## CHAPTER TEN

# NATURE AND STRUCTURE OF PHD STUDIES IN ARCHITECTURE: THE CASE OF THE FRENCH-SPEAKING COMMUNITY OF BELGIUM

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As a result of the exchanges made during the Workshop on Doctoral Education in Architecture organized by the Istanbul Technical University on the 28<sup>th</sup> and 29<sup>th</sup> November 2011, this paper tries to present the case of the French-speaking community of Belgium<sup>1</sup>. It portrays the political, legal and institutional contexts of architectural Education and Research. The paper also focuses on research fields and incentives to assist researchers. These themes are addressed specifically by the Université catholique de Louvain (UCL). The paper looks into the past and the future of doctoral education in a new faculty that offers various formations leading to architectural practice.

#### 1. The landscape of Architecture education in Belgium

Belgium is a ten-million people country. Education is under the responsibility of the three linguistic communities: the Dutch, the German, and the French ones. The Dutch community is the largest one with more than 6 million people. The German one is the tiniest one with around 50.000 people.

In Belgium, two distinct curricula prepare students for architectural practice: Architect and Engineer-Architect. Following the Bologna agreements, both are organized in a five year cursus: a Bachelor (3 years) also known as the first cycle of higher education and the Master (2 years) also known as the second cycle. Each year is composed of 60 ECTS (ECTS stands for European Credits Transfer System; 1 ECTS = 30 hours

of a work of an average student for an average score). An entrance exam in mathematics must be successfully completed to gain admission to the Bachelor Engineer-Architect program.

Architecture schools have various backgrounds: some have their roots in artisanal traditions and technical apprenticeships; others were originally part of Fine Arts schools; still others originate in the break provoked by the modern movement. As for civil Engineer-Architects programs, they were born during the industrial revolution. With the freeing of energies and the growth of both sciences and mass production in the 19<sup>th</sup> century, new competences were needed. As a response to the expectations of the industrial world, les 'Ecoles spéciales des arts et manufactures, de construction et des mines' (Special schools of arts and manufactures. construction and mining) were created in Leuven in 1864. These specialized schools later became the 'Faculté des Sciences Appliquées' (Departments of Applied Sciences). This course of study belongs to the sciences of engineering; a solid foundation in mathematics and physics is needed in order to act in a concrete manner on the realm of inhabited spaces. Taking into account the specific backgrounds of the two curricula of the two main communities (there is no architectural school in the German-speaking community) along with the different teaching entities (public and parochial schools) managed by the Ministry of Education or municipalities, the total number of architectural schools in Belgium was 17

## 2. The Teaching of and Research in Architecture in the French Community: an Overview

Following the Bologna Process, the teaching of Architecture entered a framework provided by the Decree of March 31, 2004 that defined the teaching done in higher education in the French community, promoted its integration within the European Realm of Higher Education and reorganized the financing of Universities<sup>2</sup>.

This framework is common for all Higher Education programs. In addition to this framework there has been a recent and major change specifically aimed at reorganizing the Architecture curriculum. If Engineer-Architect degrees were conferred by Universities, Architecture degrees were conferred by 'Higher Institutes of Architecture' (ISA in French for 'Institut Supérieur d'Architecture'). The seven Higher Institutes of Architecture, distributed in four cities (Brussels, Liège, Mons, Tournai), had no mandate for research and were considered to be exclusively oriented toward 'professional education', whereas the Universities could prepare students for both professional and research careers. But through a decree dated 30 April 2009, the teaching of Architecture in these Higher Institutes was handed over to Universities. This became effective during the school year 2010-2011. Since then all the Higher Institutes have integrated the Universities. And since former Higher Institutes can now promote research, the Universities' two curricula are now equally responsible for both teaching and research in Architecture. Due to some recent fusions between Universities, the French-speaking community now has six Universities: Facultés Universitaires Notre-Dame de la Paix, Namur (FNDP); Facultés Universitaires Saint-Louis, Bruxelles (FUSL); Université catholique de Louvain (UCL); Université Libre de Bruxelles (ULB); Université de Liège (ULg); Université de Mons-Hainaut (UMH).



