

CONSTRUCTION HISTORY IN BELGIUM

Interuniversity Research Seminar January 14th, 2022

Book of abstracts

Susan Galavan & Philippe Sosnowska (eds.), University of Liège

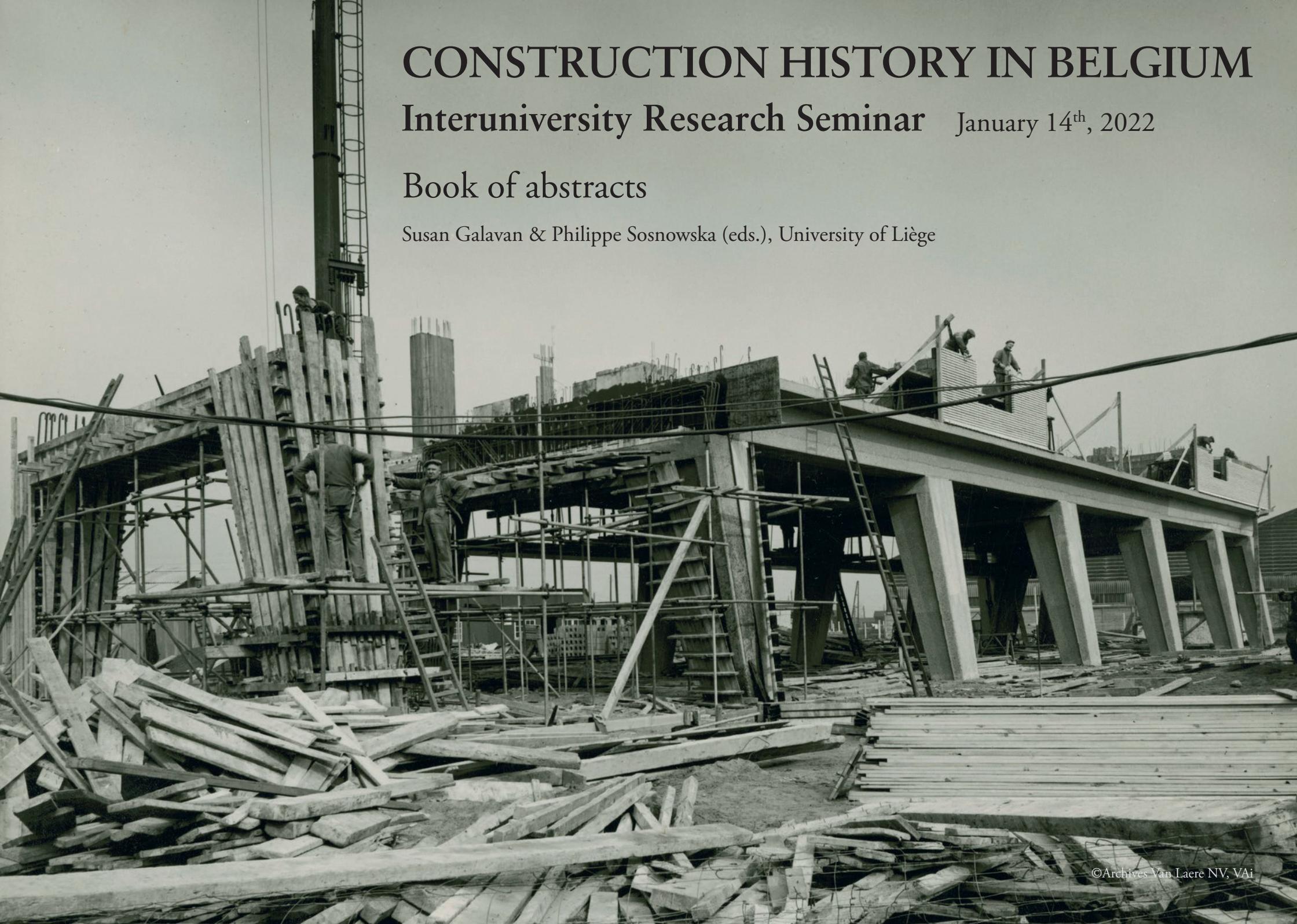


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The Faculty of Architecture ULiège is pleased to host the third Interuniversity seminar on Construction History in Belgium on January 14th 2022 (online).

This book of abstracts summarises the research which will be presented at the seminar. It represents work from five universities across Belgium (Université libre de Bruxelles, UCLouvain, Vrij Universiteit Brussel, Universiteit Antwerpen and Université de Liège). The seminar provides the opportunity for researchers to discuss ideas, form new collaborations and to benefit from the input of international experts in the field.

We would like to thank the participants for their contributions, as well as Prof. Conor Lucey (University College Dublin) and Dr. Louis Vandenabeele (ETH Zurich) who have kindly agreed to act as external reviewers during the seminar. The event will conclude with a round table and the launch of Jelena Dobbels' new book *Building a profession: a history of general contractors in Belgium (1870-1970)*, published by VUB Press.

