

sites of construction: *connected histories*

Laurence Heindryckx
Dave De ruyscher (eds.)



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Introduction

Construction sites – Sites of Construction:

Connected Histories

Beyond the construction site

Construction history is the history of a complex combination of processes, which the construction historian must disentangle. As Johan Summerson already observed in 1985, the history of construction not only encompasses the history of structural design but also connects with the history of building practice. Building practice includes the recruitment of labour, the selection and transport of materials and equipment, the provision of the supply of drawing materials for the office, methods of payment to builders and architects, and so on.¹ These interrelated practices involve a wide range of actors, underscoring the need to study the “building world and its unique relationship to society”.² Extending the process-based understanding of construction, Antoine Picon has further argued that “construction history offers a unique opportunity to rethink the relations between technology and culture,”³ including their social, economic, political, and environmental implications on society. Following this lead, the field has expanded to encompass new research topics that dovetail with economic, labour, cultural and urban history.⁴ This volume adopts and extends this perspective, broadening the notion of the construction site by considering how different external places and conceptual loci (intellectual fields or realms) sustain, connect to, or shape the construction site.

The construction site has served as a privileged analytical frame for construction historians. Bounded by fences, gates, and schedules, the site appears as a defined location where materials arrive, workers labour, and structures rise. This geographical separation and the site’s distinctiveness provide helpful and natural demarcations in the interpretative analysis of construction historians.⁵ In addition, scholars like Jane Hutton and Kiel Moe have demonstrated the importance of tracing

1 John Summerson, “What Is the History of Construction?,” *Construction History* 1 (1985), 1-2.

2 Ibidem, 2.

3 Antoine Picon, “Construction History. Between Technological and Cultural History,” *Construction History* 21 (2006), 5-19.

4 William Addis and Hermann Schlimme, “Editorial,” *Construction History* 28, no. 2 (2013), i-iii.; James Campbell, “Building a Fortune. The Finances of the Stonemasons,” in: Karl-Eugen Kurrer, Werner Lorenz, and Volker Wetzke (eds.), *Proceedings of the Third International Congress on Construction History* (Berlin: Neunplus1, 2009), 297-304; Linda Clarke, “From Craft to Qualified Building Labour in Britain,” *Labor History* 46, no. 4 (2005), 473-493; Annie Fourcaut and Loïc Vadelorge, “Où en est l’histoire urbaine du contemporain?,” *Histoire urbaine* 32 (2011), 137-157; João Mascarenhas-Mateus and Ana Paula Pires, “Introduction: History of Construction Cultures,” *History of Construction Cultures: Proceedings of the Seventh International Congress on Construction History* (London: Routledge, 2021), xi-xii.

5 Laurence Heindryckx et al., “The Productive Ambivalence of Construction Site Photography as Evidence, Archive, and Positional Prism,” *Aedificare* 18 (2026), 37-56; Valérie Nègre, ed., *L’art du chantier: construire et démolir du XVIe au XXe siècle* (Gand: Snoeck/Cité de l’architecture et du patrimoine, 2018).

material and energy flows beyond the construction site.⁶ Their work focuses mainly on material ecologies, leaving room for expansion to a more extensive network of sites of construction – some physical, others conceptual – that collectively produce the built environment. This volume therefore examines locations and realms whose influence on building has been overlooked, despite their profound impact on construction processes, labour relations, material flows, and regulatory frameworks.

The established focus on the construction site reflects an empiricist impulse in construction history: the desire to locate agency where it seems most visible. Yet this approach obscures the distributed nature of construction knowledge and the multiple actors whose decisions shape what happens at this site. When nineteenth-century Members of Parliament drafted legislation on safety in construction, when factory owners set processes of scaling and distribution in motion, when labour organisers rallied for higher wages and job security, each of these activities takes place in abstract fields or realms of intersecting ideas, constituting ‘sites of construction’ in their own right. These realms produced outcomes – legal frameworks, material innovations, labour standards – that fundamentally structured what became possible at the construction site itself.

Conceptual frameworks for engaging with interacting realms and with the actors operating in such realms have been developed and tested in adjacent disciplines, offering productive entry points for approaching this diversity. Bruno Latour’s actor-network theory (ANT) provides a particularly useful lens for understanding these relationships.⁷ Rather than privileging the construction site as the locus of building activity, Latour used the metaphor of construction to illuminate the “social construction of science and technology” as a process involving heterogeneous actors, collaborations of many trades and skills, not just the various materials of which buildings are made. For Latour, construction carries the “metaphoric weight of building, builders, workers, architects, masons, cranes and concrete poured into forms held by scaffolds.”⁸ What is at stake is not the solidity of the finished structure, but the long process, multiplicity of trades, and subtle coordination required to achieve it. ANT therefore encourages us to follow the actors: the teacher whose

6 Kiel Moe, *Empire, State & Building* (New York, Barcelona: Actar, 2017); Kiel Moe, *Unless: The Seagram Building Construction Ecology* (New York: Actar, 2021); Jane Hutton, *Reciprocal Landscapes: Stories in Material Movement* (Abingdon: Routledge, 2019).

7 Bruno Latour, “The promises of constructivism,” in Don Ihde (ed.), *Chasing Technology: Matrix of Materiality* (Indiana: Indiana University Press, 2003), 27–46.

8 Ibidem, 29.

vocational curriculum shapes workers' technical competencies, the developer whose lobbying activities influence legislative reform, the colonial labour recruiter whose misinterpretation of recruitment shortfalls exposes the reliance on forced labour and coercive recruitment practices in colonial infrastructure projects. These figures, typically peripheral to construction history narratives, emerge as nodes in networks that extend far beyond any single building project. The construction site becomes not an origin point but a temporary convergence – a moment when dispersed actors, fields of ideas, and material flows briefly align to produce built form.

This distributed understanding resonates with Gilles Deleuze and Félix Guattari's concept of assemblage, which rejects hierarchical models in favour of heterogeneous multiplicities.⁹ As Albena Yaneva and Bruno Latour already argued, we need to abandon the static view of buildings as fixed objects but apprehend them (through a theoretical equivalent of Marey's photographic gun) as flows of transformations encompassing social, material, cultural, and temporal dimensions.¹⁰ The construction assemblage thus includes not only bricks and beams but also distribution logistics, apprenticeship programmes, safety protocols, and wage negotiations. These elements connect through relations of exteriority. Each maintains its own trajectory and logic while temporarily configuring with others. A strike for better working conditions, seemingly remote from technical building concerns, reconfigures the assemblage by altering labour availability, cost structures, and scheduling assumptions. The distribution logics expressed in the distribution centre of the GB supermarket chain reconfigure construction practice by aligning urban planning insight, infrastructural capacity, legal and market constraints, distribution knowledge, and consumerist strategy within the building process itself. The legal shift from jurisprudence to regulation in the nineteenth century transformed construction by imposing standardised specifications and inspection regimes, juridifying relationships that had operated through informal practice.

If assemblage theory helps us recognise construction's heterogeneity, Rauhut and Heine's notions of bricolage and non-simultaneity illuminate how diverse realities combine in practice on the site.¹¹ As a concept, 'bricolage' aptly captures what

9 G. Deleuze, F. Guattari, and B. Massumi, *A thousand plateaus: capitalism and schizophrenia*, Repr. ed., Bloomsbury revelations (London: Bloomsbury, 2021).

10 Albena Yaneva and Bruno Latour, "Give me a gun and I will make all buildings move: An ANT's view of architecture," in Reto Geiser (ed.), *Explorations in Architecture: Teaching, Design, Research* (Basel: Birkhäuser, 2008).

11 Eike-Christian Heine and Christoph Rauhut, *Producing non-simultaneity: construction sites as places of progressiveness and continuity* (Abingdon: Routledge, 2018).

happens in the muddy pit of the construction site, where design and theory intersect with practical knowledge. Contractors and builders integrate knowledge of materials, pragmatic assessment of the terrain, and available labour force when implementing architectural plans. The construction site thus functions as a prime space of non-simultaneity where technological innovation such as reinforced concrete continues to go hand in hand with persistent forms of traditional building. Far from being isolated, the construction site becomes a stage for bricolage not despite but because of its embeddedness in extended networks: the builder assembles from a repertoire constituted by actors and sites far removed from the immediate work. In this regard, the concepts mentioned above resonate with Sérgio Ferro's "muck down below", which draws attention to the "under-layer" of labour within the building assemblage.¹²

Indeed, beyond specific locations – the training school, the distribution centre, the courtroom – lie broader realms that structure construction without necessarily occupying distinct geographical spaces. The social realm manifests in labour movements that reshape hiring practices and wage structures. The paradigm of safety emerged over the course of the 19th century in multiple industries, eventually crystallising in regulatory requirements and inspection routines for the building sector. Similarly, paradigms of urbanisation and production influence the construction site. When looking at building as a practice of planning or colonisation, we start to understand not only the various ways in which the (colonial) city is being constructed, but also how the conditions within which construction takes place, such as the availability of common materials, labour, and distribution systems, determine the kind of construction that is possible. The realms mentioned functioned according to mechanisms that impacted construction sites, even though they were not always connected to the construction sector. Each of these realms follows rules of its own and generates a specific logic, expertise, and institutional forms, which then intersect with and reconfigure construction practice.

Bringing these realms into meaningful connection with construction history demands genuinely interdisciplinary research. Legal historians illuminate how regulatory frameworks emerged and evolved; labour historians trace practices of organisation and struggles in the workplace; historians of science and technology reveal how material knowledge circulated between laboratories, factories, and

12 Silke Knapp and Mariana Moura (eds.), *Sérgio Ferro. Architecture from Below: An Anthology* (London: Mack, 2024).

construction sites; urban historians analyse how construction intersected with processes of urbanisation and governance; historians of education document shifting models of vocational training; colonial historians analyse how construction mediated imperial power and local adaptation. Each discipline offers methodologies and archives with specific challenges which construction historians are starting to engage with and are essential for understanding how buildings actually came to be built.

The interdisciplinary heterogeneity of construction history

Construction history has been defined as an “*objet de frontière*” (a boundary-spanning subject),¹³ “*une discipline carrefour*” (a crossroads discipline),¹⁴ or a “technical anthropology”.¹⁵ The identity of the disciplinary field of construction history is a topic of debate because it is situated between the engineering sciences, the humanities, and the social sciences.¹⁶ This heterogeneity has often resulted in fragmented and unilateral approaches, with exchanges between construction history and adjacent disciplines remaining limited in scope.¹⁷ However, others have identified this disciplinary heterogeneity as a key asset, enabling the discipline to address the complexity of construction as a historical phenomenon.¹⁸ In response to repeated calls for more coordinated and mutually informed exchanges across disciplinary boundaries, this volume seeks to further develop and articulate the interdisciplinary potential of construction history.

13 Antonio Becchi, Robert Carvais, and Joël Sakarovitch, *L'Histoire de la construction/Construction History*, vol. 2 (Paris: Classiques Garnier, 2018), 74.

14 Robert Carvais et al., *Edifice & Artifice: Histoires constructives* (Paris: Picard, 2010), 5.

15 Werner Lorenz, “From Stories to History, from History to Histories. What can construction history do?,” *Construction History* 21 (2005-2006), 31-42.

16 Robert Carvais et al. (eds.), *Nuts & Bolts of Construction History. Culture, Technology & Society*, vol. 1 (Paris: Picard, 2014).

17 Eberhard Pelke et al., “What is Construction History and why is it significant for structural engineers?,” in: Eberhard Pelke and Eugen Brühwiler (eds.), *Engineering History and Heritage Structures* (Zurich: International Association for Bridge and Structural Engineering, 2017), 7-20.

18 William Addis and Nick Bullock, “Editorial,” *Construction History* 27 (2012), i-ii; Antonio Becchi and Robert Carvais, “Histoire de Construction. Un chantier européen, in: Antonio Becchi et al. (eds.), *L'Histoire de la construction/Construction History*, 13-26; Santiago Huerta and Ignacio Javier Gil-Crespo, “Construction History in Spain. The Discipline's Foundation,” in: Antonio Becchi et al. (eds.), *L'Histoire de la construction/Construction History*, 387-424; Werner Lorenz, “From Stories to History, from History to Histories. What can construction history do?,” (2005-2006).

Labour-focused perspectives, both implicitly and explicitly referring to the social sciences, have become more prominent in construction history over the past years, notably in the work of Linda Clarke and Christine Wall, the *Who Builds Your Architecture?* project, and in the recent Cornell AAP's *Labor Un:Imagined* symposium initiated by María González Pendás.¹⁹ The recent work of Will Thomson, Katie Lloyd Thomas, and João Marcos de Almeida Lopes has traced some of these broader trajectories in practice and established what might be termed “production studies” for architecture – a field that refuses the disciplinary separation of design from construction and insists on understanding the built environment through its material making.²⁰

The collaborative engagement of these scholars with Brazilian architect and theorist Sérgio Ferro, particularly through the *Translating Ferro/Transforming Knowledge* project, has illuminated how architectural discourse systematically obscures the labour and processes of construction.²¹ As Katie Lloyd Thomas demonstrates in her examination of architectural specifications, materials exist prior to their constitution through processes of procurement, manufacture, and regulation.²² Specifications reveal how materials are actively constructed through practices that extend far beyond the construction site, in testing laboratories, standards committees, trade associations, and contractual frameworks.

Thomson, meanwhile, argues that design and construction are mutually constitutive on the construction site, as design is a relational practice embedded in production.²³ His ethnographic research on Chinese migrant construction labour similarly shows how the construction site operates as a node where global labour flows, migration policies, educational systems, and capital accumulation strategies converge.²⁴ The site becomes legible only when understood as embedded in these

19 Linda Clarke, “From Craft to Qualified Building Labour in Britain,” *Labor History* 46, no. 4 (2005); Christine Wall, “Recording the ‘building world’: how oral history transforms construction history,” in: James Campbell et al. (eds.), *Proceedings of the First Construction History Society Conference* (Cambridge: CHS, 2014), 435–443; María González Pendás, “Labor Unimagined,” *Journal of the Society of Architectural Historians* (2022). For *Who Builds Your Architecture?*, see <http://whobuilds.org/about/> (last consulted 11 February 2025).

20 Matt Davies et al. (eds.), *Building Sites: Architecture, Labour, and Production Studies* (Abingdon: Routledge, 2025).

21 *Translating Ferro/Transforming Knowledge*, see <https://tftk.iau.usp.br/en/> (last consulted 30 December 2025).

22 Katie Lloyd Thomas, *Material matters: architecture and material practice* (Abingdon: Routledge, 2007); K. L. Thomas, T. Amhoff, and N. Beech (eds.), *Industries of Architecture* (Abingdon: Routledge, 2016).

23 William Thomson, “Challenging Design Ideology. Reframing Architectural Production and the Design-Labour Relation,” in: Matt Davies et al. (eds.), *Building Sites: Architecture, Labour, and Production Studies* (Abingdon: Routledge, 2025).

24 William Thomson, “Encounters with labour: migrant workers, architects, and building sites in China,” *Architectural Research Quarterly* 21, no. 3 (2017).

broader networks. De Almeida Lopes's work with grass-roots building movements in Brazil engages with alternative construction practices where the separation between design and making breaks down entirely, revealing how conventional architectural practice depends on maintaining precisely this division.²⁵

The present volume contributes to these approaches by way of its systematic attention to sites and realms that have remained peripheral even within this production studies framework. While recent scholarship has focused productively on the heterogeneity within the construction site – the multiplicity of trades, the complexity of material transformations, the contested nature of labour relations – less attention has been directed to how the site itself is constituted by actors and processes operating elsewhere. The courtroom, the stockpile depot, the vocational school, the business lunch, the distribution centre, the protest-filled streets, the passenger warehouse temporarily housing colonial labourers: these locations have their own logics, temporalities, and fields of knowledge, yet their influence on construction has been insufficiently theorised. By bringing these locations and the realms they represent into dialogue with construction history, this volume aims to further develop the project of diverting attention away from the construction site as sole location of construction while revealing the distributed nature of construction knowledge and practice.

What history can do for Construction History

This volume is the result of the research project “Above and Beyond Construction History. What History Can Do for Construction History”. This Belgian project was an Excellence of Science project (EOS) funded by both the Flemish and Walloon research funding agency (FWO and FNRS, respectively). EOS projects are intended to analyse topics of fundamental research and aim to bring together research of different scientific communities and disciplines. The project “Above and Beyond Construction History” set up dialogues between the central discipline of

25 João Marcos de Almeida Lopes, “Architecture as ensemble – a matter of method,” in: Katie Lloyd Thomas, T. Amhoff, and N. Beech (eds.), *Industries of Architecture*, 106–113; Raíssa Pereira Cintra de Oliveira et al., “Modern Architecture, the Construction Site, and the Inconvenient Truth of Materials,” *Architectural Research Quarterly* 29, no. 1 (2025), 21–29.

construction history, and three other disciplines, namely legal history, colonial history, and planning history, each constituting a track or cluster within the EOS project. The project's programme was to explore mutually uncharted territories and knowledge gaps in these disciplines through joint themes, actors, and sources. The goal of the project was not only to contribute to these distinct fields but also to gauge the potential of thematic and methodological cross-overs for construction history. The project analysed the discipline from the angles of juridification, urbanisation, and colonisation.

The legal track explored the intersections between law, expertise, and the construction site. The divisions between expertise and law were often blurred in building, and the various actors involved had to acquire insight into both the law and building practices. In the period between c. 1880 and c. 1970, the processes of juridification and professionalisation of the building industry coincided. More rules were imposed on building professions (contractors, architects, engineers), as well as with regard to safety during the building process. The formation of these rules reflects interactions between different fields. Economic and social processes intersected with developments in the legal sphere. Moreover, the processes of juridification and professionalisation mentioned were concerned with the combination of practice, custom, and legislation. Changes in building processes interacted dynamically with legal developments.

Within the colonial cluster, the role of construction within the *mise-en-valeur* or economic exploitation of the Central African territory under Belgian colonial rule (1885-1960) was studied. The (infra)structures of colonialism and, along with it, colonialism itself depended on the successful implementation of a 'modern' Congolese building industry, requiring the recruitment and training of construction workers, the extraction and production of building materials, as well as the development of specific constructive know-how. Through microhistorical studies of construction sites, the track critically reassessed this apparent 'success', highlighting its complexities and contradictions. Research on postwar housing for Africans, for instance, showed its reliance not only on metropolitan contractors but also on so-called *artisans libres*, while studies of major infrastructure projects revealed the persistence of practices of covert forced labour. Further work demonstrated how vocational training was shaped by political debates linked to the Belgian educational conflict, and how timber production contributed to large-scale deforestation. The research also extended into the early post-independence period (to c. 1975) to trace both continuities and transformations in building practices.

The planning track considered the city as a collective edifice in constant transformation. Cities depend for their development on the construction industries that can build them. As cities develop, they select what kind of construction processes can thrive and persist. This track studied the relation between urban development and construction through an urbanisation perspective, examining the reciprocal relationship between dynamics of urbanisation and the changing assemblage of landscapes of construction. This analysis looks, among other things, at the availability of resources, the enabling landscapes supporting their processing and distribution, the vocational training of construction labour, and the circulation of ideas and imaginaries that co-define the ‘appropriate’ use of materials and technologies.

The project involved a total of 13 scholars. It included six lead researchers: three construction history experts (Rika Devos, Stephanie Van de Voorde, and Ine Wouters) and three experts from legal history (Dave De ruyscher), colonial history (Johan Lagae), and planning history (Michiel Dehaene). In addition, it engaged four post-doctoral researchers (Tom Broes, Simon De Nys-Ketels, Robby Fizez, and Laurence Heindryckx) and three PhD researchers (Igor Bloch, Louis Debersaques, and Mirte Wambacq).²⁶

This volume is composed of two main parts. Part 1, “Sites of construction”, examines construction through a series of geographically grounded case studies. It focuses on locations beyond the construction site that nonetheless inform its processes and practices and is based on research conducted by the project’s full-time (junior) researchers. Part 2, “Connected histories”, contains contributions that engage with conceptual and methodological issues encountered in the course of the project. These contributions start with position papers that were initiated by four of the project’s lead researchers, from within their respective cluster, and developed in dialogue with other team members. External scholars whose work resonates with the approaches and questions in the position texts were invited to add reflections to the latter.

26 <https://www.above-and-beyond-construction-history.be/> (last consulted 30 December 2025).

Part 1: Sites of Construction

The contributions in Part 1 of the book engage with locations beyond the construction site that matter for the processes and practices that apply in the latter. The following sites are addressed: the stockpile depot, the vocational school, the chambers of the investigating judge, the passenger warehouse, the business lunch, the distribution centre, and the streets. These seven sites are not a comprehensive representation of all potential locations associated with construction sites. Rather, they reflect a selection of interdisciplinary case studies, research trajectories, and actors identified and examined by the full-time researchers involved in the EOS project.

Construction history research still largely focuses on the design and construction of the built artefact, even though its scope has broadened following Summerson's definition. As a result, the roles of architects, engineers, and contractors remain central, and commonly used sources continue to revolve around design and building processes (such as architectural drawings, engineering specifications, estimates, and construction site photographs). This emphasis often overlooks how projects are shaped by actors external to daily construction activities, diverse fields of knowledge, and the wider building culture.

Moving away from this consolidated core, we discern several important knowledge gaps in the field of construction history concerning the range of actors, sources, and types of knowledge that shape construction processes and practices.

Firstly, this volume extends the range of actors. Actors can be involved in processes of manufacturing that produce materials applied at a site of construction. The underlying dynamics of production processes can occur both at the construction site and beyond. In his contribution on the brick industry, Tom Broes argues that the exploitation of clay reserves and the use of permanent kilns created a brick supply that had to be met by sufficient demand. This incentivised the creation of federations for the allocation of excess materials. At the same time, social reorganisation did not merely involve the construction industry but was happening around the sites of brick production as well. In addition, Igor Bloch analyses the curriculum of *écoles professionnelles officielles* in the Belgian colony of Congo in his chapter on vocational schools in the 1950s. He argues that the training of skilled Congolese construction workers was part of a scheme that targeted economic development of the colony while also serving as instrument of social mobility. In both contributions, the actors described are not tied to the site of construction but rather

adjacent to it. They bring with them a language, knowledge, and assumptions that have an imprint on the practices and processes present at construction sites. As these actors seldom set foot on the actual construction site and are only involved with the act of construction indirectly or from a distance, they are rarely identified as actors within construction history and even less an object of study, leaving their contributions poorly understood. Studying their actions on different ‘sites of construction’ in this volume demonstrates beyond doubt their relevant roles as ‘builders’ and opens up new opportunities for construction history.

Secondly, this range of actors leads to unexplored types and interpretations of sources and vice versa. Broadening the range of sources – for example, through company archives, contractors’ correspondence, parliamentary minutes, and labour recruitment reports – can redirect construction history narratives by mapping the agencies of these ‘other’ crucial yet underrated actors, as well as investigating the (implicit and explicit) processes and mechanisms that define building practice.²⁷ This expansion must be paired with new interpretative approaches applicable to both established and alternative sources, opening new avenues of research and ways to reconstruct the ‘assemblages’ particular to construction history. Even the most common and factual documents, like building permits, site diaries, and quotes, can yield richer insights when read between the lines and against the grain, especially since they are often produced by actors with knowledge and/or profiles other than those who later interpret them, resulting in a potential additional layer of meaning. In his chapter, Louis Debersaques demonstrates how court files, which eventually ended up in the Belgian State Archives, are especially interesting due to their ‘self-contained’ nature, by which the historian can, to a certain extent, contextualise and validate builders’ testimonies as given to the investigating judge. Examining how workplace accidents triggered a “translocation” from the construction site to the chambers of the investigating judge unveils informal processes like professional delineation and the organisation of safety. In his contribution, Robby Fizez demonstrates that the *Office du Travail de Léopoldville* was an institution that existed alongside the Belgian colonial administration in Congo. This parallelism allowed for policies of forced labour, even though they went against the official policy of Belgium. Yet the sources produced by the *Office du Travail* also show

27 Jeffrey L. Beard, “Contracting blunders and innovative regulations of US military construction 1861 to 1918” (paper presented at the Building Knowledge, Constructing Histories conference, Brussels, 2018); Sandra M. G. Pinto, “Behaviours and procedures used by construction agents of ordinary buildings in Portugal during the Late Middle Ages and Early Modern period: rules, regulations and controls,” *Construction History* 33, no. 1 (2018); Cécile Sabathier, “La figure d’entrepreneur du bâtiment au prisme des comptabilités des chantiers urbains,” *Aedificare* 1, no. 5 (2019).

the strategies of resistance from the part of the workers, and they shed a light on the interactions between colonial policy and infrastructure planning.

Thirdly, (re)interpreting (alternative) sources allows for tracing and highlighting many alternative types of knowledge, such as tacit knowledge, practical knowledge, or situated knowledge, which have so far been largely overlooked or unrealised in construction history scholarship.²⁸ Tapping into implicit or unwritten cognitive principles, rules, procedures, associations, and habits is crucial for uncovering the culture of building and its importance for day-to-day building practice, still too often a missing ingredient in many construction history studies. In her contribution, Laurence Heindryckx focuses on business lunches at which captains of industry, politicians, and union leaders met. These lunches served as a unique platform for cooperation and lobbying, because they allowed attendants to relate developments across different domains. Their situated knowledge was broadened with input about what happened in other realms of society. Mirte Wambacq, in her chapter on the distribution centre, points to technological innovations triggered by the creation of a new type of distribution centre for *Grand Bazar Antwerpen* (GBA) and the centralisation of building knowledge in the chain. In his chapter, Simon De Nys-Ketels uses alternative sources and oral history to trace how construction workers' unions deployed the streets as a site of social protest in ambiguous ways. While labour movements made active use of their situated knowledge to pressure for social reform, thus improving working conditions, safety, and wages, such shifts in social legislation also served to defend the interests of the predominantly local union members, while often excluding migrant workers, undoubtedly one of the most 'muted' actors of construction history.

28 William Addis and Hermann Schlimme, "Editorial," (2013); Christine Wall, "Recording the 'building world'"; Robert Carvais, "Plaidoyer pour une histoire humaine et sociale de la construction," in: Robert Carvais et al. (eds.), *Edifice & Artifice: Histoires constructives*; Andrew Rabeneck, "The Place of Knowledge in Construction," in: James Campbell et al. (eds.), *Further Studies in the History of Construction: Proceedings of the Third Annual Conference of the Construction History Society* (Cambridge: CHS, 2016), 3-11; Cáo Rodrigues de Castro and Amílcar Gil Pires, "From regulation to everyday construction practice: The Lisbon building codes between 1864 and 1930," in: João Mascarenhas-Mateus and Ana Paula Pires (eds.), *History of Construction Cultures: Proceedings of the Seventh International Congress on Construction History* (Lisbon: CRC Press, 2021), 465-472.

Part 2: Connected Histories

While the first part of the book focuses on case-based research, the second part analyses conceptual and methodological issues encountered over the course of the project. It contains four cluster-oriented chapters. These chapters start with a position paper that was written by the project's lead researchers and members of their cluster teams. External scholars were invited to write comments on the position texts, drawing on their own expertise. As a result, the cluster-oriented contributions in Part 2 expand the dialogue between construction history and the fields of legal, medical, media, architectural, colonial, and planning history. Building on historiographical perspectives that were developed and mobilised during the research project, these contributions explore how these approaches can connect and interact. In this manner, Part 2 foregrounds the exploratory and interdisciplinary nature of the project.

Accordingly, the cluster-oriented chapters reflect the diverse interdisciplinary exchange promoted by the EOS project over the past four years and demonstrate the sustained continuity of such exchange, as several external contributors have remained engaged with the project over an extended period during collective workshops and individual research meetings. Fostering dialogue and interaction, both within the EOS research team as well as with prominent scholars working on new ways of understanding the making and transformation of the built environment, has been a central choice from the outset. It reflects a key methodological premise of the project, namely that the complexity of construction history and the breadth of its disciplinary entanglements resist reduction to a single interpretative framework or disciplinary voice.

The first chapter, “Activities, Actors, Archives and Positionality of the In-Between”, consists of a position paper written by Rika Devos and Simon De Nys-Ketels, discussing what the project found in between the different disciplinary research fields (construction, legal, colonial, planning) and how to assess these findings. Central to this reflection is the question of what emerges in the spaces between disciplines and how this object of study can be critically evaluated, a concern that has informed the project throughout, albeit often implicitly. This chapter puts forward productive ways of reflecting on activities, actors, and archives in this “in-between” space, which is each time complemented with responses by Réjean Legault (Université du Québec à Montréal), Christine Wall (University of Westminster), and Martin

Kohlrausch (KULeuven). These authors have each in their own terms engaged with similar historiographical issues in their own work.

“Enabling Conditions of Industrialised Construction”, the second chapter, is introduced by Michiel Dehaene and Tom Broes, who examine ‘building as a practice of urbanisation’, addressing not only the multiple ways in which the city is constructed, but also the conditions under which construction takes place, in particular the factors that co-determine the forms of industrial construction that become possible. The chapter connects the history of labour, distribution, and terraforming to the history of the industrialisation of urban construction in Belgium in the second half of the twentieth century. Linda Clarke (University of Westminster), Lionel Devlieger (Ghent University), and Carl H. Nightingale (SUNY, University at Buffalo), whose work inspired the reflection in the planning history track of the EOS project, were invited to respond to ideas forwarded from this ‘building as a practice of urbanisation’ perspective.

While ‘expertise’ is a central notion in the disciplinary field of construction history, the contribution “The Expert’s Not-knowing: Authority as art” questions an uncritical acceptance of it, by arguing that not-knowing can be considered an equally significant part of expertise. Its authors, Dave De ruysscher and Louis Debersaques, together with external respondent Tijn Vanneste (Universidade Nova de Lisboa), connect not-knowing to the notion of ‘art’ and link it to theoretical conceptions of ‘practical wisdom’. In doing so, they refer to historical examples, showing that flaws and mistakes could be redressed by the ‘expert’ who had caused them. In a broader sense, the chapter analyses what philosophical and scientific historical approaches (position paper), as well as medical and trade history (respondent), contribute to the analysis of notions of expertise and authorship, and how these notions resonate with recurring themes in construction history.

Johan Lagae’s chapter “S is for Small” makes a plea for ‘smallness’, albeit seen through a multi-scalar lens, to reflect on what history can do for construction history. Lagae argues that writing from the small and the mundane, rather than the grand and spectacular, can be about the technologically innovative (small engineering) as well as about the quantitatively large (small can be plentiful), while linking local conditions to global ramifications. In this sense, the notion of the ‘small’ is proposed as a productive framework for engaging with otherwise all-encompassing histories, foregrounding empirically grounded, theoretically informed, and methodologically adventurous approaches that challenge canonical narratives.

Jean Souviron (ENSA Paris-Est) and Peter Scriver and Amit Srivastava (University of Adelaide) offer their reactions and reflections on the theme by discussing how the notion of ‘smallness’ plays out in their own work and what it allows to open up in historiographical terms.

The cluster-oriented chapters mentioned demonstrate how the research conducted within the framework of the EOS project, from the angles of architecture, legal, colonial, and planning history, has yielded results that broaden a wide range of perspectives on construction history. In addition, the four contributions in the second part of this volume offer reflections on the historical method and which histories can be told when narrating construction in the past. As a result, this volume is an invitation to further pursue interdisciplinary research on construction-related topics and hopefully inspires similar disciplinary confrontations with other disciplinary fields such as economic or labour history, fields that emerged as relevant during the discussions within the EOS project, but whose potential could not be fully fleshed out. It illustrates how interdisciplinarity not only refers to themes but also to the assumptions and views of different disciplines that underpin their approach to history.

Part 1

sites of construction

Tom Broes

The Stockpile

Reciprocities between the industrialisation of brick production and the extended urbanisation of residential landscapes in postwar Belgium, 1945-1985



Figure 1. “Huge overstock is paralysing the Boom brick factories in the Rupel Region. Every open space is used to store the excess stock of bricks.” (Belgian State Archives, Depot Landuyt, Beveren, Newspaper Clipping, Monday, 21 June, 1971)

Introduction

In recent years, scholarship in the fields of architectural and construction history has explicitly moved beyond traditional concerns of spatial form and structural design, turning instead to broader questions and interrogations of production studies and labour history.¹ In a context of rising awareness of the construction sector’s planetary impact,² historians have particularly sought to reveal, question, and understand the socioecological externalities of practices of material

1 Matt Davies et al. (eds.), *Building Sites: Architecture, Labour, and Production Studies* (Abingdon: Routledge, 2025); K. L. Thomas, T. Amhoff, and N. Beech (eds.), *Industries of Architecture*. See also the TF/BK project: <https://productionstudies.com> (last consulted 10 February 2026).

2 Matti Kuittinen, “Building within planetary boundaries: moving construction to stewardship,” *Buildings & Cities* 4, no. 1 (2023), 565–574.

extraction, production, circulation, and processing – together with labour aspects embedded in each stage – often through close engagement with specific manufacturers, projects, or places.³ A growing body of research thus reveals how every built project is sustained by reciprocal worlds and forms of labour that remain mostly invisible and too often unacknowledged.⁴ In a related, though much more abstract register, current scholarship in critical urban theory argues that the continued urbanisation of extended urban agglomerations is deeply dependent on what are termed *operational landscapes* – often remote, anonymous zones of extraction, primary production, energy generation and distribution, logistics, and related infrastructures – dispersed across the planet.⁵ Inspired by such framings at the crossroads of discussions on Planetary Urbanisation, the Anthropocene, and Global Urban History, recent work has started to reconceptualise ‘building’ explicitly as a type of ‘terraforming’⁶ – a reconceptualisation of construction at an urban scale that recognises how vast quantities of material are drawn from the Earth’s bio- and geosphere and are subsequently transformed, distributed, and processed through diverse thermochemical operations and labour regimes to meet human purposes.⁷

Within the context of the EOS project “Above and Beyond Construction History”, I have sought to bring these emerging research strands together – expanding the analytical frame beyond individual sites or projects to examine urbanisation at large, while simultaneously attending much more closely to the specific production logics, practices, and actors that terraformed the commodified landscapes of extended urbanisation.⁸ Methodologically, these research trajectories and objectives led me to study the practices, organisational dynamics, and politics of realisation of federated material industries, which effectively bridge realms of material production (at a geological scale) and consumption through construction (at the

3 See, for instance: Hannah le Roux, “Circulating asbestos. The international AC review, 1956–1985,” in: Kim Förster (ed.), *Environmental Histories of Architecture* (Montréal: Canadian Centre for Architecture, 2022), ch. 6, 1–17; Vyta Pivo, “Shrouded in Dust: The Unseen Labor of African American Cement Workers,” *Journal of Architectural Education* 74, no. 2 (2020), 328–331; Monika Motylińska et al. (eds.), “Swimming in an ocean of materials,” *ABE Journal* 23, Dossier: Material Constraints (2024); Kiel Moe, *Unless: The Seagram Building Construction Ecology* (New York: Actar, 2021).

4 Jane Hutton, *Reciprocal Landscapes: Stories in Material Movement* (Abingdon: Routledge, 2019).

5 Neil Brenner et al. (eds.), *Environments of Planetary Urbanization* (Berlin: Jovis Verlag, 2026); Neil Brenner and Nikos Katsikis, “Operational Landscapes: Hinterlands of the Capitalocene,” *Architectural Design* 90, no. 1 (2020), 22–31.

6 Carl H. Nightingale, *Our Urban Planet in Theory and History* (Cambridge: CUP, 2024).

7 Mathieu Fernandez et al., “La terre et le béton: Le projet d’urbanisme considéré sous l’angle du métabolisme territorial,” *Vertigo – la revue électronique en sciences de l’environnement* 18, no. 3 (2018).

8 Tom Broes, “Urbanization through concrete plants, or the ‘realization’ of cement as terraforming practice: the Belgian case 1955–85,” *Bulletin KNOB* 124, no. 4 (2025), 20–40.

level of extended urbanisation).⁹ The aim is to develop a distinctive approach to the epistemology of urbanisation and its relation to the Great Acceleration by tracing a detailed material history and theory of the extended urban fabrics of the postwar period.¹⁰ At the same time, this line of inquiry enables a systematic ‘urbanisation’ of scholarship on material production and construction.¹¹

This chapter examines Belgium’s postwar clay industries during the period 1945–1985. Scrutinising the archives of the Belgian National Federation of Clay Industries (NFCI, 1947; today the Belgian Brick Federation), it outlines the reciprocal relationships between the emergence and consolidation of extended forms of residential urbanisation, on the one hand, and the intensified industrialisation of brick production, on the other. It proceeds from the observation that, in a context of rapid (sub)urbanisation and the accompanying shift to a consumption-driven market, the federated clay industry was compelled to adopt a proactive politics of realisation to accelerate and reinvent traditional brick production, to rebrand brick as a ‘new’ and indispensable material for Belgium’s state-induced suburban housing programmes. These historical perspectives on industry and commerce open a very self-evident window onto different realms of production, not only in the development of technology,¹² but also in the evolving forms of construction labour on the urbanising worksites.¹³ This chapter shows the NFCI’s constant struggle to synchronise the capacities of Belgium’s brick-producing industries with the consumption demands of state-induced urbanisation in order to calibrate extraction, production, distribution, onsite manufacturing, and eventually urban growth. The stockpile in that setting, finally, surfaced as a pertinent historical prism, refracting some of these dynamics with remarkable clarity.

9 Garth Meyers, “Political Ecology and Urbanisation: Zanzibar’s Construction Materials Industry,” *The Journal of Modern African Studies* 37, no. 1 (1999), 83–108; David Harvey, *Abstract from the Concrete* (Berlin: Sternberg Press, 2017).

