes, using innovative calibrated architectural systems to speculate on strategic interventions within existing urban intricacies. We will conceive of new types of three-dimensional urban and architectural latticeworks and interstitial spaces which elicit networking and collision, capitalising on the synergetic interweaving of multiplicitous urban domains.

Jeroen van Ameijde has been teaching at the AA since 2007 and is co-founder of Urban Systems, an office specialising in generative design methodologies which is currently developing several large scale projects in China. He has previously taught at the University of Pennsylvania and the University of Innsbruck and has lectured, published and taught workshops on digital design and fabrication worldwide. He has studied at the Delft University of Technology and worked with offices in the Netherlands, Switzerland, New York, Hong Kong and London.

Brendon Carlin completed his masters in Architecture and Urbanism at the Architectural Association and undergraduate of Environmental Design in Architecture at the University of Colorado, Boulder. He has worked on architecture projects of various scales for offices in Holland, the UK, China and the United States. Brendon has taught and co-ordinated courses and workshops at the University of Colorado, Berlage Institute, the AA and Harvard. Currently he is developing several large building and urban projects as director and co-founder of the London based practice Urban Systems.

James Kwang-Ho Chung is an architectural designer at Urban Systems. He has worked for Foster and Partners and NEX Architecture in London on projects of various scales in the UK, China and Kuwait. James has previously taught and coordinated digital workshops at the AA.

Deep Planning

Jamie Queisser, proposal for a non-standard open framework for urban growth, creating an ‘urban catalyst’ that intensifies and juxtaposes traditional small and newer, larger types of economic activities at a site in Ho Chi Minh City.
Context

As society continues to experience accelerated technological development, the ways that people interact and identify with each other are also changing at an accelerating pace. The meaning and function of the physical urban realm within society now holds an altered, though equally significant set of functions, as technologies are changing the ways we define territories and inhabit the fabric of the city. The ascendancy of liberal economic models is prompting patterns of historically unparalleled urban densification and ever increasing resource consumption, offering new challenges and opportunities to the architectural profession. Architects have a chance to once again attribute a much larger scope of research and ambition to the act of building, not only through the adoption of technological concepts within their design methodologies and schools of thought, but also through their compatibility with the new technologies embedded within society as a whole.

The research conducted within Intermediate Unit 6 is based on the belief that new technological developments are not just enabling progress but hold a substantial potential to drive highly progressive strategies for the conception of the functionalities of architectural design. However their use requires an approach that is quite different from how most architects have explored tools such as algorithmic design and digital fabrication up to this point. Instead of obsessing with newly achievable formal complexity and the boundless creative freedom that digital design environments seem to allow, we apply an attitude of critically towards application of these new tools. We focus on the integration of digital concepts and technologies within realistic societal challenges, investigating their strategic use within overall potential project scenarios rather than exploring them as independent processes of design.

Urban Ecologies

A deeper understanding of the intricacies of our networked society allows us to question the life-cycle and the appropriateness of buildings within the chaotic and dynamic context of their briefs. With an ongoing urbanization and increasing pressures on resources and space, cities are becoming increasingly dense to optimise the use of their infrastructures. ‘Urban Centres’ are no longer only planned through grand, government-led schemes filled with buildings that reinforce a centralized power over society. Instead, multiple and mixed urban centres are emerging out of collaborations between local governments and developers, between top-down planning and the market-driven forces that dictate much of the societal framework. After decades of failed urban development schemes, contemporary planning policies now include the recognition that successful urban spaces derive their qualities from complex sets of interactions between people, programs and the physical environment, which are continue changing and evolve over time. Successful urban projects need to be designed with a certain ‘open-endlessness’, to be able to absorb the unforeseen activities of city life, and to be able to mould into a context consisting of many interacting forces at a social, cultural and economical scale.

New Design Strategies

Just like with other products such as cars and cellphones, the use of buildings is being affected by an ongoing technological transformation that is revolutionising the way they are designed, fabricated, consumed and recycled. An increasing part of the architectural community is shifting its attention from initial exploration of new digital tools to more pressing questions of their purpose within the larger context of society. As technological developments have resulted in paradigm shifts in the past, innovations in digital design and fabrication technologies should not only allow for the transformation of the methods of architectural production, but also the methods of its conception. Design processes should be re-invented to incorporate the new ways of harvesting, processing and translating the information related to each project. We are at a crucial moment in time, amongst a group of architects trying to put new digital tools to good use. We can start to develop new information-based design methods and strategies that are taking advantage of current technologies, giving architects and their design processes a renewed validity and purpose within society, and allowing ourselves to create building projects that intensify and catalyse the dynamic and exciting opportunities for unique city life.
Generative design

Many contemporary researchers have addressed the increasing similarities between digital design processes and certain organizing principles in nature. Michael Weinstock has written about the principle of “biomimesis”: a valuable method of “abstracting principles from the way in which biological processes develop a natural material system, applying analogous methods in an artificial context.” He points out that in nature, form, structure, and material act upon each other, and the behaviour of all three cannot be predicted by analysis of any of them separately. The way in which for example trees grow within a natural environment is governed by the interplay between its materiality, structure and the influences from its environment such as gravity, climate and neighbouring elements. If architects aim to create buildings with a similar intelligence in efficiency and adaptation, they should consider similar interactions between the several aspects of their digital designs.

There are several architecture practices and academic researchers that explore concepts of ‘growth’ to establish rule-based design systems that gradually evolve design solutions to fit their brief and site. Yet most of this research remains fully in the digital realm, applying the concepts at a theoretical level before any outcomes might be materialized. Within the research of Intermediate Unit 6 we develop innovative design processes with a clear logic and consistent step-by-step translation of design information over time. This allows for design processes to ‘generate’ traceable solutions which can be evaluated against the performance criteria that informed the design process in the first place. We calibrate our design processes against the characteristics of the material systems, construction methods and scale of their final application, creating a range of architectural solutions that can be adapted further to a specific location or point in time. Similar to nature we don’t start our design process with considerations of the formal qualities of the final result, yet we trust that each successful process will generate exciting creations, showing their intricate balancing of complex forces at work.