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Programme

9:15	WELCOME & INTRODUCTION Dr. Susan Galavan (ULiège) and Dr. Philippe Sosnowka (ULiège)
9:30-10:15	LECTURE Prof. Conor Lucey (University College Dublin), <i>Builders as designers: row housing in British architectural culture, 1750-1830</i>
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10:30-12:30	IN DEPTH INVESTIGATIONS [15 mins each + Q&A] Referees: Prof. Conor Lucey (UCD) & Dr. Louis Vandenabeele (ETHZurich) Matthijs Degraeve (VUB), <i>Transient or resilient? Firm longevity in the construction sector, Brussels 1830-1970</i> Jelle Angillis (UAnt), <i>Kiel social housing complex: a rational construction on pilotis</i> Lyna Bourouiba (ULB), <i>'Zero degree' in the work of Hiromi Fujii (1933): neutralizing authorship and 'neutriser' architectural language</i> Shuyuan Han (UCL), <i>Rigid Frames Origin, Development, and Application</i>
12:30-13:30	Lunch

13:30-14:30	PITCH PRESENTATIONS 1 [5 mins each + Q&A] Lara Reyniers (VUB), <i>From deconstruction to destruction and back. Demolition entrepreneurs in the urban context of Brussels (1850 – 2025)</i> Joke Van Houwenis (UAnt), <i>Intelligent ruins: the reusability of existing buildings</i> Baptise Drugmand (ULiège), <i>Railway passenger shelters in Belgium: development of roof structure typologies</i>
	PITCH PRESENTATIONS 2 [5 mins each + Q&A] Louise Huba (VUB), <i>The premature demolition of large-scale buildings in Brussels (1987-2022)</i> Tuba Bölük (UAnt), <i>İshak Efendi and the discursive construction of modern engineering knowledge in the nineteenth century Ottoman Empire</i> (online) Robbe Pacqué (UAnt), <i>Porosity of Building Structures: Tracing changes to the circulation and functional layout of converted buildings</i>
14:30-15:15	LECTURE Dr. Louis Vandenabeele (ETHZurich), <i>Building the domes of the basilica of St Anthony in Padua</i>
15:15-15:45	Break
15:45-16:15	ROUND TABLE Prof. Ine Wouters: State of the art and new initiatives
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16:45	Closing remarks

Transient or resilient? Firm longevity in the construction sector, Brussels 1830-1970

Matthijs DEGRAEVE | Vrije Universiteit Brussel, Architectural Engineering (ARCH) and Historical Research into Urban Transformation Processes (HOST)

Entrepreneurs in the construction sector played a crucial role in the production and maintenance of urban space. Yet, there is still an outspoken need for knowledge of the long-term evolution of construction entrepreneurs and their relationship with the transforming city. In my PhD research, defended in August 2021, I therefore mapped out the long-term evolution of the Brussels construction sector (1830-1970) in terms of its presence in the urban economy and space, its structure in various building trades, and its organisation in diverse forms of business and entrepreneurship. Because few direct historical sources are preserved on construction enterprises, I used indirect sources of trade directories and fiscal registers to compile a database of approximately 25,000 construction enterprises, active in Brussels in 1833, 1866, 1899, 1932 and 1965. For the first time this allowed to provide a detailed image of the evolution of the urban construction sector in its entirety for the nineteenth and twentieth centuries.

One of the long-term developments that can be scrutinized through this database is centred on the longevity of construction enterprises. The short-lived nature and trend-susceptibility of enterprises have since long been stressed as key characteristics of the building sector (Dyos 1973: 124; Summerson 1973: 13). In the early years of Construction History, when analyses of the business organisation in construction were no exception, Powell (1986) concluded that the average life span of building firms in nineteenth-century Bristol ranged between only five and ten years and even deteriorated in time. In geography and housing studies, a focus on firm longevity has similarly proven its potential to probe the

typical trend-susceptibility in construction. Buzzelli and Harris (2003) saw a high transience with housebuilders in Ontario between 1978 and 1998 that was accelerated or slowed down by business cycles.

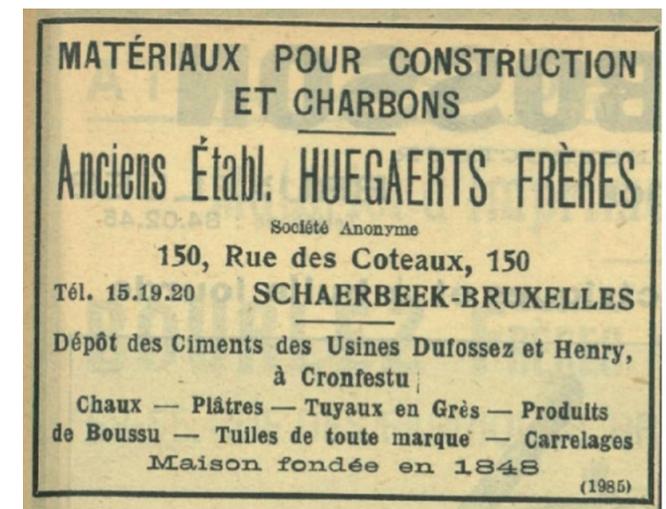
Apart from these studies, however, most claims on firm longevity are based on case studies, which leave little room for generalisations. Especially the extent to which firm longevity rates were affected within a long-term perspective is unknown. In this presentation, I address this lack of a quantitative basis by analysing firm longevity in the Brussels construction sector in the nineteenth and twentieth centuries. I aim to contribute to Construction History by revisiting Powell's findings on Bristol, compare them to Brussels and extend the scope of analysis towards the twentieth century.

To get a grip on firm longevity in construction, I combine two methods: one that involves a process of individual record linkages, and one that departs from a late nineteenth-century enquiry into the age of construction enterprises. Firstly, I rely on the database that I composed for my PhD research on the Brussels construction sector. Based on similarities in name, trade and address, I analyse which firms survived for 33 years (one generation) between 1833 and 1866, and between 1932 and 1965. Secondly, I use a table from the Belgian industry census of 1896 that provides a detailed age distribution of all firms per sector and region, along with the size of their workforces.