10 John R. McNeill and Peter Engelke, *The Great Acceleration: An Environmental History of the Anthropocene since 1945* (Cambridge (Mass.): Belknap Press of Harvard University Press, 2016); Neil Brenner and Swarnabh Ghosh, “The Monster ‘Within’: Capitalist Urbanization as Geometabolic Escalation,” *Development and Change*, 56, no. 4–5 (2025), 668–728.

11 Tom Broes et al., “Het verstedelijken van constructiegeschiedenis: de stad als assemblage van bouwpraktijken?,” *Stadsgeschiedenis* 18, no. 1 (2023), 39–56.

12 Steven Groák and Graham Ive, “Economics and technological change: Some implications for the study of the building industry,” *Habitat International* 10, no. 4 (1986), 115–132.

13 Linda Clarke, *Building Capitalism: Historical Change and the Labour Process in the Production of the Built Environment* (Abingdon: Routledge, 1992); Pratik Mishra, “Urbanisation Through Brick Kilns: The Interrelationship Between Appropriation of Nature and Labour Regimes,” *Indian Institute for Human Settlements* 5, no. 1 (2020), 17–36.

Federating a highly fragmented sector (1941-1947)

The Belgian clay industry first federated in 1941 with the creation of the Independent Sectoral Federation for the Clay Industry and Affiliated Trades (ISFCIAT) – founded by the country’s larger brick companies.¹⁴ Its immediate trigger was the severe rationing of coal, wood, straw, and steel under German occupation during the Second World War, which cut output to just 10–12% of capacity.¹⁵ However, deeper shifts were already underway. By the late 1930s, economic and construction crises, alongside competition from new materials and collapsing export markets, forced the industry to confront a new reality in which selling every brick was no longer assured. To protect the brick’s market position, the ISFCIAT sought to develop better sector statistics; establish market-regulating agreements; organise structured consultation with authorities, contractors, architects, and related trades; promote shared marketing through fairs and exhibitions; create a technical/commercial research office; and found a clay school with laboratories linked to academic research centres, among others.¹⁶ These ambitions would, however, only (partially and gradually) materialise after the war. The German authorities dissolved the ISFCIAT as early as 1942, replacing it with the Industrial Council of the Clay Industry (ICCI), whose mandate was strictly limited to allocating scarce resources.

When rationing ended, the ICCI was replaced by the National Federation of Clay Industries (NFCI), founded on 2 April 1947, with Victor Burton as executive chair.¹⁷ The sector was highly fragmented, with nearly 900 mostly small and medium-sized family brickyards spread across numerous Belgian municipalities. Although some miscellaneous products were produced, the industry was still overwhelmingly dominated by the production of traditional Rhine-format bricks – 3.2 million tonnes of small solid bricks of roughly 180 × 85 × 50 mm in 1947, albeit with regional variations.¹⁸ This persistence of traditional brick did not imply a total absence of

14 Structurally, the clay industry consisted mainly of mature family businesses and remained weakly corporatised, with little presence of external investors or embedded financial-political networks, in sharp contrast to the cement and steel sectors.

15 Archief Belgische Baksteenfederatie (hereinafter ABB), not inventoried (hereinafter NU), *Eerste Jaarverslag* (1.10.41-31.3.42).

16 Ibidem.

17 ABB, NU, *Statuten 1947*.

18 ABB, NU, *75 jaar Belgische Baksteenfederatie*.

innovation. Throughout the nineteenth and early 20th centuries, the industry had gradually concentrated in regions with favourable clay deposits – especially the Rupel, Campine, and coastal regions – and had adopted successive technological advances: the Kollergang for mechanical grinding (early 1800s), the Hoffmann kiln for continuous firing, the Schlickeisen stiff-moulding press (after 1860), and mobile motorised excavators digging clay to unprecedented depths of up to 30 m (early 1900s).¹⁹

The sector's industrialisation, however, remained strikingly limited and uneven. Many small, capital-light brickyards continued to rely on labour-intensive practices well into the mid-twentieth century – hand-digging and overwintering of clay,²⁰ hand-moulding bricks, and firing them in low-tech field or clamp kilns. Even the more advanced companies remained heavily dependent on manual labour to handle large volumes of raw material for kiln setting and unloading, internal transport, and stacking bricks for shipment.²¹ Natural drying in covered sheds, essential to prevent cracking during firing, remained the only viable option in 1947, keeping production labour-intensive and, above all, highly seasonal. Kilns shut down between November and February, when bricks could not dry properly, forcing many of the 9,000 manual labourers (out of a workforce of 12,290) to seek temporary winter employment.²² Streamlining this heterogeneous mix of traditional and semi-modern brickyards, centred on an age-old product, into a 'modern' materials industry posed an immense challenge for the NFCl.

19 ABB, NU, *Geschiedenis van de baksteentechnologie*, G. Peirs, 1973 (hereinafter *Geschiedenis baksteentechnologie*).

20 Handmoulded clay retained water and was left to overwinter in the clay pits to 'rot' – so that frost made it more plastic.

21 An estimated 200,000 tonnes of clay were lifted by hand each day in 1960. See ABB, NU, *Geschiedenis baksteentechnologie*.

22 ABB, NU, *75 jaar Belgische Baksteenfederatie*.

The NFCI's first postwar actions: Advocating policies favouring brick (late 1940s)

Although initially the NFCI expected the postwar reconstruction agenda to replicate the massive brick boom of the early 1920s, it was soon confronted with stagnating demand and stock accumulation instead. By 1948, kilns stood idle and thousands of available bricklayers were unemployed, despite an urgent need for an estimated 300,000 dwellings.²³ “Have the Belgians all lost their minds?”²⁴ the NFCI asked pointedly, while instructing its president, Victor Burton, to issue press releases to defend the sector’s interests.²⁵ Burton identified various obstacles that slowed reconstruction and tried to steer new policy frameworks, albeit with mixed success. Arguing that construction was one of Belgium’s few autarkic industries, for instance, and frustrated by delays in what he saw as an obvious choice, he pushed for Marshall Plan aid for clay and brick,²⁶ warning that only fools would “kill the goose that lays the golden eggs.”²⁷ In the end, however, the funds went to steel and cement, not clay.²⁸

The NFCI also blamed delays on the emergence of new materials and building systems that weakened brick’s formerly unquestioned position. While conceding that new materials might yield long-term benefits,²⁹ the NFCI pressed policymakers to prioritise immediate needs by using “readily available and traditional materials [...] proven over two thousand years [...] and rooted in our soil and labour.”³⁰ The aspect of endogenous labour was particularly salient for the NFCI. Citing the 1948 Congress of the National Federation of Construction Enterprises, the federation claimed that most Belgian contractors lacked the resources, materials, and skilled labour to apply new rationalised building techniques at a scale that would yield

23 Stadsarchief Antwerpen (hereinafter SAA), *Archief Frans Detiège, mappen over woningbouw 1947–1949* (hereinafter AFD), 672#799, *De Wederopbouw in België van 1945 tot 1948: Een bittere ontgoocheling voor het land, een mislukking voor de administratie*, 30 Juni 1948.

24 SAA, AFD, 672#799, *Laten wij, alleen voor het bouwen, de geblokkeerde 60% vrijlaten*, 14 juli 1948.

25 Interestingly, these press releases were recovered in the archives of Frans Detiège, alderman of housing for the City of Antwerp in the late 1940s.

26 SAA, AFD, 672#799, *De bouw is een autarksiche sector der Belgische Economie, vergeten wij dat niet!*, 23 Juni 1948.

27 SAA, AFD, 672#799, *Het Marshall-Plan en de mooie toekomst der Belgische bouwmaterialen*, 30 Juni 1948.

28 Broes, “Urbanization through concrete plants”.

29 SAA, AFD, 672#799, *Enkele suggesties om het tekort van 300.000 woningen te verminderen*, 1 Juni 1948.

30 Ibidem.

real efficiencies.³¹ Though these few major enterprises were seen as effective for a small number of large public and private projects, the NFCI insisted that weak competition would “nullify the economic gains of rationalisation”³² in the face of the massive housing challenge.

The NFCI maintained that housing was to be built by the country’s numerous small contractors who worked largely on their own, often with multi-skilled relatives. It pushed for policies limiting projects to small sites of “2 to 10 units at most,” insisting that any additional costs due to the “relative absence of rationalisation” would be offset by stronger competition, slimmer margins, and lower overheads³³ – a model it saw as well suited to both social and private housing.³⁴ At its core, the NFCI sought to align postwar housing policy with the actual availability of materials and skilled labour. Using bricks and reemploying bricklayers – “the most useful members of the propertied class, for they provide housing for those unable to build for themselves”³⁵ – was presented as the most economically and pragmatically obvious solution, ensuring that those who built the housing would benefit from the policies shaping it.

Clearly targeting this market, the NFCI argued that housing was “without any possible doubt the nation’s foremost issue”³⁶ and soon saw its preferences realised in new policies that superseded the War Damage Act, criticised as “cumbersome” and “inadequate to meet new demand.”³⁷ The socialist Brunfaut Act (1949), which paved the way for high-rise modernist projects by the National Housing Society (*Nationale Maatschappij voor Goedkope Woningen en Woonvertrekken* NMGWW), created little demand for brick. By contrast, the Christian democratic De Taeye Act (1948) fully matched the NFCI’s small-scale vision, initially providing generous loans and premiums for no more than 50,000 new private homes.³⁸ Its success, however, ensured repeated renewals, ultimately subsidising around 500,000 units by 1980

31 SAA, AFD, 672#799, *De Mededinging zal de bouwkosten der werkmanswoningen doen dalen*, 28 Juli 1948.

32 Ibidem.

33 Ibidem.

34 SAA, AFD, 672#799, *Om het bouwen te bevorderen: De Fiscus moet het privaat bouwen begunstigen*, s.d.

35 SAA, AFD, 672#799, *Onbillijkheid en onhandigheid*, 9 April 1949.

36 SAA, AFD, 672#799, *Het Marshall-Plan: de ‘speciale rekeningen’ en de wederopbouw*, 7 Juli 1948.

37 SAA, AFD, 672#799, *Een nieuwe hindernis voor de wederopbouw: de opstopping van dossiers der geteisterden*, 14 Juli 1948.

38 Katrien Theunis, “De Wet De Taeye. De individuele woning als bouwsteen van de welvaartsstaat,” in: Tom Avermaete and Karina Van Herck (eds.), *Wonen in Welvaart: Woningbouw en Wooncultuur in Vlaanderen 1948–1973* (Rotterdam: VAI, CVAA, 010 Publishers, 2006), 66–77.

– or roughly 730,000 when including small landholdings and purchase-premium homes of social housing companies – half of all private houses built in Belgium in that period.³⁹ Combined with the 1962 Urban Planning Act, which opened extensive tracts of cheap building land, postwar Belgium's policies decisively favoured individual, largely suburban homeownership, the very model the NFCI had championed. Unsurprisingly, the brick industry came to dominate this expanding market.⁴⁰ In the Belgian welfare state, mass housing materialised as mass private housebuilding, stimulating the extended urbanisation of enormous quantities of small bricks, processed by small contracting firms on small plots.⁴¹ This massive 'suburban shift', however, would come with a radical transformation of brick itself – and, with it, of the entire clay industry.

The metamorphosis of brick and the entire clay industry (1950-1960s)

In hindsight, it is striking – if not mildly amusing – that Burton's press statements repeatedly invoked "new" or "alternative" materials with a "destitute appearance", while carefully avoiding any explicit reference to the elephant in the room: concrete. One of the earliest documents in the NGCI archive – *Patents Relating Exclusively to Building Blocks Made of Cement Agglomerates, 1926–1948* – suggests, however, that the brick industry monitored every development in the concrete sector with suspicion.⁴² Lightweight aggregate concrete blocks, in particular, posed a serious threat, even in daily practice.⁴³ Their production was not seasonal, they were lighter yet larger than bricks, so that they could be laid far more quickly on site.⁴⁴ This intense competition ultimately compelled the clay industry to reinvent its age-old solid

39 Pascal Dedecker, "Ruimtelijke verrommeling à la belge: zit Alfred De Taeye terecht in de beklaagdenbank?," *RUIJME* 45 (2020), 78–81.

40 ABB, NU, *Vraaganalyse en prognose in verband met de sektor steenbakkerijen*, L. Marrecau, 1973, Master's Thesis (hereinafter *Vraaganalyse en prognose*).

41 Bruno De Meulder et al., "Sleutelen aan het Belgische Stadslandschap / Patching up the Belgian Urban Landscape," *OASE* 19, no. 52 (1999), 78–113. For a notion of the small in construction history, see Johan Lagae's chapter in this volume.

42 ABB, NU, *Uitvindingsoctrooien uitsluitend betrekking hebbend op bouwstenen en bouwblokken in cementagglomeraat*, M.F.J. Bockstael 1948, Pathenthotèque.

43 SAA, AFD, 672#799, *Universal Construction Associates*, 27 November 1948.

44 ABB, NU, *Distributie in de Baksteenindustrie*, J.P. Nauwelaerts, 1972, Master's Thesis (hereinafter *Distributie in de Baksteenindustrie*).

Rhine-format bricks to meet new urban demands in a more competitive market, marking a definitive shift from a seller's (producer-driven) to a buyer's (consumer-driven) market.⁴⁵

In 1952, the first *Snelbouwsteen* (*QuickBuild* brick, a type of engineering brick) entered the Belgian market as the clay industry's response to emerging concrete building products – reportedly produced in the Rupel region.⁴⁶ In 1955, NGCI secretary F. J. Claes published his incisive pamphlet titled *The New Products of the Brick Industry: A Contribution to Solving the Housing Problem*. Acknowledging a long period of relative stagnation, he argued that there was no longer any reason to dismiss the brick industry as “backward”. Advances in scientific research had accelerated technical progress, enabling the mass production of a brick that matched the qualities associated with ‘new’ materials: lighter yet larger units that would improve productivity and reduce construction costs – an area, he stressed, with far greater savings potential than further optimising the production of traditional Rhine-format bricks.

The Belgian *QuickBuild* brick, a crossbreed of the American S.C.R. and Swiss B25 bricks, was introduced in formats of 290 × 140 × 90 and 290 × 190 × 90 mm, each pierced with 80–120 holes of roughly 1 cm² and featuring a central opening (6–7 × 3 cm) for easy manual handling. Above all, *QuickBuild* bricks were produced for the domestic market, as their low value-to-weight ratio, high transport costs, and dominant embedding in regional building standards and habits made them economically and technically unsuitable for sustained export beyond national borders.⁴⁷ As the brick changed, so too did the craft of bricklaying. Thanks to the *QuickBuild* brick's size, excellent thermal properties, and compressive strength, brick walls could be erected 50–80% faster and with 30–35% lighter, more slender assemblies that required fewer joints, lighter lintels and beams, and less (costly) insulation. Transport costs per cubic metre of masonry were also significantly reduced.⁴⁸ Unsurprisingly, the *QuickBuild* brick soon completely displaced traditional solid brickwork as the primary load-bearing material of suburban housing

45 Paul Deneffe, *Distributie en Consument: Evolutie en Prognose* (Antwerp: Standaard Wetenschappelijke Uitgeverij, 1966).

46 ABB, NU, *Vraaganalyse en prognose*.

47 Exports mostly occurred for specific extruded façade bricks to neighbouring countries, but they never became structurally significant for the sector, rarely exceeding 3–5% of total output. See: ABB, NU, *Distributie in de Baksteenindustrie*.

48 ABB, NU, *De Nieuwe Producten van de Baksteenindustrie: een bijdrage tot de oplossing van het woningprobleem*, F.J. Claes, 1955 (hereinafter: *De nieuwe producten*).

production. The turning point came in 1973, the first year that perforated bricks definitively outnumbered solid bricks in Belgian production (fig. 2).

This transformation of brick in turn demanded a profound overhaul of Belgium's entire clay industry. The *QuickBuild* brick could only be produced through mechanical pressing of high-plasticity clays, which required new expensive machines for dosing, grinding, kneading, fine-rolling, steaming, and mixing.⁴⁹ The competition with concrete blocks urged factories to shift to continuous, year-round production, which required mechanically excavated clay that did not need overwintering, as well as artificial drying systems that consumed as much energy, if not more, as firing itself.⁵⁰ The progressive mechanisation of mass-produced brick provided the perfect setting for the rollout of high-capacity tunnel kilns. These were roughly 100 m in length to combine controlled preheating and cooling within the firing cycle.⁵¹ While offering no major energy advantages over Hoffmann ring kilns, tunnel kilns allowed fully automated loading and unloading at fixed stations, replacing expensive manual labour costs.⁵² The cost-intensive scale of this transition comes into sharp focus in ads by German manufacturers like Händle, offering complete turnkey plants with all necessary machinery.⁵³

Rumst-based Swenden (now part of Wienerberger) claimed to be the first Belgian brickworks to install a tunnel kiln in 1962.⁵⁴ Others quickly followed, and sector-wide investment had clearly accelerated by 1965.⁵⁵ This shift deepened internal divisions: small brickyards outside the main clay regions – working shallow seams of barely 1–2 m – could not adopt the deep mechanical excavation required and closed in rapid succession, eroding a longstanding tradition of local resource sovereignty. Even in the main brick centres, family businesses with limited clay reserves found the capital costs prohibitive and were pushed out. The Rupel region, where the transition to *QuickBuild* bricks was most advanced, suffered most. By 1974, the

49 ABB, NU, *Geschiedenis baksteentechnologie*.

50 ABB, NU, *Close-up van de Belgische Onderneming: De Baksteenindustrie, 1981* (hereinafter *Close-up baksteenindustrie*).

51 Kris De Decker, "Rings of Fire: Hoffmann Kilns," *Low-Tech Magazine* (19 October, 2009).

52 Decker, "Rings of Fire: Hoffmann Kilns".

53 Claudine Gunst-De Paepe and Edward H. Lapeysen, *Bricks, Brickmaking and Brickworks* (Mechelen: Unie der Boomse Steenfabrikanten, 1970).

54 Edward Broecks, "Hoe maakt u het?," *Rupelklei Tijdingen*, no. 2, April 2019.

55 ABB, NU, *Analyse van de Sektor Steenbakkerijen*, M.C. Vandewelle, 1977, Master's Thesis (hereinafter *Sektor Steenbakkerijen*).

“world’s largest brick-producing centre”⁵⁶ had been overtaken by the coastal clay industries, whose more flexible investment strategies allowed them to outpace the sector’s historic epicentre.⁵⁷

The rapid rise of the *QuickBuild* brick also upended longstanding market rhythms. Year-round production became unavoidable, necessitated by high depreciation costs and driven by tunnel kilns that were far too expensive to shut down. This situation created a new structural pressure: the need for constant sales outlets. However, bricklaying – seasonal and weather dependent – could not match the continuous pace of production, leading to chronic stock accumulation. Factories kept producing value they could only realise once conditions allowed.⁵⁸ This mismatch amplified cycle volatility, strained liquidity, and pushed yet another wave of smaller firms out of the market.

State-controlled consumer prices and their implications for the brick industry (1960s and beyond)

The heavy investments required for continuous, year-round production ultimately made the sector more fragile – a paradoxical vulnerability compounded by an unusual state intervention. Archival NGCI graphics reveal that, at least from 1960 onwards, the Belgian government imposed uniform, ex-factory brick price caps, transport costs included.⁵⁹ These brick price caps, which were embedded in the state’s postwar price control regime aimed at boosting consumption, became yet another instrument to secure affordable homeownership, alongside grants, favourable loans, and inexpensive suburban land.⁶⁰

56 Paul De Niel, *Gevormd, gedroogd, en voor de eeuwigheid gebakken* (Boom: EMABB, 2000).

57 ABB, NU, *Sektor Steenbakkerijen*.

58 Ibidem.

59 ABB, NU, *Jaarverslag 1985*.

60 ABB, NU, *Vraaganalyse en prognose in verband met de sektor steenbakkerijen*, L. Marrecau, 1973, Master’s Thesis; *Analyse van de financiële en economische structuur van de Belgische baksteenindustrie aan de hand van een paar balansen*, J.M. Verlinden, 1973, Master’s Thesis (hereinafter *Analyse Belgische baksteenindustrie*).

Although this Keynesian welfare regime guaranteed the brick industry a broad market, price-capping also became a key source of the sector's structural unprofitability, frequently "leaving more than half of all the firms operating at a loss" in the late 1960s and early 1970s.⁶¹ While this price policy mainly affected traditional labour-intensive brickyards, larger mechanised firms were by no means immune to its repercussions. Compressed margins led to chronic underinvestment, thereby slowing modernisation and scaling which ultimately produced a structural technological lag in the clay industry. As *QuickBuild* bricks faced even stricter price control from 1969 onwards – introduced right after major investment waves – flattened price differentiation completely restrained quality competition and continued product innovation.⁶²

With wages, social security contributions, and energy prices rising sharply throughout the 1960s and 1970s, production costs outpaced the slow and often delayed indexation of state-capped brick prices.⁶³ Unable to cut energy use, manufacturers were forced to accelerate the large-scale dismissal of manual labourers.⁶⁴ Firms also tended to hold back sales until price adjustments materialised, further exacerbating the formation of chronic stockpiles. At the same time, the heavy burden of fixed costs – depreciation, interest payments, maintenance, minimum permanent staffing, and taxes – forced plants to keep production running, either to secure future cash flows, to generate liquidity through occasional underselling at dumping prices or, in the worst case, simply to maintain bank confidence.⁶⁵

Excluded from price – and therefore quality – competition, manufacturers increasingly relied on volume competition, obliged to maintain output even under saturated or adverse market conditions. In effect, Belgium's rich clay deposits, along with the industries and labour force dependent on them, were treated as expendable and effectively put up for sale to fuel state-engineered suburban housing policies. The socio-environmental consequences were severe. In the Rupel region, for example, extraction accelerated dramatically, while an increasing amount of bankrupt brickyards started converting their abandoned clay pits into lucrative landfills to compensate for the losses suffered, absorbing millions of tonnes of sometimes

61 Ibidem.

62 Ibidem.

63 Ibidem.

64 Ibidem.

65 Ibidem.

toxic (industrial and household) waste.⁶⁶ Meanwhile, employment collapsed by 93.5% between 1960 and 1990, and the state invested little in social reconversion programmes to absorb the displaced workforce.⁶⁷ This neglectful handling of the clay industry is fundamentally part and parcel of what several scholars have described as a Belgian politics of 'cheap urbanization' – urban development pursued at minimal public cost by exploiting existing infrastructures and resources.

From the early 1970s onwards, the legitimacy of the price caps was increasingly questioned as they were seen to obstruct the sector's economic viability. Yet archival material indicates that their removal did not occur before at least 1985.⁶⁸ As an alternative pathway towards sustaining the sector's viability, commentators proposed to launch expanded state-led public housing programmes, conceived as a means to stabilise brick demand and prices during periods of downturn and stockpiles.⁶⁹ Explicitly echoing the cement sector's reliance on public infrastructure spending as a countercyclical buffer, this strategy steered the brick industry towards greater engagement with social housing initiatives to broaden demand beyond the cycle-sensitive market of individual homeownership.⁷⁰ Interestingly, the NMGWW had already been tasked with assessing how the main clay-producing regions could contribute to large-scale social housing under the 1949 Brunfaut Act. Yet its early 1950s reports on the Rupel, Campine, and coastal industries were issued just too early to capture innovations such as the *QuickBuild* brick – an unfortunate timing the industry tried to correct some 20 years later.⁷¹

66 Emiel Depoortere, *The Rupel region: Landfill of Belgian urbanization*, unpublished Master's Thesis, Ghent University, 2024.

67 Karin Blommaert, *Nog steeds strijdvaardig: 100 jaar ACV Rupelstreek* (Rupel: ACV, 1994).

68 ABB, NU, *Jaarverslag 1985*.

69 ABB, NU, *Analyse Belgische baksteenindustrie*.

70 Ibidem.

71 NMGWW, *De Boomse Baksteen* (Brussels: NMGWW, 1950); NMGWW, *De Kempense Baksteen* (Brussels: NMGWW, 1950); NMGWW, *La Brique Littorale* (Brussels: NMGWW, 1955).

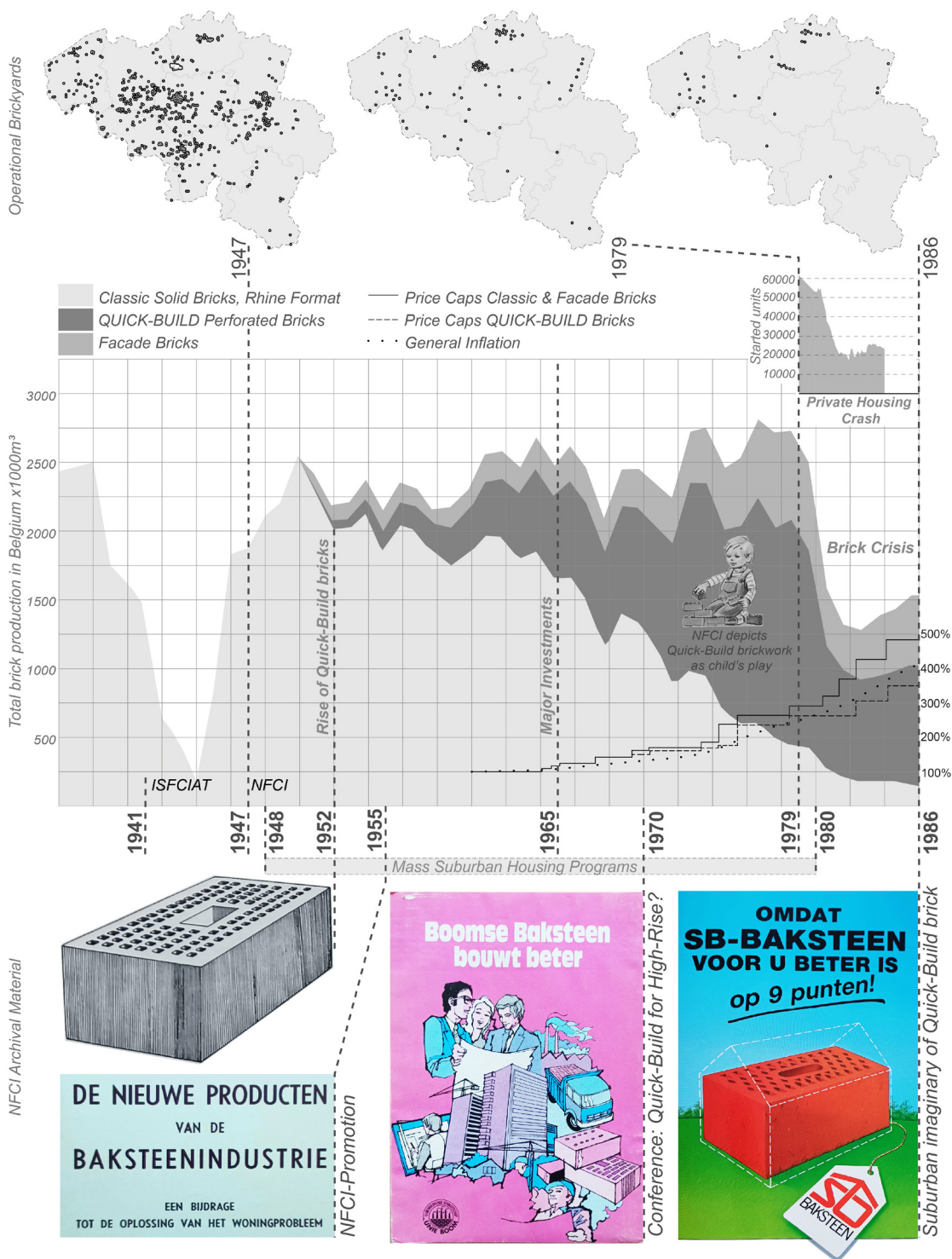


Figure 2. Integrated statistic scheme, layering several of the postwar dynamics conditioning brick production in Belgium. (Interpretative infographic produced by the author based on a graphic produced by Rafaël Deman, and on Archives of the Belgian Brick Federation, Brussels, not inventoried)

(Failed) attempts at breaking into new markets (1970s)

From 28 to 30 October 1970, the Union of Boom Brick Manufacturers (UBBM) – following a series of successful international conferences on load-bearing brickwork for high-rise construction (Texas 1967; Warsaw 1968; Stoke-on-Trent 1970) – hosted a national brickwork conference in Antwerp, in collaboration with the Technological Institute of the Royal Flemish Society of Engineers.⁷² The volume *Bricks from Boom Build Better*, featuring all conference papers and the self-promotional brochure *The Biggest in the World* at its centre, clearly formed part of a marketing strategy to position the Rupel region – originator of the *QuickBuild* brick – at the forefront of scientific and political attention.⁷³ Commercial promotion constituted one of the UBBM's core aims, complementing efforts to secure cheaper group energy contracts and to establish coordinated production and pricing arrangements.

Uniting academic experts from several Belgian universities and engineers from the Public Works and the Clay Union departments under the patronage of Ministers Desaegher (Public Works) and Breynne (Housing), the conference chiefly aimed to show that, since 1952, the *QuickBuild* brick easily permitted the construction of tower blocks of up to 24 storeys, a point reinforced through many international examples.⁷⁴ Besides reiterating brick's hygric, thermal, and acoustic advantages over substitute materials, detailed cost analyses suggested potential savings of up to 16.8% for solid-wall construction relative to skeleton structures in standard apartment blocks.⁷⁵

Yet despite its vigorous efforts, the brick industry failed to secure a position in large-scale housing – whether public or private – for several reasons. Major contractors were reportedly reluctant to take on large brick projects because they lacked sufficiently skilled masons capable of meeting the required productivity targets.⁷⁶ Moreover, neither the state nor the public housing sector embraced the industry's overtures, remaining firmly committed to promoting single-family housing. When

72 ABB, NU, *Boomse baksteen bouwt beter, Unie der Boomse Steenfabrikanten, 1970* (hereinafter *Boomse baksteen bouwt beter*).

73 Ibidem.

74 Ibidem.

75 Ibidem.

76 ABB, NU, *Close-up baksteenindustrie*.

the early 1970s construction downturn, which was partly triggered by the new VAT regime, produced another major stock accumulation crisis across the entire brick industry – illustrated in the image opening this chapter – the Eyskens-Cools government limited its response to reviving incentives for owner-occupied housing.⁷⁷

Given the substantial fiscal returns (levies, labour taxes, property taxes) tied to individual housebuilding, the state's loyalty to this model was hardly surprising⁷⁸ and the brick industry was all too well aware of this propensity.⁷⁹ Recovery measures in the 1970s even promoted rationalised systems for single-family homes favouring materials such as wood, steel, and concrete. Not only did brick fail to expand its market share into large-scale housing, but the state also even encouraged alternative materials to encroach on brick's traditional domain.⁸⁰ Prolonged price controls, unsuccessful attempts to conquer new housing segments, the state's unwavering focus on homeownership, and escalating competitive pressures progressively locked the *QuickBuild* brick into a narrow and financially strained suburban housing destination and market (fig. 2).

These dynamics, in turn, had direct repercussions on the composition of brick itself. Designed increasingly for low-rise construction, it no longer required high compressive strength, which could be combined with greater porosity to meet thermal and acoustic standards.⁸¹ Manufacturers therefore incorporated increasing amounts of admixtures – such as wood shavings and polystyrene granules – which reduced firing energy and progressively lowered volumetric density.⁸² Coupled with tighter dimensional tolerances, this formula improved onsite manoeuvrability and reframed bricklaying less as a skilled craft and more as 'easy as child's play assembly', alongside rising productivity expectations for masons. At the same time, the *QuickBuild* brick became more fragile: whereas earlier generations could be dumped from trucks just like solid Rhine-format bricks, lighter variants shattered on impact, severely limiting reuse.⁸³ Reduced weight also lowered transport costs and further facilitated a shift from water and rail to far more flexible road haulage,

77 ABB, NU, *Analyse Belgische baksteenindustrie*.

78 KADOC, *Archief Desaeger, Mededeling aan de pers, 23 juni 1958*.

79 ABB, NU, *Analyse Belgische baksteenindustrie*.

80 Nelly Schmitz and Michel Ducuroir, "Vers l'industrialisation du bâtiment en Belgique," *Brussels Economic Review* 49 (1971), 5-50.

81 Sylvie Massaux, *Évolution de la Maçonnerie en Belgique*, unpublished Master's Thesis, Institut Supérieur d'Architecture Saint-Luc, 1994.

82 Massaux, *Évolution de la Maçonnerie en Belgique*.

83 ABB, NU, *De nieuwe producten*.



Figure 3. The suburbanisation of brick: the clay ‘terraforming regime’ pictured through brochures from Kapittel’s brick factory in Niel (top), and tract development branch (bottom). (Collage by the author, Archives of the Belgian Brick Federation and the firm Extensa, Brussels, not inventoried)

pushing the effective supply radius well beyond the 60 km limit of the mid-1960s,⁸⁴ thereby decisively accelerating brick's suburbanisation. A set of 1970s brochures from Kapittel – a firm in the Rupel Region led by René della Faille, then chair of the NGCI and owner of the famous tract development company Extensa – captures in emblematic fashion the smooth, industrialised brick 'terraforming regime' that had gradually been installed, extending from clay extraction to suburban buildout (fig. 3).

The chronicle of an industrial crash long in the making (1980s)

Even a modernised plant such as Kapittel's – under the aegis of a powerful property developer like Extensa – ended up going bankrupt in the early 1980s, however.⁸⁵ This event symbolises the systemic rupture of the brick industry in this period, with the total production of bricks dropping from nearly 3 million m³ in 1977 to just 1.25 million m³ in 1983 and the number of active factories dropping to a mere 35 in 1985.⁸⁶ Beyond the overall construction crisis and the sector's sometimes limited managerial foresight,⁸⁷ this chapter helps explain a number of more systemic factors behind this abrupt failure.

Firstly, the state shifted from subsidising new single-family homes to supporting renovation in deteriorating urban cores left behind by suburbanisation, especially after the regionalisation of housing policy in 1975. This new policy orientation was formalised in the early 1980s under Minister Akkermans's policy on "revaluation areas".⁸⁸ As subsidies dried up, private housing construction collapsed from roughly 60,000 units annually in the 1970s to about 20,000 in the early 1980s,

84 W. Boes, et al., *Onderzoek betreffende de afzetmarkten van de Unie der Boomse steenfabrieken* (Leuven: KULeuven, 1964).

85 ABB, NU, *Jaarverslag 1981*.

86 ABB, NU, *Jaarverslag 1985*.

87 These traits were considered characteristic of the sector's numerous competing family firms. Remarkably, for instance, a pioneering firm like Swenden was not part of the Union of Boom Brickyards.

88 Tom Broes, "The rise of do-it-yourself in Belgium (1965–1985) and the mutual entanglement between construction history and planning history: an exploration," in: Stefan Holzer et al. (eds.), *Construction matters: Proceedings of the Eighth International Congress on Construction History* (Zurich: vdf Hochschulverlag, 2024), 260–268.

hitting the brick industry particularly hard after it had spent decades tailoring its entire production to this suburban mass housing model.⁸⁹

Secondly, the brick industry's limited investment capacity under strict price controls slowed its overall productivity. According to Giovanni Peirs, NFI director from the late 1960s, the sector was therefore unable to meet the spike in demand triggered by the state's early 1970s recovery policies, allowing rival systems such as concrete panelling, itself supported by these policies, to seize (small but) strategic market shares. Brick would only reassert full dominance in single-family housing in the 1990s, once these alternatives had faded.⁹⁰

Finally, the expected productivity gains for bricklayers – crucial to positioning the *QuickBuild* brick against industrialised systems in concrete – rested on an increasingly tenuous faith in Taylorised site labour.⁹¹ Cost comparisons were stretched to the limit, spinning out ever finer scenarios of how the extremely Taylorised use of *QuickBuild* brick might shave off man-hours per square metre of realised brickwork.⁹² At the 1970 national brick conference, a UN study was cited showing how extreme levels of repetitive bricklaying could eventually outperform even mechanisation, prefabrication, and industrialisation in construction.⁹³ Yet such claims jarred with the wider 1970s backlash against turning onsite construction labour into assembly line work.⁹⁴ Tellingly, by 1988 the NGCI warned – in *The Problem of the Shortage of Bricklayers, Bricklayer's Assistants, and Joiners* – that a mounting labour deficit threatened national brick consumption. Ironically, this report again reduced a “good” mason to a “quick” and “productive” one, while arguing that bricklaying had become so “easy” it no longer carried “social prestige”. The once numerous and tightly organised bricklaying profession, so crucial to the NGCI's postwar mobilisation of brick-built housing, gradually dwindled over the *trente glorieuses* (thirty

89 ABB, NU, *De snelbouw baksteensector*, P. Deschutter, 1986, Master's Thesis.

90 “Baksteen weer marktheersend in de woningbouw,” *De Tijd*, 13 July, 1995.

91 Very detailed calculations for onsite processing of brick were made, reminiscent of the time schedules Taylor made for the use of concrete. See: Adrian Forty, *Concrete and Culture: A Material History* (London: Reaktion Books, 2016).

92 ABB, NU, *Analyse Belgische baksteenindustrie*.

93 ABB, NU, *Boomse Baksteen Bouwt Beter*. See also: United Nations ST/ECE/HOU/14. *Effects of repetition on building operations and processes on site*, 1965, New York.

94 Jelle Angillis, *Building in a transforming society. An exploration of the dynamic interplay between construction workers and contractors in post-war Belgium 1944–1980*, unpublished PhD Dissertation, University of Antwerp, 2024.

glorious) years following the Second World⁹⁵ – uncannily in step with the rise of the supposedly ‘child’s play’ *QuickBuild* brick.