Information-based Design

Intermediate Unit 6 uses the development of unique and informed generative design methodologies for the creation of speculative projects for high-density urban locations. The aim of setting up these design methods is to generate site-specific outcomes within the limitations of a particular context, allowing projects to take full advantage of and contribute to their surroundings. We believe that informed design processes will result in better buildings, addressing the full spectrum of a building’s required functionalities and accommodating its adaptation towards social, economic and environmental performance criteria and contexts.

Through this research we aim to explore not only new scenarios of construction and inhabitation, but also the changing role of the architect within this process. When designers and digital tools can collaborate as partners in a creative and generative process, architects can begin to set up individual and unique design mechanisms, using rule-sets that capture the intelligence and underlying logics of materiality, organisation and spatial performance. By incorporating the knowledge of how constructed spaces facilitate types of activities, architects can become digital master-builders, reverse engineering high-quality spaces that stimulate social interaction and individual freedom within new types of urban environments.

Unit Work Strategies

Each design project will start with rigorous research into architectural precedents, focusing on both technical achievements and the philosophical framework or social context within which these solutions have emerged. We will investigate which opportunities can be found within existing projects and ideas, using both London projects and spaces as well as a list of suggested projects as research. As a unit as a whole we will collect a range of case studies, covering intentionally and unintentionally developed urban centres, analysing both designed and undesigned complexities in existing urban architectures. We will study the Situationists and Metabolists, Team 10, and their possible contemporaries. We will tour The Barbican and the Southbank, and several other London public spaces that feature a mixture of programs, infrastructures and spatial qualities that are affecting their everyday use.
Using innovative and detailed methods to map existing city spaces, we will aim to channel the harvested information into our inventive work flows for rule-based design. The key ambition is to identify and instrumentate links between the physical properties of a particular environment, and its demonstrated uses based on the qualities of space. The performance criteria will be translated into a design brief for each individual student, and re-created through 1:1 scale construction process tests. Starting with simple but complete processes from input to output, we will test the possibilities for the translation of environmental and user information into architectural structures, and study the feedback loops in between.

**Structures for Urban Life**

As it is the units’ ambition to address problems that are shared by a large part of the world’s population, we will design our proposals with multitudes of projects in mind. This ‘system-approach’ would allow our research and development of new and innovative fabrication methods to be applied on a large scale. Developing prototypical scenarios will emphasize the need for intelligent control of our design models, forcing us to be specific about the relationships between each potential site and the specific -changing- designed outcome. Linking back to a specific fabrication method will help to define the bandwidth of possible variations of the design, making its application more specific, efficient and realistic.

Within a designated area of London’s South Bank, each student will choose their own specific site and context, using site-specific information to further challenge, intensify and articulate the design thesis of their individual project. Design development will allow projects to adapt into an already rich context while at the same time contributing and improving on its physical, cultural, economical and social climate.

**Contingencies: Adaptation and Growth**

Throughout the yearlong research, the unit will re-asses each design project from the perspective of its development over time. Assuming that there is no single or permanent solution for a design or organisational model, that will satisfy the needs of its ever changing population, we will ask whether our projects can be designed as partially open-ended systems, including possibilities for adaptation and future growth within our digital design, fabrication and construction strategies.

Based on the previously developed logics to achieve structure and inhabitable space, we will envision scenarios of clustering and large scale assembly, bringing all aspects of design variation and construction under digital control. Envisioning scenarios in which a feedback loop between digital design models and the performance of the structures that already have been built would allow to forecast each future addition that should be implemented on site, we speculate how buildings can be programmed to evolve over time.

**Urban Interventions**

Applying our prototypical structures into our sites will inform a refined brief of performance criteria, linking ideas about existing conditions and possible improvements regarding the physical and programmatic relationships within the site to the ambitions for the project. Setting up top-down strategies that direct and limit growth, our scenarios will allow for negotiation between the possibilities for individual customisation and the interests of the whole. Designs for new infrastructural systems have to be implemented, including the social and cultural infrastructure of the surrounding urban communities. A specific description of existing and future users, their activities and requirements will help to envision scenarios which can be both visionary and realistic. Each individual student will be asked to select additional programmatic elements for the projects which will contribute to their capacity to evoke emergent urban ecologies. Using specific diagramming and visualisation techniques, we will demonstrate the ability of each project to integrate and participate within society, forming a case study for new models of urban life.
Dividing the yearlong research of the unit in two phases, the first phase is centred around laboratory-type research, focusing on general principles of ‘urban ecologies’ without considering a specific project brief.

Using detailed research into the inner workings of existing urban spaces and their physical characteristics, we develop a framework for the conception of innovative architectural projects that build upon the feedback between the physical structure of an urban environment and its perceived qualities and use.

We will use physical prototypes and carefully located interventions inside of our laboratory urban test site to explore innovative methods of designing and testing architecture’s abilities to influence and enhance the dynamics of three-dimensional urban spaces.

From term two, we expand our earlier findings into calibrated larger project scenarios, using the same site research and urban ecology/mapping mechanisms used in term 1. The expansion of previously developed concepts will allow individual students to develop a programmatic and urban brief that combines a thesis on the enhancement of existing urban ecologies with an innovative material and spatial/geometrical systems. Each project will address specific challenges at the interface between flexibility and economics of means, measuring, rectifying and intensifying earlier design premises to allow the projects to adapt into their context while at the same time contributing and improving on its physical, cultural, economical and social climate.

