



Enhancing of Heritage Awareness and
Sustainability of Built Environment in
Architectural and Urban Design Higher Education

STATEMENTS



for Teaching through Design
for Sustainability of the Built
Environment and Heritage
Awareness



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Statements for Teaching through Design for Sustainability of the Built Environment and Heritage Awareness

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Content

Introduction **7**

How to read **10**

TERMS **12**

NOTIONS **13**

Cultural and Collective Memory 14
Urban Narratives 22
Resilience 30
Urban Patterns 38
Heritage genealogy 46
Cultural Studies, Cultural Diversity 54
Cultural Identity 62
Cultural Enhancement 70
Cultural Heritage 78

HERITAGE TYPES **87**

Modern Heritage 87
Industrial Heritage 96
Vernacular Heritage 104
Performative and Affective Heritage 112
Tangible and Intangible Heritage 120
Cultural Landscape 128
Urban Heritage 136
Monumental Heritage 144
Emerging Heritage 152
Documentary Heritage 160
Archaeological Heritage 168
Heritage Sites 176
Natural Heritage 184
Military Heritage 192

DESIGN APPROACHES **201**

Heritage Reprograming 202
Construction Centred Design 210
Environmentally Responsive Design 218
Energy Conscious Design 226
Climate Sensitive Design 234
Whole-Lifecycle Design 242
Carbon Neutral Design 250

DESIGN ACTIONS

Passive/Active Sustainable Design	258
Community Building and Representation	266
Renewable Energy Integration	274
Historical Urban Landscape- HUL	282
Design for All in Cultural Heritage	290
Thermal Comfort Design	298
Visual Comfort Design	306
Green Blue Infrastructure	314
Acoustic Comfort Design	322
Multiscale Design Approach	330

339

Preventive Conservation	340
Integral Heritage Protection	348
Conservation	356
Restoration	364
Redevelopment	372
Adaptive Reuse	380
Consolidation	388
Temporary planning and Meanwhile spaces	396
Refurbishment/Rehabilitation	404
Heritage Management	412
Nature Based Solutions	420
Public Advocacy for Social Participation	428
Circular Economy	436
Developing Cultural Routes and Itineraries	444
Microclimate Improvement	452

TOOLS

461

Image Rectification	462
3D printing	470
As-Built / As-Found Recording	478
Space Syntax	486
Morphogenesis Study	494
Mapping, Documenting, Cataloguing	502
Use of GIS Technology	510
Historic Building Information Modelling - HBIM	518
Colaborative Cartography	526
Collaborative workshop - CHARRETTE	534
Artistic approaches (photography, video, performance)	542
Heritage Value Matrix	550
Thermal/Energy Simulation	558
Lighthing Slmulation	566
(Post)-occupancy evaluation	574
Petrography	582
Conservation Status Evaluation	590
Archaeometry	598
Digitalization of Heritage	606

Conclusions

611

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HOW TO READ HERSUS VADEMECUM STATEMENTS