These sources allow to evaluate long-term change in 33-year survival rates, check for subsectoral differences and confront firm longevity with firm size for 1896. The

Post-Doctoral project: *Building Brussels. Construction Entrepreneurs in a Transforming Urban Space (1830-1970)*
Supervisor(s): Heidi Deneweth (VUB HOST), Stephanie Van de Voorde (VUB ARCH), Inge Bertels (UA HVDV)
2017-2021 | Vrije Universiteit Brussel
website: <https://www.vub.be/arch/project/buildingbrussels>

analysis shows that most businesses were short-lived ventures. In 1896, for example, 57% had been active for less than 16 years. There was a persisting dichotomy within the construction sector, consisting of a high trend-susceptibility and transience among many recently established, small firms on the one hand, versus a path-dependence in the resilience to crises of a few older ones on the other. The share of enterprises that existed at least 33 years nevertheless expanded from 1-4% between 1833 and 1866 to 15-20% between 1932 and 1965, most likely because the growing availability of credit and rising standards of living gradually increased their chances of survival. Family firm successions were important, but



Advertisement in the Brussels trade directories (almanacs) highlighting the longevity of traders in building materials Huegaerts brothers, 1932 (©Brussels City Archives).

they were also often situated in thin markets, shielded from the fierce competition that challenged the longevity of the labour-intensive firms of ordinary painters, joiners, electricians, etc. Furthermore, a relation is established with firm sizes, where older enterprises usually employed more workers than younger ones.

Important differences thus persisted in the pursued lifespan of the business: from providing for their employment and income during their own professional career at most, to a long-term strategy for firm growth and consolidation of the family's standard of living through an intergenerational succession. In that sense were the differences in firm longevity perhaps largely strategised. For the many small proprietors, the flexibility of entry and exit in entrepreneurship was an important asset that allowed a timely retreat during economic downturns and quick profits when demand was on the rise again. As construction enterprises were so easily set up and dissolved, it was rarely the intention for them to survive for more than one generation.

For the few large proprietors, on the other hand, the higher levels of capitalisation made firm longevity a worthy goal. To actively counter the perception of transience and unreliability that resulted from the short lifespan of most businesses, they used marketing strategies that stressed their firms' reliability, experience and embeddedness. Especially after a takeover or relocation, they aimed to retain their client base and networks by emphasising continuity. Advertisements in the almanacs provide insight into these practices through references to successions, years of establishment and former company names. These were especially common among traders in building materials, for whom asserting reliability was important in a market where their clients were highly volatile businesses themselves. For example, after having relocated in 1930, the Huegaerts brothers advertised their trade in building materials as 'anciens établissements' founded in 1848. It suggests a rather selective and flexible appraisal of their own past, as they emphasized continuity

amidst a great deal of discontinuities, such as the takeover of someone else's business by their father in 1873, and the diversification from a coal-trade to include a trade in building materials by their widowed mother in 1887. Later on, however, the label of 'anciens établissements' was truly earned. Under the name of Bati-Mat, the business is still active on the same location, which makes it even more an exceptional case in an industry that remains characterized by the transience and volatility of its firms.

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Kiel social housing complex: a rational construction on pilotis

Jelle ANGILLIS | Faculty of Design Sciences, University of Antwerp

PhD project: *In Situ Pro Toto: The post-war construction site as a locus of the building practice*

Supervisor(s): Inge Bertels & Lara Schrijver (University of Antwerp)

2020-2024 | University of Antwerp (BOF)

website: <https://www.uantwerpen.be/en/research-groups/henry-van-de-velde/members/jelleangillis/>

This research project analyses post-war building practices in Antwerp, within the national and international context, by studying the actual building process of medium and large construction projects in a comparative perspective. The project puts the building site in the spotlight as the place where the various actors in the construction sector actually work together. It thus focuses on the interactions and collaborations on the building site, and adds a new and relevant dimension to existing, often monodisciplinary, contemporary studies. As such, the research fills an existing gap within the research field of construction history, but also connects and reinforces the existing expertise of both 19th and early 20th century construction history (Bertels 2015) with contemporary construction practice (Schrijver 2016).

The social housing project in Kiel (Antwerp) designed by Renaat Braem and built between 1950 and 1958 is one of the case studies that has been shed light on. The housing complex was known for its progressive design, but also for a rationalized and to some extent industrialized construction process. Through an analysis of building specifications, the well-preserved archive of Braem (CIVA, Brussels) and the photo collection of the contractor Van Laere (VAI, Antwerp), the research examined how this construction process evolved through close interaction between, among others, the client and the architect, and how this was translated on the construction site. What happened at the Kiel construction site turned out to be a derivative of political, ideological and technological impulses, which influenced both the way of working and the organization of the construction site as well as the materials used.



Block D5 under construction during the second building phase of the Kiel social housing complex, circa 1956 (©Archives Van Laere NV, VAI).

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Braeken, Jo, Inge Bertels and Vlaams Instituut voor het Onroerend Erfgoed, eds. *Renaat Braem 1910 - 2001*, architect. 2 vols. Relicta monografieën 6. Brussel: ASA Publ, 2010.