Conclusion

The general gist of this chapter is captured quite well by the quotes of then NFCI director Giovanni Peirs from 1973, claiming that the building industry, more than any other production sector, belongs to the “fixed repertoire of politicians”, and that “ministerial speeches at construction congresses carry more weight in shaping technological evolution than those of the engineers themselves.”⁹⁶ This postwar Belgian brick history does indeed seem to support scholarship that understands building materials as iconographic bearers of political and ideological convictions.⁹⁷ Moreover, this examination of the brick industry as an agent of extended urbanisation advances an understanding of Belgium’s geological formations as political assets – resources whose transformation, distribution, and consumption became subject to intense political and economic intervention.⁹⁸

By launching the *QuickBuild* brick, the clay industries fundamentally reconfigured the interrelationships between the appropriation of nature – across landscapes of extraction and urbanisation – and the organisation of labour – both in primary production and construction – in the service of state-induced housing programmes. Moving beyond an understanding of operational landscapes as static functional backdrops, this zoom on Belgium’s brick-producing industries frames them instead as sites of intense sociopolitical negotiation and sociotechnological evolution, shaped by local agency and struggle, where the material conditions of urbanisation’s metabolism are continually recalibrated.⁹⁹ It demonstrates how Belgium’s welfare-state housing programmes, price-cap policies, and the growing competition from concrete products precipitated a true metamorphosis of brick production: accelerated, automated, continuous, and detached from seasonal rhythms,

95 For clues, see: Angillis, *Building in a transforming society*.

96 ABB, NU, *Geschiedenis baksteentechnologie*.

97 Christian Fuhrmeister, *Beton, Klinker, Granit. Material, Macht, Politik. Eine Materialikonographie* (Berlin: Bauwesen, 2001).

98 Adam Bobbette and Amy Donovan (eds.), *Political Geology: Active Stratigraphies and the Making of Life* (Cham: Springer Nature Switzerland, 2019).

99 Mosè Cometta, “Timber, power, and the metabolic city: Alpine frontiers in the Swiss inner south,” *Environment and Planning D: Society and Space* (2026), online.

dramatically increasing the industry's energy dependency. This 'productivist' turn produced a chronic tendency towards overproduction and stockpile accumulation, evidencing a structural inversion in which production acquired an autonomous momentum that ceased to follow and serve urbanisation. Urbanisation, on the contrary, became a necessary vehicle and condition for the absorption of relentless surplus output. This circular dynamic readily maps onto an interpretation of urbanisation as a project of "accumulation for accumulation's sake only"¹⁰⁰ supporting postwar narratives of the Great Acceleration.

The stockpile metaphor, finally, underscores the extent to which material production, circulation, and associated forms of labour are fundamentally conditioned by prevailing urbanisation regimes that are co-negotiated by federated material industries. This finding points towards the insight that achieving more sustainable and socially equitable construction practices will require pairing technological and building scale innovations with their embedding within alternative urbanisation policies pushed for by alternative material industries – without which their prospects for lasting adoption may remain limited. Today, however, little work on sustainable construction seems to address this crucial link.¹⁰¹ Conversely, the quest within the fields of critical urban theory and urban planning for "alter-urbanisations" that underpin more sustainable types of urbanism rarely engages in depth with the indispensable task of building alternative construction landscapes, assembling the practices, materials, and cultures that would make the ecologically more sound production of these sustainable urban futures materially possible in the first place. Every pursuit of more regenerative urban futures that remains blind to these fundamental terrains of production is destined, time and again, to slip back into extractive patterns.¹⁰²

100 David Harvey, "Cities or Urbanization?," *City* 1, no. 1-2 (1996), 38-61.

101 It starts to emerge in the work of some urban metabolism studies. See, for instance: Giulia Caterina Verga, *Towards Urban Circularity: Exploring and analysing circularity-inspired ambitions in Theory, Practices, and Projects*, unpublished PhD Dissertation, Université libre de Bruxelles, 2026.

102 In an unpublished text, Dehaene draws on feminist literature that notes how 'productivism' emerges when production is separated from reproduction and treated in isolation. Turning the argument around, Dehaene argues that treating reproduction in isolation is just as problematic, and that reproduction that ignores production is ultimately bound to become extractive.

Igor Bloch

The Vocational School

The training and making of the artisan libre in late colonial Congo



Figure 4. Selection of five black-and-white stills from *Chez un menuisier congolais*, directed by M. Van Orshoven (Belgian Congo, 1956), showing a Congolese joiner discussing an order with a client, reading plans, assembling a chair, and delivering furniture to a house. (AfricaMuseum, Tervuren, and Cinematek, Brussels, reference number BPS736)

The (invisible) *artisan libre* in late colonial building practices

The propaganda film *Chez un menuisier congolais*, produced in Belgian Congo in 1956 and directed by M. Van Orshoven, depicts a day in the life of a Congolese joiner.¹ The film traces a process culminating in the completion of an order placed by a white furniture buyer. It begins in a joinery workshop and concludes with the delivery of the furniture to a private residence. Its most symbolically charged moment occurs when the two protagonists sit at a table to discuss the order and light a cigarette together in a gesture that suggests an unprecedented moment of fraternisation. Within the film's internal logic, the relationship is framed as an ostensibly equal business exchange between a Belgian client and a Congolese craftsman – an *artisan libre* – and stands in contrast to the dominant colonial policy of producing disciplined and docile labour for the colonial economy (fig. 4).²

The *artisan libre*, often invisible in archival records, remains overlooked in historiography despite his central role in late colonial building practice and in what may be described as a broader colonial logic of “outsourcing the housing crisis to its victims”.³ The term is introduced here after the deputy district commissioner of Élisabethville (now Lubumbashi), Ferdinand Grévisse, who, in a 1951 report, used it to describe an independent builder or craftsman operating between two urban markets: providing services to Congolese clients in the *ville noire* while also working as a subcontractor on European construction sites.⁴ Although often absent from colonial administrative archives in Brussels, these *artisans libres* did attract the attention of a colonial research institute, the *Centre d'Étude des Problèmes Sociaux Indigènes* (CEPSI), which conducted detailed surveys of the emerging African middle

1 AfricaMuseum, Tervuren, and Cinematek, Brussels, *Chez un menuisier congolais*, directed by M. Van Orshoven, Belgian Congo, 1956, reference number BPS736.

2 Adam Hochschild, *King Leopold's Ghost: A Story of Greed, Terror and Heroism in Colonial Africa* (Boston: Houghton Mifflin, 1998), 170.

3 Igor Bloch, *À chacun sa maison? Outsourcing the housing crisis in late colonial Congo*, joint PhD project, Ghent University and Vrije Universiteit Brussel, 2022–2026.

4 Donatien Dibwe dia Mwembu, “La problématique de l’habitat dans la ville de Lubumbashi (Élisabethville), province du Katanga, 1910–1960,” in: Martina Barker-Ciganikova, Kirsten Rüther, Daniela Waldburger, and Carl-Philipp Bodenstein (eds.), *The Politics of Housing in (Post-)Colonial Africa: Accommodating Workers and Urban Residents* (Berlin/Boston: De Gruyter, 2020), 121–140; F. Grévisse, *Le Centre extra-coutumier d’Élisabethville: quelques aspects de la politique indigène du Haut-Katanga industriel* (Brussels: Institut Royal Colonial Belge, 1951), 98, 101, 112, 138, 149, 245.

class in Élisabethville.⁵ Focusing explicitly on the period following the Second World War, this chapter argues that one way to restore the *artisan libre* to (construction) history is through the institution that shaped his training and social positioning: the male-only vocational school, which became an important theme in postwar reforms and visual propaganda. It approaches the vocational school as a site of construction in its own right, drawing on missionary archives, colonial reports, and visual sources.

The *Plan Décennal pour le Développement Économique et Social du Congo Belge* (1949–1959) laid the foundations for university education in the Congo, yet it still continued to strictly regulate Congolese access to secondary education, reflecting a broader educational strategy often summarised in the colonial formula “*pas d’élites, pas d’ennui*” (no elites, no problems).⁶ Ideologically and economically, the plan prioritised the expansion of vocational training in cooperation with missionary orders, which, despite the cultural changes taking place in Belgium, remained key actors in colonial educational policy.⁷ The *école professionnelle officielle de Luluabourg*, opened in 1952 and run by the Scheut Order, serves as a central case study here.⁸ Explicitly tasked with supplying qualified technical personnel, including in the construction sector, for the colonial industry and for public and private licensed enterprises, the school was strategically embedded within colonial infrastructures. Located in Luluabourg (now Kananga), a key centre for the transport of labour between regions, it was closely linked to the Port-Francqui–Élisabethville railway line, opened in 1928. This line was just as important for the transport of raw materials as for the movement of the labour force, connecting Luluabourg, the capital of Kasai province, with the highly industrialised Katanga province, which faced a constant demand for cheap labour, particularly from major employers such

5 Centre d’Étude des Problèmes Sociaux Indigènes (CEPSI), *De inlandse middenstand te Elisabethstad* (Élisabethville: CEPSI, 1961), part 4, ch. 2, par. 3 (“*Uitrusting van kleermakers, timmerlui en metselaar-aannamesters*”).

6 Bloch, *À chacun sa maison?*; Bambi Ceuppens (ed.), *Indépendance! Congolese Tell Their Stories of 50 Years of Independence* (Tervuren: Royal Museum for Central Africa, 2010), section “Une classe moyenne: les ‘évolués’”.

7 Ministère des Colonies, *Plan Décennal pour le Développement Économique et Social du Congo Belge* (Brussels: Ministère des Colonies, 1949).

8 KADOC, Leuven, Archives Scheutists – Generalate, files concerning *École professionnelle officielle de Luluabourg*, BE/942855/1262/2823 and BE/942855/1262/2824; Tijdschriftencollectie Scheutisten (CICM) – Generalate, BE/942855/2144/3/1523.

as the *Union Minière du Haut-Katanga* (UMHK).⁹ At the same time, the vocational school in Luluabourg trained independent craftsmen – *artisans libres* – in *ateliers d'apprentissage*, destined to work primarily within the Black urban centre, but whose entrepreneurial activities soon extended beyond the boundaries of the *ville noire*. By incorporating the construction of *maisons modèles* (model houses) into the curriculum, the school's training directly responded to the housing crisis, a practice later repeated in site-and-service programme known as the *Système Grévisse*.¹⁰

These two teaching orientations – serving distant industrial and infrastructural construction sites on the one hand and addressing small-scale urban housing projects on the other – were not contradictory. Rather, they aligned closely with the colonial government's assumption that the Congo required a Black elite that was not intellectual but technical: an elite expected to ensure the orderly and peaceful functioning of the colony by valuing the fruits of their own labour rather than by engaging in political participation.¹¹ In this sense, the late colonial missionary vocational school operated as both a physical and an ideological site of construction, through which a narrowly defined Congolese technical petite bourgeoisie was produced. This model of tightly controlled social advancement also resonated with the social teachings of the Church, fostering loyalty and self-reliance while promoting the figure of Joseph the craftsman as both a moral exemplar and economic breadwinner.¹²

9 Interview with Prof. Donatien Dibwe dia Mwembu, conducted by the author, Ghent, 21 May 2025; for an in-depth discussion of the making of this railroad, see Yonah Couwels, *Socio-spatial transformations along the Bas-Congo-Katanga railway line: Archival fragments of mobility*, unpublished Master's Thesis, Ghent University, 2022; see also Henri Nicolai, *Le chemin de fer du Bas-Congo au Katanga: Contribution à l'étude de la géographie des transports au Congo belge* (Brussels: Institut Royal Colonial Belge, 1952). The importance of labour migration from Kasai is also confirmed by statistics in CEPSI, *De inlandse middenstand te Elisabethstad* (Élisabethville: Centre d'Étude des Problèmes Sociaux Indigènes, 1961).

10 Bloch and De Nys-Ketels, "Système Grévisse. The Lubumbashi post-war housing scheme, between colonial guidelines and reality," in: Stefan Holzer et al. (eds.), *Construction matters: Proceedings of the Eighth International Congress on Construction History* (Zurich: vdf Hochschulverlag, 2024), 1223-1230; Igor Bloch and Laurence Heindryckx, "The *maison modèle*: Colonial imaginaries of model houses and model households in the Belgian Congo (1949-1959)," paper presented at the European Architecture History Network Conference, Athens, 2024.

11 Marc Depaepe and Annette Lembagusala Kikumbi, "Colonial education in the Congo," in: Idesbald Goddeeris, Amandine Lauro, and Guy Vanthemsche (eds.), *Colonial Congo: A history in questions* (Turnhout: Brepols, 2024), 275. The authors argue that "the elite, which the Belgians wanted to create for their self-labelled 'harmonious development of the colony', did not necessarily have to be intellectual. The so-called *évolués* were to form a kind of artisan middle class, essential both to the local economy and to safeguarding the post-war Congo against revolts and revolutionary ideas, from within and beyond."

12 I am grateful to Prof. Pedro Monaville for noting that the figure of the carpenter evokes biblical imagery. See also Johan Lagae, "Les mains de Dieu. Quelques réflexions sur l'imaginaire littéraire et visuel autour d'une figure missionnaire, le frère-bâisseur de la congrégation des Pères Blancs (1935-1960)," in Pierre Halen (ed.), *Approches du roman et du théâtre missionnaires, Recherches en littérature et spiritualité*, vol. 11 (Bern: Peter Lang, 2005), 103-139.

Vocational training as part of the *Plan Décennal*

The period following the Second World War generated far greater demand for African skilled technical workers, both within companies such as Safricas and OTRACO, responsible for large industrial projects, and within institutions such as the *Office des Cités Africaines* (OCA), which built modest yet strikingly modernist housing estates for Congolese urban dwellers.¹³ This demand was also driven by a growing number of Congolese investors, such as white-collar public servants (*évolués*), who were seeking contractors to build individual dwellings. Then Minister of Colonies Pierre Wigny emphasised in the introduction to the *Plan Décennal* that “the expansion of the economy requires the training of specialised agents and technicians: we know how much their shortage could compromise the development of businesses in the coming years. White technicians [under the African sun] are extremely expensive; whether we like it or not, they will gradually have to be replaced by Black assistants (Fr. *auxiliaires noirs*) for certain tasks. In this respect, education is an excellent investment.”¹⁴

Despite growing tensions over the future of education in Belgium and its gradual removal from the supervision of the Catholic Church – known as the Second School War – the *Plan Décennal* envisaged a hybrid (state/missionary) system in which cooperation with Catholic missions continued to form the foundation of all kinds of training for the Congolese population.¹⁵ Missionaries – crucial ‘middle figures’ in colonial history – possessed the expertise, experience, and infrastructure that would have been difficult to abandon.¹⁶ The first vocational training schools in

13 Safricas was one of the major construction companies operating in the Congo from the 1920s onwards, though it has remained relatively overlooked in historiography. OTRACO (*Office des Transports du Congo*), founded in 1935, brought together several transport companies in the lower and middle Congo and continued its activities after independence until its reorganisation as ONATRA in 1971. On the OCA (*Office des Cités Africaines*), see Bruno De Meulder, *Kuvuande Mbote: een eeuw koloniale architectuur en stedenbouw in Kongo* (Antwerp: De Singel, 2000).

14 Ministère des Colonies, *Plan Décennal*, 75. The original reads: “L’expansion de l’économie nécessite la formation d’agents spécialisés et de techniciens : on sait combien leur pénurie risque de compromettre, au cours des années à venir, le développement des entreprises. Le technicien blanc est extrêmement coûteux; il faudra, qu’on le veuille ou non, progressivement le remplacer, dans certaines tâches, par des auxiliaires noirs. Sous cet aspect, l’enseignement constitue un excellent investissement.” A similar statement appears in the introduction: “L’Européen sous le soleil d’Afrique coûte extrêmement cher” (Ibidem, 40).

15 Guy Vanthemsche and Roger De Peuter, *A Concise History of Belgium* (Cambridge: CUP, 2023), 324–328.

16 For a discussion of ‘middle figures’ in colonial Congo, such as *assistants médicaux indigènes*, see Nancy Rose Hunt, *A Colonial Lexicon* (1999). On missionary brothers as comparable ‘middle figures’, see Lagae, “Les mains de Dieu”.

Léopoldville, Stanleyville, and Boma were opened in 1907 and 1908, thereby contributing to the emergence of formally trained African technical professionals. However, under the *Plan Décennal*, this earlier missionary network was expanded and more systematically integrated into the colonial development programme.¹⁷

Before the implementation of the *Plan Décennal*, a small network of state-run vocational schools had already been established in the Belgian Congo. In 1947, there were three *écoles professionnelles officielles* forming part of the state education system, located in Léopoldville Ouest, Stanleyville, and Lusambo, offering professional training in woodworking, metalwork, and mechanics. These were supplemented by eight *écoles professionnelles subsidiées*, subsidised schools often run by missionary orders. The distinction between these two types of institutions appears to have been primarily administrative and financial rather than curricular, although some subsidised schools – such as those in Lokandu, Kafubu, Wafania, Gombe-Matadi, Buta, Kindu, Élisabethville, and Kasenga – offered a more extensive and diversified curriculum.¹⁸

The spatial distribution of subsidised vocational schools reveals a clear correlation between geographical location and curricular provisioning. Smaller and more peripheral centres offered a limited range of training, predominantly focused on joinery (*menuiserie*), reflecting immediate local labour needs. In contrast, larger urban and regional hubs developed more diversified programmes, including mechanical, construction, and printing-related trades, which required more substantial infrastructural and human resources. For example, the school in Kafubu, located on the outskirts of Élisabethville in Katanga province, offered as many as five distinct programmes (*menuiserie, mécanique, confection, imprimerie, and reliure*), illustrating the concentration of diversified vocational training in proximity to major urban and industrial centres.¹⁹ This differentiation indicates that vocational education was strategically aligned with the economic functions of each locality, as well as with the practical possibilities for transferring qualified staff via the railway network or air transport.²⁰

17 Ministère des Colonies, *Plan Décennal*, 63.

18 Ibidem, 75–76.

19 For more on the vocational school at Kafubu, see “L’École professionnelle de la Kafubu,” in: Léon Verbeek, *Ombres et clartés. Histoire de l’implantation de l’Église catholique dans le diocèse de Sakania, Zaïre (1910–1970)* (Rome: LAS, n.d.), 334–335.

20 Ministère des Colonies, *Plan Décennal*, 75–76.

Together, these institutions enrolled only 859 pupils and, in the same year, awarded 103 diplomas. These figures appear modest when compared with the scale of certain African-run construction firms, some of which employed hundreds of workers, which may indicate that on-the-job training within semi-formal artisanal circuits remained a significant, though less visible, pathway to technical expertise.²¹ These figures potentially increase when taking into account the existence of vocational schools organised by industrial companies such as the UMHK.²² However, this element did not change the fact that in 1947 the network as a whole was unable to meet the growing needs of the construction sector, including at the local level of the *villes noires*. For example, only the school in Lokandu had a dedicated bricklaying (*maçonnerie*) department.

The situation in the urban construction sector, particularly in African centres, was gradually transformed by the implementation of the *Plan Décennal*. Drawing on the pre-existing network of missionary vocational schools, which had relocated to urban centres during the interwar period in response to mass migration, the plan introduced the *ateliers d'apprentissage* into the curriculum. These usually offered a two-year cycle and may be regarded as descendants of earlier missionary workshops, described as involving *des chrétiens volontaires jusqu'au chantier*, who learned the building trade while assisting in the construction of church and mission buildings.²³ In Belgium, where the history of vocational education awaits re-examination by educational historians, *l'atelier d'apprentissage* had, since 1932, been conceived as “a second-rate technical school, intended for the less gifted ‘who cannot assimilate theoretical subjects’.”²⁴ Transplantation of this model to the colony may be interpreted as an example of enlightened paternalism within the framework of “welfare colonialism” policy.²⁵ Nevertheless, these *ateliers*, from which *artisans*

21 Robby Fivez, *A concrete state. Constructing materials and building ambitions in the (Belgian) Congo*, unpublished PhD Dissertation, Ghent University and Université libre de Bruxelles, 2023. As noted in the dissertation: “According to a census of the Service Territorial of Léopoldville, by 1955 at least 18 Congolese construction companies existed in the city, with a total number of 116 employees,” citing [unknown author], “Travailleurs indépendants au Congo belge,” in: *La revue congolaise du bâtiment et de l'industrie* 3 (1956).

22 Ministère des Colonies, *Plan Décennal*. 77: “L'intervention du Gouvernement dans les deux catégories d'écoles ne fit que compléter les efforts déployés par les principaux organismes industriels qui comptent avant tout sur leurs propres établissements scolaires.” See also *ibidem*, 75: “Les écoles professionnelles non subsidiées, dont plusieurs sont organisées par des sociétés industrielles, préparent aux métiers les plus divers.”

23 Lagae, “Les mains de Dieu,” 114.

24 Dominique Grootaers, “L'enseignement technique et professionnel masculin en Belgique: aux sources d'une identité,” in: *Revue des sciences de l'éducation* 21, no. 4 (1995), 773.

25 Frederick Cooper, *Africa since 1900: The Past of the Present* (Cambridge: CUP, 2002), 91; Crawford Young, *The African Colonial State in Comparative Perspective* (New Haven: Yale University Press, 1994), 182.

libres emerged, were primarily intended to serve the needs of indigenous communities in the *villes noires*.

Within the state-controlled vocational education system introduced under the *Plan Décennal*, there were two higher levels of vocational education. First, *écoles professionnelles du degré moyen* provided a four-year cycle following primary education to train workers capable of carrying out ordinary work “under European direction but without permanent supervision.”²⁶ These schools supplied workers for the building trades operating in *villes blanches*, as well as for broader colonial industries and construction sites. Second, *écoles professionnelles du degré supérieur* organised a six-year cycle and were intended to train *maîtres-ouvriers* “capable of executing work independently and supervising qualified workers, without assistance or control by a European.”²⁷ Training in both types of schools, often located under one roof, was divided into two principal groups: *le groupe du fer* and *le groupe du bâtiment*. The latter included, among others, cabinetmakers (*menuisiers-ébénistes*), carpenters, painter-glaziers, builders, masons, and roadworkers, as well as site supervisors (*chefs-ouvriers du bâtiment (contremaîtres)*).²⁸

The extent to which students were able to move between different levels of education within the school framework remains unclear.²⁹ What seems evident is that the structure of the curriculum – from two to six years of study – was determined by the degree of involvement of white supervisors in overseeing future employees. At the lowest level, that of the *atelier d'apprentissage*, the need for white supervision was not even mentioned, reflecting both a lower colonial interest in work carried out in the *villes noires* and, paradoxically, the possibility of a degree of independent (*libre*) professional practice. At the highest level of the six-year programme, training was designed to produce African employees sufficiently skilled to replace white supervisors in certain technical functions, in line with expectations articulated by the *Plan Décennal*.

26 Ministère des Colonies, *Plan Décennal*, 77: “sous la direction d’un Européen mais sans contrôle permanent”.

27 Ibidem: “capables d’exécuter n’importe quelle pièce sur simple bon de commande, sans l’aide ni le contrôle d’un Européen.”

28 Ibidem, 65–66, 75–78.

29 What is evident in the *Plan Décennal*, however, is that the correct assignment of pupils to appropriate types of schooling (general, vocational, or higher education) was treated with the utmost seriousness. To this end, the *Service Central d’Orientation Professionnelle* was established, with branches in the largest cities of the colony, where opportunities for Congolese advancement intersected with modern forms of social engineering. There, as shown in the film *Choisir ton avenir* (dir. J.-M. Landier, Belgian Congo, 1957, 11 min.), aptitudes for specific professions were ‘tested’ under laboratory conditions.

The vocational school as a trope of colonial propaganda

The propaganda films for Congolese audiences correspond closely to the division of vocational training introduced under the *Plan Décennal*, distinguishing pathways oriented towards large-scale industry and licensed construction companies from those linked to housing production in *cités*. While earlier films emphasised missionary initiative and moral education – like *Élite Noir de Demain* by Gérard De Boe (1950) – later productions increasingly foregrounded the role of the colonial state, presenting vocational education as a modern, rational, and laicised system.³⁰ At the same time, missionary institutions did not disappear from the screen. Rather, their presence was reframed within a new visual hierarchy, suggesting the coexistence of two centres of teaching and propaganda production – State and Church – and pointing towards a relationship that may be described as one of “competitive co-dependency”, while simultaneously giving visual form to the otherwise scarcely documented presence of a skilled Congolese labour force.³¹

Produced within the missionary film circuits of the late colonial period, *Bâtisseurs/Bouwers* (1952) – made by *Africa Films van de Witte Paters* and intended both for European audiences in Belgium and African audiences in Congo – presents the construction site of a modern vocational school in Usumbura, integrated with the construction of a church, as a central setting for the training of future professional builders (electricians, mechanics, and joiners).

The film draws on a longer tradition in which education and construction were closely connected: the earliest construction sites in the Congo to depart from established vernacular building practices were those of the Catholic missions, where much of the work was carried out by young boys recruited from nearby villages.³² It

30 Gérard De Boe, *Élite Noir de Demain* (Belgian Congo, 1950), in: Gérard De Boe, André Cauvin, and Ernest Genval, *Belgisch Congo Belge: Cinema and Documentary Film in the Belgian Congo* (Cinematek, DVD edition); François Ramirez and Christian Rolot, *Histoire du cinéma colonial au Zaïre, au Rwanda et au Burundi* (Tervuren: Musée Royal de l'Afrique Centrale, 1985): “Over time, however, these representations were not static: From the aftermath of the Second World War to the eve of Independence, one observes a very clear shift in orientation, dividing the films into two major periods: the first, marked by the missionaries, and the second, which sees the emergence of a secular system.”

31 Reuben Loffman, quoted in Idesbald Goddeeris, “Missionaries: A Human Dimension to Colonization?” in: I. Goddeeris, A. Lauro, and G. Vanthemsche (eds.), *Colonial Congo: A History in Questions* (Turnhout: Brepols, 2024), 254, where the relationship between Church and State is described as “competitive co-dependency”.

32 Jonas Van Mulder, “Oogpunten. Een artistieke kijk op de filmcollectie van de Witte Paters,” *Koorts* 5, no. 1 (2022).



Figure 5. Sixteen colour stills arranged in a grid, showing workshop training, construction work, architectural drawings, and model houses, from *Bâtisseurs/Bouwers*, directed by Piet Verstegen and Roger De Vloo (Belgian Congo, 1952), and *Écllosion*, directed by Roger De Vloo and Piet Verstegen (Belgian Congo, 1953); top two rows: *Bâtisseurs/Bouwers*, bottom two rows: *Écllosion*. (KADOC, Leuven, Archives White Fathers – Belgian Provincialate, Film collection, no. 170 and no. 46)

portrays the White Fathers – veterans of missionary education in Africa – as heroic builders, *frères-bâtisseurs*, sharing their experience with future *ouvriers spécialisés indigènes*, legitimising their work while mobilising moral and financial support and encouraging further recruitment.³³ What is striking in the missionaries' film production is the explicit confirmation of cooperation between the Church and the state, as consolidated under the *Plan Décennal*. This cooperation is also depicted in a film produced a year later, *Écllosion* (1953), directed by Roger De Vloo, in which missionary achievements in the field of education are directly linked to the

33 Johan Lagae, "Les mains de Dieu," 136; *Bâtisseurs/Bouwers*, dir. Piet Verstegen and Roger De Vloo, Africa Films, Belgian Congo, 1952, 11 min., KADOC, Archives White Fathers – Belgian Province, film collection, BE/942855/763/170.



Figure 6. Eight colour film stills showing construction training, including bricklaying, carpentry, wall construction, and building work in progress, from *Les métiers de la construction*, directed by André Cauvin (Belgian Congo, 1955). (AfricaMuseum, Tervuren)

development of the modern CEC centre.³⁴ The camera moves between scenes of independent Congolese businesses in the *ville noire* and the construction of the new *cité* – the OCA housing estate in Usumbura – where Belgian architects are shown working alongside Black draughtsmen and professional builders (fig. 5).³⁵

It is precisely the construction of the OCA housing estate – a project repeatedly used in colonial propaganda – that connects the two films to *Les Métiers de la construction* by André Cauvin (1955). The English voiceover, which indicates that the film was commissioned by *Inforcongo*, explicitly refers to the “handing over of responsibilities” from white to Black professionals.³⁶ We observe the construction of modern terraced houses carried out by highly skilled Black professionals – not only bricklayers, but also roofers, glaziers, plumbers, and electricians. However, before the film takes the viewer to the *Chantier O.C.A. Maison Communale St Paul*, it first presents scenes from an equally modern vocational school, where teaching is conducted by white instructors in secular clothing, making it difficult to determine whether they are missionaries or lay employees of, for example, the *Centre de Formation Professionnelle Accélérée* in Léopoldville (fig. 6).³⁷

34 Most Black residents' urban settlements were subject to the *Centres extra-coutumiers* (CEC), 'centres outside customary law' with their own court system, where special regulations governed many aspects of Congolese life, including housing and construction. See Lewono Lufungula, "Participation des Congolais à la gestion du Centre Extra-Coutumier de Coquilhatville: 1952–1958," in: *Annales Aequatoria* 16 (1995): 307–338. For the legal definition of the CEC, see *Codes et lois du Congo belge*.

35 *Écllosion*, dir. Roger De Vloo and Piet Verstegen, Africa Films, Belgian Congo, 1953, KADOC, Archives White Fathers – Belgian Province, film collection, BE/942855/763/46.

36 *Inforcongo* (*Office de l'information et des relations publiques pour le Congo belge et le Ruanda-Urundi*) was the colonial information and public relations service active between 1955 and 1960, responsible for propaganda and the international promotion of the Belgian Congo. See AfricaMuseum Archives, *Centre d'Information et de Documentation du Congo belge et du Ruanda-Urundi*. Inforcongo, https://archives.africamuseum.be/agents/corporate_entities/225 (last consulted 23 February 2026).

37 *Les métiers de la construction*, dir. André Cauvin, Belgian Congo, 1955 (AfricaMuseum, Tervuren).

Across this filmic corpus, the vocational school appears as a place of instruction carried out on a campus equipped with modern teaching facilities and machinery, where productivity is understood as a practice inseparable from building and actual construction (for example, the construction of a church or a school building), which never ceases. The school is thus presented as a site where technical competence, moral discipline, and economic utility converge, preparing the ground for the more critical examination that follows in subsequent sections. Highly skilled graduates in manual trades are shown moving from the school's 'performative' construction site to regular construction sites, where they are embedded within larger collectives employed by licensed companies such as the OCA.

When viewed alongside *Chez un menuisier congolais* (1956), discussed in the introduction, the three films together articulate the dual orientation of vocational education promoted under the *Plan Décennal*: on the one hand, the trained professional technician integrated into a licensed company and working on the construction site of one of the major projects of Belgian "welfare colonialism"; on the other, the independent craftsman – the *artisan libre* – who produces furniture capable of satisfying the needs and tastes of a white clientele. Together, these films present a limited set of professional trajectories deemed appropriate for Congolese men, within a visual narrative in which vocational education appears simultaneously as a means of discipline and as a controlled form of empowerment.

A school between two labour regimes

Like the school in Usumbura, the *École Professionnelle Officielle de Luluabourg* was conceived as a response to the objectives set out in the *Plan Décennal* and functioned as a site of construction, serving both small- and large-scale building projects, while only partially fulfilling the promises made in propaganda films directed at prospective future students. Opened on 1 March 1952, the school was operated by the Scheut Order, whose activities had a long-lasting impact on both the rural and urban transformation of Kasai province and on the lives of its inhabitants. In conjunction with the establishment of the BCK railway line linking Kasai province with Katanga



Figure 7. Three photographs mounted on album pages, showing a modern school building, a small model house, and architectural drawings, from the album *Photo-Book on the Occasion of the Visit of Fr. Sercu* (December 1959), with captions stating that modern classroom buildings allow specialised training, that the masonry department constructs model houses, and that students are trained as masons, woodworkers, and automobile technicians. (KADOC, Leuven, Archives Scheutists – Generalate, no. 2824)

province (1924–1928), Luluabourg – located at the next stop after Port Francqui – emerged as another power hub of this influential Flemish religious order.³⁸

Established within the school, the *atelier d'apprentissage* offered a two-year programme focused primarily on practical training. This workshop was intended to “meet the needs of the indigenous communities”,³⁹ emphasising skills applicable to local construction and everyday material production: “Apprentices must be able to carry out simple work: doors, windows, furniture, masonry, etc...”⁴⁰ P. W. Callewier, the school’s headmaster, articulated this more precisely: “We have to teach our Blacks, little by little, to build their own houses, make their own furniture, and thus help their country economically.”⁴¹ As part of their training, apprentices took part in the construction of the school campus and built the so-called *maison modèle* (*modelhuis* or model house), whose conventional, ‘romantic’ architecture contrasted with the other, markedly modernist school buildings. Above all, however, the construction site of this building functioned as a form of simulation. Rather than conforming to a single fixed typology, the model house was defined by a set of normative criteria centred on hygiene, including sanitary facilities, ventilation, and the rational organisation of interior space. More broadly, the primary objective

38 Bram Cleys, “Catholic Missionaries and the Production of Kasai as a Colonial Landscape, 1890–1960,” in Vincent Viaene, Bram Cleys, and Jan De Maeyer (eds.), *Religion, Colonization and Decolonization in Congo, 1885–1960* (Leuven: Leuven University Press, 2020), 134–135.

39 Ministère des Colonies, *Plan Décennal*, 77.

40 Ibidem, 75.

41 P. W. Callewier, “Notre école professionnelle de Luluabourg,” *Missions de Scheut*, September 1958, KADOC, Leuven, Scheut Archives collection.

appears to have been the mastering of craftsmanship in compliance with good building practice. Graduates of the *atelier d'apprentissage*, equipped with a certificate of completion and the basic tools needed to start their own business, could later replicate the model in the *ville noire*, either for themselves or for their clients (fig. 7).⁴²

Alongside this training, the vocational school provided a more extensive five-year programme. The first year functioned as a preparatory practical internship, followed by four years of technical, theoretical, and practical instruction, leading to a diploma equivalent to the Belgian *niveau A3* (lower secondary level). This track was explicitly designed to supply manpower for the building trades and for industrial construction sites in the European centres of Léopoldville and Élisabethville. Its stated aim was to train master craftsmen capable of executing work independently, “without the assistance or supervision of a European.”⁴³

The available data on the number of graduates from the atelier (197 certificates issued by 1959) and from the five-year vocational school (53 diplomas issued by 1959) can be interpreted in two ways. On the one hand, the school appears primarily to have produced *artisans libres*, suggesting that missionaries operating under state supervision acknowledged that the growing housing crisis in the *cités* could only be addressed through small-scale construction undertaken by Congolese alumni who took advantage of the opportunities offered by the reformed vocational training programme. On the other hand, the relatively small number of diplomas may be related either to the short period of the school's operation, to the fact that companies such as the UMHK trained their employees in company-run schools, or to the continued importance of on-the-job training within semi-formal artisanal circuits.⁴⁴ In this last interpretation, the cautious release of electricians, mechanics, or plumbers onto the labour market may have been intended to avoid provoking a sense of competition or threat among Southern European contractors, particularly those from Greece or Italy.⁴⁵

42 Evening classes, especially in construction-related subjects, allowed the school to train a broader group of urban residents beyond the regular day students.

43 KADOC, Leuven, Archives Scheutists – Generalate, *École Professionnelle Officielle de Luluabourg*, “Sections professionnelles. Organisation didactique en 1957–1958”, BE/942855/1262/2823.

44 Fizez, *A concrete state*, 465.

45 Sofie Boonen and Johan Lagae, “A City Constructed by ‘des gens d’ailleurs’: Urban Development and Migration Policies in Colonial Lubumbashi, 1910–1930,” *Comparativ* 25, no. 4 (2015), 53.

Père Degryse, a missionary teacher at the school, stated unambiguously that “we need not only well-trained but also well-disciplined professionals.”⁴⁶ Read in light of the uneven distribution of certificates and diplomas, this statement points to a dual educational logic embedded in the training structure. On the one hand, vocational education served the implementation of the *Plan Décennal* through the systematic production of technically skilled labour. On the other, it functioned as a mechanism for regulating social mobility by controlling access to higher levels of technical education, particularly in specialised fields such as electricity or plumbing.⁴⁷ It is also possible that recruitment in Kasai province, conducted since 1910 by the *Bourse du Travail de Katanga* (BTK, later OCTK), continued to be based primarily on quantity and cost rather than quality, as the wage demands of Black workers increased due to their education and, in some cases, active participation in the war effort.⁴⁸ The school, operating like a newly installed machine, was unable, due to political changes and Congo’s imminent independence in 1960, to adapt to the needs of a colonial economy planned to function till the mid-1980s.⁴⁹

Training, production, and invisible labour

The school, under permanent construction by its students, functioned simultaneously as a production site. The Scheut Brothers, relying on the 80% subsidy from the state, continued to depend on student labour: “it seems entirely appropriate that the vocational school progressively manufactures the necessary furniture for the proper organisation of theoretical classes.”⁵⁰ Considering the amount of furniture required in an institution of this size, where several hundreds of people

46 Père O. Degryse, “Rapport d’inspection du Très Révérend père Degryse, délégué du Supérieur Général des Missionnaires de Scheut”, Brussels, 25 March 1958, KADOC, Leuven, Archives Scheutists – Generalate, BE/942855/1262/2823, 9.