1

GENERAL INFO
ON TERM AND
AUTHORS

2

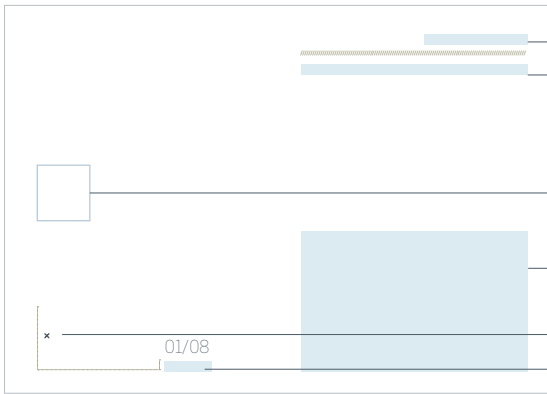
WHAT, HOW, WHY,
BY WHOM TO BE
TOUGHT

3

AT WHAT COURSE
TYPE , WHICH
SCALE AND WHAT
OUTCOMES TO
EXPECT

4

RELEVANT
REFERENCES FOR
THEORY AND
PRACTICE

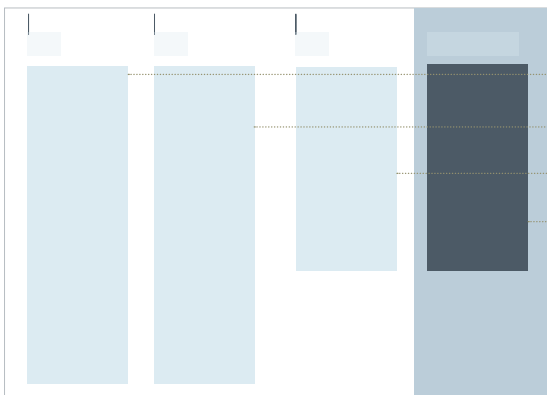


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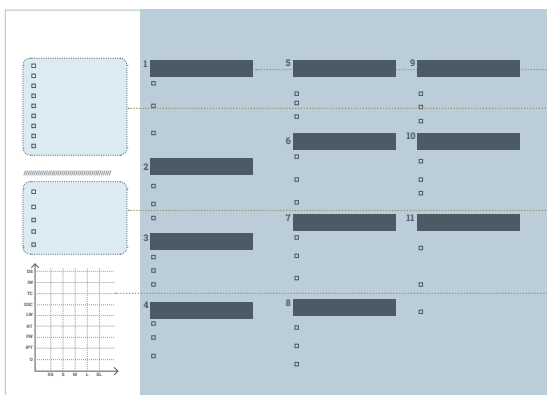


WHAT? CONTENTS

HOW? METHODS

WHY? GOALS

TEACHING COMPETENCES



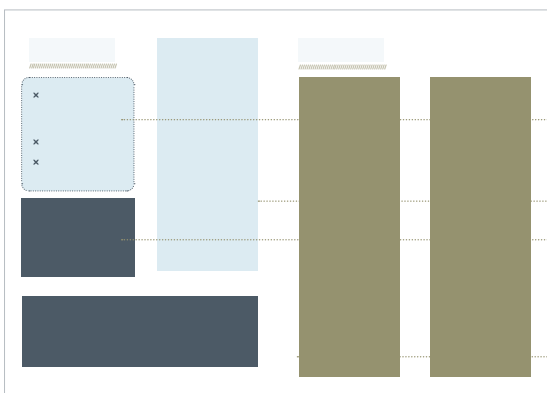
COURSE OUTCOMES

COURSE TYPE

COURSE SCALES

MATRIX - COURSE TYPE IN RELATION TO SCALE

■ □ Checklists



RELEVANT EXAMPLE ID

RELEVANT EXAMPLE EXPLANATION

RELEVANT EXAMPLE PHOTOS

KEY REFERENCES

TOOLS

Image Rectification



3D printing



As-Built / As-Found Recording



Space Syntax



Morphogenesis Study



Mapping, Documenting, Cataloguing



Use of GIS Technology



Historic Building Information Modelling - HBIM



Colaborative Cartography



Collaborative workshop - CHARRETTE



Artistic approaches (photography, video, performance)



Heritage Value Matrix



Thermal/Energy Simulation



Lighthing Simulation



(Post)-occupancy evaluation



Petrography Archaeometry



Digitalization of Heritage



Conservation Status Evaluation



UBFA

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Aleksandra Đorđević

05/19

tools

statements

MORPHOGENESIS STUDY

студије морфогенезе • *Morphogenesis study* • Μελέτες Μορφογένεσης •
Estudio de Morfogénesis

GENERAL DEFINITION/ EXPLANATION

The **Morphogenesis** term originates from the Greek morphê meaning shape and genesis meaning creation, and can be defined as the 'creation and subsequent transformation of urban form' (Vance 1977, 37)The morphogenetic approach is primarily used in the field of urban morphology, specifically within historico-geographical school. It was mainly researched and applied by M.R.G. Conzen and his successors who formed Urban Morphology Research Group in Birmingham, UK. In the domain of urbanism and architecture, it refers to the analysis of continual and perpetual historical process in which urban tissue is observed both at the time of their emergence and during the development and transformation in time (Djokić, 2009), hence contributing to the preservation of relationship between people and place through morphogenetic imprint as the basis for planning and design decisions. From the perspective of heritage and sustainability, the importance of the approach emerges from its focus on changes of the built environment, but taking into consideration the changes of the function and to the identity of the environment, and socio-economic and socio-political conditions that triggered changes.

WHAT?

CONTENT

Morphogenesis must be considered within the course having in mind the unbreakable connection with urban morphology as a research field. Consequently, the concept note of the course needs to reflect on three parts:

- (1) Theoretical grounding: Understanding central ideas and concepts within urban morphology, followed by an understanding of the reasons for its application in the context of heritage and sustainability
- (2) Analytical assessment: applying morphogenetic approach on a specific study area, and presenting, comparing and interpreting research findings
- (3) Design process: applying gained knowledge to inform design process and guide decisions making process in context of urban planning.