‘Zero degree’ in the work of Hiromi Fujii (1933): neutralizing authorship and ‘neutrizer’ architectural language

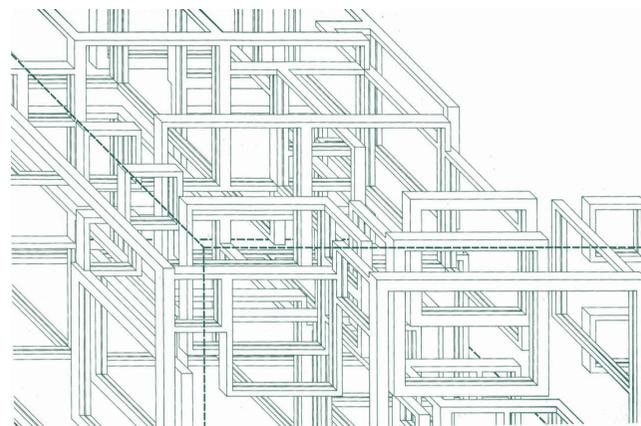
Lyna BOUROUIBA | *hortence*, Research Centre for architectural history, theory, and criticism of the Faculty of Architecture La Cambre Horta of the Université Libre de Bruxelles (ULB)

From the ‘60s to the ‘90s some architectural practitioners, historians, theorists and critics took on the barthesian idea of ‘writing degree zero’ to break loose from the antinomies that plagued the crisis of modernity. After Roland Barthes’ *Le degré zero de l’écriture* (1953) they translated and reformulated to the field of architecture the possibility of a new kind of writing able to overcome the historically embedded conflict between popular and literary language. They advocated a ‘third term’ – a ‘zero degree’ of architectural writing – to transcend the duality of genres, such as ‘high and ‘low’, which divided positions in the postmodern era.

As the idea of ‘zero degree’ travelled the world of architecture, across Europe, USA, Japan and South America, its translations widely varied. Why and how the concept of ‘zero degree’ renewed the debate on architectural language and became associated with the work of particular architects deserves closer scrutiny. This research aims to explore the history of the idea of ‘zero degree’ of architectural writing as it moved across the globe in various media and theatres of debate, and this from three angles: 1) its contributions to architectural theory and criticism in the modern/postmodern era by the adaptations and reasonings that have resulted from these acts of translation; 2) the repercussions it has had on the work of architects in the last half century and the resulting projects; 3) the spaces where it has been debated and where it became an object of transculturation.

This paper is part of the second axis of study and aims to analyse the idea of ‘zero degree’ in the work of the Japanese architect Hiromi Fujii (1933). The hypothesis

that structures this research is that the idea of ‘zero degree’ in architecture is considered by those who adopt it as a *third* language capable of *neutrizer*¹ - to use Lila Braunschweig’s French term - the paradigmatic structure of architectural language. In other words, the ‘zero degree’ of architectural writing, also understood as neutral, white or amodal (architectural) writing, comes as an attempt to overcome the systems of oppositions that have articulated the thinking of architecture as a language since the crisis of modernity: high/low, modernity/tradition, modern/vernacular... Based on some of Hiromi Fujii’s projects, the aim here is to ask how the Barthesian idea of ‘zero degree’ has been formalized in his work and what systems have been developed to *neutrizer* binary categories of genres. Fujii, like other architects in the same period, chose to rely on a system, the grid, a set of pre-determined geometric



Extract from a drawing by Hiromi Fujii for the ‘continuity’ project, 1973. Coloured by the author.

PhD project: *The ‘zero degree’ of architectural writing: overcoming the antagonism between ‘high’ and ‘low’ architecture*

Supervisor(s): Wouter Van Acker (ULB)

2020-2024 | FNRS

website: <https://hortence.com/>

rules that led him first to repetition and then to consider variation within that repetition.

Nevertheless, we would like to submit a second hypothesis, which is not only that of a suspension of genre categories but also that of a neutralisation of the author, of a self-negation, of an attempt to suppress all subjectivity, all traces of choice, by the system. This form of sabotage is an ideal that is very present in Japanese art in the second half of the twentieth century, which seeks to disrupt the relationship of creation to history and culture. It is also structuring another later Barthes’ theory, but intimately linked to the first, that of the Neutral, no longer as a style of writing but as an intellectual posture with regard to a binarity of choices, which would aim at a ‘non-choice’ or a ‘choice from the side’.

Thus, in what way does Fujii’s ‘degree zero’ testify to an ideal of neutralisation of the author and, through this, a *neutrization* of architectural language?

1. In her book, Lila Braunschweig define *neutrizer*, a word she invents to name a neutral that no longer ‘neutralises’ but, on the contrary, ‘acts’, as ‘a tactic of transformation acting by dissolving the great oppositions that give meaning to the expected categories and forms’. Lila Braunschweig, *Neutrizer*. Emancipations par le neutre, Paris: Les liens qui libèrent, 2021, 17. Our translation.

The Origin, Development, and Application of Hyperstatic Rigid Frames

Shuyuan HAN | Faculty of Architecture, Architectural Engineering, urbanism (LOCI), UCLouvain

The research presented in this seminar is the first part of the author's PhD project. This project is comprised of two parts: a history study of hyperstatic rigid frames, and developing the historical analysis method graphic statics into a geometric-based design method for hyperstatic rigid frames.

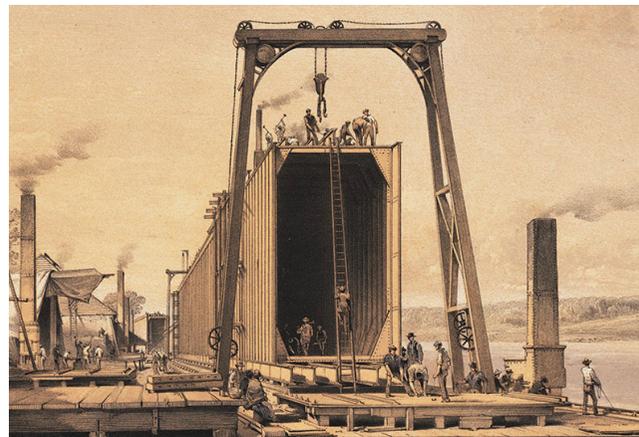
Hyperstatic rigid frames are frames characterized by moment-resisting connections and static indeterminacy. Despite their ubiquitous use nowadays, some questions related to the history of their origin, development, and application are still unclear. The first part of the project tries to answer these questions through the investigation of archival evidence. The review of the historical graphical method also provides the foundation for the second part of the project.