47 KADOC, *École Professionnelle Officielle de Luluabourg*, “Sections professionnelles. Organisation didactique en 1957–1958”, BE/942855/1262/2823.

48 Dácil Juif and Ewout Frankema, “From coercion to compensation: institutional responses to labour scarcity in the Central African Copperbelt,” *Journal of Institutional Economics* 14, no. 2 (2018), 313–343.

49 In 1955, the Belgian scholar Jef Van Bilsen proposed a 30-year plan for the political emancipation of the Congo, implying independence only by the mid-1980s. To find a discussion of these political changes, see Isidore Ndaywel è Nziem, *Histoire générale du Congo: De l’héritage ancien à la République démocratique* (Paris/Brussels: Duculot, 1998).

50 KADOC, Leuven, Archives Scheutists – Generalate, *École Professionnelle Officielle de Luluabourg*, BE/942855/1262/2823, “Rapport d’inspection,” 1958.

studied and worked (400 enrolments by the end of 1959), the production of these items can no longer be understood merely as the fulfilment of the pedagogical principle prevailing in the school – “no lesson without didactic materials” – but rather as part of a broader logic of outsourcing production tasks to the students themselves. In this context, it is worth considering whether this contribution of students should be included within the category of “*les prestations gratuites des missions*”.⁵¹ However, it should be remembered that a similar form of exploitation, which can also be regarded as the promotion of do-it-yourself practices, was applied to the working class in Belgium, where “the producers (workers) were also the consumers (residents).”⁵²

The composition of the teaching staff at the *École Professionnelle de Luluabourg* reveals another ambiguity. While European personnel – both religious and secular – continued to dominate the formal hierarchy of the institution through administrative authority, disciplinary control, and curricular oversight, Congolese instructors played an increasingly central role in the delivery of technical training. By 1958, Congolese secular teachers constituted more than a third of the teaching staff, particularly in construction-related fields, and formed a majority within the school’s technical sections, ensuring that the institution retained a formally secular character, at least through the composition of its staff.⁵³ As a result, vocational education depended materially on Congolese expertise – built on several decades of missionary presence in the Congo – even as institutional legitimacy and visibility continued to be attributed to European actors. In this way, the provisioning of workers for both small- and large-scale construction sites in the colony was carried out under the supervision of previously trained Black personnel, figures who remained largely anonymous in state and missionary propaganda films on vocational training but who, in post-1960 company publications such as *Mwana Shaba*, were named.⁵⁴

51 Ministère des Colonies, *Plan Décennal*, 63.

52 Jesse Foster Honsa, “Housing for Workers, by Workers: Contradictions in English and Belgian Garden Cities,” *Bulletin KNOB* 124, no. 4 (2025), 6-19.

53 It further specified that up to two-thirds of the teaching personnel could be lay instructors, with the remaining third drawn from religious orders. KADOC, Leuven, Archives Scheutists – Generalate, W. Callewier, Luluabourg, 31 December 1959, 6.XIV.b.3.2.2. ETSOI.

54 Archival research in numerous issues of *Mwana Shaba: journal d'entreprise U.M.H.K.* from the 1960s, conducted by the author and Johan Lagae at the library of the Theologicum Saint François de Sales, Lubumbashi, January 2026.

Conclusion

The *École Professionnelle Officielle de Luluabourg* operated as a site of construction in material, organisational, and ideological terms, bringing together vocational training, productive labour, and social schooling. Its *atelier d'apprentissage*, conceived within the framework of the *Plan Décennal*, functioned not only as a pedagogical space but also as a mechanism through which building tasks were outsourced to the pupils themselves. The school's buildings, furnishings, and teaching infrastructure were largely produced by students, blurring the boundary between training and productive labour.

This logic extended beyond the school grounds. The *maison modèle* or model house, constructed as part of the curriculum, served as a prototype intended for replication in the *cité*. As a pedagogical device, it translated norms of construction, hygiene, and spatial organisation into a reproducible building type. As graduates reproduced this model in the *ville noire*, whether for themselves or for their clients, the school became implicated in the postwar transformation of African urban housing.

Within this framework emerged the *artisans libres*: formally autonomous, yet structurally dependent on colonial technical and institutional frameworks. Certificate data indicates that access to higher technical positions remained limited, postponing the prospect of replacing European specialists with Congolese technicians. Positioned along the BCK railway line, the *École Professionnelle Officielle de Luluabourg* functioned as an intermediary centre between African urban centres and the industrial sites of Katanga province. The school facilitated the circulation of trained workers between small-scale construction in the *ville noire* and large colonial building projects, but only gradually enabling upward technical mobility.

Taken together, colonial reports, propaganda films, CEPESI scientific studies, religious orders' archival documents, and oral accounts collected during fieldwork reveal that the vocational school operated as an extension of the colonial construction site, supplying trained labour to the infrastructural and industrial projects of

late colonial Congo and contributing to the emergence of what colonial observers described as an embryonic African middle class.⁵⁵

55 F. Grévisse, *Le Centre Extra-Coutumier d'Élisabethville: Quelques aspects de la politique indigène du Haut-Katanga industriel* (Brussels: Institut Royal Colonial Belge, 1951). Grévisse lists the *artisans libres*, alongside small traders and prostitutes, as forming “*un embryon de classe moyenne*.” Reference to oral accounts is based on the author's fieldwork in Lubumbashi, conducted between 18 and 31 January 2026; the interviews are currently being transcribed and analysed.

Louis Debersaques

The Chambers of the Investigating Judge

The translocation of the construction site via preliminary judicial inquiries into accidents and some methodological considerations (Belgium, late nineteenth-early twentieth centuries)

Introduction

During the nineteenth century, labour organisation and decision-making on the construction site have commonly been interpreted as informal in nature. What refuge can scholars then take to identify and approach normative rules from professional practice if direct and explicit sources seem to be lacking? Before trying to answer this question, it is useful to step back – and *go wide* as cinematographers would say – to reconsider what sources might render norms embedded in everyday practice visible.

By zooming out, it becomes clear that legal sources emerge as particularly revelatory. While legislation towards the end of the nineteenth century required the formalisation of working hours, tasks, and salaries in writing, it remains unclear how tasks were delegated in practice and to what extent responsibility was allocated if something went wrong.¹ Examining litigation, however, makes it possible for the researcher to address this gap. In addition to showcasing the procedural implications of litigation, historical court files also, albeit indirectly, shed light on the social, moral, and professional aspects in people's lives. The revelatory potential of these sources has already been demonstrated by scholars who have worked on criminal cases, such as Bruno Debaenst and Paul Drossens.² The latter, together with Karel Velle, even explicitly argued that “criminal files often feature people who have not left behind sources of comparable size elsewhere.”³

Existing scholarship that scrutinises the interaction between construction and law has primarily focused on professional recognition and safety measures in legislation, parliamentary debates, and professional organisations.⁴ While this has

1 For an overview on early (safety) legislation and the enforcement thereof, see Louis Debersaques, Dave De ruysscher, and Stephanie Van de Voorde, “Regulating Risks: The Evolution of Safety Laws in the Belgian Construction Sector (1888–1905),” in: James Campbell et al. (eds.), *Construction Innovation: Proceedings of the Eleventh Annual Conference of the Construction History Society* (Cambridge: CHS, 2025), 337–346.

2 Both scholars also emphasised the importance of visual documentation, attached to the files, found in the archive: Bruno Debaenst, “Een beeld zegt meer dan duizend woorden: het gebruik van beeldmateriaal in strafrechtelijke procedures inzake arbeidsongevallen op het einde van de negentiende eeuw in België,” *Pro Memorie: Bijdragen tot de rechtsgeschiedenis der Nederlanden* 2 (2014), 136–145; Bruno Debaenst, *Een proces van bloed, zweet en tranen! Juridisering van arbeidsongevallen in de negentiende eeuw in België*, unpublished PhD Dissertation, Ghent University, 2010; Paul Drossens, “De lotgevallen van een passieoordenaar tijdens het interbellum. Het onderzoekspotentieel van gerechtelijke en penitentiaire bronnen belicht aan de hand van een case,” *Vlaamse Stam* 3 (2024), 283–296.

3 All non-English quotes have been translated by the author from Dutch or French, unless otherwise specified. K. Velle and P. Drossens, “De rechterlijke macht,” in: Patricia Van den Eeckhout and Guy Vanthemsche (eds.), *Bronnen voor de studie van het hedendaagse België 19e–21ste eeuw* (Brussels 2017), 717.

4 For the law-claiming role of professional architectural organisations, see Simon De Nys-Ketels and Dave De ruysscher, “Building the law: law-making and lobbying in Belgium’s construction sector (c. 1890 – c. 1940),” *Tijdschrift voor Rechtsgeschiedenis (The Legal History Review)* 93 (2025), 237–263.

contributed to a deeper understanding of construction in law and vice versa, this chapter instead foregrounds methods to approach the concrete organisation of labour and the practical delegation of tasks and responsibilities on site. This highlighting is particularly relevant given the often vague delineation of professions in the construction sector before the 1920s and 1930s, when roles such as architects and contractors were not always distinguished and could even be embodied by a single individual.⁵

As Debaenst has shown, the revelatory essence of court files seems especially formidable when dealing with workplace accidents.⁶ As moments of crisis, accidents disrupted normal proceedings, thereby unhinging existing networks and their often unwritten, normative implications. Discussing a building's collapse in Paris in 1964, Jacob Paskins argued that accidents "could make visible the building industry's structures of employment and processes of production."⁷ Guy Lambert and Olivier Raveux argued a similar thesis.⁸ Both these views were underscored and then consolidated by Robby Fivez who, guided by a Latourian understanding, argued that accidents in construction expose a wide variety of data which had remained hidden. The accident thus acted as a generous "generator of paperwork".⁹

This alleged paperwork leads us back to the State Archives of Belgium where historical files of tribunals and courts are preserved.¹⁰ This chapter focuses on court files that were compiled through the preliminary legal inquiry as led by the investigating judge (*juge d'instruction*). When an accident happened, and some of the legal requirements were met, builders were summoned to testify in this judge's chambers (*cabinet du juge d'instruction*). This judge spearheaded the pre-trial investigation. Aside from the information gathered by testimonies, he appointed one or more experts to aid him in seeking the cause of the accident and those responsible. The expert then submitted a written report to the magistrate. Knowledge

5 On the delineation of the contractor *vis à vis* the architect and engineer, see Jelena Dobbels, "Algemene aannemers in de Belgische bouwsector (1870–1970): afbakening van de beroepsactiviteiten in een interprofessionele context," *Handelingen* 71 (2019), 69–84.

6 See footnote 2.

7 Jacob Paskins, "The Boulevard Lefebvre disaster: a crisis in construction," *Architectural Histories* 1 (2013), 1.

8 Guy Lambert and Olivier Raveux, "Pannes et accidents, mises en question et révélateurs des relations entre techniques, économie et société (XIXe–XXe Siècle)," *Artefact* 11 (2019), 9–19.

9 Robby Fivez, "Unfortunately, the toll is high for some of your blacks': moments of crisis in the Belgian Congo's construction industry," in: Stefan Holzer et al. (eds.), *Construction matters: Proceedings of the Eighth International Congress on Construction History* (Zurich: vdf Hochschulverlag, 2024), 1107.

10 In Belgium, to consult historical criminal cases less than 100 years old, the researcher needs permission from the competent prosecutor general.

at the construction site is thereby discursively translocated from the workplace to the chambers of the investigating judge through witness statements and the appointed expert's report. Additionally, this translocation to the chambers often implied a material counterpart. However, the expert's intermediary role in literally bringing fragments from the construction site (e.g., planks, bricks, bolts, etc.) to the "warehouse" of the court's clerk as potential evidence has been scarcely examined to date.¹¹

Etymologically, the term translocation stems from the Latin prefix *trans* (across) and the word *locatio* (a placing). Literally, the word thus means "to locate to another place". Historically, translocation has been used in diverse contexts: from early modern theology and geography to modern-day medicine, botany, and wildlife conservation.¹² In this chapter, the term is used to identify the phenomenon of 'placement' of professional information and building material 'to another location', namely, the chambers of the investigating judge. As discussed later, this translocation implies a facilitation of certain mediating actors.

Post factum discourse in testimonies cannot be accepted as objective. This status was not only a problem for the historical judge, but also for present-day historians dealing with these documents as archival sources. To overcome this difficulty, this chapter draws on Paul Ricoeur's views of the interpretation of testimonies and historical sources. Dealing with methodological considerations of primary sources, this section hints at yet another translocation: from the chambers of the investigating judge to the archive and, eventually, to the historian.

Accordingly, the chapter is propelled by three questions: (1) What are the procedural and logistical implications of the (discursive and material) translocation of the construction site to the chambers of the investigating judge? (2) How can court files be used to unveil the delineation of responsibilities, the demarcation of professions, and the organisation of safety in construction, and (3) to what extent can this information be contextualised and critically validated by the historian?

11 One of the exceptions: Debaenst, "Een proces," 266.

12 Francisco Suárez, *Commentariorum ac disputationum, in tertiam partem divi Thomae, tomus tertius* (heirs Cardon, 1613); Nathaniel Carpenter, *Geographie delineated forth in two bookes*, 2nd edition (Oxford, 1635); Peter D. Aplan, "Causes of oncogenic chromosomal translocation," *Trends in Genetics* 22, no. 1 (2006), 46-55; Alden S. Crafts, "Translocation in plants," *Plant Physiology* 13, no. 4 (1938), 791-814; J. Michael Scott, Brad Griffith, John Carpenter, and Christine Reed, "Translocation as a species conservation tool: status and strategy," *Science* 245, no. 491 (1989), 477-480.

From the construction site to the chambers of the investigating judge

Discursive translocation

When an accident happened during construction work, the local prosecutor (*procureur du Roi*) asked the investigating judge or “examining magistrate” to launch a preliminary judicial inquiry.¹³ Not every accident was brought to the magistrate’s desk. If there were indications of unsafe or reckless behaviour which caused the victim to become unfit for work or worse, the case was flagged and scrutinised based on the judicial qualification of “involuntary blows/injuries or manslaughter”, potentially constituting a negligence offence.¹⁴ As a spider in the web of the investigation, the magistrate invited and questioned witnesses and appointed one or more experts to aid him in his search for the truth.¹⁵ Eventually, the investigating judge presented his findings to the prosecutor and the *chambre du conseil*, which decided whether the case would be referred to the correctional tribunal (first instance) and brought before the criminal judge.¹⁶

Procedures concerning testimony

When accidents occurred, workers or concerned citizens nearby often alerted the local police force.¹⁷ Officers provided initial support (by removing debris or contacting a physician) and conducted the first interrogations, and builders gave statements by elaborating on what might have caused the incident in a first *procès verbal*.¹⁸ In other cases, workers – or others who considered themselves wronged by the construction work (such as frustrated neighbours or dissatisfied clients)

13 The chambers of the investigating judge are part of the tribunal of first instance.

14 This method is provided for in articles 418-420 of the *Code pénal belge*. In some instances, the criminal procedure is followed by a civil one (cf. claiming compensation). For a relevant study concerning the time and topic of this chapter, see Bruno Debaenst, “The argumentation in workplace accident trials. The case of the civil court of Mons (1870-1904),” *Clio @ Themis* 8 (2015), 1-20.

15 Article 43 of the 1808 *Code d’Instruction Criminelle* (hereinafter CIC) prescribes the availability to appoint one or two experts. In practice, this number could be expanded to include three individuals, see (original from 1839) François Duverger, *Manuel des juges d’instruction* (Paris: Cosse & Marchal, 1862), 503. In large-scale, construction-related accidents, this was often the case, given the variety of types of damages (material, technical...) to be examined by specialists of different disciplines.

16 See articles 127-135 CIC.

17 From the early twentieth century onwards, accidents were to be flagged to the local labour inspector (art. 24, law 1903); “Loi sur la réparation des dommages résultant des accidents du travail,” *Pasinomie* (1903), 292.

18 When the victim was hospitalised but awake, the magistrate sometimes visited the hospital to briefly interrogate the person there.

– could also directly address a written complaint to the local prosecutor. Additionally, *rumeur publique* might also inform the magistrate: working with heavy (sometimes toxic) materials and on considerable heights meant that accidents in construction were often life-threatening; it is therefore not hard to imagine how they quickly became the talk of the town, especially when serious damage was involved.

After permission and accompanied by the local prosecutor, the investigating judge and his clerk would then (on the same day or as soon as possible) visit the construction site together with a police officer. This is known as the *descente* or the site visit.¹⁹ Afterwards, the investigating judge summoned builders to his office or chambers. Here, he asked builders to repeat and elaborate on their original statements made to the police. Mostly, the questions asked during these pre-trial interviews remain implicit. Drawing from the answers given, however, one can deduce questions like “Where were you working at that moment?” and “What, according to you, happened here just before the accident?” Answers to these questions not only expose the daily activities of these builders (masonry, building scaffolding, cleaning), but also their professional attitude on the job. Often referring to their colleagues as comrades or *werkkameraden*, builders situated their own tasks in relation to those of other workers and their respective decision-making process. Interestingly, people who saw or heard what happened but did not directly participate in construction (such as housekeepers sweeping the pavement across the street) also tell us more about the daily activities of builders.

The investigating judge could also count on the local police force and *gendarmerie* which assisted him with the further contextualisation of these testimonies.²⁰ The officers’ tasks ranged from informing the magistrate about the first visit at the construction site to communication with the local mayor concerning administrative documentation. In most cases, this last point referred to acquiring either the death certificate of a victim, or other data to complete the suspect’s or victim’s profile (such as stating whether he could write, had a criminal record, had served in the military, and so on).

19 Articles 32, 47, and 62 CIC. Note that, in the case of negligence resulting in involuntary injuries or death, the construction site is rendered a scene of investigation where a felony was committed.

20 Articles 8-15 CIC.

The roles of the appointed expert

Ultimately, the appointed expert was tasked with identifying the cause of the accident and exposing who, in his professional opinion, had erred. The expert, who usually had a career as an architect or civil engineer, was brought to the chambers of the investigating judge, where he (most always a ‘he’) swore the oath of expertise “between the hands of the judge and the clerk”.²¹ Afterwards and sometimes even before this formal appointment, the magistrate prohibited further work activity on the construction site, thus leaving the scene undisturbed and therefore helping the expert to identify clues to potential violations.

The expert was not only someone seen as having professional authority through experience, but also as some kind of learned gentleman-like figure; someone with a creative mind that could penetrate the case’s intricacies with intellectual curiosity.²² In the 1890s, this epithet of artistic intelligence and craftsmanship was mainly attributed to architects.²³ While the draughtsman’s skills of the ‘architect-designer’ are underlined here, it should be noted that general contractors sometimes also presented themselves as architects from the mid-nineteenth century onwards. Known as ‘contractor-architects’ (to distinguish them from the architect-designer), these professionals were often appointed in cases on damage assessment.²⁴

Architects were considered pivotal in the reconstruction of the accident by, for example, drawing plans of the construction site (sometimes even including the depiction of stick-figure workers) or *croquis* (sketches) to illustrate materials, joints, equipment, or machinery involved. In so doing, they clarified for the judge how the malfunction had occurred. In some instances, safety organisation (or the lack thereof) was made evident, since drawings sometimes showed which equipment was placed where, as well as who was working on what part of the building (fig. 8). Debaenst, who also examined the use of visual documentation in expertise about workplace accidents, argued that an image drawn by the expert can be seen as “a snapshot that provides insight into the details of how people worked at that time.”²⁵

21 At the end of the nineteenth century, it was customary for the nomination forms to mention “*Le comparant a accepté cette mission et a prêté entre nos mains le serment de faire son rapport*”.

22 This persona seems particularly true for expertise in urban environments.

23 These characteristics were considered historically inherent to the profession, see, for example: Valérie Nègre, “Les figures de l’architecte ‘savant’ (XVe-XVIIIe siècle),” in: L. Hilaire-Pérez, F. Simon, and M. Thébaud-Sorger (eds.), *L’Europe des sciences et des techniques : un dialogue des savoirs, XVe-XVIIIe siècle* (Rennes: PUR, 2016), 133-139.

24 Their appointment was especially true in (civil) cases on damage assessment. For public works, engineers were preferred. See: Dave De ruyscher, “Expertise in Building-Related Disputes (Belgium, c. 1800-1914)” (forthcoming 2027).

25 Debaenst, “Een beeld,” 145. Translated from Dutch by the author.

In 1875, for example, a vaulted ceiling collapsed during masonry work on a building. In the report, the experts voiced their concerns about the measurements of the brick abutment (*épaulement*) that was supposed to support the arches. They explicitly asked the question: “Is it so obvious that a man of the art (*homme de l’art*) would have noticed it before putting it into practice?” The experts prefaced their answer by remarking that “every man of the art had to know that this abutment’s dimensions did not match those defined by normative practice.” This rhetoric was triggered by one of the articles in the original contract which stipulated that the masonry work was to be “carried out according to the rules of the art”.²⁷ Significantly, experts asked about the delegation of tasks and who had ordered the (premature) removal of the formwork. In cases like these, it is remarkable how often different builders point to different actors as being ‘the boss’, ‘the contractor’, or ‘the supervisor’.

The appointed expert was also a kind of technical teacher. After the expert’s report was submitted to the magistrate, the builders (or suspects) could consult the document, after which they could redeem themselves by dismissing the points raised. As such, the chambers of the investigating judge become a hub for the exchange of construction knowledge. For example: in 1905, during the construction of a railway station, a worker died after an 8 m-long metal beam (which functioned as a purlin of a canopy above the platform) had fallen on his head after accidentally becoming detached.²⁸ Eventually, the mechanic who had wrongly affixed the beam to the structure was found guilty. Instead of fixing the inner beam of the metal canopy, he had first secured the outer one. Deeming it incompatible with normative practice, the expert argued that this method had made the structure too rigid. This situation meant that the outer beam could only be fixed into place with extreme force. After the expert had explained how to do it for future reference, the mechanic agreed on this better alternative.

Aside from his role as technical teacher, thereby claiming and performing some kind of expertise, the expert also acted as moral arbiter in construction disputes. This role was not only taken up by the appointed expert, but also by the master craftsmen onsite. In 1905, for example, a joiner working on the final parts of a

27 “*Présente-t-il un degré d’évidence tel que l’homme de l’art devait nécessairement le remarquer avant toute mise à exécution?*” To be complete: this expert report was commissioned in appeal. State Archive Brussels, Forest (hereinafter SABF). Inventaire des archives de la cour d’appel de Bruxelles (hereinafter CAB). Affaires correctionnelles (1811–1884), inv. 2685, 1875. This case was presented by the author at the XXIXth Annual Forum for Young Legal Historians at Ghent University (September 2025). Translated by the author.

28 SABF. CAB. Affaires 1907, inv. 953, 1905.

church tower fell from his scaffolding after it collapsed. Apparently, shortly before the accident, there had been a local fair in town. When the master carpenter was interrogated in the chambers of the investigating judge, he claimed that some of the workers, including the future victim, were seen dancing to the carnival's music on top of the scaffolding. According to him, this event might have been the main reason for the crack in a plank, which was then argued to be the ultimate cause of the accident.²⁹ Crucially, the magistrate inquired who built the scaffolding and where its material came from. Testimonies went back and forth as builders failed to agree on who was the contractor, subcontractor, and supplier. While the scaffolding should have been enforced to withstand unforeseen damages (like a bucket falling), dancing and singing along to the fair's music clearly was not included in the rules of the art. Obviously, the master carpenter was not the appointed expert *in se* (he could not have been due to his direct involvement in the case), but he was considered a highly skilled professional, claiming some sort of "*moralité sociale*", which he tried to convey to his fellow workers.³⁰ This idea of prudence is one of the particular virtues affiliated with experts.³¹

Material translocation

... to the chambers of the investigating judge

Together with a worker serving as a professional guide to the abandoned construction site, the expert took a walk around the premises and pointed out which aspects he would like to investigate further. These material fragments were then brought to the depot of the competent tribunal where the investigating judge operated. If necessary, the objects from this evidentiary seizure could then also be sent to a research facility where the expert could subject them to a more thorough examination. In 1880, for example, a wooden roof of a circus collapsed during its construction. Some of the wooden fragments that came down were brought to "the correctional clerk's warehouse" for further investigation by the expert.³²

29 SABF. CAB. Affaires 1907, inv. 1461, 1905.

30 This characterisation of the (appointed) expert as moral arbiter is a typical legacy from at least the eighteenth century, see Robert Carvais, "Sur la compétence des experts et le droit mobilisé par l'expertise," in: M. Barbot et al. (eds.), *Les acteurs et les mécanismes de l'expertise du XVIe au XIXe siècle* (Paris: Presses des Mines, 2025), 40.

31 For the role of the expert and *phronesis*, see Dave De ruysscher, Louis Debersaques, and Tijl Vanneste's chapter in this volume.

32 SABF, CAB, *Affaires correctionnelles* (1811-1884), inv. 2828, 1880.

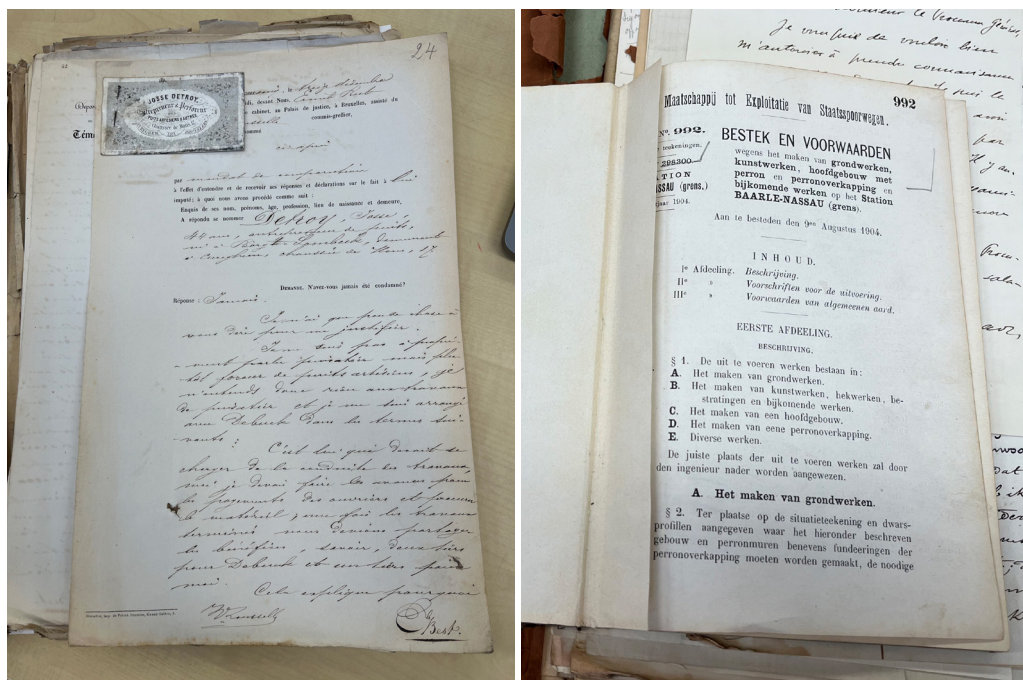
Another example: in 1898, a worker fell from his scaffolding, plunging all the way down into the building's basement.³³ Somehow, he managed to survive. Like the previous case in the church tower, a plank from the scaffolding was confiscated. However, instead of having it brought directly to his chambers, the investigating judge ordered the local police commissioner to keep it safe "in a closed-off space" where the appointed expert could retrieve it.

... to the archive

Written and visual documentation that qualified as legal evidence, like witness statements in a *procès verbal* or an expert's report, were kept in the court's archives. Nowadays in Belgium, courts are required to transfer ('translocate', if you will) their archive to a local depot of the State Archives after 30 years, once the sources no longer have administrative use. The historian researching these archival documents can thus further engage with the past thanks to the 'capsular' nature of these archival sources. By 'capsular' one should understand the word in its most literal form: an enveloping shell or box that holds contents, as in pharmaceutical encapsulation. During pre-trial investigations, builders were often asked to bring certain types of documents that could prove their point or shift the blame, thereby contextualising their oral statements. The architect could bring the plans, the contractor could bring the specifications or correspondence with suppliers, the client could bring the contract, and so on. Sometimes the investigating judge actively tasked the police force with the retrieval of some of these documents. Eventually these types of documents could be appended to the file. Therefore, the historian working with files on criminal litigation in the archive should not be surprised to find original contracts between the contractor and the supplier, business cards, or even small booklets containing the specifications of the construction project (fig. 9 and fig. 10). In contrast to similar finds in archives of architects or contractors, these documents were then scrutinised and given evidentiary weight by the judge, partly disclosing the relation between normative practice and legal responsibility.

Another source that illustrates the 'capsularity' of these files dealing with construction litigation on accidents is onsite photography. Later, mainly after the Second World War, the expert was sometimes joined by a forensic photographer. Photographs taken in this context feature material debris, the victim's body, details

33 State Archive Mons (SAM), *Tribunal correctionnel de Mons. Affaires non-lieu*, inv. 277, 1898.



Figures 9 and 10. On the left: the business card of the builder-witness as affixed to his testimony (SABF, 1866). On the right: the specifications booklet of the construction project attached to the file (SABF, 1905).

of crucial joints in the structure, construction site hygiene, and so forth. These pictures were eventually put into a large white envelope and brought to the chambers of the investigating judge, and thus eventually to the historian in the archive.

From archive to historical research

Whereas the documents compiled by the investigating judge and his clerk, and potentially elaborated on by the criminal judge in court, had a legal origin (i.e., judicial inquiry) and purpose (i.e., determining criminal liability), these files ended up in acid-free boxes of the State Archives for scrutiny by historians.³⁴ While the judge rules on liability and the value of evidence, the historian, working on a

³⁴ It is important to emphasise that not all cases were routed to the correctional tribunal, for example, by lack of evidence. The pre-trial files of these *non-lieu* cases are preserved in the archives of the tribunals of first instance. When, in contrast, the case was brought to the tribunal, and perhaps also the court of appeal, the files can be found in the archival series of the case's institution of last instance.

different timescale, tries to investigate the extent to which these sources are truthful testimonies of people's behaviour, beliefs, and overall social situation – seeking to glance through some kind of 'window into the past' – even though this operation cannot be seen as wholly objective.

Suspicion related to testimony

Oral statements were recorded in written reports. This practice implies some sort of translation, especially as the author of the testimony is not the person who was interrogated. Hermeneutical dynamics like these were already identified and problematised by Paul Ricœur (1913-2005). Like many scholars of his time, he agreed that historical sources do not speak for themselves.³⁵ In his work *La mémoire, l'histoire, l'oubli* (2000), Ricœur argued that historical knowledge is not just about what is considered factual as preserved in archives, but that it also involves a certain interpretative act or understanding.³⁶ He distinguished three stages of the "historiographical operation": the archive, explanation/understanding, and representation. Here, without elaborating too much on Ricœur's far-reaching philosophy of interpreting historiography, it is important to understand that history depends on documentary evidence and seeks a certain degree of objectivity even though it cannot be purely neutral. While it aims to establish facts, judicial testimony also remains interpretative, dependent on narrative coherence, institutional mediation, and the credibility of witnesses. The translocation from the construction site to the archive is not a neutral procedure but a process from personal memory to "testimony presented before a third party, received by this party, and eventually deposited in an archive."³⁷ Testimony (even though revelatory) is also shadowed by suspicion.³⁸ Who is to say that builders had no specific motivation to lie on the spot, or that maybe their statements were warped by the court's clerk respect for legal formalities at the expense of historical accuracy?

35 Seminal works concerning this phenomenon include Michel de Certeau, *L'écriture de l'histoire* (Paris: Gallimard, 1975); Edward Carr, *What is history?* (New York: Knopf, 1961); Marc Bloch, *The Historian's Craft*, translated by P. Putnam (New York: Vintage Books, 1964).

36 Paul Ricœur, *Memory, history, forgetting*, translated by K. Blamey and D. Pellauer (Chicago: UCP, 2004), 182. The original edition *La mémoire, l'histoire, l'oubli* was published in 2000 by Le Seuil in Paris.

37 Ibidem, 129.

38 Ibidem, 163.

Glancing through the window into the past

What follows is an overview of three methodological considerations that can be used to validate the truthfulness of the discursive translocation of the construction site from the chambers of the investigating judge to historical research.³⁹ I will call these considerations ‘lenses’ through which the historian can test the ‘opaqueness’ of the metaphorical window of the past.⁴⁰

The first lens can be labelled as *witness interdependence*. Already in ancient times, lawmakers believed that one witness equals no witness (*testis unus, testis nullus*).⁴¹ In the same philosophy, the historian can trace the personal convictions of the builder towards the organisation of labour. If, for example, several masons agreed that a specifically named person is usually responsible for the maintenance of ropes or planks, one can assume that this was in fact the case. This interpretation is relevant both for the historical judge and the historian. If the person specifically named as responsible was not yet interrogated, he was summoned to the chambers of the investigating judge and confronted with the potential violation. He could then confirm or deny the validity of the normative proceedings as argued by his colleagues. The suspect’s truthfulness is then again tested when the witnesses and other suspects are asked to redo their testimony (for example, from construction site to chambers, or from chambers to court). According to Ricœur, this repetition also reinforces “the credibility and trustworthiness of testimony”.⁴²

The second lens: builders are considered to be *craft-bound*. Belonging to the community of artisans and craftsmen, builders share some sort of code which I have identified as the rules of the art of building. While this definition may sound like an apology for naïve realism, the example of the vaulted ceilings above has shown that the expert reports frequently referred to these rules of the art as a code to which builders should comply. To violate these rules means to violate the established norm. This claim could then further be substantiated through the expert’s analysis of material debris – the physical product of inadequate craftsmanship. Therefore, I

39 Within the hypothetic understanding that there were no textual alterations to the written sources by archival instances.

40 The illustrating term “opaqueness” here was borrowed from Carlo Ginzburg, *Clues, myths and the historical method*, translated by John and Anne Tedeschi (Baltimore: Johns Hopkins University Press, 1989), 123.

41 This claim hails from the Law of Moses (Deuteronomy 19:15). The Latin maxim is from Justinian’s Code. See Ricœur, *Memory*, 257.

42 Ibidem, 165.

argue, builders were required (cf. *moralité sociale*) by this code to identify and signal possible violations, thereby validating how responsibilities and professions were delineated, or at least how they *should* have been. Essentially, the chambers of the investigating judge are a place of translation. Aiming to understand to what extent the legal qualification of involuntary injuries or manslaughter applied to the case, the investigating judge invoked the findings made by the expert, who, because he was allegedly well versed in the art of building, served as a mediating link in the translation from law to practice and vice versa.

Thirdly, there is the *intertext* lens, which relates to the role of the court's clerk. If the author of the testimony was not the one giving it, to what extent could the clerk be seen as a "disengaged observer"?⁴³ It should be underscored that statements of witnesses do not travel solely through interactions with the clerk, as the police would be the first to conduct interviews. Only after the case was brought to the chambers of the investigating judge does the court's clerk appear. Furthermore, discussing the inherent nature of criminal files also implies admitting the argument of its capsular nature. Since the testimony of builders in itself can be seen as tenuous or even suspicious, the transcription of the clerk is yet another translation that requires validation. The historian, however, can still analyse styles of writing and articulation by intertextually comparing the statement and documents by the builder's own hand, which could be attached to the file. Furthermore, in many cases builders used a certain jargon that was not directly accessible to jurists. While, indeed, legal discourse itself was filled with paradoxical and intermixed vocabulary, it was not a one-way street. This point means that the clerk could not explain the technicalities of machinery, nor the technique of masonry or the assembly of scaffolding – points that are indeed explained in detail in many testimonies. Finally, by way of proxy attestation, witness statements and suspect interrogations end with the sometimes pre-typed or stamped notification that the entire document was read aloud to the person, after which they signed to mark their agreement (fig. 11). When things were misinterpreted, the clerk redacted sentences from the witness report by crossing out sentences or words.

43 Ricœur, *Memory*, 162; Renaud Dulong, *Le témoin oculaire: Les conditions sociales de l'attestation personnelle* (Paris: EHESS, 1988).

De houlous met geschilderde
 zijn van Ispmaul.
 Ik heb geen kennis in zemen, maar
 alleenlijk in metsel en timmeren.
 Na gedane voorlezing volkerdt de getuige
 bekent lare en tekenet
 wat ons in onzen griffier.
 J. H. Jansz
 J. H. Jansz

Figure 11. Stamp on the testimony indicating that the statement was read aloud and subsequently signed by the builder-witness, the investigating judge, and the clerk. (SABF, 1905)

Conclusion

Normative aspects of workplace management in terms of safety organisation and professional delineation become visible through the unhinging character of moments of crisis, like accidents. This chapter has argued how pre-trial investigations that were triggered by building accidents (which qualified as a potential negligence offence) initiate a translocation from the construction site to the chambers of the investigating judge. Here, translocation is characterised by a discursive and a material component. We have seen, both on a procedural and logistical level, how the investigating judge summoned builders to his chambers and how the appointed expert gathered evidence, which was first stored in the warehouse of the tribunal, a laboratory, or another closed-off space.

As the destination of the translocation, the chambers are also a place of confrontation of two worlds: the judicial one and the professional one. The interaction between the builders and the investigating judge was further facilitated by the appointed expert who, as translating mediator, tried to triangulate professional fault with liability. Only the judge, however, was able to eventually deliver the verdict.