Calendar of the Year

**Phase 1 - ‘Societal Space’ (12 weeks)**

**Term 01 (12 weeks, 29 Sept - 19 Dec 2014)**
- **CIVIC SPACE** 4 weeks
  - Jury: 24 October
- **1:1 CIVIC INTERVENTION** 6 weeks
  - Hooke Park design+build: 3 - 7 November
  - Term 1 Final Jury: 28 November
  - Shanghai Workshop: 8 - 13 Dec
  - Tokyo Mapping: 15 - 20 Dec

**Phase 2 - ‘Deep Planning’ (20 weeks)**

**Term 02 (11 weeks, 12 Jan - 27 March 2015)**
- **URBAN THEORY** 2 weeks
- **URBAN INTERVENTION** 12 weeks
  - Interim Jury: 6 February
  - TS3 Report part 1 Hand-in: 2 February
  - TS Interim Jury: 9 March
  - 3rd year preview tables: 23/24 March
  - 2nd year final jury: 26 March

**Term 03 (9 weeks, 27 Apr – 26 June 2015)**
- **INHABITATION** 4 weeks
  - Final Jury: 22 May
- **DESIGN FINALISATION / PORTFOLIO / EXHIBITION** 5 weeks
  - 2nd years final tables: 8 June
  - 3rd year final tables: 15/16 June
  - 3rd year external examination: 23 June
The unit places central importance on research into specificities of construction methods as a basis for the development of design. We aim to facilitate a productive overlap between the work that is required for the unit’s brief and work required for the thirdyear’s Technical Studies submission.

The unit calendar of the year is deliberately structured around a bottom-up design process, starting with physical experimentation from which design systems are derived, which are then applied to a larger scale mixed-use urban project.

Unit assignments are aimed towards clear deliverables, which need to be documented in a format suitable as a basis for both the unit portfolio and the TS submission:

1. research and analyses of historical precedents and case studies of a specific method of construction (using a material system suitable for large scale assembled structures);
2. prototyping experiments recreating and improving upon a chosen construction method through the critical use of digital design tools and file-to-factory processes;
3. experimental design and production of an assembled structure through at 1:1 scale, testing materials, fabrication and assembly and environmental design;

The main focus of the first term is the application of ideas and theories on urban ecologies and spaces towards realistic, physical building structures. Students are asked to set up digital enabled methods that translate social and environmental performance factors into the design process of a 1:1 structure on-site.

The unit will require all thirdyear students to submit an early TS Report (2 February 2015), which will count as ‘phase 1’ of the TS work. The work will be developed in coordination with TS staff who will join certain tutorials and unit juries.

During the second term, students will continue to develop their design projects which are informed by the first term’s work. The key interest is to translate term 1 work into ‘realistic’ speculative project proposals for a high-density urban project, related to the specific site on the South Bank in London.

Each student will choose a key technical aspect in their project that is related to one of the following categories:

- structural design, geometrical systems, integrated digital design methods
- environmental parameters informing design methods and outcomes

The unit tutors aim to help student develop projects, in close coordination with TS staff and through the support of external consultants. Topics chosen for development for the TS submission shall inform and strengthen the unit design project, which is also submitted and evaluated as part of the TS work.

As the development of the TS work coincides with the further materialisation of the design projects, coordination between unit targets and TS requirements is of key importance. Students will be required to lead this coordination and development and avoid having to work on separate areas of interest.

Final TS documents will include, in additional to above points 1, 2 and 3:

4. individual analyses and reflection on 1:1 experiments in term 1;
5. additional research of a key technical aspect of the project using literature, physical and digital testing;
6. selection of initial design project drawings indicating implementation of the previous research;

The unit will follow the TS option 2 timeline this year. Final TS documents are to be submitted on Monday 27 April by 1pm.
Calendar / Weekly Schedule

Unit teaching days: Mondays or Tuesdays and Fridays
Complementary Studies: Wednesdays and Thursdays

**TERM 01**
(12 weeks, 29 Sept - 19 Dec)

**Week 00**
Introduction Week
Mon 22/09 Registration for new students
Fri 26/09 Picnic – all new students

**Week 01**
Tue 30/09 10:00 Inter Unit Presentations / 6pm informal meeting with students
Wed 01/10 11:30 Student interviews commence
Thu 02/10 16:30 First Unit Meeting
Fri 03/10 14:00 Complementary Course Introductions and Registration

**PHASE 1 - ‘CIVIC SPACES’** (11 weeks)

**(Week 02-04: ‘SOCIETAL SPACE’)**

**Week 02**
Mon 06/10 10:00 Urban Design and Society Workshop 1
Tue 07/10 10:00 London South Bank Walking Tour
Wed 08/10 am+pm: MS 2nd Year Courses commence (8 sessions)
pm: PP 3rd Year Course commences (7 sessions)
Thu 09/10 am: HTS 2nd / 3rd Year Courses commence (7 sessions)
pm: TS 2nd / 3rd Year Courses commence (7 sessions)
Fri 10/10 10:00 Mapping Tools Workshop 1
Sat 11/10 10:00 Mapping Tools Workshop 1

**Week 03**
Mon 13/10 Essay 1 due: Urban Theory
Tue 14/10 10:00 PINUP: Research phase 1
Wed 15/10 MS / PP
Thu 16/10 HTS + TS
Fri 17/10 Individual Group Tutorials

**Week 04**
Mon 20/10 Group Tutorial
Tue 21/10
Wed 22/10 MS / PP
Thu 23/10 HTS + TS
Fri 24/10 Research Brief 1 Final JURY: Present Mapped Data

**(Week 05-12: ‘1:1 CIVIC INTERVENTION’)**

**Week 05**
Mon 27/10 Group Tutorial - Design Brief Introduction
TSJ Introduction
Tue 28/10 Essay 2 due: Strategy/Thesis for intervention
Wed 29/10 MS / PP
Thu 30/10 HTS + TS
Fri 31/10 Group Tutorials