Fig. 10.1 Belgium, French-speaking Universities (main campus) and UCL (different sites)

These Universities were assembled in three Academies: the Louvain Academy, which comprises UCL, FUNDP and FUSL; the Wallonia-Brussels Academy, which comprises ULB and UMH; the Wallonia-Europe Academy, centered around the ULg. The term 'Academy' implies that, while remaining autonomous, Universities share some ambitions and a common vision. The members of an 'Academy' can also have a common set of rules and regulations. Ever since the publication of a new decree (November 7, 2013), defining the landscape of Higher Education and the academic organisation of studies, those Academies have been replaced by the ARES, Académie de Recherche et d'Enseignement Supérieur (Academy of Research and Higher Education). Among the six Universities, the four major ones (UCL, ULB, ULg, UMH) have a civil Engineer-Architect program. Since July 2010, these four Universities also host an Architecture program. Generally the civil Engineer-Architect program is part of a Polytechnic School and the Architecture programs form a new Faculty of Architecture.

#### 3. UCL's position regarding the teaching of architecture

UCL, 'Université catholique de Louvain', is the oldest University in the country. Founded in 1425, the University was deeply connected to the city of Leuven, in the northern part of the country. In 1968, the French and Dutch components split and the French-speaking part was banned from Leuven. The city of Louvain-la-Neuve was then created to host the French wing of the University. While Louvain-la-Neuve remains the main campus of the University, the UCL today encompasses a series of departments or institutes that are located in different cities within the francophone half of the country (Brussels (Louvain-en-Woluwe, Saint-Gilles), Louvain-la-Neuve, Mons, Saint-Gilles, Tournai). UCL offers courses in every possible discipline: it offers 42 Bachelor's programs (180 ECTS), 153 Master's programs (60 or 120 ECTS) and 220 continuing education programs<sup>3</sup>. UCL represents a large, international community: it gathers more than 29.000 students of 127 different nationalities, a 5.695-member teaching, research, administrative and technical staff and 150.000 alumni worldwide.

With regard to Architecture, UCL presents a unique configuration: civil Engineers-Architects and Urban Planners (responsible for the Advanced Master in Urban and Regional Planning) have left the Polytechnic School, to form, along with the Architects coming from two Higher Institutes, a new Faculty named LOCI or Faculty of Architecture, Architectural Engineering, Urban Planning. Three kinds of education connected to dwelling artifacts are therefore gathered within the same entity. The Faculty counts approximately 1.400 students. The uniqueness of the Faculty is also due to its location on three different sites: Saint-Gilles (a neighborhood of Brussels), Louvain-la-Neuve and Tournai.

It was decided early on that all available means would be mutually shared and all competences gathered together. Ultimately, the University's framework should strengthen the foundations of architectural studies and render unnecessary the current balancing act between art, technique, and human sciences, which leads to a sterile division for the theory and practice of Architecture. The newly created LOCI Faculty will enable the Architects/instructors who are now joining the University to take up the missions entailed by research: to develop fundamental knowledge, enhance skills, and provide expertise. This matters for society as a whole, and attaining such goals is therefore crucially important. The places we inhabit (whether individually, collectively, institutionally or environmentally) are not sufficiently questioned – not with the depth they demand - or safely kept from short-term pressure. If all the means and objectives available in a sizeable faculty are structured to the utmost, this challenge can be met.

## 4. The Structure of Doctoral Research in Architecture in the French-speaking Community of Belgium

Since the 2004 Decree, a legal structure of graduate training common to all doctoral studies in French-speaking Belgium has been implemented. The third cycle of studies comprises the actual training (60 credits), which leads to a certificate in research education and a minimum of 120 credits of research work resulting in a dissertation and the academic title of 'Doctor'. The minimum length of the study is 3 years. There is no maximum set by law. Such a doctorate is required for professors who have teaching and research responsibilities. It is not required for instructors who have teaching responsibilities and no research responsibilities (in this case, however, the instructors' resume must be deemed equivalent).

In the French-speaking community graduate training rests on two pillars:

- The first one considers regulatory matters. It was up to the three academies, but it is now framed by the ARES that establishes the jurys in charge, within the Universities to award research degrees.
- The second one is more concerned with issues of epistemology and the way the doctoral candidates' training (whether specific or transversal) is organized beyond the traditional curriculum defined by the program of each University. This pillar is

determined in mutual agreement by the Universities, under the aegis of the F.R.S.-FNRS (Fonds de la Recherche Scientifique). This 'Fund for Scientific Research' is a foundation for public utility that is 90% financed by public funding. The F.R.S.-FNRS promotes the development of fundamental research in the French community of Belgium. To this end, it strengthens individually the training of researchers and finances research programs in the Universities of the French-speaking Belgium<sup>4</sup>.