An overview of the historical research of hyperstatic rigid frames

The intent of the history study is to reveal how new materials, spatial need, new construction technologies and structural theories have advanced the development and application of hyperstatic rigid frames.

This kind of frames had already existed before the first industrial revolution. Ancient wooden ships used bracing knees in joints. The members could thus resist bending together, the ship frames became stronger and more integrated. During the age of first industrial revolution, the increasing need for prompt construction promoted rigid connections. The frame of the Crystal Palace derived its stability from rigid connection during construction. Without the supporting falsework, the construction

became faster. Many iron frames at that time adopted brackets or curved girders in joints to realize the moment-resisting capacity, imitating the strategy of timber frames. It is believed until the Godfrey Greene's Royal Navy Boat Store that the rigid connection finally had its modern elegant construction. Then with the burgeoning high-rise building in Chicago and New York in the late 1860s and 1870s, the demand for reducing floor area occupied by thick masonry walls gave an impetus for the adoption of "portal actions" to resist lateral loading. For example, the Old Colony Building built in the 1890s was laterally braced by its sophisticated portal arch system. With the extensive application of steel and reinforced concrete in building industry, the elegance and simplicity of the rigid joints became more effortless to achieve. Electric welding and high-strength bolts further simplified the



Detail of Britannia tube on shore (Source: C., E & R. Stephenson, *The Britannia and Conway Tubular Bridges*, 1850, Linda Hall Library).

PhD project: *Hyperstatic Rigid Frames: Historical and Design Approaches*

Supervisor(s): Denis Zastavni (UCLouvain)

2018-2022 | China Scholarship Council

detail of steel frames. Meanwhile, pioneering architects and engineers were exploring the potential of visual expression of hyperstatic rigid frames.

The structural theories had also been evolving along. At the time of Renaissance, Leonardo da Vinci was able to illustrate the basic bending action of portal frames. Then at the time of first Industrial Revolution, analytical methods advanced continuously with the introduction of mathematical means like calculus and matrix. At the beginning of the twentieth century, the force method and the displacement method quickly reached their limits with the blossom of high-rise building. To address high degree of static indeterminacy, iterative methods such as those of Hardy Cross was proposed and extensively used. Besides the well-known numeric methods, geometric-based method graphic statics was also developed and applied on hyperstatic rigid frames by some researchers. Milo Ketchum and Jerome Sondericker devised methods that could solve portal frames partly rigid. William Wolfe adapted Otto Mohr's method to solve a three-degree-indeterminate continuous portal frame under vertical loading. Though almost forgotten, these graphical methods can offer special insight into the relation between structural definition and bending performance.

From deconstruction to destruction and back. Demolition entrepreneurs in the urban context of Brussels (1850 – 2025)

Lara REYNIERS | Department of Architectural Engineering, Vrije Universiteit Brussel

At least until the first half of the twentieth century, it was common practice to carefully deconstruct buildings rather than to quickly erase them at the end of their lifetime. Demolition used to be a complex, yet well-organised inherent stage of the construction process that generated materials and components for potential reuse. Despite its significance, the demolition stage of buildings has often been overlooked in the field of construction history. The topic only recently gained interest by publications such as 'Il reimpiego in architettura. Recupero, trasformazione, uso.' (Bernard et al. 2009) and the fourth issue of *Aedificare* that was dedicated to 'Recyclage et emploi: la seconde vie des matériaux de construction.' (Bernardi et al. 2018). These publications paid attention to the laboriousness of deconstruction and the implementation of recuperated materials into new buildings.

This research project fills a knowledge gap in the history of construction by portraying the demolition practice in Brussels between 1850 and 2025. During this period large urban renewal projects took place, simultaneously with the ongoing bottom-up renovation of the urban building stock. Both kind of operations entailed the disappearance of many buildings: either through careful and precise deconstruction, or by rapid and harsh destruction. The aim of this research is to grasp the preconditions to deconstruct rather than to destruct from a historical perspective, by closely looking at the demolition process itself, as well as the recuperation and trade of materials that resulted from it. Through a variety of sources such as photographs, textbooks, archives, and tender documents, it will be investigated which materials were perceived durable and valuable, but also dismantlable and saleable

by demolition companies, and how this assessment evolved through time. Also the relationship with other stakeholders, the applicable regulations, and contractual obligations will be taken into account to understand the legal and professional framework in which demolition companies operated. This will be set against a long-term perspective on socio-economic and technologic developments of the building culture in Brussels as well as internationally. For instance, the development of new materials and construction techniques and the mechanisation of the building site had an impact on demolition, as well as the changing ratio between labour costs and material costs, the rise of new kinds of partnerships, the development of new building typologies, and the emergence of architectural obsolescence. As such,



Display of recuperated materials at the *Saints-Michel-et-Gudule* cathedral (Photo by the *Comité d'études du vieux Bruxelles* around 1910 © Bibliothèque artistique, ArBA).

PhD project: *Deconstruction History (1850 – 2025). The salvage of building materials in Brussels*

Supervisor(s): Ine Wouters & Stephanie Van de Voorde (Vrije Universiteit Brussel)

2021-2025 | Vrije Universiteit Brussel

website: <https://www.vub.be/arch/people/lara-reyniers>

the study will not only emphasise the importance of the demolition profession in the construction sector, but also enable to understand the complex interplay of technical, professional, environmental, and socio-economic aspects of circular construction activities in a long-term perspective.