**Week 06**
Sun 02/11 18:00 leave for Hooke Park
Mon 03/11 Hooke Park

Tue 04/11 Hooke Park
Wed 05/11 Hooke Park
Thu 06/11 Hooke Park - 4pm back to London
Fri 07/11 10:00 PINUP
All day: OPEN JURY

**Week 07**
Mon 10/11 Group Tutorials
Tue 11/11 On-site Deployment and Monitoring
Wed 12/11 MS / PP
Thu 13/11 HTS + TS
Fri 14/11 Group Tutorials / On-site Deployment and Monitoring

**Week 08**
Mon 17/11 Final Design+Fabrication
Tue 18/11 Final Design+Fabrication
Wed 19/11 MS / PP
Thu 20/11 HTS + TS
Fri 21/11 On-site Deployment and Monitoring
Sat 22/11 On-site Deployment and Monitoring
Sun 23/11 On-site Deployment and Monitoring

**Week 09**
Mon 24/11 Group Tutorials
Tue 25/11
Wed 26/11 APP conclude
Thu 27/11 HTS + TS conclude
Fri 28/11 Term 1 FINAL REVIEW / On-site Event
Term 1 FINAL REPORT Hand-in

**Week 10**
Mon 01/12 Unit Meeting: Studytrip Research / Field Mapping Tools
Tue 02/12
Wed 03/12 MS conclude
Thu 04/12
Fri 05/12 Complementary Studies Hand-in
Sat 06/12 Travel to Shanghai
Sun 07/12 Travel to Shanghai

**Week 11**
Mon 08/12 Shanghai Workshop Introductions
Tue 09/12 Shanghai Tongi University Workshop
Wed 10/12 Shanghai Tongi University Workshop
Thu 11/12 Shanghai Tongi University Workshop
Fri 12/12 Shanghai Workshop Review w Invited Guests

Sat 13/12 Travel to Shanghai
Sun 14/12 Travel to Shanghai

**Week 12**
Mon 15/12 10:00 am meeting in Tokyo: Project/Neighbourhood visits
Tue 16/12 Tokyo Mapping
Wed 17/12 Tokyo Mapping
Thu 18/12 Tokyo Mapping
Fri 19/12 Tokyo Review w Invited Guests at University
Sat 20/12 Last unit trip meetings / visits

Unit teaching days: Mondays or Tuesdays and Fridays
Complementary Studies: Wednesdays and Thursdays

TERM 01  (12 weeks, 29 Sept - 19 Dec)

Week 00  Introduction Week
Mon 22/09 Registration for new students
Fri 26/09 Picnic – all new students

Week 01  Tue 30/09 10:00 Inter Unit Presentations / 6pm informal meeting with students
Wed 01/10 11:30 Student interviews commence
Thu 02/10 16:30 First Unit Meeting
Fri 03/10 14:00 Complementary Course Introductions and Registration

PHASE 1 - ‘CIVIC SPACES’ (11 weeks)

(Week 02-04: ‘SOCIETAL SPACE’)

Week 02  Mon 06/10 10:00 Urban Design and Society Workshop 1
Tue 07/10 10:00 London South Bank Walking Tour
Wed 08/10 am+pm: MS 2nd Year Courses commence (8 sessions)
pm: PP 3rd Year Course commences (7 sessions)
Thu 09/10 am: HTS 2nd / 3rd Year Courses commence (7 sessions)
pm: TS 2nd / 3rd Year Courses commence (7 sessions)
Fri 10/10 10:00 Mapping Tools Workshop 1
Sat 11/10 10:00 Mapping Tools Workshop 1

Week 03  Mon 13/10 Essay 1 due: Urban Theory
Tue 14/10 10:00 PINUP: Research phase 1
Wed 15/10 MS / PP
Thu 16/10 HTS + TS
Fri 17/10 Individual Group Tutorials

Week 04  Mon 20/10 Group Tutorial
Tue 21/10
Wed 22/10 MS / PP
Thu 23/10 HTS + TS
Fri 24/10 Research Brief 1 Final JURY: Present Mapped Data

(Week 05-12: ‘1:1 CIVIC INTERVENTION’)

Week 05  Mon 27/10 Group Tutorial - Design Brief Introduction
TSJ Introduction
Tue 28/10 Essay 2 due: Strategy/Thesis for intervention
Wed 29/10 MS / PP
Thu 30/10 HTS + TS
Fri 31/10 Group Tutorials

Week 06  Sun 02/11 18:00 leave for Hooke Park
Mon 03/11 Hooke Park

Tue 04/11 Hooke Park
Wed 05/11 Hooke Park
Thu 06/11 Hooke Park - 4pm back to London
Fri 07/11 10:00 PINUP
All day: OPEN JURY

Week 07  Mon 10/11 Group Tutorials
Tue 11/11 On-site Deployment and Monitoring
Wed 12/11 MS / PP
Thu 13/11 HTS + TS
Fri 14/11 Group Tutorials / On-site Deployment and Monitoring

Week 08  Mon 17/11 Final Design+Fabrication
Tue 18/11 Final Design+Fabrication
Wed 19/11 MS / PP
Thu 20/11 HTS + TS
Fri 21/11 On-site Deployment and Monitoring
Sat 22/11 On-site Deployment and Monitoring
Sun 23/11 On-site Deployment and Monitoring

Week 09  Mon 24/11 Group Tutorials
Tue 25/11
Wed 26/11 APP conclude
Thu 27/11 HTS + TS conclude
Fri 28/11 Term 1 FINAL REVIEW / On-site Event
Term 1 FINAL REPORT Hand-in

Week 10  Mon 01/12 Unit Meeting: Studytrip Research / Field Mapping Tools
Tue 02/12
Wed 03/12 MS conclude
Thu 04/12
Fri 05/12 Complementary Studies Hand-in
Sat 06/12 Travel to Shanghai
Sun 07/12 Travel to Shanghai