Even though written source material like testimonies and expert reports are fascinating archival finds, they cannot immediately be considered as straightforward

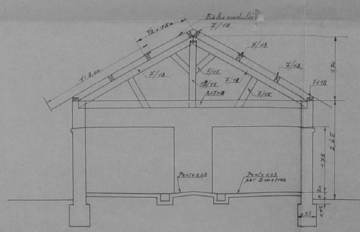
windows to the past. When approaching normative practice concerning the organisation of safety or the delineation of responsibilities through the revelatory abilities of these files, the historian should be critical and suspicious by default. This chapter has shown that, while it has long been clear that historical sources do not speak for themselves, there are a few methodological considerations that the historian can use to (albeit indirectly) try and capture normative practice in construction through the unveiling potential of moments of crisis.

These considerations can be gateways or ‘lenses’ for the researcher to contextualise and validate statements. Given the capsular nature of court files, it has become clear how testimonies of builders can be tested intertextually with other testimonies, attached files (such as contracts or correspondence), and the passivity of the court’s clerk. This evaluation is also possible in relation to the opinion of the expert who, as a technical teacher and moral arbiter, sanctioned certain on-site behaviour in relation to normative *usage* and the rules of the art. Further research can clarify the epistemological tension between normative practice, judicial discretion, and the rules of the art as is, in fact, concretely planned within the frame of the doctoral study of which this chapter was a ‘testimony’.

Robby Fivez

The Passenger Warehouse

Building labour recruitment in the realisation politics of the Belgian Congo's Plan Franck, 1919-1931



ESTIMATION		
7 HANGARS		60.000 -
4 TO	4 x 60.000.00	240.000 -
7 CUISINE		76.000 -
7 FORGE / TOUANT		76.000 -
SURVEILLANCE EUROPEENNE		20.000 -
TOTAL		280.000 -

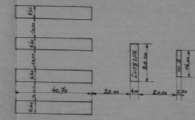
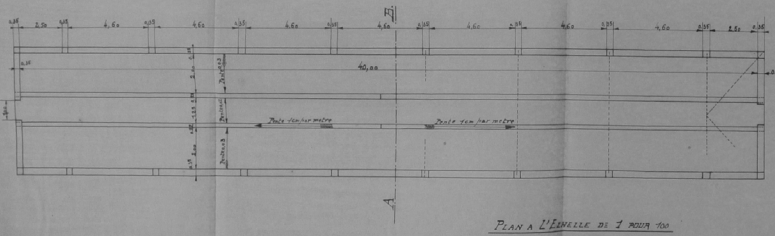


Figure 12. Plan for the passenger warehouse. Original title: “Projet Hangars pour Passagers Offitra”. (Belgian State Archives, ARA2, Brussels, AIMO 1685 (9338), September 1926)

Introduction

An architectural drawing, kept in the colonial state archives in Brussels, shows a long rectangular warehouse of 40.70×6.40 m (fig. 12). Although the drawing is lacking in detail, it does provide additional information on the rudimentary structure. The roof, for instance, was made from corrugated iron sheets and held up by eight wooden trusses. These trusses rested on columns of 35×35 cm. Between the columns, an infill wall of 1.95 m high formed the outer façade of the building, leaving a 50 cm opening between the roof and the wall. The only other openings in this outer wall were two doors in the short façades. The elements that perhaps received most attention of all in the whole plan were the two gutters that ran from doorway to doorway, and the inclination of the adjacent pavement.

The simplicity of the structure, the closed outer wall, the gutters, the cross ventilation: everything seems to suggest that this building was yet another of many similar small warehouses that underpinned the exploitative economy of the Belgian Congo. However, in comparison to other such warehouses, the 1-m-wide door openings were remarkably narrow, and not that suitable for carrying goods in and out. Moreover, the small location plan on the right shows two auxiliary structures: a kitchen and a toilet. Finally, the name of the plan, *Projet Hangars pour Passagers*

Offitra, leads to the inevitable conclusion that this rudimentary building did not house wares, but people.

From 1922 onwards, the parastatal organisation *Office du Travail* (Offitra) was responsible for recruiting people across the colony and for transporting them to and from the infrastructural construction sites of the Belgian Congo. After all, the realisation of the grand infrastructural projects that were part of the colonial investment plan of the 1920s to the tune of 1 billion Belgian francs – known as the *Plan Franck* or Franck Plan after Minister of Colonies Louis Franck and comprising numerous roads, railways and harbours, all aiming at improving the export of colonial wealth to the Metropole – required thousands and thousands of construction workers.¹ Given the role of Offitra, the *Projet Hangars pour Passagers Offitra* is no longer an innocent architectural plan. Rather, it is now a piece of evidence. Suddenly the simple warehouse evokes strong images of the hardship faced by these Offitra ‘passengers’: of surviving in a confined overcrowded space, of dehumanising practices of colonial hygiene (these gutters were widespread in both hospital wards for Africans and in stables), and of people physically contained by these closed walls. Without other evidence, such a forensic approach to architectural history, of course, remains speculative.² However, the archive does provide us with other sources that corroborate these speculations. A report about the Coquilhatville passenger warehouse – exactly like the one depicted in the plan above – mentions, for instance, how due to limited transport capacity and general lack of organisation, these ‘passenger warehouses’ were often the home for new recruits for months on end. One time, the Coquilhatville warehouse ‘housed’ an incredible 362 workers (some with families) for four months on end. An official wrote of the situation:

*This type of housing can hardly serve as anything more than temporary shelter: it offers residents no possibility of privacy, and the promiscuity of the different families is total. [...] The camp is completely overcrowded and if an epidemic would break out it would be a total disaster.*³

- 1 Guy Vanthemscche, *Genèse et portée du « Plan décennal » du Congo belge (1949-1959)* (Brussels: Académie Royale des Sciences d’Outre-Mer, 1994); Simon De Nys-Ketels et al., “Planning Belgian Congo’s network of medical infrastructure: type-plans as tools to construct a medical model-colony, 1949-1959,” *Planning Perspectives* 34, no. 5 (2019).
- 2 Eyal Weizman, *Forensic architecture: violence at the threshold of detectability* (Brooklyn: Zone Books, 2017); Aggregate Architectural History Collective, *Writing Architectural History: Evidence and Narrative in the Twenty-First Century* (Pittsburgh: University of Pittsburgh Press, 2021).
- 3 BSA, AIMO, AIMO (1702)7396, René Mouchet, ‘Rapport d’inspection Coquilhatville’, n.d.

Travelling through the colony in 1926, even the former Governor General Maurice Lippens “was struck by the miserable conditions in which the recruits were housed”. Apparently, he even “took photographs of the sheds used as shelters” as further evidence of the appalling nature of the government’s recruitment system.⁴

This detailed reading of the passenger warehouse confirms Swati Chattopadhyay’s recent statement that “storage spaces were often better built than the spaces for servants and the enslaved,” but more importantly it corroborates her seminal idea that “when we begin with small spaces, we notice subjects and effects that remain invisible at the large scale of analysis”.⁵ Indeed, studying this passenger warehouse from an architectural history perspective brought the “labouring bodies that worked, waited and rebelled” into view.⁶ However, a construction history perspective that tries to grasp the complex processes of architectural realisation under colonial capitalism in the first decade of official Belgian rule over Congo also begs for the larger scale of analysis, not of its built artefacts but of the ‘system’ of recruitment – and its connected forms of labour exploitation – as a site of construction.

In this chapter, I will analyse Offitra’s recruitment system, a fundamental prerequisite for the realisation of the *Plan Franck*. In the analysis, I will focus on three key construction sites of this investment programme. The Ango-Ango railway (1920-1923), connecting the existing harbour of Matadi to the planned port of Ango-Ango, was the first of this series of infrastructural projects. As its recruitment proved more challenging than anticipated, the construction site became the testing ground of two subsequent recruitment policies: first, a blunt reintroduction of forced labour regimes that had been outlawed by the *Charte Coloniale* in 1908, and second, an attempt at ‘voluntary’ recruitment across the colonial territory, which quickly resulted in the continuation of more disguised forms of forced labour. With that, the Ango-Ango railway formed the blueprint for the ostrich policy of the colonial state and its parastatal organisation Offitra, during the reconstruction of the Matadi-Kinshasa railway (1922-1931), the gruesome working conditions of which were described in the work of Jules Marchal.⁷ Finally, the port at Ango-Ango (1926-1930),

4 BSA, AIMO, AIMO (1685)9338, Jacques Evelyn (director Offitra) to Martin Rutten (Governor General), 1 December 1926.

5 Swati Chattopadhyay, “Architectural History or a Geography of Small Spaces?,” *Journal of the Society of Architectural Historians* 81, no. 1 (2022), 5-20.

6 Ibidem.

7 Jules Marchal, *Travail forcé pour le rail: l'histoire du Congo 1910-1945* (Borgloon: Bellings, 2000).

for which the contractor was exempted from the government's recruitment system, provides us with an interesting comparative case of private recruitment.

This chapter's scrutiny of the recruitment system as a 'site of construction' inevitably recasts construction history as a social history of labour. Rather than focusing on the techniques and technologies of construction, we ask questions about the people who built these infrastructures: how they were hired, by whom, and under which conditions, how they were brought to the state's construction sites, and how they were housed throughout the process. Such a labour history shifts the attention away from the empire builders – the engineers, contractors, public works, state officials, etc. – and centres instead on the hands that realised these works. However, given the troubled nature of the colonial archive, which has been strongly criticised in several postcolonial approaches for the colonial power relations embedded within them, such a recentring is not straightforward: the subjugated African construction workers barely figure, and if they do, it is often through the lens of state policies. That such 'silencing' happens in a colonial archive should not come as a surprise: in a rare critical discussion of sources from the field of construction history, Robert Carvais already highlighted how in most construction-related archives, the construction workers remain similarly 'mute'.⁸ In a colonial context, this anonymity of construction workers is all the more problematic, as Susan Verdi Webster rightfully states in her study of the native artisans in colonial Quito, as it "has fostered a general vision of colonial architecture as built by masses of nameless native workers under the legal control, intellectual supervision and according to the designs of Europeans."⁹ Also in this chapter, the construction workers figure primarily as the subject of consecutive labour legislation and policies. However, dispersed throughout these sources, we can trace forms of resistance against these policies, and this text will highlight these instances not only as important counter-narratives, but also because they had far-reaching consequences for the construction sites across the colony as well as for colonial labour policies.

8 Robert Carvais, "Plaidoyer pour une histoire humaine et sociale de la construction," in: Robert Carvais et al. (eds.), *Edifice & artifice: Histoires constructives* (Paris: Editions Picard, 2010).

9 Susan Verdi Webster, "Masters of the Trade: Native Artisans, Guilds, and the Construction of Colonial Quito," *Journal of the Society of Architectural Historians* 68, no. 1 (2009), 10-29.

The Anjo-Anjo railway: The reintroduction of forced recruitment (October 1919–February 1920)

10 Julia Seibert, "More Continuity Than Change? New Forms of Unfree Labor in the Belgian Congo, 1908–1930," in: Marcel van der Linden (ed.), *Humanitarian Intervention and Changing Labor Relations: The Long-term Consequences of the Abolition of the Slave Trade* (Leiden: Brill, 2011).

to incorporate the Congolese into a capitalist wage system, as taxes had to be paid in Belgian francs.¹¹ However, the large-scale construction projects planned after the First World War challenged these self-imposed regulations: the very first project of this plan, the Ango-Ango railway, immediately made clear just how naïve the colonial belief in the transition to a monetary economy and voluntary wage work had been.

From the start of the project, the local public works department (PWD), responsible for the construction of the railway link, informed the head engineer Eudore De Backer that construction was difficult as the site was “almost devoid of any manpower”.¹² A longer letter from the district commissioner to the Governor General disclosed why the contractor struggled to find the required construction workers in the Bas-Congo district. The district commissioner mentioned how – contrary to what the colonial authority had anticipated – “the natives of the Bas-Congo had all the money they needed to pay their taxes” and that “under such conditions nothing could persuade them to make a commitment to Matadi”.¹³ With the construction of the railway link coming to a standstill even before it had truly started, the colonial government realised that finding the construction workers for their ambitious investment plans would perhaps even be more difficult than allocating the necessary funding.

To get the Ango-Ango complex back on the rails, the Governor General therefore decided to issue a governmental decree on 1 October 1919:

*Considering that it is in the public interest to clear the railway station and the port of Matadi, whose facilities are no longer sufficient for the growing traffic caused by the removal of products; it is therefore important to hasten the completion of the construction of the Ango-Ango connection and to recruit one thousand workers. [...] In each of the provinces of Equateur and Congo Kasai, an extraordinary levy of five hundred workers will be carried out. [...] Natives designated as workers who fail to make themselves available to the territorial authorities may be forced to do so.*¹⁴

11 Vincent Vaessen, “Les législations sur le contrat de travail de 1910 et 1922 au Congo Belge: deux intentions et deux modes de décisions opposés,” *Revue belge de philologie et d'histoire* 79, no. 4 (2001).

12 BSA, 3DG, 3DG (972) 1, Eudore De Backer, “Note sur la Réorganisation du Service des Travaux Publics de la Colonie,” 1948.

13 BSA, Fonds Affaires Indigènes et Main d'Oeuvre (hereinafter AIMO), AIMO (1606), district commissioner to Eugène Henry (Governor General), 18 August 1919.

14 BSA, AIMO, AIMO (1606), “Ordonnance-loi prescrivant la levée de mille travailleurs d'utilité publique destinés à la construction du chemin de fer de Matadi à Ango-Ango,” 1 October 1919.

It is remarkable how this ordinance directly related “the public interest” to the exploitation economy and how this public interest legitimised the use of force in recruitment again, a mere ten years after the abolishment of forced labour in the colonial constitution. The decree was enforced through a series of circular letters, and workers were forcefully recruited in the Equateur and Kasai provinces by local administrators. In the archives, a series of *feuilles de route* documents this recruitment campaign. These *feuilles* identified all the workers who were recruited in a certain district and included details like the names of the recruited workers, the names of their wives and parents, their *chefferies* and villages, as well as the names of the respective chiefs (fig. 13). Yet what is most remarkable is how resistance against these forced labour practices is embedded in these documents: an improvised column marked every recruit who fled at some stage of the recruitment process. The pencil marks with the words “*en fuite*” testify to how common fleeing was as a direct act of resistance.¹⁵

While these *feuilles* make it possible to identify the conscripted construction workers – people who often remain anonymous in the colonial archive otherwise – it remains hard to fathom how each of these lines also represents an individual’s story. However, the correspondence in the archive does give us some more insight into these on-the-ground realities of recruitment. A letter from a territorial agent to the district commissioner of the Bas-Congo, for instance, relates the recruitment process in the Mayombe territory. According to the letter, the village chiefs played a key role: the territorial agent directly asked all of them to bring a number of recruits to Tshela, the territory’s main village. The “reluctance of the Mayombe natives to emigrate, even a few kilometres from their villages”, so the agent believed, “forced the *chefs médaillés* to pick at random”.¹⁶ Whether it was due to the reluctance about emigration, or rather to an intense fear about the government’s recruitment campaigns that was deeply ingrained in the region since the construction of the first Matadi-Kinshasa railway line (1890-1898), it is clear that none of the people who were escorted to Tshela on 2 December, 1919 arrived out of their own free will. Rather, they strongly resisted their recruitment with all sorts of what government officials called “excuses”, like “having to tend to their houses, farmyards and fields”.¹⁷ From the “30-ish” people who arrived, only 15 passed physical examination

15 BSA, GG, GG 17.649, “Feuilles de route,” 1919.

16 BSA, AIMO, AIMO (1606), territorial administrator (Mayombe territory) to district commissioner (Bas-Congo district), 6 August 1920.

17 Ibidem.

by the territorial agents.¹⁸ On 5 December, “after being housed and fed”, these 15 were eventually sent to Boma. The next day, six more recruits followed. That no fewer than 16 of these 21 men fled despite being aware of the severe punishments for ‘desertion’ is telling, attesting both to the forced nature of these recruitments and to the desperation of the recruits.

While it is a rather typical example of such correspondence about this forced recruitment campaign, I selected this letter not just because it was exemplary. Rather than letting these fugitives ‘off the hook’, as often happened, the territorial agent was more diligent than most of his colleagues. After receiving the list, he was able to track down ten of these ‘deserters’, arrest them, and send them to the public prosecutor’s office in Boma to be tried for their ‘crime’. However, they were all acquitted in the ensuing court case. The judge ruled that the recruitment had been illegal as it was at odds with article 16 of the colonial charter that explicitly prohibited the forced recruitment of workers.¹⁹ In a panicky telegram to the Minister of Colonies, the Governor General informed him of the consequences: “If that judgment is confirmed, all Ango-Ango workers will have to be dismissed and the construction of the port [and the railway] will be postponed indefinitely.”²⁰ While unintentional, these ten fleeing recruits thus had an enormous impact on colonial labour policies, as their trial sparked a strong debate in Belgium. Public opinion was divided, with some Belgian newspapers reporting how “the *ordonnance-loi* re-establishes forced labour and reinstalls a system full of disadvantages and perils for Blacks transplanted from one region to another”²¹ and others pointing to the necessity of forced labour: “The rights of the natives are protected to the point of absurdity – [they are] grown children for whom authority is even more necessary than protection against abuse.”²² Yet the colonial council, a group of advisors to the Minister of Colonies, harshly condemned the approach of the *ordonnance-loi*. After the legal dispute and the political turmoil, the Minister of Colonies had little choice but to send all the forcefully recruited workers home.

18 Ibidem. For this physical examination, Pignet’s index was used, a formula that combined the height, weight, and chest circumference of a person to estimate their physical build.

19 BSA, AIMO, AIMO (1606), Governor General to Minister of Colonies, 5 March 1920. For a more thorough analysis of the legal implementation of the *Charte Coloniale* in actual labour laws, see: Vaessen, “Les législations sur le contrat de travail de 1910 et 1922 au Congo Belge: deux intentions et deux modes de décisions opposés”.

20 BSA, AIMO, AIMO (1606), Governor General to Minister of Colonies, 5 March 1920.

21 Unknown author, “Une levée de travailleurs,” in: *Le Vingtième Siècle*, 3 March 1920.

22 Jules Tilmant, “En regardant en arrière...,” in: *L’Essor Coloniale et Maritime*. n. d.

While referring to the workers' political agency would be an overshoot as the consequences of their actions were clearly unintentional, it is clear that everyday forms of resistance like fleeing could impact grander political debates, thereby challenging the idea that the world is divided into people with political agency and those without, the agency-trap historian Mona Gleason recently warned historians against.²³

The Ango-Ango railway: The blueprint for 'voluntary' recruitment (February 1920–November 1922)

Although the minister stood firm in his decision to halt the forced recruitment, his counterpart in Congo, the Governor General, was unable to conceal his frustration. In a telegram he wrote:

*If I send off the workers of Ango-Ango, all works will be abandoned as voluntary recruitment is impossible in Congo. The same policy will also make the reconstruction of the railway line [Matadi-Kinshasa] impossible, as the project would require about 10,000 construction workers.*²⁴

That this need was no exaggeration is clear from a construction site report of 12 July, 1920, in which the direct consequences of the judge's ruling became apparent. The construction site, though well underway, came to a grinding standstill due to the lack of construction workers. The director of the public works department wrote how month after month hundreds of workers were returned home, drastically reducing the number of construction workers from 899 in March to 205 by June 1920. Eventually the PWD director even argued to stop the project altogether, until a "minimum of 1,000 men would be on site", as without this number of workers,

23 Mona Gleason, "Avoiding the agency trap: caveats for historians of children, youth, and education," *History of Education* 45, no. 4 (2016), 1-14.

24 BSA, Fonds Main d'Oeuvre Indigène (hereinafter MOI), MOI (3547), Eugène Henry (Governor General) to Louis Franck (Minister of Colonies), 20 March 1920.

he argued, “we can only keep the men that are left busy with odd jobs, while the costs of the administrative and technical [European] personnel remain the same.”²⁵

Despite the pressure from his own administration, the minister – aware of the public opinion in Belgium and abroad – remained adamant: “Your decree has provoked criticism in the Colonial Council and has stirred members of Parliament. Send the African workers home again.”²⁶ In a difficult position between his administration, which had repeatedly complained about the impossibility of voluntary recruitment, and the minister who insisted on it, the Governor sent a telegram to the Vice-Governors of the different provinces:

*The minister believes that the levy of construction workers for Ango-Ango has to be halted and only volunteers can be engaged. He insists that we do everything we can to restart the works that are abandoned now that he has sent the levied workers home. He insists on absolute freedom.*²⁷

The stream of paperwork generated by this request betrays the strong discrepancy between the ministry in Belgium and the *gouvernement général* in Congo. In every different layer of the colonial administration these ministerial instructions trickled down into, the decision was met with ridicule and disbelief. The territorial agents voiced their dismay over the lack of awareness of the on-the-ground reality in Congo. Yet in doing so they also displayed a more blatantly racist position with respect to the Congolese they were living with. While there are numerous examples in the archive, perhaps the response of the Bas-Congo’s district commissioner is the most representative of this shared belief:

There is no hope of being able to supply the contingent of 80 workers for the Ango-Ango section through a simple request for labourers. The black man does not have the necessary energy to agree to go to work unless he is pushed to do so. It is in their customs: nothing is done spontaneously; they are used to having

25 BSA, AIMO, AIMO (1606), Eudore De Backer, “Construction site report”, 12 July 1920.

26 BSA, AIMO, AIMO (1606), Louis Franck to Eugène Henry, 19 March 1920.

27 BSA, AIMO, AIMO (1606), Eugène Henry (Governor General) to all Deputy Governors General (provincial governors), 24 April 1920.

*to be urged, to waiting for some form of violence, which they in fact even desire. [...] Many black people wish to work, but they need to be pushed, to feel a force that decides for them.*²⁸

Despite this storm of critique, the Governor insisted, reminding everyone time and again that “the railway works at Ango-Ango must proceed rapidly” and that “its progress depended solely on the workforce”.²⁹ Referring to the aforementioned study of the PWD director, he stressed how important this recruitment was for the timely realisation of the railway: “the limited number of workers currently employed on the works will not allow the completion of the connection before the beginning of the year 1923, whereas, if the number of men could be doubled, the operation of this connection could be envisaged for the beginning of next year.”³⁰ To further increase the pressure, a detailed recruitment scheme was drawn up, detailing how many people had to be recruited in each district. However, as the critical Vice-Governor of the Congo-Kasaï province euphemistically noted: “asking the various district authorities to supply a fixed contingent of voluntary workers implies a certain moral coercion”.³¹ Despite the minister’s objections – “I would not hesitate to admit what our officials call ‘moral coercion’, if by that they mean energetic insistence [yet] I condemn all threats and violence in these matters”³² – this administrative correspondence suggests that the pressure on the lower echelons of colonial power, combined with the racist stances of many of these territorial agents, often blurred the line between persuasion and coercion.

Eventually, the small stretch of the Ango-Ango railway link of about 4 km, took three years to be realised, much longer and costlier than initially planned. A final report on its construction explicitly mentioned that “if the same approach to the planned reconstruction of the railway between Matadi and Kinshasa [approximately 370 km] has to be followed, its transformation would take decades”.³³ Nevertheless, the Ango-Ango approach explicitly formed the blueprint for the following recruitment

28 BSA, AIMO, AIMO (1606), District Commissioner (Bas-Congo) to Deputy Governor General (Congo-Kasaï province), 24 June 1920.

29 BSA, AIMO, AIMO (1606), Eugène Henry (Governor General) to all Deputy Governors General (provincial governors), 24 April 1920.

30 Ibidem.

31 BSA, MOI, MOI (3547), L. Bureau (Deputy Governor General of the Congo-Kasaï province) to Eugène Henry (Governor General), 15 July 1920.

32 BSA, MOI, MOI (3547), Louis Franck (Minister of Colonies) to Eugène Henry (Governor General), October 1920.

33 BSA, MOI, MOI (3547), “Minute recrutement Ango-Ango,” 7 July 1926.

campaigns of the colony's infrastructural construction projects in the 1920s. In the final months of the construction of the Ango-Ango railway, the colonial government even decided to establish a governmental recruitment office, dedicated to the "voluntary" recruiting of Congolese: the *Office du Travail* (Offitra). Even though this institutionalised Offitra was officially meant to unburden local administrators, it also functioned as an effective vehicle for maintaining control over the subsequent recruitment campaigns.

The Matadi-Kinshasa railway: Offitra's ostrich policy (November 1922-1931)

On 31 July, 1923, the newly appointed director of the *Office du Travail* (Offitra), Joseph Beernaert, wrote an initial report on his new agency, established about nine months earlier. In it, he clearly stated Offitra's mission:

*The mission of the Office des Travaux consisted of identifying the areas that could supply the indigenous labour force necessary for the major construction works whose execution is imminent in the Bas-Congo; ensuring the necessary sources of provisions; constructing concentration camps; arranging the transport of the indigenous workers; and overseeing the execution of labour contracts.*³⁴

This task, Beernaert underlined, was no small feat. Mirroring the typical racist and paternalist views discussed above, he stressed that "given the natural apathy of the indigenous [...], civilising the primitives [was only possible by] teaching them how to work".³⁵

34 BSA, AIMO, AIMO (1678), Joseph Beernaert, "Rapport sur la marché de l'office du travail pendant le premier semestre 1923".

35 Ibidem.



Figure 14. Staged group portrait of the construction workers recruited by the *Office du Travail* in the so-called concentration camp of Léopoldville. The original caption reads: “*Groupe de travailleurs, prêt à être transporté aux chantiers*”. (Belgian State Archives, ARA2, Brussels, AIMO (1678), photographic album “*Camp de Léopoldville Est*”)

Beernaert’s subsequent periodic report of March 1924 gave an overview of what the *Office* realised in its first year of operation. The report disclosed how three recruiters were hired for recruitment in the Ubangi and Bas-Congo territories, ‘hiring’ 385 workers in Libenge (Ubangi) and 704 in Thysville (Bas-Congo). However, Beernaert took the most pride in their built accomplishments, which were illustrated by several photographs. One was a frontal view of the *Office* headquarters, built in Léopoldville in 1923, and which must have been one of the earliest multi-storey buildings in a city comprised of single-storey colonial bungalows. Beernaert informed his readers that the Art Deco-inspired building housed the Offitra offices on the first floor, his private office on the second, and his own apartment on the third.³⁶ Other photographs showed how houses were also built for the newly appointed Offitra recruiters. These prefabricated steel structures, shipped from Belgium to Congo, made it possible to rapidly provide housing for the European employees operating across the colony. However, the realisations

36 BSA, AIMO, AIMO (1678), Joseph Beernaert, “*l’Office du Travail du premier janvier 1923 au 31 décembre 1923*,” 12 March 1924.

Beernaert emphasised most were the “concentration camps” built in Thysville, Léopoldville, and Libenge (fig. 14).³⁷ These camps served as a rallying and transit point for all those recruited in their vicinity. Here the health and physical condition of new recruits was tested and anyone considered sufficiently fit was sent on to Léopoldville and eventually to the state’s construction sites. The pictures of these camps showed neat brick or pisé row houses, with well-dressed recruits posing in front of them – a far cry from the plans for the passenger warehouses that can be found throughout the paper archives. The report disclosed how these houses were built by the recruits themselves, after they had first realised temporary camps in “non-durable materials”. As the need for construction workers grew over the years, mainly for the Matadi-Kinshasa railway line, new territories were constantly added to Offittra’s operating area, and all the nodes within the network were continuously equipped with workers’ camps. A report from 1926, when the “most dangerous part [of the railway] for the health of our workers was going to start”, mentioned how “concentration camps”, consisting of passenger warehouses, were now also installed in Stanleyville, Buta, Lisala, Coquilhatville, and Bena-Dibele, drastically expanding Offittra’s reach to ensure a “steady pace of recruitment”.³⁸ The overhead cost of this colony-wide recruitment apparatus was supported by ‘taxes’: for every recruited construction worker a company had to pay a monthly fee of 33 francs to Offittra, even though only 15 francs went to the wage of the construction workers.³⁹

While Beernaert’s reports clearly strove to display a successful and efficient organisation, the archive contains numerous reports of the horrific conditions in which people were housed and transported within this apparatus. The horrific story from aboard the *Princess Clementine*, which transported 40 Offittra recruits and their families, is a case in point:

For lack of space, these recruits had to travel on small barges attached to the sides of the boat. [...] At Inongo, one of the barges struck the cliff; a man was thrown into the water, and a woman had her leg completely crushed between the boat and the barge. [...] The boat did not stop to search for the missing man;

37 The French term “*camp de concentration*”, used by Beernaert in his report, of course did not yet bear the moral weight it would acquire after the Second World War. See BSA, AIMO, AIMO (1678), Joseph Beernaert, “*Rapport sur la marché de l’office du travail pendant le premier semestre 1923*”.

38 BSA, AIMO, AIMO (1685), Joseph Beernaert, “*Note du directeur de l’Offittra*”.

39 BSA, AIMO, AIMO (1678), Joseph Beernaert, “*Rapport sur la marché de l’office du travail pendant le premier semestre 1923*”.

*the woman's leg was only roughly bandaged. At Bena-Dibele, a medical officer finally treated the woman and asked the captain to transport her to Ilebo so that her leg could be amputated there. He refused to take her back on board, and her husband received no permission to remain with her.*⁴⁰

Another ship, the *Kitambo*, left Stanleyville with 276 recruits on 16 July, 1924, and arrived with only 229 recruits in Léopoldville. On the construction sites, too, conditions were horrible. Archival records detail cases of physical violence, withheld rations, and the exploitation of workers' families. The state's disciplinary regime, which included the use of the whip and chain labour, remained in force.⁴¹ Unsurprisingly, desertion and refusal persisted, undermining claims that voluntary recruitment had replaced coercion.

Yet, even in – or maybe because of – these desperate conditions, the recruited Congolese continued to resist their treatment. One file in the Belgian State Archives contains all the legal complaints by recruits about their treatment.⁴² Ranging from the withholding of rations to repeated and widely prevalent physical abuse, several of these construction workers' complaints were proven in court. Nevertheless, it is remarkable to see how the legal apparatus, which had reprimanded the colonial government during the construction of the Ango-Ango railway following similar complaints, no longer challenged the government's decisions more fundamentally in the second half of the 1920s. As the official story was that recruitment was voluntary – despite overwhelming evidence of the contrary – probably no judge dared to question the legal foundation of the Offitra approach. With Offitra, the colonial administration intensified the ostrich policy of Ango-Ango: the minister continued to publicly distance himself from coercive labour practices, officially condemning forced labour under international pressure from Great Britain and Switzerland, while simultaneously facilitating large-scale coercion from the 'rogue' recruiters of Offitra. Despite giving rise to some scandals in Belgium throughout the railway's construction, this two-faced approach largely allowed the administration to project an image of compliance with humanitarian expectations, even as it continued to extract labour on a massive scale.

40 BSA, AIMO, AIMO (1702), Jean-Baptiste Hautefelt to Reisdorff, 17 August 1927.

41 As stated above, the gruesome living and working conditions on the construction sites for the reconstruction of the railway between Matadi and Kinshasa have been described in detail in the work of Jules Marchal. Marchal, *Travail forcé pour le rail: l'histoire du Congo 1910–1945*.

42 BSA, AIMO, AIMO 1607 (9126).

The port of Ango-Ango: The cost of private recruitment (April 1926–August 1930)

Simultaneous to the reconstruction of the railway line between Matadi and Kinshasa, the construction of the much-anticipated port of Ango-Ango was finally initiated. As this port was supposed to be the absolute showpiece of the *Plan Franck*, the government decided to construct a reinforced concrete quay wall. However, the contractor could not make use of Offittra's government recruitment system due to a dispute over its labour camps.⁴³ They therefore had to look for construction workers in the vicinity of the construction site. This private recruitment had a direct impact on the wages of construction workers as the company had to entice people to work for them. Another colonial contractor, the *Compagnie Générale des Travaux au Congo* (Cogétra), sent a written complaint to the Minister of Colonies denouncing how "the Ango-Ango contractor is recruiting local staff in Matadi by outbidding us". While it was clear that they were mainly frustrated about the fact they "lost 120 of the 350 workers employed in Matadi", they tried to argue that this "company's way of operating was contrary to the general interests of the Colony, since the result of its actions is an increase in the cost of labour".⁴⁴ Though the Cogétra manager did have a point – the average wage in Matadi was around 2.5 francs a day, whereas the Ango-Ango construction workers were paid 6.5 francs a day – the government did not intervene. Given that their own workers were directly hired through the Offittra recruitment system, they were not affected by these wage wars: the construction workers who worked on the reconstruction of the railway line were only paid about 0.5 francs a day – literally a starvation wage.

The photographs of construction workers in the port of Ango-Ango, with workers being able to afford luxury items like a pipe and tobacco, paint a radically different picture of construction workers during the first decades of Belgian colonialism (fig. 15). We see a well-paid and well-clothed group of employees, staring directly into the camera's lens, not the typical abused workers we came to expect. With

43 For a close reading of the corruption on site and the disputes between the different levels of government and the contractor, see: Robby Fivez, "Des millions à l'eau: European 'experts' and the construction of the Ango-Ango harbour, the Belgian Congo, 1925-1930," in James Campbell et al. (eds.), *The Proceedings of the Tenth Annual Conference of the Construction History Society* (Cambridge: CHS, 2023), 459-471.

44 BSA, MOI, MOI (3601), manager of the *Compagnie Générale de Travaux au Congo* to Minister of Colonies, 28 September 1927.

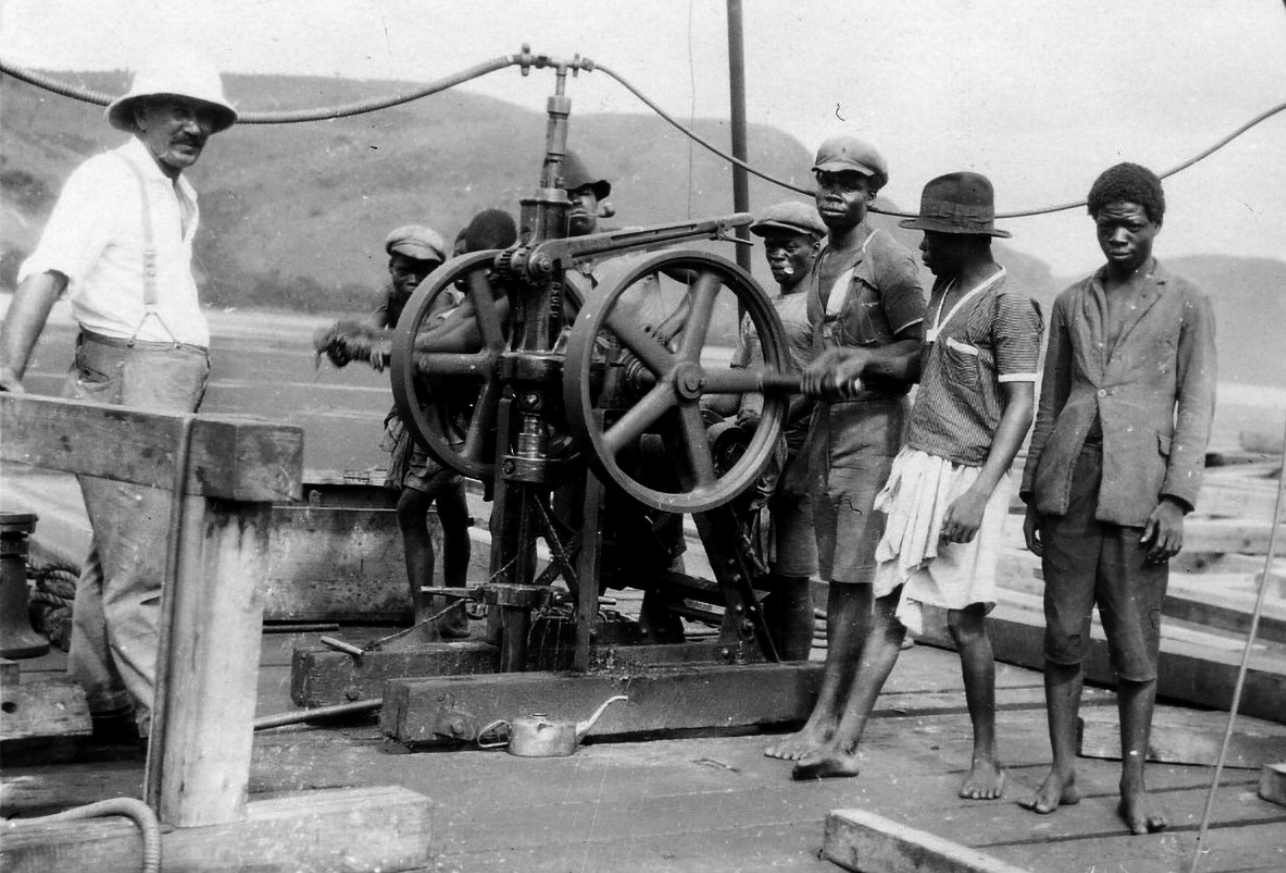


Figure 15. Group portrait of the privately recruited construction workers on the construction site of the port of Ango-Ango. (Corporate Archives Bilfinger SE, Mannheim, Germany)

these higher wages apparently also came more political acumen: strikes repeatedly halted construction in the port of Ango-Ango. A police report of a strike noted “that the Europeans at Construcol seemed to find it [the strike] all very natural as no one seemed to try and stop these serious breaches of discipline”, indicating how common this type of resistance was.⁴⁵ Besides, none of the Europeans were willing to tell the police who the instigators of the strike were, indicating a degree of fear or solidarity for the workers among the European foremen.