The course should be concerned built along seven intertwined axioms and principles articulated by M.R.G. Conzen that create a framework for morphological concepts, summarized as (1) townscapes are historically stratified, (2) the period specificity of urban forms, (3) secular socio-political conditioning, (4) systematic townscape composition, (5) hierarchical nesting of form complexes, (6) systematically differentiated persistence of forms, and (7) morphogenetic priority of forms (Conzen, M.P., 2018).

HOW?

METHODS

The general teaching style should cover (1) holding ex cathedra lessons on urban morphology: essays, presentations, (2) collecting (archival research and on site research) and analysing urban transformation from the time of emergence to the present state: graphical representation of **morphogenesis** either in parallel, by placing the maps in chronological order next to each other or by overlapping them so that changes are perceivable (Milojević, Đokić, Pešić, 2021), (3) conducting comparative analysis (plenary discussions, debates) of different stages of **morphogenesis** regarding change intensity (quantitative or qualitative), historical milestones, and detecting possible reasons for the changes (socio-economic and socio-political) that are manifested in change of morphological characteristics (ibid), (4) applying gained knowledge in design process perceivable in street, block, plot and building pattern and position, shape, size, function.

Following the IO2 results, the teaching of **Morphogenesis** as a integral part of Urban morphology will significantly improve analytical tools and methods for securing sustainable use of heritage that were ranked below average.

WHY?

GOALS

The main reasons for teaching and applying morphogenetic approach as a part of urban morphology can be seen in (1) revealing order within the apparent complexity of urban form and hence advance the practice of urban design (Kropf, 2011), (2) describing and explaining the dynamics of urban form in an accurate way (Oliveira, 2021), (3) understanding and presenting changes of urban form and transformation processes in different historical periods (Đokić, 2009) (4) forming a connection with history in order to determine what is important for the present (Sanders, 2016), (5) establishing a connection with a place through an interpretation of the history of a site revealed by its detailed built form patterns (ibid), and (6) adding value to the design and place making aspect (Davies in Sanders, 2016).

Following this line of reasoning, **morphogenesis** is an important tool for establishing value framework for the design process, and as such it is important for securing sustainable use of heritage. The areas to be tackled while teaching on space syntax in relation to heritage and sustainability are Cultural identity, urban patterns (Notions), Urban Heritage, Documentary heritage (Heritage types), Community Building and Representation, Historical Urban Landscapes (Design approaches), Restoration, Conservation (Actions) and Mapping, Documenting and Cataloguing Use of GIS Technology (Tools).

TEACHERS' COMPETENCIES



General competences:

- possessing a specialist knowledge of urban morphology schools, tools and techniques, as well as an

- appropriate background in planning and architectural history, and social and economic history

- developing professional relationships and networks with research labs and institutions

Pedagogical skills, comprising the following:

- understanding need for way and manner how city has formed, developed and changed over time

- teaching on real life examples, developing critical thinking and problem solving approaches

- empowering morphogenetic approach as an integral part of design studio

- Inspiring creativity, critical thinking and experimentation.

- encouraging archival research and site visits

COURSE TYPE

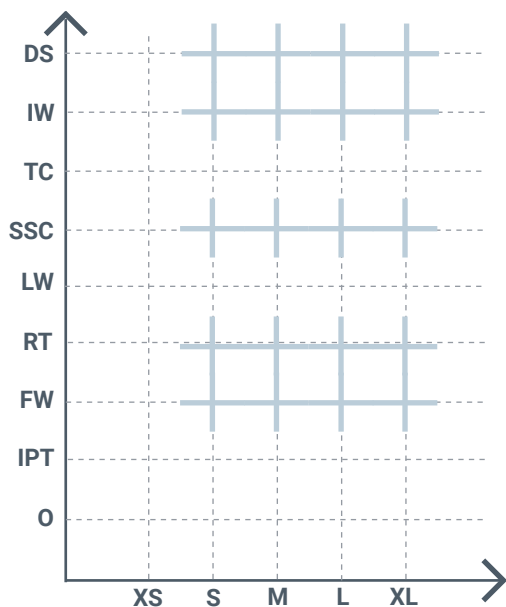


- Design Studio (DS)
- Intensive Workshop (IW)
- Theory Course (TC)
- Seminar (short comprehensive) (SSC)
- Laboratory work (LW)
- Research Thesis (RT)
- Field work (FW)
- Internship Practical training (IPT)
- Other (O)

SCALE



- Construction Detailing and Interior Design Scale (XS)
- Architecture: Buildings Scale (S)
- Urban Design Scale (M)
- Urban and Regional Planning Scale (L)
- Landscape Scale (XL)



LEARNING OUTCOMES

1 Ability to create architectural designs that satisfy both aesthetic and technical requirements. The student could have the ability to:

- prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;
- understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project;
- develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user.