Week 11  Mon 08/12 Shanghai Workshop Introductions
Tue 09/12 Shanghai Tongi University Workshop
Wed 10/12 Shanghai Tongi University Workshop
Thu 11/12 Shanghai Tongi University Workshop
Fri 12/12 Shanghai Workshop Review w Invited Guests

Sat 13/12 Travel to Shanghai
Sun 14/12 Travel to Shanghai

Week 12  Mon 15/12 10:00 am meeting in Tokyo: Project/Neighbourhood visits
Tue 16/12 Tokyo Mapping
Wed 17/12 Tokyo Mapping
Thu 18/12 Tokyo Mapping
Fri 19/12 Tokyo Review w Invited Guests at University
Sat 20/12 Last unit trip meetings / visits
End of Autumn Term

PHASE 1 - ‘CIVIC SPACES’ concludes

Christmas Break (2 weeks)

PHASE 2 - ‘DEEP PLANNING’ (20 weeks)

TERM 02 (11 weeks, 12 Jan - 27 Mar)

(Week 01-02: ‘URBAN THEORY’)

Week 01
Mon 12/01 Group Tutorial - Design Brief Introduction
Tue 13/01 10:00 Urban Mapping Tools Workshop 2
Wed 14/01 am+pm: MS 2nd Year Courses commence (8 sessions)
Thu 15/01 am: HTS 2nd / 3rd Year Courses commence (7 sessions)
pm: TS 2nd / 3rd Year Courses commence (7 sessions)
Fri 16/01 PINUP: Site Analysis

Week 02
Mon 19/01 Essay 3 due: Strategy/Thesis
Short Presentation and Thesis Workshop
Tue 20/01 (MArch Phase II Juries)
Wed 21/01 MS (MArch Phase II Juries)
Thu 22/01 HTS + TS (MArch Phase II Juries)
Fri 23/01 Individual Tutorials (MArch Phase II Juries)

(Week 02-11: ‘URBAN INTERVENTION’)

Week 03
Mon 26/01
Tue 27/01 Individual Tutorials
Wed 28/01 MS
Thu 29/01 HTS + TS
Fri 30/01 Individual Tutorials

Week 04
Mon 02/02 TS3 DRAFT REPORT REVIEW
Tue 03/02 MS
Wed 04/02 MS
Thu 05/02 HTS + TS
Fri 06/02 INTERIM JURY (With Invited Critics)

Week 05
Mon 09/02
Tue 10/02 Individual Tutorials
Wed 11/02 MS suspended
Thu 12/02 HTS + TS suspended
Fri 13/02 OPEN JURY

Week 06
Mon 16/02 Individual Tutorials
Tue 17/02

Week 07
Mon 23/02
Tue 24/02 PINUP
Wed 25/02 MS
Thu 26/02 HTS + TS
Fri 27/02 Individual Tutorials

Week 08
Mon 02/03 Individual Tutorials
Tue 03/03
Wed 04/03 MS
Thu 05/03 HTS + TS conclude
Fri 06/03 Individual Tutorials

Week 09
Mon 09/03 TS Interim Jury
Tue 10/03 Individual Tutorials (Secondyears)
Wed 11/03 MS conclude
Thu 12/03
Fri 13/03 Group Tutorial

Week 10
Mon 16/03 Individual Tutorials
Tue 17/03
Wed 18/03
Thu 19/03 Individual Tutorials
Fri 20/03 Individual Tutorials

2nd Year Complementary Studies Submission Hand-In

TERM 03 (9 Weeks, 27 Apr - 26 June)

PHASE 2 - ‘URBAN INTERVENTION’ continues
(Week 01-04: INHABITATION)

Week 01
Mon 27/04 13:00 TS3 FINAL REPORT Submission
Tue 28/04 Essay 4 due: Project Thesis
Group meeting and Unit Brief Introduction
Wed 29/04 10:00 Graphics/Drawing Workshop
Thu 30/04 10:00 Graphics/Drawing Workshop
Fri 01/05 Individual Tutorials

Week 02
Mon 04/05 (bank holiday)
Tue 05/05 PINUP
Wed 06/05
Thu 07/05 TS3 High Pass Panel
Fri 08/05 Individual Tutorials

Week 03
Mon 11/05
Tue 12/05 Individual Tutorials
Wed 13/05
Thu 14/05 Individual Tutorials
Fri 15/05 Individual Tutorials

Week 04
Mon 18/05 Jury Week 1
Tue 19/05 Individual Tutorials
Wed 20/05
Thu 21/05
Fri 22/05 FINAL REVIEW (with invited jury)

(Week 05-08: DESIGN FINALISATION / PORTFOLIO)

Week 05
Mon 25/05 (bank holiday)
Tue 26/05 10:00 Visualisations Workshop
Wed 27/05 10:00 Visualisations Workshop
Thu 28/05 10:00 Visualisations Workshop
Fri 29/05 Individual Tutorials

Week 06
Mon 01/06
Tue 02/06 Individual Tutorials
Wed 03/06
Thu 04/06 Individual Tutorials
Fri 05/06 Individual Tutorials

Week 07
Mon 08/06 Secondyears Final Tables
Tue 09/06 Individual Tutorials
(Secondyears helping Thirdyear students)
Wed 10/06
Thu 11/06
Fri 12/06 Individual Tutorials

Week 08 (Exhibition Preparation)
Research Brief 1: ‘Societal Space’

(4 weeks, starting Thursday 02 October)

“People have to enter into public space as rightful citizens, sure of access to the means of life, communication and progression. Without this guarantee, now so severely tested by market society and related forms of corporatism, interventions in public space will amount to no more than tinkering on the edges.”

- (Ash Amin, 2006)

Research: Urban Spaces

This year our unit projects will pursue a mechanistic interweaving of multiplicitous urban domains including distinct functions, three-dimensional civic space, and infrastructural nodes and networks to foster an intensified collective civic experience. In the first four weeks of term 1 we will document and analyse through a set of digital tools, diagramming, film, and photographs the relationship between the tangible, quantifiable aspects of the urban environment and the social and economic patterns which these traits directly influence.