However, it is another episode that is testament to the most intriguing form of resistance. On 25 February, 1930, the lead engineer of the Ango-Ango port project found a note on his bed: “Mister engineer, you will never succeed in drilling your cylinders.”⁴⁶ The threatening note arrived after repeated acts of vandalism: throughout

45 BSA, GG, GG 15.521, Étienne Chapeaux, “Grève à la Construcol,” 7 December 1928.

46 BSA, 3DG, 3DG (1642), threatening note cited in Hubert Müllschitzky (head engineer of Ango-Ango) to Matadi’s chief of police, 26 February 1930.

the construction process, the contractor continued to find scrap metal in the boreholes for the foundation piles. While certainly not the only reason, this scrap metal and the enormous delays it caused ultimately bankrupted the contractor. While the police dismissed the engineer's complaint after a fruitless search for the saboteurs, scrap metal continued to be found in the boreholes. Eventually the contractor even had to import an electromagnet, clearing about 15 kg of scrap metal from the borehole daily. As the culprits of the sabotage were never found, it could well be that it was one of the men depicted in the photograph of the construction site at Ango-Ango. Perhaps the man on the right – staring boldly into the camera, with a frown and a slight grin on his face – was the author of this threatening note, successfully sabotaging the construction of the most crucial transport node of the whole exploitative economy of the Belgian Congo.

Conclusion: The passenger warehouse as a site of construction

This chapter examined the Belgian Congo's recruitment process as a 'site of construction'. While in the introduction the passenger warehouse was mainly used as a placeholder for this larger system, this conclusion briefly reiterates some of the intermediary conclusions, anchoring them more explicitly to the physical (network of) passenger warehouses across the colonial territory. Hence, this conclusion reframes the passenger warehouse itself as a physical 'site of construction' that directly influenced the physical 'construction sites' of the 1920s infrastructural building boom in the Belgian Congo.

The existence of these passenger warehouses can only be explained by the difficulties of transporting the recruits from and to the construction site, as well as by the extreme hardship faced by the recruits during transport. Before their construction, reports mentioned how people had to remain outside for days on end without any shelter whatsoever while waiting for transportation, leading to high mortality rates among the recruits. This death toll, and particularly the economic implications thereof, inspired Offittra to start building these warehouses. Considering the number of runaways, we can further speculate whether this official incentive of 'providing shelter', as recorded in the archive, was the only motivation for building these warehouses. The continuous wall, with only two small door openings, also suggests

that these warehouses could have served to physically contain these recruits, most of whom were eager to escape their terrible predicament. These warehouses were therefore fundamental for reducing both the number of casualties and of fugitives. Without the passenger warehouse, the colonial construction site would be brought to a standstill.

Furthermore, the numerous copies and variations of this type plan, scattered throughout the archival files of Offitra, testify to how variations of this warehouse were replicated in port cities and administrative seats of colonial power across the territory, and ultimately to how the system of forced recruitment was extended and consolidated across the colonial territory. The strong insistence on the expansion of Offitra's operating area and the rapid extension of the system's logistical apparatus of passenger warehouses during the most dangerous phase of the construction of the Kinshasa-Matadi railway demonstrates how the *construction site* strongly shaped these hinterlands of recruitment, but also how this *site of construction*, the passenger warehouse, allowed the horrific on-site working conditions to persist. Without the possibility to funnel people through the system and to cheaply replace the many workers who died with new construction workers – the detailed accounting of the death toll in the archives is staggering – this construction approach and the disposable nature of construction labour under colonial capitalism would be simply untenable. As a very tangible example of that impact, we can highlight the reluctance of the colonial engineers to replace the large numbers of ground workers with steam-powered shovels, as operating them was simply more expensive: “Economic considerations dictate that we do not use steam shovels”.⁴⁷

If steam shovels were more expensive than construction workers, this was only due to the starvation wages Offitra paid. The construction cost of these infrastructural works could only be kept in check because of the continuous stream of forced recruits through these passenger warehouses. The high wage discrepancy with the privately recruited construction workers of the port of Ango-Ango makes clear that the state recruitment system was all about keeping the grand infrastructural dreams of Franck's investment plan economically feasible. The ministry refused the option of higher wages, though repeatedly suggested by territorial agents as the sole incentive that would make voluntary recruitment feasible, time and again. This hardly comes as a surprise: even with the extremely low wages of

47 BSA, AIMO, AIMO(1680)9318, Dierkens (director Safricas) to Engels (Governor of the Congo-Kasaï province), 5 February 1929.

construction workers, the *Plan Franck* was estimated to cost about 1 billion Belgian francs. However, the Belgian government only allocated 300 million francs to these investments in its Congo budget. The protests in Belgian parliament against the continuation of forced labour are rather ironic in that sense, as their reluctance to properly invest and to instead build these colonial infrastructures as cheaply as possible was paid for by the exploitation of cheap labour.

Finally, as the case of the port of Ango-Ango shows, well-paid construction workers were also a threat to political stability. Even though their conditions were more favourable than those of railway workers, they nonetheless went on strike time and again. In particular, the many immigrant workers, recruited in Senegal and Angola, were often portrayed as the instigators of the strikes. It is telling for this political agency that when the private contractor of the port of Ango-Ango went bankrupt, the director of the public works department insisted on continuing construction under state control. His main argument was not just the importance of completing the port; he also feared that the many strikes at the site could rapidly turn into fully-fledged riots that would easily spread to the port of Matadi: “The blacks know that the work is being done on behalf of the Colony; they will find it difficult to distinguish between the contractor and us, and will think they are frustrated by the Government.”⁴⁸ However, it was probably not those higher wages that led to a heightened sense of political agency, but rather the daily struggle for survival imposed by poverty wages that stifled any political action. Hence, the steady stream of forced and underpaid workers that passed through the Offitra warehouses turned the construction site into a highly controllable environment, while, as the Ango-Ango case shows, construction sites were often insurgent and unruly places from where dissatisfaction could easily spill over, undermining the stability of the Belgian colonial project.

48 BSA, 3DG, 3DG(1631), Louis Van Leeuw (head engineer of the PWD) to Louis Franck (Minister of Colonies), 1 February 1929.

Laurence Heindryckx

The Business Lunch

Networking, lobbying, and shadow politics in postwar Belgian building practices and policies

Introduction

This chapter analyses the historical business lunch as a ‘site of construction’, both literal and metaphorical, where diverse forms of negotiation, networking, and lobbying took place that influenced Belgium building practices, policies, and legislation in the postwar period. Although such meals served as settings to strengthen relationships, explore business opportunities, and negotiate construction-related issues, they have received little scholarly attention.¹ Construction historiography has long prioritised the formalised processes of building production, including regulatory frameworks, institutional actors, and codified forms of technical and professional knowledge, as documented in written archival records. At the same time, there is broad scholarly recognition that tacit forms of knowledge exchange operate across all levels of building practice, ranging from design and practical skills to market positioning and business strategies.² While the former dimensions have been extensively studied, including through oral history,³ this article focuses on the latter, business-related forms of tacit exchange, which have received comparatively little attention in historical research. This neglect is due in part to persistent source-related and interpretative challenges, as informal mechanisms of influence, such as personal mediation, negotiation, and cooperative arrangements, rarely leave explicit archival traces and are difficult to reconstruct without retrospective projection.⁴

Against this backdrop, the reports of the business lunches analysed in this chapter offer a rare, albeit filtered, insight into such practices, explicitly documenting moments of semi-formal and tacit exchange. They thereby illuminate a largely overlooked dimension of building practice and foreground an alternative understanding

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- 1 Carlos Cabral-Cardoso and Miguel Pina E. Cunha, “The business lunch: toward a research agenda,” *Leadership & Organization Development Journal* 24, no. 7 (2003).
 - 2 Tom Avermaete et al., “Tacit Knowledge in Architecture, A Quest,” in: Tom Avermaete et al. (eds.), *TACK Book: Perspectives on Tacit Knowledge in Architecture* (Zurich: TACK Communities of Tacit Knowledge, 2023); Laurens Bulckaen and Rika Devos, “Understanding the roles of tacit knowledge in the historical collaboration between AEC: a case study approach,” in: *Tacit Knowledge in Architecture – Conference Proceedings* (Zurich: ETH, TACK Communities of Tacit Knowledge, 2023).
 - 3 J. Gosseye, N. Stead, and D. Van der Plaat, “Introduction: A Short History of Silence: The Epistemological Politics of Architectural Historiography,” in: J. Gosseye, N. Stead, and D. Van der Plaat (eds.), *Speaking of Buildings: Oral History in Architectural Research* (New York: Princeton Architectural Press, 2019); Christine Wall, *An architecture of parts: architects, building workers and industrialisation in Britain 1940–1970* (Abingdon: Routledge, 2016).
 - 4 Simon De Nys-Ketels and Rika Devos, “Legal Practices in and beyond the Brussels Palais des Beaux-Arts (1923–29),” *Revue CLARA* (2025); Jessica Kelly, “Discourses, Ephemeral Sources, and Architectural History: Personality and the Personal Story of J. M. Richards,” in: J. Gosseye, N. Stead, and D. Van der Plaat (eds.), *Speaking of Buildings: Oral History in Architectural Research*; Igea Troiani, “Spoken-not-spoken, Written-not-written: From Gossip to Rumor to Architectural History between Margin and Center,” in: J. Gosseye, N. Stead, and D. Van der Plaat (eds.), *Speaking of Buildings: Oral History in Architectural Research*.

of how construction-related knowledge and influence were historically produced and circulated beyond formal institutional frameworks. This approach cultivates new narratives in construction history, directing attention not only to what was built, but also to what was not, in addition to the interpersonal conditions that contributed to these outcomes.

This chapter focuses on a particular type of business lunch: a seemingly formalised series of meals organised by the Belgian professional organisation of housing developers, known as *l'Union professionnelle des créateurs de lotissements et de logements* (UPCL) or the *Beroepsvereniging voor Grondverkoop* (BGH), between 1956 and 1970. Because these lunches are unusually well documented in the organisation's journal *Woning/Logement*, they offer a rare insight into how relationships, power, and legislation were performed and negotiated. Although these periodicals are no objective records – having been produced by the UPCL itself and therefore functioning, at least in part, as instruments of professional legitimation – they nevertheless shed light on gatherings that were typically informal and thus often remain largely undocumented.

The interpretation of these lunches is based on piecing together fragmented and diverse sources into a coherent historical narrative, a process central to historical research that requires careful analysis, interpretative judgement, and awareness of the researcher's own perspective.⁵ While these lunches can be analysed as semi-formalised events with published accounts, including photographs and limited meeting notes, the fully informal dimensions of what occurred during them, particularly off-the-record conversations, remain only partly accessible and cannot be fully reconstructed. The analysis in this chapter is therefore extensively complemented with other sources, including official legislation reports, bankruptcy filings published in the *State Gazette*, press coverage, parliamentary and senatorial debates, and broader tacit knowledge accumulated through years of interviews and archival research documenting the twentieth-century practices of private housing developers in Belgium.⁶

5 D. Abramson, Z. Çelik, and M. Osman, "Introduction: Evidence, Narrative, and Writing Architectural History," in: Aggregate Architectural History Collective (eds.), *Writing Architectural History: Evidence and Narrative in the Twenty-First Century* (Pittsburgh: University of Pittsburgh Press, 2021); Kelly, "Discourses, Ephemeral Sources, and Architectural History: Personality and the Personal Story of J.M. Richards."

6 Laurence Heindryckx, *Practices of commodification: the private mass housing development of Etrimo and Amelinckx (1924–1985)*, unpublished PhD Dissertation, Ghent University, 2023.

Ultimately, this chapter constitutes an initial step towards examining what occurred during these lunches (and not elsewhere), why such gatherings emerged and proved necessary, what they reveal about the structure and culture of the construction sector, and what new forms of knowledge and sources they may offer to construction history.

The informally formal business lunch

Between 1956 and 1970, the UPCL organised 87 business lunches, on average one every two months, that brought together real estate professionals, national policy-makers, local political leaders, heads of syndicate, financial executives, and representatives of industrial companies such as Eternit and Gyproc. Founded in 1956 by developer Jean-Florian Collin, the UPCL united housing developers who wanted to (re)calibrate the boundary between private and public responsibilities in housing and considered homeownership as the liberal answer to the housing question.⁷ The majority of these lunches were reported in the organisation's periodicals *Uw Home* (1958–1963) and *Woning/Logement* (1964–1970).⁸ These journals reported on the participants as well as the sectoral priorities and urgencies formulated during and after the meals. Although the events were not always held at the same venue, they consistently took place in a well-known Brussels establishment, and the periodicals often included photographs of the lunches as well as speeches delivered by prominent invitees, which were frequently published in full.

These lunches can be understood as a way of formalising a customary practice – going for lunch with a business associate – that was already taking place informally and was an intrinsic part of the sector. The events added credibility to a growing professional organisation that depended heavily on housing policy yet was often perceived as operating through opaque influence and preferential treatment. At the same time, these semi-formalised business lunches, which combined public,

7 As stated in the organisation's statutes, as well as during various business lunches, such as the 53rd, 54th, and 79th lunches.

8 The periodical appeared four times a year between 1955 and 1971. Besides documenting the conferences and activities of the UPCL, the journal reported on shared experiences in housing development and argued for changes in national legislation related to the topic. Each issue also contained a detailed list of houses, apartments, and land for sale by the members of UPCL. See Union Professionnelle des Créateurs de Lotissements et de Logements, *Uw Home* (Brussels: EDITIONS SIC, 1958–1961); l'Union Professionnelle des Créateurs de Lotissements et de Logements, *Woning: officieel orgaan van de Beroepsvereniging voor Grondverkoop en Huisvesting* (Brussels: Novedi, 1964–1970).



Figures 16a & 16b. The 78th lunch of the UPCL, organised in June or July 1967, was hosted in Hotel Atlanta in Brussels. This venue was frequently used for these types of large events, for example for dinners with prominent foreign guests of the 1958 World Exhibition. (*Woning*, 1967, no. 3, 15 & 27, Copyright KBR)

on-the-record speeches as well as opportunities for informal interaction among table neighbours, strengthened participants' networks by establishing and reinforcing personal contacts indispensable to emerging developers in this entangled business. Sharing food plays a crucial role in building and maintaining relationships,⁹ and sitting face to face adds an additional layer of communication through choice of words and tone, and body language, which further reduces uncertainties and builds trust.¹⁰ As such, people tend to be more receptive to broaching sensitive topics during a meal, although it is important these must be breached implicitly, and a large percentage of the 'sensitive' issues at hand are usually first addressed in other professional settings before sitting down at the lunch table.

Although a business lunch of four participants might differ from one attended by one hundred guests, both require substantial organisation, including a set agenda, selected participants, and advance scheduling. However, the informal setting of a

9 Charlotte De Backer, *Niet iedereen kan een bizon schieten: waarom de wereld om zeep gaat als we niet samen eten: een smakelijke oproep om dat wel te doen* (Antwerp: Manteau, 2020); Nicklas Neuman, "Commensal Attraction: Eating Together as a Social Tool," *Journal for the Theory of Social Behaviour* 54.

10 Laurent Winnock, *Wat doe jij tussen 12:00 en 14:00?* (Ghent: Borgerhoff & Lamberigts, 2025), 18.

lunch table, characterised by looser seating arrangements, different acoustics, and the presence of alcohol tends to deformatise the proceedings. A business lunch is therefore “informally formal”: although it is carefully prepared and follows a well-established format, it must appear as spontaneous as possible.¹¹ Both academic scholarship and popular press have therefore emphasised the importance of the so-called stagecraft of the business lunch, in which participants attempt to influence the perceptions and behaviours of others by controlling the information they reveal, selecting the appropriate venue, and performing the role of the host, whether through verbal means (such as a speech), non-verbal clues (such as body language), and artefactual elements (such as dress code, etiquette, and table setting) – even paying the bill.¹²

The stagecraft of the UPCL lunch

When analysing the photographs, we can see that approximately one hundred individuals attended these lunches, typically seated at five or six densely arranged long tables of 14–16 participants, positioned so attendees faced one another across the table (fig. 16a). A ‘table of honour’ was placed perpendicularly at one end of the room, where the most prominent invitees – generally between 14 and 20 persons – were seated (fig. 16b). This table accommodated the (former) presidents of the UPCL as well as invited guests, who addressed the organisation’s members and one another through speeches usually delivered after the meal, as suggested by the finished plates and leftover beer bottles visible in the photographs. The sole exception was the welcoming address by the (former) president of the organisation, which seemed to be delivered prior to the meal (fig. 16b).

The attending UPCL members, primarily housing developers, could network with one another at their respective tables, listen collectively to the speeches delivered by invited guests, and mingle informally during breaks. Because invited guests were largely limited to conversing with those seated directly adjacent to them, table setting functioned as a critical instrument through which interaction was structured: access to knowledge and influence was spatially staged and routed through physical proximity. The seating plans reveal that the most prominent UPCL

11 Cabral-Cardoso and Cunha, “The business lunch: toward a research agenda”.

12 Ibidem, 372–373.

members were positioned closest to the most influential invitees, typically at the centre of the table, which enabled meaningful interpersonal exchange. The invited guests ranged from senior civil servants and political figures to representatives of industrial firms and sectoral federations. The composition of this group varied according to the issues the UPCL sought to address during the event.

A close examination of the photographs further shows that the dress code for these meals was a ‘three-piece lounge suit’, corresponding to what today would be considered semi-formal or business attire. This outfit consisted of a three-piece suit made of identical textiles, typically worn with a white, collared dress shirt, a necktie, a white pocket square, and dress shoes. Such attire was consistent with what participants wore at construction conferences or in parliament at the time and represented the standard level of formal daytime dress – less formal than morning dress but more formal than ordinary business wear – thereby signalling the semi-formalised character of these business lunches.

Alcohol and cigarettes are visible in the photographs of the meals, further signalling a deliberate blurring of the boundary between professional conduct and relaxation. The photographs also demonstrate that women were present at all of these lunches, although it remains unclear whether they attended as spouses of members or as employees within development firms. The former seems likely, since the presence of Collin’s and Van den Bogaerts’s spouses was explicitly mentioned in the records of UPCL’s 75th business lunch of 1966. We see how the women wore ‘formal day dress’, a typically tailored dress or a skirt suit, but lacking notable jewellery. In the case of the 75th business lunch, which was a jubilee edition, we know that the wives of the (former) presidents were not seated next to their husbands but several seats away, making it difficult to determine who the other women were whom we see seated dispersed throughout the venue (figs. 16 & 17).

In the upcoming years, the lunches became increasingly formalised and were no longer held at the Hotel Atlanta, but in an undisclosed conference room (fig. 17). The larger venue resulted in the participants being seated further apart, while the rectangular table of honour was positioned on an elevated platform. This arrangement also accommodated a fixed pulpit, from which speeches could be clearly seen by all attendees, who were seated at round tables of approximately eight to ten people, while the logo of the organisation was displayed behind the speaker. During this 85th meeting organised in the first quarter of 1970, Collin – honoured for his contributions to housing promotion and spatial planning – argued that credit



Figure 17. UPCL's 85th lunch in a large but undisclosed conference room with large windows, although no information has been found on the exact location. The formalisation of the event is reflected among others in the display of the organisation's logo in the background of the pulpit. (*Woning*, 1970, no. 1, 5-7, Copyright KBR)

restrictions were harming housing construction by delaying purchases and investment, calling for credit easing, targeted loans, and support for first-time buyers.

The next section examines three sets of business lunches organised by the UPCL between 1966, when the organisation celebrated its ten-year anniversary, and 1971, the year in which its founder and driving force, Jean-Florian Collin, went bankrupt amid shifting macroeconomic conditions and political disputes. His bankruptcy marked the end of the organisation's journal and, consequently, of published reports on these business lunches. This analysis demonstrates how these lunches were strategically orchestrated events – featuring carefully selected invitees, deliberate timing, predetermined discussion topics, and even purposeful

table arrangements – designed to influence day-to-day construction practice, long-term policy, and construction legislation at critical moments. More specifically, the detailed examination offers exceptional insight into a) the ways in which interpersonal relationships influenced construction practices on the ground; b) networking and power relations in long-term policy evolutions; and c) the processes by which legislation was shaped outside the purview of parliamentary debates.

Interpersonal relationships and construction practice on the ground

The 75th lunch, held on 28 October, 1966, as a jubilee edition to mark the tenth anniversary of the UPCL, included a site visit to construction sites in the Brussels municipal agglomeration. The guests visited the sites of housing projects developed by Collin's firm Etrimo, who also organised the after-party for the event. These construction sites were intended to demonstrate the "innovative techniques and financing methods" employed by the private sector, as discussed earlier during the event. It also aimed to enhance the credibility of both the sector and of individual developers and reinforce attendees' perceptions (including the ministers for Employment and Labour, minister for Family and Housing, and the vice-president of the European professional organisation of housing developers) of the advantages of public-private collaboration in housing development.

The repeated articulation of the claim during several lunches, reaffirming one of the organisation's core principles, was that the private sector could deliver housing of similar quality to social housing at significantly lower cost, even in the absence of equivalent state support and under less favourable operating conditions. The developers attributed this potential to the private sector's more rationalised and industrialised construction processes, and the organisation sought to challenge the monopoly of the social housing companies and their preferential treatment – an argument echoed by the organisation's other presidents, Amelinckx and Van den Bogaert, in personal correspondence and in reports to parliament later on.¹³

13 Heindryckx, *Practices of commodification: the private mass housing development of Etrimo and Amelinckx (1924–1985)*.

On a more local scale, these lunches also facilitated opportunities for developers to secure commissions and collaborations with municipal authorities. During the 78th lunch in the third quarter of 1967, all mayors of the Brussels municipal agglomeration were invited to the table of honour. The speeches held addressed both legislative and practical issues – for example, the regulation of mandatory parking spaces in apartment buildings across cities and provinces – as well as the improved outlook for the construction sector following the national government's announcement that credit restrictions on loans would be lifted, thereby stimulating both private and public initiative. Again, the cost efficiency of the private housing sector in comparison to the public sector was highlighted, with speakers stressing how new housing projects could increase municipal populations (and thus tax revenues) and underscoring the strategic importance of the municipal level alongside supralocal authorities.

These business lunches thereby demonstrate how interpersonal relationships influenced construction practices across different levels and scales. They enabled developers to secure future ventures by demonstrating their capacity to deliver projects on the ground and by persuading mayors and other attendees – either directly or indirectly through peer influence – to engage in public/private housing development initiatives. These lunches thus invite reflection on the diverse actions of individual actors and the interpersonal relationships they cultivated to facilitate specific projects, ranging from formal speeches to more informal site visits and social gatherings before and after the events. Simultaneously, these events functioned as arenas for structuring long-term policy conditions in which multi-year strategies, growth trajectories, and investment opportunities could be assessed – a dimension that will be addressed in the following section.

Networking and long-term policy in volatile power relations

In a sector characterised by long investment cycles and shifting regulatory frameworks, developers continuously sought to anticipate policy changes in order to secure their own long-term viability. Power in the development sector was neither fixed nor fully institutionalised, but volatile and relational, shaped by the interplay of technical expertise, financial capacity, and political access. Within this context,

business lunches functioned as strategic venues for articulating long-term objectives, with influential actors capable of shaping long-term housing policy and the position of private developers in it.

One illustrative example is the UPCL's concerted effort to build a strategic rapport with Christian Democrat Minister Marguerite De Riemaeker (CVP, 1965-1968), the national minister for Family and Housing. In late 1967, the organisation stated during the 78th and 79th lunches that its favourable connection with Minister Marguerite De Riemaeker had helped secure the successful broadening of the De Taeye subsidies earlier that year. This reform had expanded the subsidies introduced in 1948, originally limited to single-family houses financed through public-sector mortgages, to also cover apartments of up to 65m² and dwellings financed through private-sector mortgages, thus creating a major stimulus for both the private development sector and the broader construction industry. The minister was subsequently invited to the 80th lunch in the second quarter of 1968 and was explicitly celebrated during a separate reception by the UPCL as well. The organisation clearly considered its relationship with her and with her cabinet strategically vital and intended to secure a further extension of the De Taeye subsidy to include apartments of up to 85m², an ambition that ultimately was never realised.

The relationship between De Riemaeker's successor Gustave Breyne (CVP, 1968-1972) and the UPCL, particularly with its central figure Collin, proved to be considerably less congenial. The two appeared together at both the 81st and 84th lunches in the fourth quarter of 1969, where Collin publicly "regretted the lack of dialogue between the public and private sectors" and addressed "his friend, Minister G. Breyne", with the hope that collaboration would no longer be neglected in the future.¹⁴ During the same lunch, however, Breyne replied how he opposed the 'commute-work-sleep' (*'metro-boulot-dodo'*) housing model, associated with large-scale, car-dependent residential expansion structured around daily commuting patterns between home and the workplace, which was actively promoted by the UPCL and, in particular, by Collin. Breyne instead committed to long-term reforms aimed at "strengthening spatial coherence" and "aligning housing development more closely with infrastructural capacity", including countering ribbon development in rural areas. When Collin unequivocally criticised the whole of the government's housing policy in the Senate later – citing, among others, the limited

14 *Woning*, 1969, no. 4, 5-7.

production of public housing, the impending restrictions imposed by the Breyne Act on housing developers, and the absence of state guarantees for loans taken out by developers building housing at social prices – Breyne rejected calls for enhanced government/developer cooperation and reaffirmed his commitment to strengthening the public sector's role. This stance ultimately deepened the divide between the two men and their respective institutional positions, and it was closely linked to Collin's later bankruptcy in 1970.

The cases discussed here demonstrate that power in the housing sector was scattered and contingent, relying significantly on political relations that could shift over time. Business lunches functioned as strategic opportunities to reduce uncertainty and cultivate long-term, favourable political relations, yet their outcomes were never guaranteed. As the differing experiences under Ministers De Riemaecker and Breyne illustrate, these interpersonal strategies could at times secure influence and policy gains, while at other times they backfired, producing lasting setbacks such as Collin's bankruptcy following political miscalculations and fractured relationships.

Strategic lobbying for legislative influence beyond the lunch table

In contrast to the previous sections, which examined the influence of business lunches on day-to-day deal-making and long-term strategic alignment, this section shifts the focus from individual lunches to the broader lobbying practices surrounding the introduction of the Value Added Tax (VAT) in 1971, a reform that had a profound impact on the Belgian economy and the construction sector.¹⁵ Taken together, the wider corpus of business lunches reveals not only that developers were well-informed about imminent legislative changes, but also that they were acutely aware of when and to whom to direct their lobbying efforts.

In this case, the published accounts of these lunches are, on their own, too limited to fully reconstruct the dynamics at play, necessitating the use of additional sources to examine specific narratives in greater depth. These lunches thus prompt a

15 *Almanak VAT Belgium 2021* (Brussels: Institute for the Application of Administrative and General Legislation, 2021), 24.

methodological reflection on how to trace unwritten or otherwise invisible dimensions of policy-making that extend beyond formal records, including parliamentary and senatorial debates.

A particularly telling example emerges from the speeches delivered during the business lunches in which Collin, a member of the Senate between 1965 and 1971, repeatedly referred to 9 May, 1969 as “the day the decision was made” regarding the applicable VAT rates and the categorisation of services and products – measures that would directly affect both material and labour costs in the construction sector.¹⁶ In the two business lunches leading up to 9 May, 1969, the UPCL invited key cabinet members, including the different ministers for Finance, the Budget, and Housing, to discuss the forthcoming VAT legislation in depth. However, a consultation of the parliamentary and senatorial archives revealed no record of a formal session on that date covering VAT.

Because Collin explicitly mentioned this date at two consecutive business lunches and was himself a member of the Senate, his claim appeared credible, prompting further investigation. A close reading of Senate documents revealed that the official draft of the bill “Introducing the Value Added Tax Code” was indeed finalised on the afternoon of 9 May, 1969.¹⁷ The Joint Committees for Finance and Economic Affairs, which met six times between 23 April and 9 May of that year, concluded their deliberations following directives from the national government on VAT rates and product categorisation. These directives were issued on 7 May, after deliberations among the individual ministerial cabinets on 5 May.

This chronology was documented in a 282-page-long Senate report dated 20 June, 1969¹⁸ and provided a rare insight into the actual timing and mechanics of decision-making in construction-related legislation, which might have been overlooked if not for Collin’s claim. His repeated references to the date during the lunches highlight how careful attention to these informal channels can reveal the precise moments when lobbying and policy formation intersect, underscoring the level of detail required to reconstruct lobbying practices with analytical and historical precision.

16 Woning, 1969, no. 2, 8.

17 Belgian Senate, *Proceedings of the Senate*, session 1968–1969, 20 June 1969, 2.

18 Ibidem.

Although the law itself was not formally voted on until 3 July, 1969 – after parliamentary debates on the bill’s articles between 13 May and 4 June – the decisive moment for influencing this legislation occurred earlier, during the closed preparatory meetings of early May. It was at this stage, and in particular before 9 May, that lobbying efforts needed to be directed towards key political actors – something of which Collin and the UPCL were clearly aware. This reinforces the argument that the organisation possessed precise knowledge of whom to invite to its lunches and when, such as prominent Cabinet members and ministers for Finance, Budget, and Housing in the run-up to 9 May, 1969, enabling strategic intervention at critical moments in the legislative process.

An additional interpretative layer concerns Collin’s own position. As a member of the Senate – albeit not of the relevant committees – he was likely aware of this internal timing and could convey both the urgency and strategic importance of the VAT discussions to fellow UPCL members during the preceding lunches. As well as reinforcing his central role within the organisation and positioning himself as indispensable intermediary, this knowledge enabled the UPCL to strategically invite key members in the period leading up to the vote. In this sense, Collin did not merely lobby indirectly but was directly embedded in the political process.

All of these preliminary meetings – whether cabinet sessions, governmental deliberations, or committee gatherings – were held behind closed doors, and no comprehensive records were written or preserved.¹⁹ This case demonstrates that, while complementary sources do not necessarily reveal more about what occurred during these lunch themselves, it is precisely these lunches that illuminate practices that take place elsewhere. As the ‘regular’ Senate archives initially yielded little, further investigation ‘on Collin’s advice’ into other archival documents uncovered blind spots in the official records. Sources such as business lunches therefore provide crucial entry points for identifying where and how legislative decisions were negotiated and for reconstructing the broader lobbying and decision-making processes through which policy was formed.

19 For some special committee gatherings at the time, reports were made. However, for both the 1969 Committee for Finance and the Committee for Economic Affairs, no such reports were found in the archives.

The end of the UPCL's business lunches

The last fully documented business lunch, the 86th, took place in the second quarter of 1970. Although he would declare bankruptcy only a few months later, founder and driving force Collin was still present. In retrospect, the collapse of Etrimo resulted from a combination of shifting macroeconomic conditions, the firm's reliance on large-scale housing ensembles with long return-on-investment timelines, and, crucially, a political rupture that undermined governmental trust in Collin personally. This mistrust ultimately led to the government's refusal to purchase or collateralise Etrimo's substantial land reserves, a decision that might otherwise have prevented the firm's downfall.

In the third quarter of 1970, the 87th and final lunch was planned as part of a conference organised by UPCL's European counterpart, the *Union Européen des Constructeurs de Logements secteur privé*, but no comprehensive report of the event has survived. Van den Bogaert wrote in the editorial of the last issue of *Woning/Logement* that the "lowest point in the real estate sector has been reached", and it was not until 1973 that the Belgian real estate market largely recovered.²⁰ The final issue of the journal was only a quarter of the length of previous editions although it covered a six-month period rather than the typical three months, and the periodical ceased publication entirely in 1971. It remains unclear whether, and in what form, these business lunches continued after Collin's bankruptcy, his disappearance from the sector, and the onset of the wider construction crisis of the late 1970s. Their disappearance marks not only the end of a decades-long practice of semi-formalised business lunches organised by the private development sector, but also the closure of a critical venue through which the UPCL had strategically cultivated relationships, navigated uncertainty, and advanced lobbying efforts in a sector so clearly defined by shifting and contingent power dynamics.

20 Philippe Janssens and Paul De Wael, *50 jaar Belgische vastgoedmarkt, 1953–2003: waar geschiedenis tot toekomst vergroeit* (Roeselare: Roularta Books, 2005).

Conclusion: Business lunches and shadow politics in Belgian housing development

In postwar Belgium, private developers fulfilled a significant yet not easily visible role in welfare housing provision. As demand for middle-class housing rose during the 1960s, while the state became increasingly reluctant to invest in housing provision for lower-income groups, a tacit consensus emerged within government circles: apartment buildings aimed at the lower end of the middle class would be realised by private developers, such as Etrimo, rather than by the public housing sector. In this manner, private developers came to supply a substantial share of owner-occupied housing and, indirectly, also created the private rental market. By focusing on these essentially private initiatives, this chapter highlights how welfare-state housing provision was driven, in practice, by private actors whose activities the state increasingly relied upon – what might be described as ‘everyday welfare state practices’.

Housing development involved an extensive and heterogeneous chain of professional activities, ranging from the acquisition and transformation of land into developable property (through zoning regulations and development rights) to the construction of dwellings and the commercialisation of fully serviced housing units through sale or lease. As such, it constituted an inherently interdisciplinary field, drawing on expertise in design, construction, sales, management, maintenance, finance, and legal and regulatory processes. The individuals engaged in these operations – referred to here as housing developers, a term also used by the practitioners themselves – came from diverse occupational and educational backgrounds, including architecture, engineering, contracting, finance, real estate, economics, law, and politics. What bound the members of the UPCL together was not a shared professional training, but a common commitment to the ideal of homeownership and their participation in an emerging community of private housing developers. Many were self-made entrepreneurs rather than members of established elites, and within this milieu, social advancement and professional recognition were closely tied to networking practices – making the business lunch a crucial site for building alliances, status, and influence.

Examining these business lunches is particularly interesting because they foreground specific moments, actors, knowledge, and relations that influenced

construction practice and policy. As semi-public gatherings, the lunches functioned as sites of construction in their own right, where policy positions, professional alliances, and sectoral priorities were articulated and negotiated. Their political significance lay not in overt decision-making, but in an expression of what might be termed ‘shadow politics’: the informal exchanges enabled by shared meals, toasts, seating arrangements, and incidental encounters, which unfolded alongside – but largely outside – the formally reported speeches. While these lunches were not covert operations nor necessarily vehicles for illicit practices, they affirmed and legitimised forms of influence that were already at work within the sector, sustained over a long period through their repeated organisation.

Nonetheless, fully grasping the complexity of these practices requires further research, which could entail conversations with developers, lobbyists, and other members of these professional communities, alongside the architects and contractors typically foregrounded in construction history, in addition to a closer engagement with parliamentary and policy sources that may indirectly register tacit exchanges as well. Such approaches are necessary to capture the informal dynamics of negotiation, corridor conversations, and everyday forms of mediation that rarely leave an explicit documentary trace.

Still, this study offers an initial step towards addressing a persistent blind spot in construction history by demonstrating how construction practices were shaped through interpersonal relationships, and how power within the sector was neither fixed nor fully institutionalised but situational, contingent upon access, proximity, timing, and the careful orchestration of encounters. In this sense, the business lunch emerges not merely as a backdrop to decision-making, but as a critical analytical device through which broader processes of lobbying, coordination, and policy formation in construction and housing can be reconstructed.

Mirte Wambacq

The Distribution Centre

The prefiguration of a distributed world



Figure 18. The *Edegem Reserve Centrale* under construction in the suburban Molenveld neighbourhood in 1953. (*Eigen Leven*, 1953)

Introduction

In 1953, construction on the *Edegem Reserve Centrale* (ERC), the first centralised warehouse of the Belgian department store *Grand Bazar Antwerpen* (GBA), started, marking a turning point in the company's reorganisation of retail distribution. When GBA created the supermarket chain *Supermarkten GB* and the hypermarket chain *Super Bazar GB* in 1961, the warehouse was reconfigured into a distribution centre (EDC), becoming the logistical hub of a chain that had yet to be built. Rather than responding to an already established model of mass distribution, the ERC anticipated it, thereby shaping the conditions under which such a model could thrive. While once a construction site in the literal sense (fig. 18), the ERC acted as a site of construction to GBA's expansion on several scales and multiple meanings. The distribution centre not only provided services to shops in the chain, but also assembled, embodied, and created the complex know-how that enabled the chain's subsequent rapid expansion and success.

In the case of GBA, the strategy behind their rapid expansion proved to be very dependent on the practice of ‘building’: recognisable buildings were part of the company’s branding, but well-equipped and strategically located buildings were mostly deployed to enable the most efficient distribution of goods. The GBA chain’s construction was the result of an entanglement of insight in urban planning and infrastructure, local realities in law and the market, knowledge of distribution needs and solutions, a complex understanding of early consumerism, and, of course, the strategic handling of building itself. While the building stock of GBA may appear to be of minor importance in the classical understanding of architecture and construction, the material realisation of the chain is the expression of the company’s strategy, ambition, and technical know-how considered relevant for the activity of distributing goods, which, ultimately, was the company’s core business. As a site of construction, the ERC was an architectural instrument that generated infrastructure.

The distribution centre dispersed flows of goods. While these flows could be studied as such, as can the socio-economic and geographic consequences of the displacement of places of production and places of consumption, this chapter is an attempt to historicise the instant in which the leap towards global supply chains was made by analysing the construction and development process of the ERC.¹ In doing so, it builds on scholarship that has demonstrated how postwar modernity in Europe was shaped not only through state-driven projects, but also through the actions of private actors operating within the welfare state.² In Belgium, emerging super-market chains, alongside captains of industry in other domains,³ played a key role in articulating new spaces of production and consumption.

This analysis draws primarily on material from the *Grand Bazar-Innovation-Bon Marché* (GIB) archive held at the *Université Libre de Bruxelles*, including building plans, staff magazines, and internal study reports. Read beyond the building itself, these sources allow the ERC to be situated within wider networks of knowledge transfer, infrastructural development, and retail experimentation, through which its role as an agent of modernisation becomes evident.