The presentation will elaborate on the terminology related to demolition and the changing associations with practices of deconstruction and destruction through time. Furthermore, a first analysis of the Brussels' 'almanacs' will give an impression of the proportions of the demolition practice, including 'entrepreneurs de démolition' and second-hand traders, in the Brussels building industry.

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Intelligent ruins: the reusability of existing buildings

Joke VAN HOUWENIS | Faculty of Design Sciences, University of Antwerp

The reuse of buildings is a central strategy of circular construction. It reduces waste, transport and pollution, and it leaves a big part of embodied carbon untouched. Developing architectural strategies for the reuse of buildings will soon be, therefore, a cornerstone of architectural practice and the construction industry. Concepts of the reuse of buildings have been discussed both in academia and practice for quite some time. While adaptive reuse plays an increasing role in architectural strategies, there is no general policy, philosophy or best practice. Moreover, most current modelling approaches focus on strategies for adaptable new buildings and conceptualize them as homogeneous structures with clearly identifiable and uniform components. However, as many buildings in the dense European cities are often ensembles with a multi-layered building history, existing models cannot be applied directly. The extensive building stock in our cities and our demand for reuse force us to find better models for the complex situation. In reflecting on the stock, many different motivations for the preservation arise which must be clearly identified, entangled and mediated.

This research project will analyse the conditions of reuse and adaptation for existing historical buildings to develop a differentiated decision-making framework for the further use of individual parts of the building. The basic methodology is based on the model of Brand (1995) which described the layers of a building according to their longevity. This modernist uniform model will be adopted for existing buildings where the site, the loadbearing structure and the skin are considered the

most permanent layers and, therefore, potentially carry the highest value for future reuse. In the first part, building parts and components will be surveyed as repositories of monumental heritage, cultural-historical, architectural or communal qualities and, at the same time, as carbon and energy storage or their compliance with modern standards. Additionally, reusability largely depends on how the building can be appropriated and repurposed, i.e. how much it is an 'intelligent ruin'. Bob Van Reeth's demand for durability through polyvalent usability will be used as a conceptual framework to



A chapel designed by Bourla in 1820 was converted into a festivity hall and later into a design studio of the Royal Academy of Antwerp (©Joke Van Houwenis).

PhD project proposal: *Measuring the intelligence of ruins - architectural strategies for a sustainable reuse of existing buildings*

Supervisor(s): Mario Rinke (University of Antwerp)

2022 | University of Antwerp (BOF – STIMPRO)

website: <https://www.uantwerpen.be/en/research-groups/henry-van-de-velde/members/jokevanhouwenis/>

discuss, in the second part, the existing and its further intelligence for adaptations. This two-stage framework will offer an important guideline for a balanced and thorough decision-making process to preserve, dislocate or demolish parts of a building and ensure its long-term usability as part of the building intelligence.

Railway passenger waiting shelters in Belgium: development of roof structures typologies

Baptiste DRUGMAND | Faculty of Architecture, ULiège

Project proposal: *Development of rail passenger waiting shelters in Belgium from 1835 to 1960: architectural, constructive and heritage approaches*

Supervisor(s): Philippe Sosnowska & Claudine Houbart (ULiège)

2022-2026 (presumed) | CSRV-SH (presumed)

Since the 19th century, when railway stations were dusty and the air was often filled with cinders, the need for large, well-covered, well-ventilated and clear areas has been an engine of innovation for roof structures. The waiting shelters, intended to protect passengers from rain and wind on the platforms, were for the most part bearers of modernity conveyed by the railways.

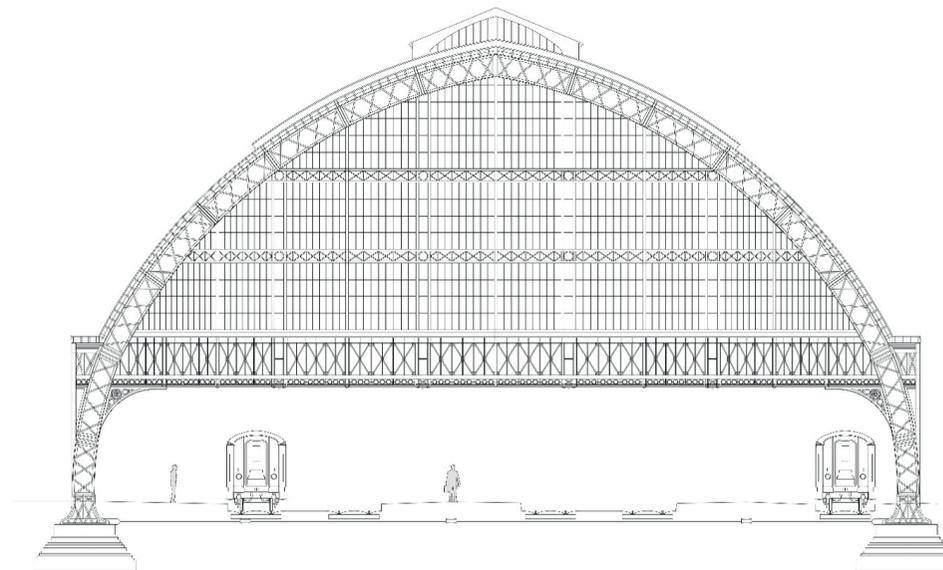
The research project, located at the crossroads of the history of architecture and the history of construction, aims to shed light on the still little explored theme of rail passenger waiting shelters in Belgium during the period 1835-1960.

The primary objective of this study is to understand the architectural object in its materiality, in a diachronic perspective. Doing so will also enrich our knowledge of the construction sector in Belgium, and beyond its borders, in the nineteenth and twentieth centuries, by taking an interest in its actors and constructive practices. It will also clarify the issues raised today by the heritage of these shelters. In the long term, this study will thus constitute a reference on the subject at a national level, which can offer perspectives of comparisons with foreign railway contexts.