We will study critical theories that have speculated on how factors such as social vibrancy, economic activity and longevity are directly linked to environmental performance, materiality, spatial characteristics and programmatic flexibility. Architects, sociologists and theorists such as Jane Jacobs, Richard Sennett, Cedric Price, Christopher Alexander, William White, Moshe Safdie, Jan Gehl, John Fraser and Bernard Tschumi have explored these topics extensively. We will seek out others whose mission it was - as it is the unit’s ambition- to use a scientific process and critical philosophical reasoning to understand the architectural mechanisms which can stimulate societal progression, and formulate design principles for the design of new dense multi-use urban projects based on our findings.

Methodology:

We will initiate our research with a quick series of tours throughout London, visiting several mixed use urban projects which incorporate shared urban space such as the Southbank Centre, The Barbican, The Brunswick and several less planned ‘cities-within-the-city’. Using a designated area on London’s South Bank as our unit-laboratory, students will research and document the use of public spaces over time through a set of digital tools, film, writings, diagrams and photographs. Working in teams of two, you will analyse and summarise what you consider to be seemingly beneficial, neutral or detrimental aspects of the particular space and document factors such as environmental conditions, spatial characteristics, materiality, connectivity, visibility and programming in relation to recorded social, economic and leisure activities and behaviours. It is crucial also to analyse what degree the urban project is left ‘unplanned’ or ‘flexible’ and thereby open to adaptation or appropriation by the users thus allowing for potential spontaneous present or future events. You should begin to speculate on the potential for appropriating and reapplying some of the discovered principles and relationships towards the design of an urban structure in a different context and scenario.

Outcomes

All research and design work needs to be documented and presented as a series of A2 sheets which will become part of your portfolio and/or TS submission. The layout and contents of the sheets need to be well-designed and must demonstrate a critical understanding of the methods and the underlying principles of the topics you are studying. Your own drawings, diagrams and text should accompany any found content -if you are including material from other publications it is required to include a reference to the source.

Deliverables

1. analysis of architectural theorists in thoroughly referenced essay, images and diagrams
2. research, diagramming and documentation of the physical characteristics of your urban space
3. mapping of activity and environmental conditions over time in relation to physical characteristics
4. graphical and written assessment which identifies the successes and failures of the space
Outcomes

As each project's main focus is a design, fabrication and insertion method capable of producing a range of possible outcomes, we will document a catalogue of 'versions' of urban structures, making clear how specifically designed parameters translate into material form. Our interests are within inventive design processes, experimental fabrication procedures and the relationship between material organisation and social conditions so the documentation and presentation of underlying logics are as important as the results.

The final presentation will need to include digitally generated architectural drawings, diagrams and models which demonstrate the functioning of the structure and its construction over time in relation to mapped data. A written essay by each student will serve as additional documentation and means for evaluation during the discussion, when we will debate the merits of each proposal for further development.

Deliverables

1. Essay defining thesis for 1:1 intervention
2. Diagrams showing the logics of a fabrication-based design strategy that allows adaptability of your structural system
3. Documentation of physical prototypes across the first term in parallel with drawings of digital design model development
4. Documentation of your file-to-factory process (screenshots, lasercut/CNC drawings, etc.)
5. Final prototype design drawings, indicating use and variability
6. Final prototype construction drawings, diagrams of fabrication and assembly sequence
7. Documentation of the 1:1 construction process (photos, time-lapse photography, movie recordings, animated diagrams etc.)

Introduction

Driven by an essay that reflects on initial research and documentation and formulates a strategy for intervention to their site, each group of two students will develop a fabrication and usage strategy for a structure that is generated in relation to environmental and social data recorded over time. This prototype will form the foundation for individual design development in phase 2 (‘In Vivo’), and will be constructed as a 1:1 scale site insertion. For this, it will be necessary to formulate rule-based design models, calibrating them so that they can generate spatial and organisational outcomes driven by mapped site information and aimed at creating environmentally performative places to incubate social and behavioural goals.

Methodology

We will research and document precedents of structural and spatial systems from relevant examples which employ variable fabrication techniques. By means of diagramming, drawing and testing, you will be asked to investigate the opportunities for creating ‘socially catalytic qualities’ that are inherent in these systems and discover their potential for application within your design process. The investigation is not restricted to one method only, but can also foresee strategies of crossover or combination of methods.

List of suggested material systems (other systems welcome)
- Space-frame structures
- Tension active structures
- Prefab concrete skeletal elements
- Mass customised component assemblies / formwork
- Variable casting machines
- Soft or flexible formwork casting
- Inflatable formwork casting
- Large scale 3D printing
- Robotic construction

List of suggested architects / researchers (other related sources welcome)
- Buckminster Fuller
- Heinz Isler
- Walter Gropius
- Frei Otto
- Jaap Bakema
- Yona Friedman
- Cedric Price
- Eladio Dieste
- Sou Fujimoto
- Tomas Saraceno
- Gramazio+Kohler
- Jesse Reiser
- Marc Forne
- Rachel Armstrong
- Sean Alquist
- Tomas Saraceno
- Gramazio+Kohler
- Jesse Reiser
- Marc Forne
- Rachel Armstrong
- Sean Alquist

We will need to carefully manage and translate the data collected during the first research brief in order to create a working method for an information based design model. We will develop simple rule sets and workflows to guide the growth of our chosen fabrication systems and calibrate them with regard to the legibility and performance of their outcomes. The conceptual framework for each project will be made specific, working towards documentation that explains formal and structural specificity in relation to intended programmatic, social and environmental function.