1 In *The Global Turn*, distribution centres are one of the journeys necessary to write global history in architecture and urbanism. See Tom Avermaete and Michelangelo Sabatino, *The Global Turn. Six Journeys of Architecture and the City, 1945–1989* (Rotterdam: nai010 publishers, 2025).

2 Tom Avermaete and Janina Gosseye, *Shopping Towns Europe: Commercial Collectivity and the Architecture of the Shopping Centre, 1945–1975* (New York: Bloomsbury Academic, 2016).

3 For the residential captains of industry in Belgium, see: Laurence Heindryckx, *Practices of commodification: the private mass housing development of Etrimo and Amelinckx (1924–1985)*, unpublished PhD Dissertation, Ghent University, 2023.

The emergence of mass distribution in Belgium

The ERC, a 22,900-m² warehouse at the start, employing nearly 900 people at its prime, was a logistical hub where goods were trucked, priced, labelled, packaged, stored, and redistributed to the branches of GB. This strategy of centralising goods replaced the practice of providing storage and processing space in individual department stores. Previously, GBA made use of three storage locations that were spread across the city of Antwerp, but their dispersal and inefficient layout obstructed an efficient supply to the nine department stores GBA was managing in 1954: Antwerp, Ghent, Hasselt, Blankenberge, Lier, Turnhout, Merksem, Sint-Niklaas, and Kortrijk (the latter was still under construction).⁴ Providing each of these stores with a storage room not only took up space, it also increased the risk of fire, traffic from suppliers, and uncertainty in the stock availability.⁵ Hence, the choice was made to invest in the construction of one central hub.

Self-service stores made their entry only late in the Belgian context. In Western Europe, American-style mass distribution and consumption spread rapidly, with the number of self-service stores increasing exponentially from 1,200 to 45,500 between 1950 and 1960.⁶ Belgium's share in these numbers was relatively small with 16 self-service stores in 1950 and a mere 398 in 1960. It was only in the following decade that the growth rate of large-scale retail in Belgium was well above the European average.⁷ To explain Belgium's delay, GBA's management as well as scholarly literature generally refer to the Padlock Law (*Loi de Cadenas/Grendelwet*) of 1937.⁸ This law remained in place until 1961 and constrained the expansion of large-scale retail by forbidding department stores to open new branches or divisions. Historian Peter Heyrman has already argued that the legal restrictions,

4 Historisch Archief Edegem (hereinafter HAE), *Vriendenkring medewerkers Distributie Centrum Edegem* (hereinafter DCE), 07, *De moderne en gemechaniseerde opslagplaats van Grand Bazar van Antwerpen te Edegem 1954*.

5 In 1937 and 1947, fire broke out in the GBA's motherhouse on the Groenplaats in Antwerp. On both occasions, the fire originated in the storage rooms.

6 Avermaete and Sabatino, *The Global Turn. Six Journeys of Architecture and the City, 1945–1989*, 74.

7 Peter Heyrman, "The rationalization of Belgian distribution, 1945–2000: a soft transition" (20ème colloque international Etienne Thil, Roubaix, KU Leuven, 2017).

8 Antoine Beenkens, *Historique du Grand Bazar d'Anvers: 1885–1968* (S.l: s.n., 1972); Jacques Dopchie, *GB, la rage de grandir* (Brussels: Racine, 2004); Jean J. Boddewyn, *Belgian public policy toward retailing since 1789: the socio-politics of distribution* (East Lansing: Michigan State University, 1971).

especially their gradual loosening in the 1950s, allowed Belgium's captains of big distribution to carefully prepare and geographically target their expansion.⁹

The construction of the ERC was closely associated with the management strategy developed under Maurice Cauwe (1905–1985). Trained as a commercial engineer, Cauwe joined Grand Bazar in 1932, after an internship at *A l'Innovation* under Emile Bernheim.¹⁰ After being appointed general director in 1952, Cauwe initiated the first plans for a central warehouse, in response to the fire hazards and inefficiency mentioned above, and also as a result of a growing engagement with retail developments abroad. Cauwe encountered the emerging model of self-service retail and supermarkets in 1948 on a study trip to the USA. Two years later he returned to focus specifically on the organisation of warehouses.¹¹ On 28 February, 1952, during a meeting of the board of directors, a proposal was made to purchase a plot of land measuring between 20,000 and 30,000 m² located in Edegem, as well as the opposite parcel on Drie Eikenstraat. That same year, Cauwe and his managerial staff undertook further study visits in Belgium, France, Switzerland, Germany, and the United States to examine mechanised warehouse systems.¹² The preparation for its construction mobilised a broad range of references from the international distribution sector and affirms Heyrman's argument for careful preparation.

Designing the ERC: the spatial choreography of productivity

On 19 August, 1953, the N.V. Grand Bazar submitted the building application for the construction of a warehouse in Edegem, a municipality situated 8 km south of the city of Antwerp. Three weeks later this request was approved by the chief engineer of the Province of Antwerp, on the condition that all façades were painted

9 Peter Heyrman, "Unlocking the padlock: Retail and public policy in Belgium (1930–1961)," *Business History* 60, no. 7 (2017), 1–10.

10 Maurice Cauwe, "Expansion et diversification. Les neuf raisons d'une impressionnante progression," *Distribution d'aujourd'hui. Spécial: GB Entreprises*, October, 1971.

11 Francis E. Burstin, "Maurice Cauwe, une révolution dans la distribution," *Ceux d'hier et d'aujourd'hui* 19 (Bruxelles: Editions Labor, 1976), 74.

12 Fred Lams (ed.), "Reuzebrand te Edegem," *GB Companen*, 2025.

in a light colour.¹³ Construction began by levelling the 44,000-m² terrain to make way for the 22,900-m² complex.

The plans submitted with the building application were drawn by the Antwerp-based architect René Grosemans. He received his first commission from GBA in 1937, for the renovation of the Grand Bazar in Groenplaats in Antwerp after a fire. From then on, he assisted GBA in the design of new department stores.¹⁴ The plans for the ERC show a trapezoidal-shaped building occupying approximately half of the plot, while the sections feature a one-storey building with a flat roof and a raised floor. The façade drawings and a list of materials give a general idea of its future appearance: a brick building with a long, repetitive stretch of identical windows. The monotony is only interrupted by the articulation of the main entrance and the gates for trucks. The internal layout is repetitive as well: there is no detailed plan for the entire floor, only those sections that differ from the 7.60 × 7.60-m grid of columns are drawn on scale 1:100. These are for the supporting functions: amenities for the staff such as office spaces, a cafeteria and changing rooms, a room with an incinerator for waste from packaging, a high-voltage enclosure, and a hall for trucks. The lack of detail in these drawings for the authorities conceals how the main activity, the temporary storage of goods, would unfold in this space.

To understand the logistical flow of the project, one should look at a scale model and a commercial brochure instead. In the scale model, built by the Technical Service of GBA “after having conducted studies on efficient internal organisation”, the uniform grid gains a sense of direction by the placement of the racks for storage.¹⁵ The brochure *The Modern and Mechanized Warehouse of Grand Bazar of Antwerp in Edegem*, written by Cauwe in Dutch and French to celebrate ERC’s official opening in 1954, praised those aspects that made the ERC stand out in terms of modernisation and mechanisation.¹⁶ These aspects related to construction as well as its internal organisation and equipment. The key concept behind the organisation was the increase in productivity. Specialised machinery would simplify the work and limit the physical exertion of manual labour, which would in turn improve working conditions, but also save time. The faster products could be displayed in

13 HAE, DCE, 01, Bouw: plannen en vergunning.

14 “Gesprekken met ...,” *Eigen Leven* (1957), 46. *Eigen Leven* was a monthly booklet published ‘for and by’ the staff of GBA to distribute novelties on the companies’ activities. First published during the war and again in 1948, the series from 1948 to 1974 are bundled and accessible in the GIB archive.

15 “Hoe ver staan we? Onze centrale reserve,” *Eigen Leven* (1954), 4–6.

16 HAE, DCE, 07, *De moderne en gemechaniseerde opslagplaats van Grand Bazar van Antwerpen te Edegem 1954*.

stores, the faster profit could be realised. The ERC's mechanisation and spatial arrangement thus revolved around achieving quick stock rotation. This resulted in a carefully choreographed movements of goods: the internal organisation of the building enabled an uninterrupted movement of goods in a single direction to increase the intensity and speed of their circulation. Increasing productivity in the handling of goods had to result in a lower handling cost, enabling GBA to sell its wares more cheaply.

The ERC's spatial choreography included an efficient arrival and shipment of goods (fig. 19). Trucks with incoming deliveries were guided from Drie Eikenstraat towards one of the five gates, each allowing two trucks to enter the hall. The grid of columns would have obstructed their movement, so this 15.20-m deep hall was spanned by a truss. The hall for trucks not only differed in its load-bearing structure, but also in how it was divided. Its floor level was a continuation of the exterior so trucks could easily drive in. The rest of the building was elevated by 1 m, making the transition of goods from truck to warehouse less labour-intensive. If architecture is meant to serve the users of a building, in the case of ERC, goods and their circulation were considered one of, if not the dominant, users involved. Once inside the warehouse, transportation was to be done as much as possible on wheels. This feature is where the 'specialised machinery' comes into play: goods are stacked on pallets, and pallets are moved around with forklifts. The brochure stated that this machinery required a minimum width of 1.80 m. The design drawings show how the structure was organised within a 7.60-m grid, the scale model shows how two racks and two corridors fitted tightly in between two columns, and the brochure specified that each corridor measured 1.80 m. Combining these sources helps us to understand the coordination of the various dimensions: each rack was 2 m deep, a common depth for a rack thereby obviating the need for customised racks. This depth allowed the side-by-side stacking of two 120 × 80-cm pallets. While this size was the standard for GBA pallets in 1954, it only became the standardised Euro pallet in 1961.¹⁷ The introduction of the forklift also seems to have determined the ERC's ceiling height. Because the forklifts could lift goods up to 4 m,¹⁸ the racks were designed accordingly. The storage areas had a floor-to-ceiling height of 4.5 m, leaving half a metre for ceiling equipment and manoeuvring (fig. 19).

17 "History of the Euro pallet," Pallit, <https://eu.pallit.com/blogs/wiki/europaletten> (last consulted 12 December 2025). Within Europe, the problem of the practicality of sharing pallets for international retail transport was recognised in 1952, and an agreement was drawn up in the following years.

18 HAE, DCE, 07, *De moderne en gemechaniseerde opslagplaats van Grand Bazar van Antwerpen te Edegem 1954*.

The ERC was constructed with future expansion in mind. Before its completion, an issue of the staff magazine *Eigen Leven* already announced that the construction would happen in two phases. First the dispersed storage rooms were to be centralised, but in the next phase, perhaps five years later, the ERC's surface would be doubled, to house additional workshops, administrative and purchasing departments, the General Administration, and storage for perishable goods.¹⁹ As the walls were non-bearing, once the decision to expand was made, the north-facing wall could be demolished and the grid of columns could be extended.²⁰

Anticipating infrastructure: Reading the network in the centre

In the various representations of the ERC, the surroundings of the building are limited to the contour of the site and the access road, Drie Eikenstraat. The background of the construction site photograph (fig. 18) shows that the ERC was constructed in the middle of a suburban neighbourhood, called Molenveld. The ERC was not the only oversized plot when compared to the surrounding parcelled houses: the neighbouring plot housed the vehicle fleet of *Supertransport*. This company was founded in 1956 for the transportation of non-alimentary goods, following the ERC's opening. Located right next to the distribution centre, Supertransport appeared as an extension to it, which in practice it was.²¹ GBA initially envisioned having its own vehicle fleet, but the site of the ERC was too small to add a garage for trailers. Instead, GBA relied on subcontractors for the supply of its supermarkets.²² Supertransport would continue to provide its services to GBA up until 1974, when the GIB group (the fusion of GBA, Innovation, and Au Bon Marché) became a major shareholder in the transport company.

While it took GBA 20 years to acquire its own vehicle fleet in Edegem, the ERC's construction had already determined that the transportation of goods would be done by truck: first, because the building was equipped with a hall for trucks; second,

19 "Hoe ver staan we? Onze centrale reserve," *Eigen Leven* (1954), 4-6.

20 HAE, DCE, 07, De moderne en gemechaniseerde opslagplaats van Grand Bazar van Antwerpen te Edegem 1954.

21 ULB, GIB, Z 025-no. 693, Kaderinformatie 1978, n1, Vervoerskosten drukken door betere planning.

22 ULB, GIB, Z 025-no. 702, Kaderinformatie 1971, n1, Op alle banen van het koninkrijk: met GB meer voor uw geld.

because the site was only accessible by road and not by water or railroad infrastructure. While this situation might seem obvious today, it certainly was not at the time. In 1955, Belgium had an extensive rail network, an established system of canals, as well as a major seaport in Antwerp, but its national motorway network consisted of a mere 50 km.²³ By choosing road-based logistics, GBA anticipated a future infrastructure.

This anticipation was well informed. In 1951, Henri Hondermarcq, director of the Ministry of Bridges and Roads, published his plan for 1,000 km of new motorways to connect major cities.²⁴ By 1965, ‘only’ 306 km had been constructed, but the ambitions were there, and they were publicly announced. Moreover, competing retailers like Delhaize and Au Bon Marché had already had their own vans since 1912 and 1930, respectively. The choice for road transport was inspired by the American model. Cauwe had witnessed how commercial centres in the USA. were a consequence of two tendencies: an unprecedented level of car ownership and suburban growth. He was convinced that these tendencies would only continue to materialise in Belgium, albeit delayed and on a smaller scale.²⁵ The motorway network thus became part of the companies’ business strategy. Jacques Dopchie – who was Maurice Cauwe’s nephew-in-law, the ERC’s first director, a lifelong GBA-employee and eventually director – later recalled that identifying promising sites was considered one of the company’s core skills. Demographical, geographical and socioeconomic data were combined to reveal the potential of locations. GBA hypermarkets had to achieve an average of 80% of their turnover within a 15-minute drive.²⁶ This practice of defining trade areas was based on studies in the domain of commercial geography and, in particular, on the work of the Viennese émigré architect and planner Victor Gruen, who has become known as the father of the shopping mall.²⁷

Although the ERC was located on a local suburban road, the site’s logistical potential was defined not by its immediate context but by its connections. Drie Eikenstraat

23 “Wegen-Routes. De eerste autosnelwegen (1935–1965),” <https://wegen-routes.be/hist/hist22n.html> (last consulted 21 January 2026).

24 Henri Hondermarcq, “De modernisatie van het Belgisch weggennet,” *Annales des travaux publics en Belgique* 1 (1951).

25 ULB, GIB, Z 025-no. 1178, Cauwe’s inauguration speech at the opening of GBA’s first self-service supermarket in Luchtbal, 1958.

26 Dopchie, *GB, la rage de grandir*, 49–50.

27 Victor Gruen, *The heart of our cities. The urban crisis: diagnosis and cure* (New York: Simon and Schuster, 1964). Gruen’s work was found in the GIB archive as part of the firm’s internal library.

intersected with the E19 motorway and the N173 (Prins Boudewijnlaan), both of which formed two of the earliest high-capacity links between Antwerp and Brussels. The ERC's vicinity to this emerging road network explains why the earliest supermarkets of the chain clustered in these two metropolitan regions.

Enabling circulation: The technology of logistics

Technology played a key role in the design of the ERC, since the action radiuses of the machinery in the building were translated in design criteria. Over time, the number of stores supplied by the ERC only continued to grow. This continuous expansion in combination with rapid developments in technologies for an efficient circulation of goods stimulated the technological innovation of the ERC but simultaneously fostered the trend of constant renewal and reorganisation. Innovation went hand in hand with obsolescence.

Circulating goods on an ever-bigger scale meant an ever-growing complexity in keeping track of them. In the early years of the ERC, manual methods were used to draw up inventories but considering that the stock contained up to 110,000 different goods, ranging in size from “*Petit Bazar*” to “*Grosses Pièces*”, manual methods were not sustainable and assistance with automation was necessary.²⁸ In his book *The Rule of Logistics*, LeCavalier argues that it was the advent of the barcode in 1974 that liberated a host of inventory management challenges – including pricing, inventory, and distribution – which the practice of self-service presented.²⁹ By then, the ERC had been in use for 20 years, during which employees nonetheless succeeded in managing these challenges in alternative ways. One of the first alternatives implemented in the ERC was, ironically, called BAR (*Bureau Administratif de Réception* or Administrative Reception Office). Based on purchasing orders, price labels were first produced in the CE (*Centre d'étiquettes* or label centre) with Soabar

28 “ERC en de jaarlijkse inventaris,” *Eigen Leven* (1958), 4–6.

29 Jesse Lecavalier, *The Rule of Logistics. Walmart and the Architecture of Fulfillment* (Minneapolis: University of Minnesota Press, 2016), 157.



Figure 19. Specialised machinery and internal organization of the ERC had to facilitate the most time- and labour-efficient circulation of goods. (GIB-archive, ULB, Z 025-no. 883, 1958)

machines³⁰ and subsequently sent to the BAR. The order number of incoming deliveries was pneumatically sent to the BAR as well. Here the matching labels for this delivery were easily retrieved and sent back to the quay by a carrier. That way, the delivery was accompanied by its purchase order and pricing labels until it was

30 Soabar was founded over 100 years ago in the US as a textile labelling machine supplier. "Soabar leverages history to promote change," 2025, <https://www.labelsandlabeling.com/features/digital-printing/soabar-leverages-history-promote-change> (last consulted 21 January 2026).

marked.³¹ The CE and the BAR were situated adjacent to the loading hall, ensuring that every product that entered the ERC was registered, and that the inventory could be updated without having to count the quantity of goods stored in the racks.

As early as 1958, Maurice Cauwe had established the “Working Group for Electronics”, tasked with conducting an in-depth study into the potential use of electronic computing machines, more specifically for stock management. Two years later, the first computer (the IBM RAMAC 305) was installed in the ERC, only the second computer to be installed in Belgium at the time.³² This marked the birth of the electronic computing centre in the ERC, which evolved into the “Information Processing Centre”. Data centralisation gave rise to the expansion of computational equipment as well as the growing number of staff responsible for programming, analysing, and maintaining it.

Data processing not only involved internal logistics of distribution; data increasingly contained product information for customers. As the middleman between supplier and store, the ERC was from the outset equipped with a workplace where goods that arrived in bulk were pre-packaged for display in self-service stores. When self-service replaced salesclerks with plastic packaging, the human encounter and the obvious liability disappeared. However, consumers still expected information on the goods they consumed, to verify their quantity, quality, and expiry date. For this purpose, GBA applied a clear sell-by date to their products from 1961 onwards, initially merely on meat, fish, cheese, pre-cut vegetables, and GB’s coffee brand, but gradually on every food product.³³ GBA advertised its price label as an open book (fig. 20).

In 1959, yet another technology entered the ERC when Cauwe returned from a study trip in the United States with new insights into the importance and potential of cooling technology for the storage and distribution of perishable goods. Cauwe delivered a detailed report “Study of central warehousing issues for a supermarket chain” following his ten-day study trip. It combined theoretical considerations – derived from visits to five warehouses, two “super supermarkets”, and consultations with “warehousing experts” – with the practical application of these theories

31 “Hoe ver staan we? Onze centrale reserve,” *Eigen Leven* (1954), 5.

32 V. Guillaume, “R.A.M.A.C.,” *Eigen Leven* (1961), 3.

33 Ronnie van Uden, “Kronieken van de zelfbediening,” Fred Lams (ed.), *GB Companen*, 2022.

in Edegem.³⁴ The decisions made in this report set the ERC's transformation in motion, from a warehouse that stored non-food into a distribution centre for the collection and redistribution of all merchandise, including perishable goods, for future super- and hypermarkets. In this preliminary study, specific options for the construction of a distribution centre were explored, including considerations on its construction, detailed calculations for required surfaces, and indicative technical specifications. It was decided to cool the entire central hall, in addition to refrigerators that were to be installed in the new wing of the building. The report specifies that "air handling units" with automatic defrosting were to be used, and in terms of construction, lowering the ceiling in the refrigerators was recommended.

Also observed in the report, and equally important for the cold chain, was the use of refrigerator trucks. Cooling the central hall of the ERC alone would not be sufficient to guarantee the freshness of products, since a cold chain starts the minute fruit or vegetables are harvested, livestock is slaughtered, or dairy is produced, and only ends when the product is consumed. Cooled transportation, cooled counters, and cooled storage in the domestic sphere are all needed to prolong product freshness. The cold chain was not a novelty specific to the development of the ERC, considering that refrigerated railroad cars had already been developed in the 1850s in the United States. Cold storage warehouses were cooled with ice until the 1880s, but it was expensive to transport and nearly impossible to obtain reliably during summer months, which in turn stimulated the search for and the development of mechanical refrigeration.³⁵ GBA controlled temperatures in its vehicle fleet, in the ERC, and in its supermarkets' counters, but indirectly also in Belgian households. While the rise of the refrigerator in Belgian households was part of a complex process, the emergence of self-service supermarkets contributed to an increase in ownership. The success of the refrigerator happened in sync with the supermarket chain's development: in 1956, a mere 17.4% of Belgian households owned a refrigerator; ten years later, this had increased to half of the population. Commercial infrastructure for preserving and distributing (frozen) food and developments in household technology reinforced one another.³⁶

34 ULB, GIB, Z 025-no. 1123, Voyage aux Etats-Unis. Etude des problèmes d'entrepotage central d'une chaîne de supermarchés.

35 Michael Osman, *Modernism's visible hand: architecture and regulation in America*, Buell Center books in the history and theory of American architecture (Minneapolis: University of Minnesota Press, 2018), 47-48. A remnant of this practice in our daily lives is the naming of a kind of lettuce: Iceberg. It was introduced under this name in the beginning of the twentieth century because it was covered in an 'iceberg' when it was transported by train from the West coast to the East coast.

36 Willem Scheire, "Geschiedschrijving van het evidente. Het verhaal van de koelkast," *Volkskunde. Tijdschrift over de cultuur van het dagelijkse leven* 2 (mei-augustus), no. 113 (2012), 130-135.

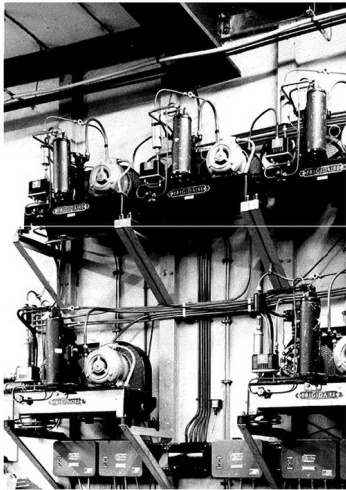


Figure 20. (In)visible infrastructures for circulation, preservation and attraction. Top: “A GB pricing label is like an open book”: the label as a means of communication to customers (GB Companen, 1970). Middle: Concealed power of refrigerated counters (archival collection of Fred Lams, 1958). Bottom: The festive inauguration of the first hypermarket in Oudergem showcased the biggest sign in Belgium at the time (GB Companen, 1961).

The technologies that had enabled GBA's growth simultaneously generated a growing incongruity between the transient nature of technology and the building's permanent character. This disparity would ultimately mark the end of the ERC. In 1971, "given the remarkable expansion of GBA, the ERC was already approaching its saturation point," and so a new distribution centre was constructed in Nivelles to complement the Edegem site.³⁷ Designed to supply the southern part of Belgium, this centre was located in an industrial zone, included a garage for its own vehicle fleet, had higher ceilings allowing goods to be stacked up to 6 m, and was equipped with an IBM System/360 Model 40. Lessons that had only gradually been learned at the ERC were integrated from the outset. In 1998, the ERC's closure was officially announced because its infrastructure was outdated: its location was no longer central enough, and its ceilings were too low.³⁸ After 45 years of service, the ERC was shut down.

Building an identity: The decorated and equipped shed

When the ERC was remodelled and enlarged in 1959, it acquired the potential capacity to supply 30 to 45 supermarkets – potential, because GBA had only one store in 1959. To make the investment in the ERC profitable, it was crucial to construct and operate this greater number of supermarkets as fast as possible. Just as the design of the ERC was driven by efficiency, both in internal organisation and in technical equipment, efficiency would likewise steer the design of the chain. For this reason, GBA sought to standardise its construction activity. This undertaking involved not only the use of standardised construction methods but also the standardisation of the building process, from acquiring property to filing building permits to maintaining buildings after completion.

To facilitate and finance its ambitious construction activities, GBA reorganised its capital in 1960. Two anonymous societies were created: *Supermarkten GB*, to operate the newly built supermarkets, and *Avimmo*, to handle the sale and purchase

37 Louis Dubois, "Rationaliser la distribution physique des entrepôts modernes," *Distribution d'aujourd'hui. Spécial: GB Entreprises*, October, 1971.

38 Michaël Houttequiert, "Magazijn GB sluit, jobs blijven," *De Nieuwe Gazet* (Antwerp, 1998).

of real estate. Supermarkten GB was founded with a share capital of 275,000,000 Belgian francs, divided between its two major shareholders, GBA and Jewel Tea Cy, a Chicago-based company among the ten largest retail grocery chains in the US by the end of the Second World War. Avimmo was incorporated with a share capital of 5,000,000 Belgian francs, evenly divided between GBA and Supermarkten GB.³⁹ One year later, another subsidiary, *Super Bazar*, was created to operate the new formula of self-service department stores, now known as hypermarkets.⁴⁰ This plan covered the financial aspects; however, that same year the department Expansion and Finances was created “with the purpose of developing a strategic plan for the expansion of a network of self-service stores.”⁴¹ This department merged with GB Engineering into *Etudes-Engineering-Expansion*, and by 1971, it employed nearly 70 structural engineers, technicians, and draughtsmen, charged with “designing, studying and rationalising plans and construction methods with the aim to develop the fastest possible construction process”.⁴² GBA’s model of construction activity proved to be a productive one: in 14 years, 108 supermarkets and 36 hypermarkets were built, as well as 58 gas stations, 53 restaurants, and 40 car centres.⁴³

The ERC’s construction was temporally and functionally distinct from the later development of the super- and hypermarket chain, and its design principles, equipment, and construction methods were therefore not directly transferable to the design of the chain. There was nevertheless an overlap in the actors who were involved with GBA as the client and René Grosemans as the architect (especially in the early projects), and experience was transferred. Preliminary research into GBA’s building stock indicates that there was no uniform standardisation of construction methods. Rather, it was the operational method of building that followed the standardisation of the logistics operation; the optimisation of the Etudes-Engineering-Expansion department thereby created an “architecture of parts”.⁴⁴ The use of trusses was rare, despite their capacity to allow a free floor plan. The most common feature was a grid of concrete beams and columns, usually cast on site, making the experience of aligning furniture, equipment, and construction,

39 HAE, DCE, 07, De Grand Bazar van Antwerpen nv boekjaar 1960–1961.

40 Dopchie, GB, *la rage de grandir*, 26.

41 Ibidem, 82.

42 Edouard Esch and Marcel Grombeer, “Trois directions pilotes: Etudes - Engineering - Expansion,” *Distribution d'aujourd'hui. Spécial: GB Entreprises* October (1971).

43 “Opening van de eerste Brico in Schoten in 1973,” *Eigen Leven* (1974).

44 Christine Wall, *An architecture of parts: architects, building workers and industrialisation in Britain 1940–1970* (Abingdon: Routledge, 2013).

as practised in the ERC, valuable for designing the super- and hypermarkets. The conception of the façades varied: brick, architectural concrete, and Glasal panels were all employed.⁴⁵ Despite structural variation, GBA established a recognisable architectural identity.

For the image branding of its buildings, GBA relied more on the standardisation of signage than on the strict standardisation of the buildings where these signs would end up. The use of signage was first observed by Cauwe during a trip to the United States in 1957. The objects of study were large self-service department stores located on the peripheries of cities. The trip resulted in extensive photographic documentation, allowing the retail transformation taking place there to be viewed through Cauwe's lens. While Cauwe, as well as members of his staff and other leaders of Belgian department stores such as Bernheim, conducted numerous studies abroad on the merchandising principles underlying chain retailing, this particular study reveals an interest in architectural principles rather than purely economic ones. The prominent use of signage, the placement of trees and fountains, the use of windows as promotional billboards, low-cost construction methods, and the 'open ceiling' that exposes building services are all captured by Cauwe as lessons to be taken home.⁴⁶

The use of signage was most literally transferred overseas. The Oudergem hypermarket, which opened on 15 September, 1961, was the first hypermarket in Europe. Although some department stores with integrated supermarkets existed in the United States, such examples were rare.⁴⁷ With 9,100 m² of retail floor space and 24,430 m² of parking space⁴⁸ which could accommodate 800 cars, it was at the time also the largest car park in Europe.⁴⁹ Besides introducing a novel way of shopping to Belgian consumers, it brought a new image to the Belgian landscape: the first Super Bazar sign was the largest in Belgium.⁵⁰ In celebration of the store's opening and to emphasise its international character, the roof was decorated with flags. GBA also made use of neon signage on its buildings, as well as in its parking lots,

45 These observations are made based on design drawings submitted with building applications, found in city and communal archives.

46 ULB, GIB, Z 025-no. 1123, *Voyage aux Etats-Unis. Centres commerciaux*.

47 Jean-Pierre Grimmeau, "Un anniversaire oublié: les premiers hypermarchés européens ouvrent à Bruxelles en 1961," *Brussels Studies* 67 (2013), 1.

48 According to a document in the GIB archive giving an overview of all their properties, listing built surfaces and parking surfaces.

49 Grimmeau, "Un anniversaire oublié: les premiers hypermarchés européens ouvrent à Bruxelles en 1961," 3.

50 Fred Lams, "Super Bazar Oudergem: eerste hypermarkt in Europa," in: F. Lams (ed.), *GB Companen*, 2021.

to enhance visibility. This practice was crucial to compensate for the sometimes-remote locations of the stores, but also to visually reinforce GBA's presence within the commercial landscape.

In 1968, 11 years after Cauwe's trip, Venturi, Scott Brown, and Izenour unravelled the laws underlying every shopping mall, holiday park, or retail park anywhere in the world, and conducted research into the language of architecture and the city in general through their study of Las Vegas's commercial strip.⁵¹ This work resulted in their influential manifesto, *Learning from Las Vegas: The forgotten symbolism of architectural form*, in 1972, which soon became an authoritative text in architectural theory and critique. Cauwe did not have the semiological framework of Venturi & Co. at hand, but his pictures anticipated their observation of the visual predominance of signage: "it is the highway signs that identify and unify the megatexture, through their sculptural forms or pictorial silhouettes, their inflected shapes and their graphic meaning."⁵²

Signage comprised the necessary equipment for the chain to communicate the function of the stores. Equally important, though less visible,⁵³ was the interior equipment: technical installations for cooled counters, artificial lighting, and ventilation, as well as furniture for the display and sale of goods. Both interior and exterior equipment, as well as the buildings they adorned, necessitated maintenance. For this, GBA had a Technical Management division that was formally responsible for the maintenance, repair, and, in certain cases, modification of buildings, machinery, and equipment used by GB Companies.⁵⁴ This concept seems to have been one of the more innovative contributions to the construction process. The centralisation of staff and the repetitive nature of their work enabled a continuous pursuit of best practices, from financing and constructing the buildings to establishing services for their maintenance.

51 Bruno Notteboom, "Learning from Las Vegas 3.0," *RUIJTE* 19 (Brussels: Vlaamse Vereniging voor Ruimte en Planning, 2013), 80-81.

52 Robert Venturi, Denise Scott Brown, and Steven Izenour, *Learning from Las Vegas: the forgotten symbolism of architectural form* (Cambridge (Mass.): MIT Press, 1977), 13.

53 For the "concealed power" of the false ceiling, see: Reyner Banham and François Dallegret, "A home is not a house," *Art in America* 2 (1965).

54 "De technische directie. Een slecht gekende directie... Een stille, maar zéér efficiënte vennoot," *Eigen Leven* (1972).

Conclusion: Built-in obsolescence

This chapter opened with a photograph from 1953 showing the modular grid of the ERC under construction and ends with an aerial photograph from 1974, highlighting the vastness of the distribution centre in relation to its surroundings. By 1974, the ERC had tripled in size: the grid had been extended to the parcel's borders, and part of the building had become two storeys high. As the chain grew, the storage facility grew along with it and became much more than a central storage facility.

This status became clear when the centre was hit by fire in 1968: while no longer the only hub in the system, the event was nothing less than traumatic for collaborators, revealing its strategic, symbolic, and emotional importance.⁵⁵ The fire also highlighted how the functioning of GBA had become inseparable from the building, since reconstruction began immediately and work resumed several days later. While GBA's building strategy was, at the level of components, an 'architecture of parts', in which elements were interchangeable and adaptable, at the level of the whole, the ERC was, at least at this moment in time, irreplaceable.

Although the configuration of the ERC anticipated modification, extension, and replacement, allowing the building to accommodate growth, this growth was not without limits, and the centre eventually became obsolete. As Keller Easterling pointed out, infrastructure is 'doing' something and, therefore, the form is the action.⁵⁶ In the case of the ERC, the action outgrew the form. It did so not merely within the building; the action also outgrew the residential neighbourhood. What the opening and the ending photographs both reveal is how the ERC was practically constructed in the gardens of family homes. In 1953, the site of the ERC was an opportunity, as it was spacious, close to the city, and near (anticipated) infrastructure. In time, however, the ERC's operational logic, characterised by truck traffic, noise, and continuous circulation, became increasingly incompatible with suburban residential life. When the closure of the distribution centre was announced in 1998, newspapers pointed to difficulties Supertransport faced in obtaining new environmental permits due to complaints from neighbouring residents. On the scale of the building as well as on the scale of urbanism, the ERC became obsolete by the things it had generated.

55 The fire was reported in national press. In 2018, 50 years later, two firemen who died while tackling the fire were commemorated with a memorial stone in the nursing home on the site of the ERC.

56 Keller Easterling, *Extrastatecraft: the power of infrastructure space* (London: Verso, 2014).



Figure 21. Built-in obsolescence through incompatibility of logistical flows and suburban living in the Molenveld neighbourhood. (HAE, 1974)

The ERC's significance therefore lies not only in its physical evolution, but in the way it actively produced the conditions for the expansion of the GBA chain. Although the ERC closed its doors in 1998, the building activity it generated continues to structure the contemporary retail landscape: literally, because many of the buildings constructed by GBA now house Carrefour markets; figuratively because the organisational and spatial choices embedded in the ERC's distribution activities became normative practices. Truck-based transportation, mechanical refrigeration to extend the routing of goods, one-way packaging, and the establishment of stores in peripheral locations were all conscious decisions at the time, rooted in specific technical, economic, and spatial conditions. Historicising the moment of their implementation reveals not only how planning history and construction history converged in the ERC. It also opens a critical perspective on the production of the suburban Belgian landscape, a world more built than planned. It shows the role of commercial entrepreneurs that both catered to and co-constructed the distributed logics of urbanisation.

Simon De Nys-Ketels

The Streets

Emancipation and exclusion of Belgian construction workers during the twentieth century

Accidents prowl on construction sites, like a spectre that light and laughter cannot faze. To defend yourself, you have to quickly learn the language of screams.

Introduction

Whenever he recalled his time as a construction worker for the World Exhibition 1958 in Brussels, Marcel Broodthaers, a renowned Belgian poet and visual artist, painted a grim picture. Although EXPO58 was to become Belgium's international billboard of progress and modernity, his bleak description portrayed construction workers forced to work at a gruelling pace, facing sleep deprivation and filthy, toxic, and unsafe labour conditions where "vertigo is just a bit habit".¹ When small Flemish protests escalated in 1957 into the "Battle for Brussels" – a national strike during which the construction worker unions set up picket lines at the construction site fences of EXPO58 – many of the labourers joined the ranks. As multiple newspapers reported, however, many of the foreign workers recruited to erect the Belgian landmark of modernity continued to cross the picket line and quickly needed police protection from an angry local mob who openly condemned these strike breakers as traitors and "rats".²

Despite representing one of the largest sectors and most active labour unions in the country, the construction industry has remained remarkably absent in social historiography. Similarly, while a 'social turn' seems underway in the burgeoning field of construction history, this shift has yet to fully mature. Nevertheless, important contributions have been made. Authors like Christine Wall and Linda Clarke have studied labour along with questions of skill, unionisation, and working conditions. Their pioneering work is increasingly being picked up by architectural historians, too, especially after the recent translation of architectural theorist Sérgio Ferro's prior work.³ The research of Jelle Angillis is particularly relevant, as a

1 Marcel Broodthaers, "Les confessions du siècle," *Le Patriote Illustré* 50 (1957), 1990, 1991.

2 Jelle Angillis, *Building in a transforming society. An exploration of the dynamic interplay between construction workers and contractors in post-war Belgium, 1944–1980*, unpublished PhD Dissertation, Antwerp University, 2024, 251.