2 Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences. The student will have knowledge of:

- the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;
- the influence of history and theory on the spatial, social, and technological aspects of architecture
- the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.

3 Knowledge of the fine arts as an influence on the quality of architectural design. The student will have knowledge of:

- how the theories, practices and technologies of the arts influence architectural design;
- the creative application of the fine arts and their relevance and impact on architecture;
- the creative application of such work to studio design projects, in terms of their conceptualisation and representation.

4 Adequate knowledge of urban design, planning and the skills involved in the planning process. The student will have knowledge of:

- theories of urban design and the planning of communities;
- the influence of the design and development of cities, past and present on the contemporary built environment;
- current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.

5 Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale. The student will have an understanding of:

- the needs and aspirations of building users;
- the impact of buildings on the environment, and the precepts of sustainable design;
- the way in which buildings fit into their local context.

6 Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors. The student will have an understanding of:

- the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;
- the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;
- the potential impact of building projects on existing and proposed communities.

7 Understanding of the methods of investigation and preparation of the brief for a design project. The student will have an understanding of:

- the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;
- the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;
- the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.

8 Understanding of the structural design, constructional and engineering problems associated with building design. The student will have an understanding of:

- the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;
- strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;
- the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.

9 Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate. The student will have knowledge of:

- principles associated with designing optimum visual, thermal and acoustic environments;
- systems for environmental comfort realised within relevant precepts of sustainable design;
- strategies for building services, and ability to integrate these in a design project.

10 The necessary design skills to meet building users' requirements within the constraints posed by cost factors and building regulations. The student will have the skills to:

- critically examine the financial factors implied in varying building types, constructional systems, and specification
- understand the cost control mechanisms which operate during the development of a project;
- prepare designs that will meet building users' requirements and comply with legislation, appropriate performance standards and health and safety requirements.

11 Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning. The student will have knowledge of:

- the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;
- the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;
- the basic management theories and business principles related to running both an architects' practice and architectural projects, recognising current and emerging trends in the construction industry.

BUILT ARCHITECTURAL / URBAN DESIGN PROJECT EXAMPLE



Tool application:
 ✕ The House in the Rua do Lindo Vale, Porto

Authors:
 ✕ Ana Cláudia Monteiro and Vítor Oliveira

Year of the application:
 ✕ 2010

A characteristic example of applying morphogenesis as an integral process of design is The House in the Rua do Lindo Vale,. It establishes the relationship between the landscape and the individual building, looking at the structural elements of the street, plot and building level as significant parts of heritage. The sustainability of the solution is observed through the author's endeavour to answer the questions "how to recover the physical relation between the past, present and the future" through the design process.



Figure 1. Rua do Lindo Vale in 2020: streets, plots and block-plans of buildings
 Copyright: (Oliveira and Monteiro, 2021)

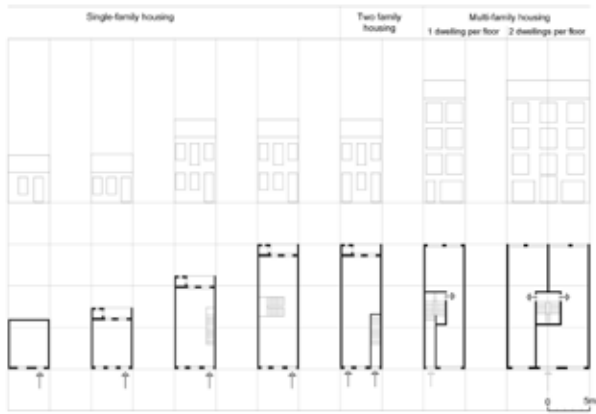


Figure 2. A simplified typological process of Lindo Vale' buildings
 Copyright: (Oliveira and Monteiro, 2021)



Figure 3. House— rear façade
 Copyright: Photographs by José Campos

RELEVANT LITERATURE / SOURCES FOR FURTHER RESEARCH



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For more about built project - The HOuse in the Rua do Lindo Vaale, Porto:

<https://vitoroliveira.fe.up.pt/pdf/clv.pdf>

https://www.archdaily.com/604697/urban-house-in-tua-do-lindo-vale-ana-claudia-monteiro-vitor-oliveira?ad_medium=office_landing&ad_name=article