Keeping the emphasis on the development of rule-based design models that carefully choreograph activities, flows and qualities and their implementation into built form by means of our chosen material and fabrication system, this exercise will deliver a case study structure of a three-dimensional urban structural intervention, capable of being adapted to a range of possible scenarios of application.

The midterm review with invited jury will be an important moment to present and reflect on our design strategies and building plan of action, as we will be working towards the preparation of the final drawings for the prototype that will be built. The design and construction of a larger scale prototype is a challenging task that requires meticulous planning and execution.
Research Brief 2: ‘Condensed Society’
(1 week, starting 15 December 2014)

Introduction
The unit will travel to Tokyo, the largest city in the world and according to many indicators, the most technologically advanced. With the guidance of local experts, we will conduct a series of mapping exercises employing the tools developed in term 1. We will record and identify and expose some of the socio-economic behavioural patterns and investigate their relationship to the built and unbuilt environments within which they occur. We will visit projects which have proposed radical new modes of inhabiting the city and have explored processes for urban design that incorporate user input, change and uncertainty resulting in architectures intended to adapt to unpredictable futures.

After exploring the city on group and individual outings each student will select a location to conduct his/her individual mapping exercise. The focus of the mapping shall be based on individual discoveries, interests and applicability to themes within their unit work. Students should critically reflect on the similarities and differences between a Tokyo and London site in terms of spatial and infrastructural features, individual and collective behavioural patterns, and cultural practises.

Deliverables
1. mapping and observations as diagrams and/or short film or animations
2. 500 - 1000 word short written reflection on society and civic space in Tokyo.

Kurokawa’s capsule tower, exterior.
Kurokawa’s capsule tower, interior of prefabricated pods meant to be replaced every 25 years.

Tokyo city fabric.
Tokyo market.
Tokyo subway and train map, zeropanzero.com, Shibuya Station 3D map.
Design Brief 2: ‘Urban Intervention’

(term 2 and 3, after returning from unit trip)

“This ubiquitous principle is the need of cities for a most intricate and close-grained diversity of uses that give each other constant mutual support, both economically and socially. The components of this diversity can differ enormously, but they must supplement each other in certain concrete ways.”

- (Jane Jacobs)

Urban Theory

Having experienced, recorded and reflected on the hyper-charged urban conditions in Shanghai and Tokyo, you will continue to develop your projects individually. You will transform and/or expand your term 1 intervention into architectural systems that contain high-density agglomerations of program, networks and three-dimensional civic space. Using the same site that you analysed in term 1, each individual student is to formulate an inspired and insightful project brief, and outline the aims and methods for the proposed urban intervention. The proposal should “grow” in a direct relationship to the data collected and with certain provocative goals which you will formulate using a short thesis statement. Your concise argument will need to demonstrate awareness of the limited but critical role of the architect within the larger context of complex urban developments and the body of work within architectural discourse that relates the history of the researched particular ambitions.

Urban Interventions

Central to the unit’s thesis framework is the assumption that dense urban areas can be catalysts and incubators for new types of activities and interactions, improving and evolving the socio-economic effectiveness and cultural richness of the societies that occupy them. The successful planning of dense urban areas relies on awareness of the critical and often contradictory multiple requirements of the various stakeholders. Beyond the interests of local program participants, successful and iconic urban spaces play an important role within the cultural and socio-economic fabric of the city as a whole, requiring strategies for top-down planning of key qualities as well as for processes of user-driven systems of self-organisation.

Using our in-depth understanding of London’s multiple infrastructural networks and various user groups of the South Bank area studied in term 1, each student will develop a proposal for an ‘intervention’ within their chosen site. Each project proposal should continue to be informed by detailed three dimensional models containing several layers of information including program mapping, movement and activity patterns, environmental data and a mapping of the physical properties urban surfaces and spaces throughout the site.

Following the thesis statement developed at the start of term 2 outlining specific aims and performance targets, each student will develop design strategies to generate ‘architectural systems’ capable of altering, improving or complimenting the specific local contextual conditions. The project’s functionalities could be understood as a cluster or series of custom designed functional components, “plugging in” to a large and complex production centre for economical, social and cultural progress - the contemporary city as a complex machine.

Understanding that the key players within the complex networks of urban ecologies are the users, operating through a wide range of motivations and stimulated by the material and environmental qualities of architectural spaces, our goal is to create strategic high quality urban environments that merge circulation and programs, economic and cultural interests, predictable and spontaneous events, a durable architectural identity and the capacity to adapt and evolve over time.

Inhabitation

The final phase of project development will seek to re-address the local scale, correlating the individual qualities of small and medium sized urban and architectural spaces with the larger encompassing urban intervention strategy. Placing emphasis on the development of architectural systems, sub-systems, rules and exceptions, projects are expected to achieve additional depth and realism through the exploration and visualisation of the detailed aspects of life within the site. Through a series of small scale investigations into the suitability of designed architectural spaces to support the range of activities that is desired, each project will develop a self critical and rich vocabulary guided by user-driven perspectives unfolding at different timescales. Projects will address tangible aspects deemed critical to the particular thesis which may include for example; developing materially, human scale inhabitation scenarios, details of the proposals interface to the existing city, and architectural component details among others.

Methodology

Our design proposals will develop in parallel with the studying of precedents, analysing both historical and contemporary models and strategies for high density mixed use buildings with urban public spaces. Each student will catalogue possible structural typologies based on the characteristics of a specific chosen construction system, investigated as part of the deliverables for the Technical Studies submission.

We will analyse various circulation principles and clustering strategies in relation to social, economic and environmental parameters. Recognising the threat of functional obsolescence in an unfamiliar and ever changing context, we will adjust our strategies to allow for development and adaptation over time, distinguishing between models that are more and less optimised, planned and unplanned. Using creative and provocative design measures to exert indirect control, we will develop ‘platforms’ or ‘frameworks’ for urban life, describing the interaction between architectural systems and social, economic and cultural activities rather than just modelling architectural objects in isolation.