#### 4.1. Regulatory issues

With regard to the first pillar, every University has incorporated the regulation of the ARES in its own doctoral regulation. The doctoral regulation of the UCL sets forth a series of steps to be accomplished by PhD students. Those steps are overseen by the thesis supervisor and an advisor committee (consisting of the supervisor and at least two other members). Their role is to provide active scientific guidance and support as well as orientation guidelines throughout the doctoral thesis process:

- Admission to a doctorate. This step consists in a quality check of the candidate's cursus and its suitability to the requirement of the proposed research. It also consists in a legal check of the admission conditions.
- Confirmation. This intermediate step has to be achieved within the next two years following the admission. It consists in a presentation of the candidate's work in front of his advisory committee. It is then decided whether the doctoral thesis should be continued or not. At stake are often the work orientations for the second half of the thesis
- Private defence. This step consists in a presentation of the research works (once the dissertation manuscript is completed) in front of a jury (composed of at least five members and at least one person outside the UCL). The private defence can have two outcomes. On one side, it allows to defend the thesis publically. On the other side, a number of corrections are indicated to the PhD student. Those comments can be simple writing remarks but they can also imply to re-write full chapters of the manuscript. According to the regulation, those (substantive) changes should take no more than three full-time months (there is no maximum delay for organising the public defence).
- Public defence. This step consists in a public lecture of the PhD thesis for a wider audience.

The 60 credits of the doctoral training consist in:

- 40 credits devoted to research training and scholarly communication (advanced seminars, active or passive participation in conferences or other scientific meetings, writing articles).
- 20 credits for the formal evaluation of progress toward the doctorate (confirmation, private and public defenses of the thesis).

#### 4.2. Graduate training as organized under the aegis of the F.R.S.-FNRS

The *Fonds de la Recherche Scientifique - FNRS* 'mission is to develop scientific research. It favors the production and development of knowledge while supporting both individual researchers and also research programs undertaken within laboratories and services located primarily in the Universities of the French community of Belgium<sup>5</sup>. Scientific fields of research are divided into 20 domains. To each domain corresponds a graduate school. The mission of the F.R.S.- FNRS' sponsored Graduate Colleges is to welcome, coordinate and promote thematic Graduate Schools and stimulate their creation<sup>6</sup>.

Among the 20 Graduate Colleges is the Graduate College in 'the Art of Building and Urban and Country Planning'. In this Graduate College, 2 thematic schools (graduate schools) are organized:

• Territorial development<sup>7</sup>

This thematic school centers its research work around the study of interactions between evolving spatial structures and all of the economic, social, cultural and environmental processes that contribute, in a diversified and plural manner, to the production of the conditions of territorial change.

• Architecture, town and country planning, architectural and urban engineering<sup>8</sup>.

This thematic school defines its field of research as all those techniques and instruments that allow territories to be collectively and individually inhabited, at all relevant scales of investigation.

Graduate Schools provide the research environment, graduate courses and seminars necessary for graduate training. Students wishing to enroll in a doctoral program are required to enter into a graduate school and take 60 credits worth of graduate courses and seminars. It is worth remembering however that unlike what happens in other countries or systems, this thematic graduate school can neither verify nor certify the graduate curriculum or education. The academic steps of verification and control depend on the first pillar, which is managed by ARES and Universities.

## 5. The Topics of Research in Architecture within the French Community

A study of the list of PhDs as published by the FNRS shows that the themes tackled can be listed as follows<sup>9</sup>:

• Architecture understood both as discipline and as an artefact.

This type of research tends to call into question the field of Architecture in order to better define it. This research talks about architectural space, theories, ethics and aesthetics. It also questions the architectural discipline through the resources, supports of the thinking, whether graphic or verbal. It sets out in search of logic, the systems, explicit or otherwise, mathematical and geometric, that structure Architecture. Sometimes, it leaves the field of Architecture behind to put it in its artistic, anthropological or sociological context, in order to come back to it from a different angle. Finally, it sets Architecture against its context, seen as a vector of conception.

• Town and country planning, landscape and territorial development.

This research relates to the territory in its wider sense. It covers both urban and territorial projects. The geographical, social, economic, political, historic contexts are mobilized with a view to sustainable development. Necessarily, this field has a multidisciplinary base.

- The design process linked to modelling This research is found in the particular field of design and the relationship that sets in between representation, modelling and Architectural Design.
- Technology and structures This research covers both general questions linked to the structure, the shell, the relationship between Architecture and its infrastructure. Furthermore, the status of the materials and of the structure in the design process is questioned. More specific aspects, linked to particular situations and close to engineering, are also tackled.
- History and heritage Issues linked to the preservation of heritage alongside typological studies and monographs of structures.

