LOCI - Faculty of Architecture, Architectural Engineering and Urbanism

1 Research scope

Research in architecture, architectural engineering and urbanism (currently conducted in the LOCI faculty) concerns sustainable design methods for places and buildings, institutions and human infrastructure. It provides answers to the challenges of spatial and environmental quality. Issues of sustainability and social and territorial cohesion in the context of metropolization are at the heart of its concerns.

Our research methods lie between the human sciences, the engineering sciences and the evaluation of human actions in a spatial context. They include modeling of materials, structures, constructive technologies, infrastructures at different spatial scales, analysis of management and project management systems, as well as research by design.

Research results are reflected in proposals for architecture, engineering and localization of human activities as well as their organization in relation to their environments and their mobility. They are aimed at both society and the scientific community. Working hypotheses integrate the resilience capacities of spaces and societies in their various mutations.

2 Research topics

The main research topics in LOCI are:

- Theory of architecture, including representation tools integrating digital technologies;
- Heritage, with a triple aim of conservation, reallocation and adaptation to energy requirements as well as lessons from the design of structures over time;
- Modeling as a method for calculating structures as well as for the purpose of developing prospective scenarios;
- Research by design, proposing hypotheses for architectural, engineering and spatial mutation;
- New forms of production and montage of architectural and territorial projects in their environmental, economic, legal, social and cultural aspects;
- Specified performance structures of buildings using natural or conventional materials as well as basic and applied research on the physical parameters of buildings (heat, light, acoustics, ventilation, air quality) affecting comfort, health and physical, physiological and psychological well-being of the occupants;
- Minimal and sustainable resource utilization strategies that take into account the complete life cycle of built and non-built environments at different scales;
- Composition of spaces and their densification / dedensification, their structuring re-articulating among others the mobilities and the urbanism, the modalities of development of the territories;
- Changing populations and socio-spatial inequalities impacting housing and territorial cohesion.
  - Mobility and Urbanism
  - Urbanism in the Southern hemisphere
Research in LOCI includes the following research groups:

- Culture and habitat: Theory, Drawing, History, Design
  - Laboratory Theory of systems in architecture (tsa-lab): http://www.tsa-lab.be/
- Building Techniques and Architectural Engineering
  - Architecture & Climate: https://uclouvain.be/fr/facultes/loci/archi-cli
  - Structures & technologies: https://uclouvain.be/fr/facultes/loci/struct-a/
- Territorial development, landscape and urban planning
  - Metrolab Brussels: http://www.metrolab.brussels/

3 Technical facilities

The LOCI faculty offers several services as part of its research such as:

- Production of 3D physical models from digital or traditional technologies
- The development of modeling tools for project engineering and to characterize spaces and territories
- Access to regional, national and European data on spaces and territories.

4 Key numbers

The Faculty in its current form was founded in 2010. As of November 1, 2018, LOCI counts 29 academics active in research; 36 technical and administrative staff in support of research; 8 postdoctoral researchers; 46 doctoral researchers. 25 doctoral dissertations have been defended over the last five years and a spin-off (Matriciel: http://www.matriciel.be/en/) has been created from research from the faculty. Researchers from the faculty have published 124 peer-reviewed articles over the past 5 years and have presented 179 papers, of which 56 have been the subject of a selection committee with peer review.

5 Contact

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“In our time, wherever one looks, architecture is present: from domestic to urban and landscape scales, it is a primary condition of our existence. As formulated in the EAAE Research Charter, representing 140 European institutions, ‘Architecture is facing challenges of climate change, globalisation, urbanisation and social transformation that necessitate vital research. [...] If we are to understand, explain, anticipate and influence the consequences of these changes, [our] research is essential.’” (Denis Zastavni)

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