Together with the testing of each project’s potentials to provide a range of performative in-between spaces in relation to enclosed programmed space and the existing flows and fabric of the surrounding city, we will develop strategies to evaluate and discuss the performance of different options of each proposal and describe the qualities of its space. Placing a strong emphasis on the

Ekatarina Dzedkova, underlying organisational diagrams generated through combining a site-specific circulation enhancing strategy and a series of adjusting and mutating apartment typology ‘body plans’. The body plans adapt to local connectivity and environmental opportunities, filling the former Kai Tak airport site in Hong Kong with socially diverse housing and amenities.
central role of an integrated, three-dimensional digital model for the development and testing of strategies for design, we will devise techniques for the extraction of drawings and diagrams to evaluate its workings in section and plans. Physical models and digital renderings will help to visualise potential qualities in the architectural and urban interior spaces and will serve as discussion pieces within the development of the project rather than representational materials towards the end.

As our strategies become more informed and defined, our initial design methods need to be updated, to be able to produce specific versions which can deal with our newly discovered programmatic and environmental requirements. Going back and forth between the rules for formation and the possibilities for variation built into the construction method, more intricate and detailed relational rules can be set up in the digital design models, producing quick variations which can immediately be tested within the urban application.

The unit places a strong emphasis on the development of building proposals with a high degree of realism and constructability, to add to the speculative and provocative nature of the work. Each student is expected to adopt a constructive, self-critical and transparent attitude towards the analysis of his/her design work, understanding that failed attempts are crucial learning tools to find the limits and potential further improvement strategies within the project. The unit requires a highly self-motivated and project-specific planning of work time and deliverables, expecting students to plan the production of diagrams, drawings, physical models, animations and visualisations or any other communicative means to best explore and communicate the unique properties of each project’s approach. Physical models are highly recommend as a tool to investigate and demonstrate scenarios which are built upon an integrated strategy of design, construction and urban development. We will use additional diagrams, renderings, digital and physical models to evaluate the internal environmental and the quality of space within each project, as the visualisation of the user perspective and the experience of the spaces are central to successful and convincing project portfolio.

Within the unit, the yearlong portfolio is perceived as a thorough and complete, self-explanatory document and thesis ‘argument’ - rather than a chronological recording of the years activities. It is continuously adapted and edited to include a wide range of different types of written and visual information, exploring and explaining the development of the project. Portfolios should be designed using refined and seductive layouts and graphics, combining a comprehensive process narrative with immersive visuals that are convincing of the inherent qualities of space and demonstrating the arguably valid predictions of their usage.

Outcomes

The individual projects will be expanded upon through an iterative development of integrated digital design models. To document and communicate the proposals a series of drawings and diagrams is extracted at each stage of development, helping to evaluate the project in relation to the brief and each students personal thesis. Renderings and physical models will help to describe the quality of the spaces within the proposal, and can be supplemented by time-based diagrams or animations to describe the changes over time of the qualities and functionalities within each project. The final focus of each project should be on the user activities, aiming to argue for the successful prediction of the ranges and changing patterns of use within the project, demonstrating the correlations between the architectural measures embedded within the site and their intended contributions to the larger context.

Minimum Deliverables (to be adapted and expanded)

1. diagrams explaining digital design model for urban proposal and the correlation between physical parameters and desired qualities and activities within the site
2. annotated plan and section drawings of the project within the site
3. visualisations of architectural and urban interior spaces
4. physical model of fragment and/or overall project with site
5. diagrams of inhabitation and development scenario over time
Bibliography

historical precedents, new technologies in architecture /
- Naturliche Konstruktionen: Formen Und Konstruktionen in Natur Und Technik
  Und Prozesse Ihrer Entstehung', Frei Otto, Deutsche Verlags-Anstalt, 1982

digital design methodologies /
- Architectural Geometry’, Helmut Pottmann, Andreas Asperl, Michael Hofer, Axel Kilian, Daril Bentley
- ‘Informal (Architecture)’, Cecil Balmond, 2002
- ‘Mathematical Form, John Pickering and the Architecture of the Inversion Principle’
  ', AA Publications, 2006

design engineering and fabrication
- ‘Extreme Textiles: Designing for High Performance’, Matilda McQuaid, Cooper-Hewitt Design Museum, 2005

innovative architectural projects /
  Richard Horden, Thames & Hudson, 2008
- ‘Beyond the Cube: The Architecture of Space Frames and Polyhedra’, J. François
- ‘Fabricating Architecture: Selected Reading in Digital Design and Manufacturing’,
- ‘Performative Architecture : Beyond Instrumentality’, Branko Kolarevic, Al Mal-

social implications of technology in architecture /
- ‘Kenzo Tange and the Metabolist Movement, Urban Utopias of Modern Japan’, Zhongjie Lin
- ‘Singapore Songlines, portrait of a potemkin metropolis ... or thirty years of tabula
  rasa’, Fem Koolhaas, SMLXL., 1995
- ‘Home delivery: fabricating the modern dwelling’, Barry Bergdoll, Peter Christens-
  en, Museum of Modern Art (New York), 2008
'Critical Mass, how one thing leads to another’, Philip Ball, Arrow Books, 2005

contemporary urbanism and public space /
'Instant Cities', Herbert Wright, Black Dog Publishing, 2008
'Requiem: For the City at the End of the Milenium', Sanford Kwinter, Actar, 2010.
'Return to the Center: Culture, Public Space and City-building in a Global Era’ (Roger Fullington Series in Architecture), Lawrence A. Herzog, University of Texas Press, 2006.

diagramming and visualisation techniques /
’Visualise This’, Nathan Yau, John Wiley & Sons, 2011.

films, documentaries /
‘Civilisation’, Channel 4 documentary by Dr. Niall Ferguson.
‘All watched over by Machines of Loving Grace’, documentary series by BBC / Adam Curtis.