Needless to say, these various themes overlap and fertilize each other: the above-described organization into rubrics is a provisional tool. Architectural research is both resolutely disciplinary and necessarily multidisciplinary: it cannot avoid the political question, or the sustainable aspect, or its historical and cultural context. All these research themes have a collective dimension in common. They set out to produce new knowledge by different means: either is putting the discipline under the microscope to better identify it, or by extracting one of its components to compare it with related disciplines before reintroducing this knowledge into the field of Architecture, thereby opening up new horizons.

## 6. Doctoral Education in Architecture at UCL: history, topics, financing, issues

#### 6.1. History

Research is historically linked to the Engineer-Architect program and the Advanced Master in Urban and Regional Planning, in Louvain-la-Neuve. At first, research primarily related to the engineering part (physics of the building, technology of construction). Gradually however, research began to widen its scope to include the field of Architecture (fundamental theory, urbanism and territorial development, the pedagogy and methodology of the project). From the late 80's, doctoral theses have increased, opening up many areas of research. The first PhD in the Engineer-Architect field was conferred in 1988; the first PhD in Architectural Theory was conferred in 1989. The first PhD in the Architecture and Urbanism field was conferred in 1992. In the 90's, there used to be one PhD presentation per year, but since 2000, an average of 3 PhDs has been delivered every year. 62 doctoral awards have been offered from 1988 until summer 2014. The average completion duration is 5 years (for theses presented since 2000). Nowadays, there is a total of approximately 70 researchers and 20 PhD students within the LOCI Faculty.

#### 6.2. Topics

Three major fields of research can be found among the completed PhD's at UCL:

• Objective technical conditions of dwelling

These questions pertain to living spaces as artefacts, and the technologies that make them possible. The field is based on hard

science and mathematical modeling to examine the constructions through different questions: structure, soils, construction, applied physics, and equipment.

- Urban and territorial structures: analyses and developments These questions pertain to living spaces as collective practice as well as to the logics that make them possible (from urbanism to territorial planning). Inhabited large structures are studied to be understood and anticipated from different disciplines: geography, agronomy, law, economics, ...
- Architectural structures: analyses, composition, conditions of production

These questions pertain to habitat and living spaces, a theoretical study of their fundamentals and their methods of production. It is based on the humanities and the history and theory of Architecture to understand the invariance, recurrences and features of architectural corpus or to question the human dimension that is the habitat.

#### 6.3. Teams

At present the Faculty hosts two large research teams (20-25 people):

• Architecture et Climat<sup>10</sup>

Since 1980, the research team of Architecture and Climate aims to elaborate and develop a theory of climate- and sustainable Architecture, within the context of sustainable development; search for the highest possible energy efficiency in buildings and equipment. With a view to satisfy residents' comfort needs, while making the best possible use of available sources of energy

• CREAT Centre de recherche et d'études pour l'action territoriale<sup>11</sup> (Research and study center for territorial action) Research undertaken since 1965 focus primarily on the spatial mutations and territorial rearrangements as well as on the best possible use of existing means of territorial management.

Besides these two entities, other ones present flexible and more recent structures:

• Structures & Technologies<sup>12</sup>: This unit undertakes research in the domain of structural design and its methods – particularly involving concrete and wood – as well as the procedures and tools used for analysing masonry structures, the application of graphical and geometrical methods and/or methods that are

analogous to contemporary engineering, the rules of good practice for construction in wood.

- LAA Laboratoire Analyses Architectures<sup>13</sup> This laboratory for architectural analysis promotes
  - This laboratory for architectural analysis promotes the development, the editing and the completion of speculative works focusing on the Architectural Theory.
- LAPs Laboratoire d'Architectures Potentielles<sup>14</sup> The LAPs aims to study the potential habitat revealed by means of Research by Design. The group seeks to establish foundations and to develop methods for this recent academic discipline.
- Réseau Architecture et Complexité (network Achitecture and Complexity)<sup>15</sup>

The group's members come from different Universities and target the field of Architecture from various and crossed approaches such as complex thinking, constructivism or systemic approach.

## 6.4. Financing

There are 4 kinds of financing for Doctoral education in Architecture. The freedom of choice of research subjects varies according to the financing body. Going from the more restrictive to the more open topics, the sources of financing can be ranked as follows:

- External research contracts = in this case, pre-determined questions must be addressed within a very precise framework and specific calendar.
- Institutional Scholarships: these consist in more or less openended calls for projects launched by various institutions such as the FNRS for fundamental research, political regions for a more applied type of research, Universities themselves or private foundations. Projects compete: every candidate's purpose and profile in the competition are taken into consideration by the experts who rank them.
- Institutional financing within the structure through Assistant positions. These Assistants are granted a 6-year contract during which they must complete teaching assignments as well as research work (usually the completing of a PhD dissertation). In this case de PhD candidate gets a relatively great freedom in the choice of subject.
- Personal: the choice of a dissertation topic is free to the extent that a thesis supervisor agrees to direct it.