To accomplish the research objective, the study will use a large corpus derived from field research and on the other hand with archive collections. This corpus, placed in its railway context, is developed in the form of a catalogue that also includes a graphic and photographic file. Thanks to the contribution of the theoretical works of the actors of the time, this documentation allows a comparative analysis at the level of both the main

work and the secondary work in order to establish the relationships between typologies, forms, spans, joints and materials used. More broadly, the construction sector is approached in a diachronic way through the analysis of some of its actors: designers, suppliers and performers. To close, a heritage assessment of the corpus followed by the identification of recurring threats to these shelters will make it possible to propose an approach to conserving this heritage and thus promoting better development in the future.

From some examples, the pitch presentation provides an overview of the variety of railway roof structure typologies erected in Belgium during the 19th century.



Large hall of the Mechelen railway station designed by Emile Janlet (1886), typical construction of the railway landscape of the late 19th century. (source: Baptiste Drugmand based on *Archives générales du Royaume, fonds d'archives Emile Janlet*, 46)

The premature demolition of large-scale buildings in Brussels (1987-2022)

Louise HUBA | Department of Architectural Engineering, Vrije Universiteit Brussel

In Belgium the building sector is responsible for over 30% of all waste production, an amount which is increasing yearly. Most of this waste is generated by the demolition of existing buildings. Regardless the efforts of policy makers and other stakeholders to prolong the lifespan of existing buildings, the impact on the amount of demolition waste is limited. This is partly due to the complexity of the question and the lack of scientific data. This research project envisions to trigger a paradigm shift “from demolition towards preservation” within the building sector of Brussels. The focus will be on the prevention of premature demolition of large-scale buildings, as these have the largest impact : one large-scale building generate up to 10 to 17% of the yearly amount of construction and demolition waste in the Brussels-Capital Region.

In a first phase the project will focus on the analysis of both context- and project-related factors. By studying the relationship between policies on demolition in Brussels and the broader economic, social, legal, urban and ecological context, large-scale demolition sites in Brussels will be linked to certain trends in city planning and architectural fashions. This will include a critical reflection on the notion ‘premature demolition’ and ‘architectural obsolescence’ in the Brussels context. By means of case studies, the project seeks to uncover the underlying motives and factors which play a role in the decision-making processes resulting in different gradients between demolition and preservation. This project will also take a more tangible approach and investigate which demolitions projects produce the most waste, considering typology, function, age, and location of the demolished

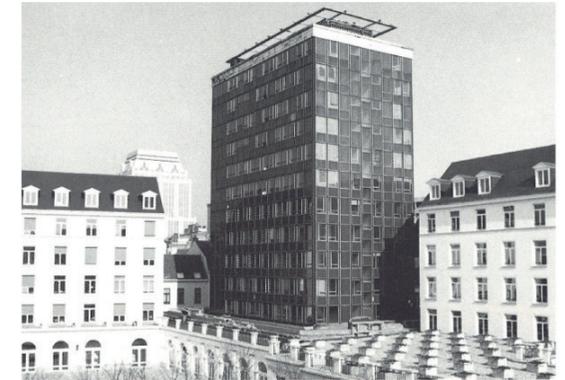
buildings.

In a second stage, the project will seek to formulate policy recommendations and incentives to stimulate the paradigm shift and favour preservation over demolition in particular cases. This will be based on the new understanding of the demolition practice during the last 40 years, as well as a theoretical investigation on how concepts and frameworks from the field of heritage studies can contribute to the preservation of young buildings that are prone to demolition.

PhD project: *From demolition towards preservation: a paradigm shift for Brussels building sector*

Supervisor(s): Stephanie Van de Voorde & Ine Wouters (VUB), Lionel Billiet & Michael Ghyoot (Rotor vzw/asbl)

2022-2025 | Innoviris (Applied PhD)



La Tour Bleue, first modern tower that was demolished in Brussels, only 2 decades after it was constructed (©AG 1825, 1993).

İshak Efendi and the Discursive Construction of Modern Engineering Knowledge in 19th Century Ottoman Empire

H. Tuba BÖLÜK | University of Antwerp

In a time of massive crisis and condensed period of transformation, the Ottoman elite realized the necessity of reforms and entered into a multi-faceted exchange with the West. Most of the historical studies of that relationship discuss how modern knowledge, mainly changes in the military sector, was transferred from Europe in the 18th and 19th century and disseminated within the Ottoman Empire through various intermediaries and practices. From the 1770s, new knowledge began to spread with a systematic introduction of European textbooks on the art of war. Mühendishane (Engineering Schools) were the first Ottoman educational institutions using European books. They combined local organization patterns with imported models, while also producing original ad hoc solutions. Translators were intermediaries in the transmission of scientific knowledge and had a complex role in the reconceptualization and integration of the imported knowledge.

While existing studies describe this process in a broad overview, detailed research on particular subjects are largely missing. This study is an early step within a PhD study, which will specifically explore the integration of western engineering knowledge in the Ottoman Empire during the nineteenth century. For this purpose, it will focus on two separate perspectives, the discourse on knowledge and the practice of its implementation. Here, the focus will be on the four-volume textbook *Mecmua-i Ulûm-i Riyâziye*, published by educator-translator İshak Efendi (1774-1834) based on European textbooks. It will be discussed how the book was used at the Mühendishane and which wider impact it had on the foundations and the terminology of the engineering system in the Ottoman

Empire. To understand the translation and editing process, the “History of Science” and “Engineering” sections in the first volume of the book from the original text will be compared with various French books found in the Mühendishane Library during the period of İshak Efendi. More specifically, the literal description, abstract concepts and depictions are studied in detail. The study develops a micro-historical perspective in the discourse on engineering education in the Ottoman Empire following through the creative mediation of the book and the translator.