As the organization of education depends on means and on the number of students and staff members, it is important to mention that registration fees are low in comparison with other areas of the world. The Incomes are 1X 835  $\in$  the first year + 32  $\in$  every other year. If the thesis is completed within a few years, this income can stay below 1.000  $\in$ . This tells a lot about democratization of education in Belgium and the restricted means for doctoral education.

#### 6.5. Issues

The new Faculty is facing specific organizational and strategic issues such as:

- The incorporation of Architects coming from the former system of Higher Institutes who were not traditionally mandated for research. Future initiatives should take advantage of their skills and potential. This situation has led to the constitution of a Research commission made of 12 persons coming from the three sites and the three programs of the Faculty. This commission has taken several initiatives:
  - A Research Day is organized every year. The first one, on the 20th October 2011, was structured around the double theme of 'Measuring our potential/Opening possibilities'. Its main objective was to give voice to the various positions and interests that coexist within the faculty in the context of a collective event.
  - An outlet aimed at publishing the research performed by LOCI Faculty members was created, and a Reading Committee of 3 professors was set up.
  - Under the same Committee's supervision, a budget was set up to sustain the initiatives taken by Architects in the field of research
- The establishment of a research group in Architectural Theory in order to be more competitive for research grants.
- The place of 'senior' researchers with long established professional experience in the field of Architecture.

The new faculty also deals with largely shared epistemological questions:

- The improvement in publishing opportunities and recognition of research quality.
- The development of a more reliable methodology of research in Architecture.

- A better definition for both the autonomy of Architecture and the trans-disciplinarity of its research.
- Research by design.

### 7. Back to Teaching

The respective places of research and teaching are not always clearly defined. Although graduate research is usually considered to form the third cycle of University studies, Universities themselves tend more and more often to separate teaching and research for the sake of effectiveness. Whatever their positions, it is clear that research and teaching affect and need each other: the competence to do research must be prepared during the first two cycles of studies; students must from day one learn to speculate and to put certainties into question; the manufacture of a course is an opportunity to ask questions that can feed research; conversely, research produces effects on teaching, through questioning existing knowledge; researchers are actively involved in the guiding of students; ...

In the Engineer-Architect program is a seminar called: Introduction to research. Students have the opportunity to hear presentations from PhD students, to follow their research, to take a small part in the process themselves. Curriculum reform is planned which will offer a research seminar (meaning a seminar with the requirement of research) every semesters of the second cycle. Each seminar will be supervised by a fulltime academic in-charge of research. These seminars will follow one another by visiting questions of history, theory, structure or applied physics. These seminars will help to establish links between training and disciplinary doctoral education in Architecture.

Whether through teaching or research, Universities are first and foremost a place where students find opportunities to shape themselves, and become thinking and active citizens.

#### Notes

1. The official name of the 'French Community of Belgium' is now 'the Wallonia-Brussels Federation', but we will use the previous name here as it stresses the reality of a common cultural foundation and makes us keep in mind that the situation might be different in other communities within the country.

2. http://www.enseignement.be/index.php?page=25837

- 3. http://www.uclouvain.be/6209.html.
- 4. http://www1.frs-fnrs.be/fr/decouvrir-le-fnrs/notre-histoire-nos-statuts.html
- 5. http://www1.frs-fnrs.be/fr/decouvrir-le-fnrs/notre-mission.html

 $\label{eq:constraint} 6. ihttp://www1.frs-fnrs.be/fr/financer-les-chercheurs/ecoles-doctorales-congres-publications/ecoles-doctorales.html$ 

- 7. http://www.developpement-territorial.net
- 8. http://www.archurb.frs-fnrs.be

9. Wittevrongel, Bernard; Stillemans Jean, *La recherche en architecture*, in Architectures, Wallonie-Bruxelles #0 Inventories 2005-2010.

- 10. http://www-climat.arch.ucl.ac.be
- 11. http://sites.uclouvain.be/creat-loci/
- 12. http://sites.uclouvain.be/structech\_loci/
- 13. http://www.lelaa.be/
- 14. http://www.lap-s.be/
- 15. http://www.architecture-et-complexite.org/

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