Chapter Title (Arabic)	Page Number
جدول مشكلات	٥٩
باب اول في مشكلات	٦٠
باب اول في مشكلات	٦٥
باب اول في مشكلات	٧٢
باب اول في مشكلات	٧٦
باب اول في مشكلات	٧٨
باب اول في مشكلات	٨٢
باب اول في مشكلات	٨٧
باب اول في مشكلات	٩٠
باب اول في مشكلات	٩١

(top) At the beginning of each volume there is a *fihrist* who gives all the *babs* (chapters) in the *Mecmua-i Ulum-i Riyaziye* by İshak Efendi (Voi. IV, Istanbul. 1834)).

(right) Illustrations of the Ptolemaic system, and Copernican system in the *Mecmua-i Ulum-i Riyaziye* by İshak (source: Efendi (Voi. IV, Istanbul. 1834)).

PhD project: *İshak Efendi and the Discursive Construction of Modern Engineering Knowledge in 19th Century Ottoman Empire*

Supervisor(s): Mario Rinke (University of Antwerp)

2021-2024



Porosity of Building Structures: Tracing changes to the circulation and functional layout of converted buildings

Robbe PACQUÉE | Faculty of Design Sciences, University of Antwerp

The load-bearing structure of buildings is the most permanent part when it comes to the question of how to deal with an existing building. It determines the spatial functioning around it and stores a large portion of embodied carbon of the overall building. The better and more refined re-use of existing building structures should, therefore, be part of circular design strategies which will play an imperative role in tackling current sustainability and resource problems. However, the underlying mechanisms and boundaries are largely understudied as convertibility and adaptability are currently at most rudimentary integrated neither into legal frameworks nor the architectural or technical design process in practice. This research project takes historic case studies to better understand how building structures are adaptable and how they determine other functions. In principle, this study aims at developing new design guidelines to develop long-lasting structures.

Historically, the study will focus on the adaptation of post-industrial buildings; hence earlier studies found the lack of adaptability to be a problem mostly induced by Modernist ideologies. The role of the loadbearing structure will be spatially analysed and connected to the circulation system and the specific areas of use. Adaptations to the building will be traced through space and time through a new empirical mapping technique combining quantitative (plans, pictures, data-analysis) and qualitative (semi-structured interviews) research methods. With concept and context as two main foci, this study will investigate the chosen structural system, its historic context, the conditions and phases of construction, and the adaptations made throughout the

lifetime of the building. Doing so we will shed light on the role of the structural system: the opportunities and friction it creates between different building layers and stakeholders.

With the hypothesis that changes to the loadbearing structure of a building are to a large extent predictable and can thus already be projected into the design of future buildings, this historic research will lead to new understandings of adaptability connected to the choice of structural systems, location, and functions which shall be made applicable in the design of new buildings.

PhD project: *Structures of Permanence and Change: Evidence-based mapping of adaptability to induce a circular design strategy*

Supervisor(s): Mario Rinke & Johan Blom (University of Antwerp)

2021-2025 | University of Antwerp (BOF)

website: https://www.uantwerpen.be/nl/personeel/robbe-pacquee_23169

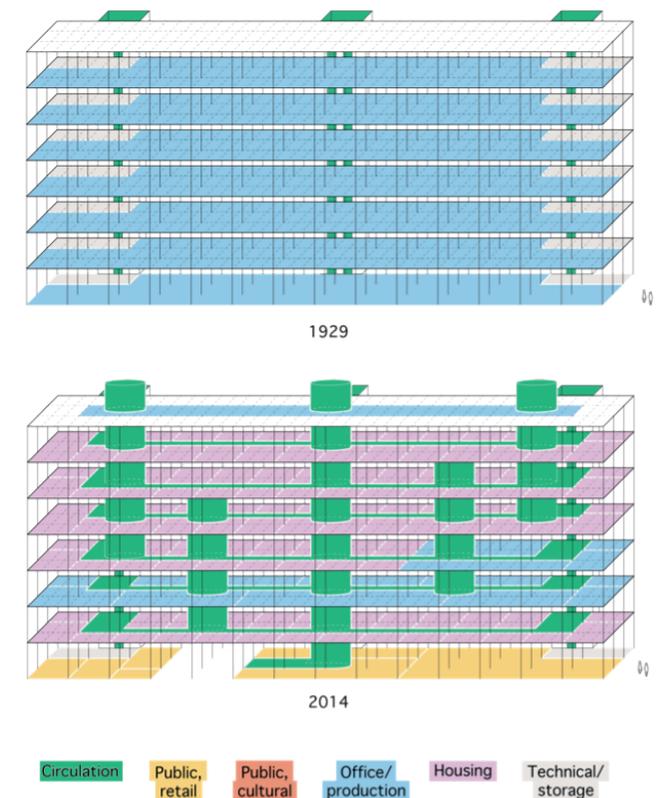


Diagram showing the loadbearing structure, circulation and functional layout of the original (top) and the converted building (bottom) (source: Robbe Pacquée, 2021).

CONSTRUCTION HISTORY IN BELGIUM

Interuniversity Research Seminar January 14th, 2022

registration

The seminar will be held online (MSTeams).

Click [here](#) to participate in the seminar.

Access is free, but please confirm your presence by email [here](#).

If you have any suggestions, questions or announcements, please contact sgalavan@uliege.be or philippe.sosnowska@uliege.be.

| graphic design: Negin Eisazadeh

book launch