3 Christine Wall et al., *Building the Barbican, 1962–1982: Taking the industry out of the dark ages* (London: University of Westminster, 2014); Linda Clarke, *Building Capitalism: Historical Change and the Labour Process in the Production of the Built Environment* (Abingdon: Routledge, 1992); Jacob Paskins, *Paris under construction: building sites and urban transformation in the 1960s* (Abingdon: Routledge, 2017); Silke Knapp and Mariana Moura (eds.), *Sérgio Ferro. Architecture from Below: An Anthology* (London: Mack, 2024).

minute examination of the “dynamic interaction between construction workers and contractors” in postwar Belgium, focusing on the role of trade unions in shaping working conditions on the construction site.⁴

As Angillis also emphasises, EXPO58 marked a pivotal moment in a much longer history of public protest in the construction sector. This chapter traces this longer history, exploring how the streets as a stage of public protest served as an external ‘site of construction’ through which labourers shaped building regulation and everyday realities at Belgian construction sites during the twentieth century. Unearthing the interwar roots of these dynamics, it focuses on the Socialist Builders’ Union, founded in 1909 as the first national construction workers union. When exploring the postwar period, however, it also looks at the Christian Union of Woodworkers and Construction Labourers, united in the 1930s. As the first section of this chapter documents, especially during the interwar period, the impact of the streets was undeniably emancipatory, shaping social legislation to increase wages, improve working conditions, and ensure onsite safety. Moreover, both the Christian and especially the socialist union mobilised street protest not merely as a direct and everyday weapon, but also started relying on its latent threat, for bargaining power during institutionalised social dialogue. As the second section illustrates, however, these social struggles also exacerbated discrimination and hierarchies amongst construction workers. Especially from the run-up to EXPO58 onwards, the construction sector faced shortages of labour and increasingly relied on a growing number of migrant workers. The streets not only offered a democratic site of emancipation through public protest but also became a site of exclusion. Union protests and legal demands increasingly focused on the needs of members – predominantly local and allegedly skilled workers – often at the cost of other labourers.

Unearthing the complex and contradictory voices of construction workers – a historical actor of which few archival traces exist – is a challenge. Be it through construction site photography, aerial imagery, or the paper trails of ‘times of crisis’, the few authors who have tried to overcome this archival silence have revealed that alternative sources and methodologies are crucial.⁵ As Christine Wall’s work

4 Angillis, *Building in a transforming society*, iii.

5 Robby Fivez, “‘Unfortunately, the toll is high for some of your blacks’: moments of crisis in the Belgian Congo’s construction industry,” in: Stefan Holzer et al. (eds.), *Construction matters: Proceedings of the Eighth International Congress on Construction History* (Zurich: vdf Hochschulverlag, 2024); Sarah Melsens, “(De)constructing gender? Women laborers and building site photography in Western India, 1850–1990,” in: Stefan Holzer et al. (eds.), *Construction matters: Proceedings of the Eighth International Congress on Construction History*.

indicates, moreover, oral history offers a particularly fruitful methodological tool to let construction workers truly speak.⁶ Covering the *longue durée* of the streets as ambiguous space of protest and exclusion, this chapter combines these various and rarely integrated methodologies. It first looks beyond conventional archival sources of construction history such as plans, drawings, or photographs, and towards the bureaucratic “evidence from the law as productive material”, from collective labour contracts and public tendering files, to administrative and financial union reports.⁷ Often overlooked, such bureaucratic archival bulk, which architectural historian Beatriz Colomina has called the “nine-tenths of the archive”,⁸ can offer new perspectives on the agency of construction workers. The second section pushes this methodological exploration even further by combining archival sources with open-ended interviews with former construction workers, who worked during the 1960s and 1970s.⁹

A site of emancipation?

During a night-time brawl in front of the Antwerp trade union offices on 23 May 1936, a member of the Belgian fascist faction shot two union militants and poster hangers of the Socialist party. Three days later, Antwerp dockworkers attended the funeral procession in large numbers, lighting the fuse of a national strike that by mid-June counted over half a million demonstrators. It marked a turning point in Belgian social history, leading to the Social Pact of 1944, which laid the foundation of the Belgian postwar welfare state, as well as its institutionalised social dialogue and collective labour agreements.¹⁰

6 Wall et al., *Building the Barbican*. See also: J. Gosseye, N. Stead, and D. Van der Plaet (eds.), *Speaking of buildings: oral history in architectural research* (New York: Princeton Architectural Press, 2019).

7 D. Abramson, Z. Çelik, and M. Osman, “Introduction: Evidence, Narrative, and Writing Architectural History,” in: Aggregate Architectural History Collective (eds.), *Writing Architectural History: Evidence and Narrative in the Twenty-First Century* (Pittsburgh: University of Pittsburgh Press, 2021), 16.

8 Beatriz Colomina, *Privacy and publicity: modern architecture as mass media* (Cambridge (Mass.): MIT Press, 1994), 2.

9 These testimonies were collected in collaborative research seminars by engineering/architecture students, myself, and Robby Fivez as part of the mutual framework of the EOS project “Above and Beyond Construction History”, and the Brussels Centre for Urban Studies project “Building capitals: Untold histories of construction workers in Brussels and Kinshasa (1958–1973)”. Master’s research by Marie-Julie Willaert was particularly relevant in this regard, see: Marie-Julie Willaert, *Chantier invisible: labour conditions of the Brusselization (1960–1980)*, unpublished Master’s Thesis, Ghent University, 2025.

10 Gita Deneckere, “De algemenestaking van 1936. Wetten en praktische bezwaren tegen een volksfront,” *Cahiers d’histoire de la seconde guerre mondiale* XVII, no. 1 (1995), 103–128.



Figure 22. Demonstrations in Menen by the Socialist Builders' Union, June 1936, and in Ostend, May 1936. (Institute for Social History (AMSAB), fo003166; fo005151, © Emile Michaël)

Images from the national strike of 1936, with militant flat-capped masses taking to the streets, waving red flags, and holding up picket signs with slogans denouncing working conditions or poor wages have become the commonplace illustration of countless social histories. Such images were key instruments of social struggle actively produced by “worker-photographers” and now offer a crucial visual source for social history.¹¹ And yet, such images represent only the most mediatised and well-studied moments of a much broader, but far less visible daily struggle that construction unions waged across the country through small-scale strikes and worksite lockouts. To understand such persistent yet pedestrian forms of street protest, a shift away from spectacular imagery to bureaucratic documentation, administrative archives, and grey literature of labour unions is necessary. Although these types of sources may seem less compelling, they nevertheless provide much clearer insight into the surprising reach of the legislative power that construction workers were able to exert over the everyday reality of the worksite.

The Socialist Builders’ Union was officially founded in 1909 with a three-day congress held in the symbolic *Maison du Peuple*, designed by Belgian architect Victor Horta. By bringing together various scattered local associations of bricklayers, roofers, or other construction labourers, its foundation was pivotal, as it marked the first national union of a single sector. Such unionisation would continue after the First World War, as the organisation incorporated an increasing number of professions, from carpenters to “mixed trades” such as “stonemasons, road workers, and painters”.¹² While the organisation saw its membership increase tenfold after this centralisation, this growing number of subscriptions was also fuelled by a carefully crafted strategy of propaganda and press. Every publication the union disseminated was printed in two languages, from its general annual reports to *De Ontvoogding* [*L’Émancipation*], its specialised monthly which, intended to recruit new members, not only reported on legal assistance and new construction techniques, but also trumpeted local protests. This work was part of a much broader information campaign, in which the union collected and centralised all data on where and when their local branches were taking to the streets (fig. 23). Based on this data, it calculated and proudly boasted the aggregate “wage increase” that these local strikes accumulated across the country. As such, despite the still highly fragmented nature of the Belgian construction sector, which consisted primarily of small and

11 Jorge Ribalta, *The worker photography movement 1926–1939: essays and documents* (Madrid: Madrid Museo Nacional Centro de Arte Reina Sofía, 2011).

12 AMSAB, Annual Builders’ Union Report, Brussels, 158/1.A/00003, 1922.

STAKINGEN EN LOCK-OUTS IN 1922

GEBIEDEN	Naam, adres van de stakende of lock-outterende	DATUM		In het geding	Naam van de stakende of lock-outterende	Plaats	Het verloop	Totaal	Oorzaken van de staking of de lock-out	Onderhandelingen en uitslagen	Aankmerken
		Begin	Einde								
Noord-Nederland	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Noord-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
Zuid-Nederland	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	
	Maatschappij van de Zuid-Nederland	18-12-21	18-12-21	1					Loosmaking van 20 personen per uur.	Verrekening van 20 personen per uur.	

Figure 23. “Strikes and Lockouts in 1922”. (AMSAB, Annual Builders’ Union Report, 158/1.A/00003, 1922)

dispersed contracting companies, the national union was still able to shape wages and working conditions through a vast number of localised protest actions.

Nevertheless, the organisation became increasingly aware of the financial risk entailed by taking to the streets. As these strike overviews document, protests could drag on for months on end during which the union supported demonstrating members through its strike fund. Especially after the economic crisis of 1929, the union acknowledged its strategy of the streets as a daily weapon was “putting its financial situation in jeopardy”, along with its bargaining power:¹³

The strike is far too serious a weapon to be used lightly or indiscriminately. By resorting to it too often, one runs the risk of diminishing the value of this powerful means of action in the eyes of the opponent.

13 AMSAB, Annual Builders' Union Report, 158/1.A/00006, 1924, 53.

The central leadership of the Socialist Union thus began explicitly “encouraging comrades to conclude collective labour contracts.”¹⁴ This new approach of “peaceful wage negotiation” was often preceded by local strikes and street protests, simultaneously leveraging multiple tools in what sociologist Charles Tilly has termed the “repertoire” of social movements.¹⁵ This complementary strategy quickly proved successful, first in smaller Belgian towns such as Eeklo or Tournai (1924), whereas the Antwerp branch finally delivered the first collective labour agreement (CLA) in a major city in 1928. Other important centres such as Brussels and Ghent quickly followed. The Antwerp CLA fixed local wages for one year, with an increase scheduled every six months. Just as with other regional agreements, moreover, these wages were not only distinguished for different occupations, from concrete workers, to painters, bricklayers, roofers but this categorisation also incorporated hierarchies of skill, with differing pay grades for schooled, trained, and unschooled labour.¹⁶

Beyond wages, however, these collective labour agreements marked a first yet crucial step in the gradual improvement of the appalling working conditions that reigned across Belgian construction sites. As the union repeatedly noted in its annual reports, it was not mining or textiles, but construction – with 9.57 fatal accidents per 10,000 workers – that had become the most dangerous industry by the mid-1920s.¹⁷ This statistic was not so much due to existent regulation, as to the deplorable lack of enforcement. In 1905 already, a royal decree stipulated the “special measures [...] in the construction industry” to improve safety. The “falling of workers and building materials” – the leading cause of (fatal) accidents in the sector – received special attention, with specifications on material quality and installation methods for “scaffolding structures”, “ladders”, or “braces”, and an obligation for employers to conduct regular “inspections of this equipment”.¹⁸ Be it by employers or by the state, such inspections, however, rarely happened. Belgium’s interwar construction sector was still characterised by a large number of family firms, which, as small businesses, were not only exempt from this safety regulation, but were also too scattered to monitor efficiently. Even though state

14 AMSAB, Annual Builders’ Union Report, 158/1.A/00007, 1925, 11.

15 Charles Tilly et al., *Social movements 1768–2018* (New York: Routledge, 2020), 6. AMSAB, Annual Builders’ Union Report, 158/1.A/00007, 1925, 43.

16 AMSAB, CLA Antwerp, 158/4.A/00699, 1928.

17 AMSAB, Annual Builders’ Union Report, 158/1.A/00008, 1926, 44.

18 Royal Decree of 31 March 1905, as stipulated in: AMSAB, CLA Antwerp, 158/4.A/00699, 1928.

inspection of construction sites was intensified around the 1910s, possibly due to union influence, there was a glaring gap between legislation and onsite reality.¹⁹

While amending this official safety legislation proved incredibly cumbersome, the union nevertheless found alternative forms of “soft(er) law” – rules of conduct or bureaucratic protocols which, in contrast to “hard law”, are not legally binding, but regulate everyday practices nonetheless – to improve onsite working conditions.²⁰ A closer look at the differentiated pay grades across the CLAs reveals how the union had brokered higher wages and premiums for the more dangerous occupations operating at heights, underground, or “in places where no proper scaffolding can be erected”.²¹ Another important instrument of soft law the union strategically used to its advantage was the *Cahier Général des Charges*, or the state-issued specifications for public building. With clauses on minimum wages and labour conditions, this inconspicuous document not only had a far-reaching impact on working conditions at (public) construction sites, but it was also much easier for the union to influence, as adjustments did not require the same cumbersome ratification procedures as official ‘hard’ law. By the mid-1920s, the union had successfully lobbied with the Belgian state’s Public Works Department to add additional clauses concerning labour safety. These new provisions reiterated the 1905 legislation on scaffolding – a legal redundancy that painfully underlines the persistence of the problem – yet also imposed further measures regarding accident insurance and the presence of medical first-aid kits on the construction site.²² And while the building specifications were officially only binding for public works, the union had brokered an additional clause in the *Cahier* that granted CLAs precedence over the state-issued document, ensuring that the more stringent regulation stipulated in CLAs would be adhered to in both private and public projects.

If the union cunningly bypassed the often arduous procedures of formal legislation by leveraging flexible bureaucratic instruments of ‘soft’ law to its advantage, it was by having mobilised the streets as an everyday weapon of public protest that it could exert the pressure to change these instruments in the first place. As the union realised the promising potential of peaceful negotiation and bureaucratic protocols

19 Simon De Nys-Ketels, “De wetgevende macht van de Belgische bouwvakker: verkenning van een vergeten geschiedenis,” *Bulletin KNOB* 124, no. 3 (2025), 1-20.

20 David Trubek et al., “‘Soft law,’ ‘hard law,’ and European integration: toward a theory of hybridity,” *University of Wisconsin legal studies research paper*, no. 1002 (2005).

21 AMSAB, CLA Antwerp, 158/4. A/00699, 1928.

22 Koninkrijk België, *Algemeen kohier van lasten* (Brussels, 1928), 27.

to avoid the cost of protest, however, it increasingly considered street protest as a credible threat only to be put into effect as a last resort. This “latent power” of the streets truly became the main strategy after the national strike of 1936, which would, with some delays due to the Second World War, lead to an institutionalised system of social dialogue officially ratified by the Social Pact of 1944.²³

The Pact also marked the first national collective labour agreement for the construction sector. In response to the living costs that had soared during the war, the agreement implied a considerable wage jump of over 60% on average for all different building occupations in addition to a semi-automatic indexation.²⁴ Despite the vast need for reconstruction in the aftermath of the war, however, the construction sector economically cooled off surprisingly quickly, leading to a surge in unemployment, especially of unskilled labourers. As this caused social dialogues to reach an impasse, the regional union branch of Antwerp eventually decided to take to the streets, and the strike quickly spread across the country. With protests persisting for nearly four months, government reconciliation eventually gave rise to several regional agreements, which, with a 7% overall wage increase and social employer contributions maintained, especially favoured the workers’ camp.

Widely “noted with great interest throughout the building industry”, the action set a precedent that further consolidated the “latent power” of strikes, strengthening the union’s bargaining power during social dialogues for the coming years. Throughout the predominantly peaceful negotiations of the 1950s, the union was able to steadily increase wages, especially those of skilled workers, as well as expand existing safety regulation. The Social Pact had already led to the General Regulation on Labour Protection (*Algemeen Reglement voor de Arbeidsbescherming* – ARAB), which finally codified increased safety measures into ‘hard’ and official legislation.²⁵ Its clauses not only focused further on the dangers of working at heights – stipulating proper measures of scaffolding, ladders, and fall protection – but also outlined methods for groundwork and underlined how temporary onsite housing and barracks for workers had to be set up. During the peaceful social dialogues of the 1950s, it was this legislation that was further extended, now, for instance, including prescriptions for the personal protective equipment that contractors had to provide to employees.

23 Angillis, *Building in a transforming society*, 127; Jonathan Zeitlin, “‘Rank and filism’ in British labour history: a critique,” *International review of social history* 34, no. 1 (1989), 49.

24 Angillis, *Building in a transforming society*, 107.

25 AMSAB, *Algemeen reglement voor de arbeidsbescherming*, MC/0201, 1946.

Throughout the first half of the twentieth century, the streets had offered a crucial site of emancipation. Be it as a direct weapon of public protest, or as a latent threat ensuring the unions' bargaining power during social dialogue, the streets had offered the unions a vital tool to improve pay, working conditions, and safety regulation. And yet, already during this period of emancipation, social struggles in the construction sector were anything but straightforward. Through differentiation in skill and experience, the unions encoded de facto social hierarchies within the collective labour agreements and public tender documents. Similarly, implementing safety premiums was a double-edged sword, as it forcibly linked working-class hopes for social mobility to a willingness to toil in unsafe or insalubrious working environments. After the Second World War, however, and with the steep rise in migrant labour arriving in Belgium during the wonder years of the *trente glorieuses*, these division lines would not just become increasingly explicit. In light of new challenges relating to building techniques and safety, they would also coincide with racial, cultural, and religious discrimination. As this increasing number of migrant workers failed to find easy access to the union ranks, the streets as representational space of *all* worker interests was eroded and increasingly transformed into a site of exclusion.

A site of exclusion?

If the question of foreign labour was becoming a major concern for the construction workers' unions during the postwar period, the issue already had a much longer and complex history. The International Labour Organization, founded in 1919, shared ambitions of creating a transnational union of construction workers across borders, ensuring that "migrant workers profit from the same rights [...] on wage and labour conditions".²⁶ By the end of the 1920s, however, this sentiment shifted, with the Socialist Union warning that migrants "constituted a serious danger to local labourers" by "intruding our professions, particularly larger construction sites and groundworks to provide unschooled labour."²⁷ The crisis years further consolidated the unions' view of foreign workers as "outsiders". The regional CLAs in Antwerp and other cities had even translated such policies into official clauses, stipulating that in case of crisis "foreign workers were to be fired before local labour".²⁸

26 Syndikale commissie van België, *Jaarverslag* (Brussels: De wilde roos, 1924), 167.

27 AMSAB-ISG, Annual Builders' Union Report, 158/1.A/00008, 1926, 30-31.

28 AMSAB, CLA Antwerp, 158/4.A/00699, 1928.

However, these CLAs also laid the foundation in less direct, but perhaps even more important ways through which social legislation, and particularly classifications of skill and experience, would unevenly impact foreign construction workers. This situation was directly tied to the emergence of new building technologies and materials, particularly the sector's growing reliance on concrete. Zooming in on reinforced concrete, architectural theorists such as Sérgio Ferro and, later, Adrien Forty have already articulated how the introduction of the material was driven not only by stylistic decisions, but also by capitalist motives, namely, the "prospect of cheapening construction through the opportunities it presented for "deskilling" – for the substitution of less skilled and therefore cheaper labour in place of more highly paid skilled labour."²⁹ Heine and Rauhut, however, recently highlighted the construction site as a prime space of "non-simultaneity" where technological innovation such as reinforced concrete continues to go hand in hand with persistent forms of traditional building and "bricolage" for which skilled labour remained essential.³⁰ From formwork, wooden scaffolding, manual rebar tying, or manual mixing to improvised groundwork solutions, these tasks were often laborious, implying new and unregulated issues of safety, as well as a complex skillset.

Already during the interwar period, the Builders' Union had actively sought to valorise such non-simultaneities by adding premiums for dangerous work at heights and groundwork, or by adapting pay grade systems to such emerging skillsets.³¹ The union also strategically countered "deskilling" with "reskilling", by offering training courses for labourers at vocational schools, retraining courses for workers, and promoting techniques such as rebar tying as a "distinguished feature of the modern construction trade".³² These reskilling courses, however, were only offered to unionised workers, just as the collective labour agreements were only binding for union members. Be it due to language barriers, cultural or religious differences, financial thresholds, or implicit deterrence policies, foreign workers struggled to find their way into the ranks of the union. As a result, many migrant workers were de facto excluded from the benefits that street protest and union negotiation provided to Belgian construction workers.

29 Adrian Forty, *Concrete and culture: a material history* (London: Reaktion Books, 2012), 226; Silke Kapp and Mariana Moura (eds.), *Sérgio Ferro, Architecture from below*, 175-211.

30 Eike-Christian Heine and Christoph Rauhut, *Producing non-simultaneity: construction sites as places of progressiveness and continuity* (Abingdon: Routledge, 2018), xxii.

31 For instance: although "concrete workers" were indeed classified as "unskilled labourers," "ordinary concrete placers" and "concrete specialists" were recognised and paid as "schooled" or "skilled" labour. AMSAB, CLA Antwerp, 158/4.A/00699, 1928.

32 De Nys-Ketels, "De wetgevende macht".



Figure 24. Photographic account of working conditions on EXPO58, presumably by the Socialist Union. With interior stoves, absence of windows or ventilations, and overcrowded barracks, the photographs exposed countless work environment violations at Belgium's flagship construction site. (AMSAB, fo014497-9, 1957)

With the increasing number of migrant labourers entering the country's building sector in the decades after the Second World War, the protectionism of the unions became more and more salient. Such dynamics of exclusion characterised construction across the country but became especially prominent in the rapidly transforming city of Brussels. The immense building boom of EXPO58 proved a catalyst. If Marcel Broodthaers' poetry painted a bleak picture, it was the Builders' Union's photographic campaigns that truly exposed the deplorable labour conditions, lack of safety, and appalling living quarters the workers were operating in. The campaigns echoed a much broader and widespread discontent, which lit the fuse for the Battle for Brussels, the national strike that brought the unions' street protest to EXPO58's construction site. A large share of the exposition's labour force was foreign, however, and was scarcely interested in joining the demonstrations. While international contractors and commissioners had brought along their own workers who would not sacrifice their wages for a foreign cause, many other labourers were migrant workers who had already been employed in Belgium. Their rejection of the unions' cause – and their vilification as “rats” and need for police protection – underscores how new boundaries emerging within the construction workforce ran along cultural, religious, and racial lines.

The reliance on a growing foreign labour force, moreover, was not limited to the construction site of EXPO58. Rather, it was part of broader urban transformations kick-started and consolidated by the international exhibition and the establishment of the European Economic Community. Later named “Brusselisation”, this process of *urbanisme sauvage* spanned about three decades, during which policymakers sought to transform the city into a grand European capital, levelling working-class neighbourhoods and architectural icons to make way for modernist high-rise office buildings and an ambitious network of new roads, car tunnels, and metro lines.³³ The construction of these new building typologies went hand in hand with often locally unfamiliar building technologies, which, again, “non-simultaneously” relied on an array of traditional ‘dirty jobs’ that nevertheless required important skills.

Without union representation, foreign labourers were more readily labelled “unskilled” and contracted for these “dirty jobs” as “manoeuvre” – the contemporary term in social legislation for workers without formal training who received the lowest wages – even though they often possessed demonstrable and highly valued

33 Katarzyna M. Romańczyk, “Transforming Brussels into an international city – reflections on ‘Brusselization,’” *Cities* 29, no. 2 (2012), 126–132.

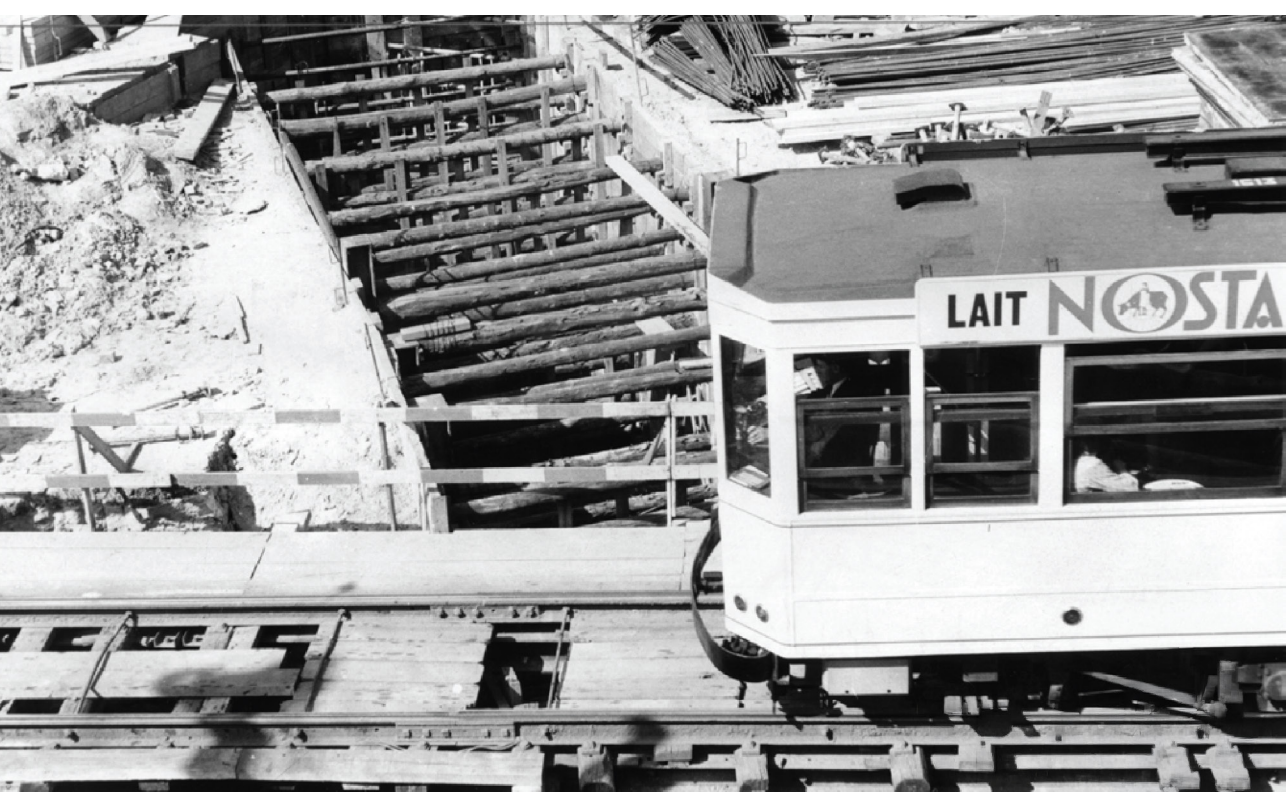


Figure 25. Manually dug bentonite shafts with an improvised pully system, and tram riding over them. (Museum of Urban Transport Brussels, *Travailleurs*, HOVCL_8_0947; *Chantiers Bruxellois*, HOVCL_8_0980)

expertise.³⁴ The complex groundworks for the Brussels metro tunnels provides a case in point.³⁵ While the tunnel itself was dug using a highly mechanised and modern system, the concrete walls of the tunnel had to be poured in situ, using a system that relied on shafts of a mere 40 centimetres wide, but sometimes over 30 m deep. They were manually dug and then filled with bentonite, a temporary liquid that provided additional soil support. Just as for deep foundations of the many high-rise buildings realised during the Brusselisation period, predominantly Italian mine workers with extensive experience in shoring and subsoil work were recruited for this precarious task.³⁶ Former employees of the *Entreprise Générale des Travaux d'Anderlecht* (EGTA), one of the groundwork contractors, emphasised how the operation demanded incredibly precise and skilled work:

*It was a system, but à la mano, of course! [...] They dug, forty centimetres. And then a small concrete shore against it. And then a special wedge in between. [...] And the men let the plumb lines down into the trenches – forty this way, forty that way. All by hand. Thirty metres and deeper!*³⁷

While highly skilled and employed precisely because of this skillset, the miners were contracted as “unskilled” labour, meaning they could be pushed more easily into these often difficult and unsafe jobs. As one of our respondents, Italian ground-worker Gerard Martino, recalls:³⁸

We were digging the trench to lay water pipes from here to Kraainem [borough of Brussels], going down to four metres without any shoring. And there was a man who died in there. The earth collapsed, and he died down there.

34 Patricia Van den Eeckhout, “Les salaires de la construction de 1885 à 1990,” *Les cahiers de la fonderie* 19 (1995), 5.

35 Similar accounts, moreover, were found across the sites of construction presented within this volume: in the propagandistic periodical *EigenLeven*, for instance, the Grand Bazar boasted that the flooring of the new distribution centre in Edegem was highly specialised work carried out by Italian workers – though it seems unlikely these labourers were paid accordingly.

36 Interview with *Bâtiments et Ponts* engineer R.V., 21 March 2023, under supervision of Simon De Nys-Ketels and Robby Fizez by Casper Blatt, Enora De Poorter, and Sam Wulgaert.

37 Group interview with former EGTA Crew, 12 December 2024, under supervision of Simon De Nys-Ketels and Robby Fizez by Marie-Julie Willaert.

38 Interview with Gerard Martino, 7 April 2025, conducted under supervision of Simon De Nys-Ketels and Robby Fizez by Noah Muzito-Muath and Casper Vervenne.

Similarly, former employees of the EGTA confirmed that at least two foreign workers died when a section of the Louiza metro shaft collapsed after they had descended into the pit. Moreover, the existing safety regulations were often poorly tailored to modern building technologies, and the unforeseen ‘bricolage’ these brought about. In the bustling capital, for instance, tramways were maintained during digging operations. This setting meant that carriages were driving over the shafts where often foreign manoeuvres were working – an exceptionally unsafe situation for which, of course, no general safety codes existed to regulate fencing or how railway sleepers were to be sealed off or reinforced. As former employees testified, this situation was not only dangerous, but it also generated incredibly harsh working conditions:

And when you came out of there, your neck was filthy! Because the tram – we were working down in those pits, 60 centimetres deep, and the tram passed right here [points a few centimetres above]! And of course, it had to stick to a certain speed, but the whole thing vibrated, and [...] that sand was salty. And in those pits, it was scorching hot! And then that salt got into your neck – it drove you crazy!³⁹

Yet conditions were not only physically, but also mentally taxing. Labour hierarchies often legitimised onsite discrimination that was shaped along racial, cultural, and religious lines. As testimonies of former employees – all local Belgians – reveal, foreign workers had “separate barracks”, “separate toilets”, and “ate separately.” Demeaning chores such as cleaning after hours were often dumped onto migrant manoeuvres, and such discrimination often escalated into outright bullying, with malicious tricks like “nailing a pig’s ear” to migrant barracks, but also more latent racism through name-calling.⁴⁰

Despite these heavy conditions, wages for manoeuvres were at the bottom of the pay scales concluded in collective labour agreements. During collective bargaining, employers pushed to keep those wages at a minimum, not only to keep labour costs as low as possible. Rather, from 1946 until 1962, these minimum wages also defined

39 Group interview with former EGTA Crew.

40 Interview with former EGTA employee Luc Morris, 27 November 2024, conducted under supervision of Simon De Nys-Ketels and Robby Fizev by Marie-Julie Willaert.

the basis on which higher pay grades were calculated.⁴¹ With the employers' side prioritising minimum wages, along with low union membership rates amongst (foreign) manoeuvres, labour unions made strategic concessions, accepting patrons' demands for relatively low minimum wages while pushing wages for unskilled and skilled labour further apart.

Slowly but steadily, however, the union also started focusing on increasing the minimum wage, highlighting the ambiguous and often shifting position of the construction union towards migrant labour. It pointed to these newly arriving workers as culprits of unemployment, but, as migrants did the "dirty jobs" that paid minimum wage, their presence as "unskilled" and cheap labour could also be leveraged as a minimum benchmark to push up wages of predominantly skilled members. Such commodification of cheap migrant labour becomes perhaps most acutely apparent in the way labour organisations played an understudied yet active role in migrant labour recruitment policies. As the government set up agencies in countries such as Italy, Turkey, or Morocco to directly recruit foreign labourers, the trade unions became crucial cogwheels within these emerging migration markets, ensuring coordination between the needs for Belgian employers and the local recruitment agencies. A well-organised administrative system was developed – the Christian Union even set up a specific branch dedicated to "migrant affairs", to which Belgian firms filed requests for the required amount and worker profile.⁴² And while the unions imposed safeguard procedures to regulate proper pay and working conditions, enforcement proved substandard, as some Italian workers even compared employment in the construction sector with "forced labour".⁴³

During the *trente glorieuses*, migrant workers were officially welcomed into the European capital, with state brochures for arriving labourers describing how "Belgium is a comfortable country, where work is well paid", and union pamphlets directed to foreign workers underlining how "the Syndicate is your home!"⁴⁴ Despite this official rhetoric, the Belgian unions commodified foreign workers and deployed "skill" as a seemingly neutral pretext to defend the interests of its members and

41 Van den Eeckhout, "Les salaires".

42 This included applications by construction company Socol, for the construction of the Brussels Louiza Metro tunnels for the recruitment of 175 Italian workers, two of whom might have later died during the collapse. Centre d'animation et de recherche en histoire ouvrière et populaire (CARHOP), *Service Migrants de la CSC Liège, Lettres Baudoux*, 74, 1956.

43 CARHOP, *Service Migrants de la CSC, Lettres Henricot*, 16 May 1956.

44 See Tom Naegels, *Nieuw België: een migratiegeschiedenis 1944–1978* (Tielt: Lannoo, 2021), 223.

push others towards underpaid, unsafe, and dirty jobs. When the oil crisis of 1974 hit and led to Belgium's first migration stop, moreover, foreign workers were the first to be let go. As many testimonies underline, however, the history of migrant workers in the Belgian construction sector is not simply a bleak account of victimhood. Not only did multiple respondents emphasise onsite comradery above discrimination, but many older migrant workers also testified how these first decades proved a crucial learning school, and a springboard to start their own and often very successful contracting companies.

Conclusion: A site of construction

Despite growing interest, the history of construction workers is still largely untold. In contrast to architects, engineers, or contracting companies, construction workers remain remarkably “muted” in the archival record, which often reflects a logic of conception that privileges intentions, designs and plans over the messy realities of the “muck down below” in which construction workers operate.⁴⁵

To shed light on this untold history, even if only partially, this chapter deliberately looked beyond the construction site itself. Instead, it turned towards the streets as external ‘site of construction’ and drew on a diverse array of archival sources and oral testimonies to find alternative traces of construction workers. As a space of public protest and strikes, the streets offered a crucial prism for understanding how construction workers influenced building legislation, working conditions, safety regulation, and the daily realities of the construction site. This perspective revealed the often underacknowledged agency of construction workers and labour unions, who strategically deployed the streets as either a direct weapon of everyday strikes or as a latent threat to ensure social emancipation and better wages, onsite safety and labour conditions. The streets, however, were not only a site of emancipation, but also of exclusion, where new division lines were proclaimed and consolidated. Labour unions increasingly stratified skilled and unskilled work, primarily aimed at defending the interests of their members. In the postwar period, with an increasing number of migrant workers in Belgium's construction sector, classifications of

45 Robert Carvais, “Plaidoyer pour une histoire humaine et sociale de la construction,” in Antonio Becchi et al. (eds.), *L'histoire de la construction: relevé d'un chantier européen* (Paris: Classiques Garnier, 2018), 1068.

skill in social legislation quickly became a veil for deeper religious, cultural, and racial discrimination.

As a 'site of construction', the streets, then, offer an important reminder that construction labour was and is anything but homogeneous. Instead, it encompasses multiple groups and cultures, clashing interests, different forms of expertise, and various life paths, all of which merit careful study. If architectural and construction history truly seeks to pursue a 'social turn', it must push beyond narratives of *the* construction worker as a generic understudied actor and instead engage with the full complexity of this crucial yet often overlooked profession.

Part 2

Connected Histories

Rika Devos and Simon De Nys-Ketels

Activities, Actors, Archives, and Positionality of the In-Between

(with comments by Réjean Legault, Christine Wall, and Martin Kohlrausch)

Introduction

While building bridges across fields, what did we find inbetween fields, and how do we assess these findings? This question was central throughout the project, although it often remained implicit. Without the ambition to be comprehensive or defining, the activities, actors, and archives from this productive space of the *in-between* lead us to three sets of observation and reflection on our historiographical positions (the specific experts we presume to be) and practices (the methods we deploy) as historians of what is built. We not only tried to capture the common ground in the research practices of the team, but we also presented our experimental notes to colleagues far and near to the project: the reactions and contributions by Christine Wall (University of Westminster, UK), Martin Kohlrausch (KULeuven, BE), and Réjean Legault (Université du Québec à Montréal, Canada) are included here as well, in dialogue with this text.

Activities

Apart from a few Art Deco highlights, the oeuvre of the architectural office of Gaston and Roger Ide has remained a footnote in the architectural canon of Belgium. Despite their unremarkable design practice, they had a prolific career as legal experts for the Brussels courts of justice, drawing and photographing crime scenes, drafting damage claims, and estimating real estate value. Such career paths, however, were not limited to architects in the margins: several of Belgium's celebrated designers, including an esteemed modernist like Louis-Herman De Koninck, have maintained important practices as legal experts. Be it to kick-start a creative career, support an architectural office, or break into a male-dominated profession, such practices – discarded as marginal by critics then and now – were far more central to the architectural profession than has been recognised so far.

Highlighted within the legal track of our project, these 'bread-and-butter' activities are still rarely studied within architecture and construction history. However, they allow us to have a more complete view on the day-to-day reality of historical practice and to better understand the intertwining of professional networks. Already in 1942, John Summerson observed that the brass-plate ideal of a private practice was dwindling for young architects and suggested that alternatives would gain importance to ensure the "three essential things for any born architect – bread,

butter, and the opportunity to build.”¹ By acknowledging the importance of everyday architectural activities beyond design, these views foreshadowed of what, over four decades later, is considered as his founding text for the discipline of construction history, in which he called “the younger generation of architectural historians” to look beyond style and theory, towards an expanded “history of building practice”.² Although not explicit, linking both texts likely reveals Summerson’s pioneering, broader understanding of practice, both in building and in the writing of its histories. Ricardo Agarez and Nelson Mota have recently taken up his calls and developed the argument that attention for the bread and butter of architecture can help balance the scales of the discipline, which long cultivated the “mythology of the sole architect as hero-author”.³ Similarly, research largely disregarded the importance of collaborative practice, administrative work by salaried architects, corporate built production, or gendered reproductive work in the office. These readings invite reflection on how the lens of the everyday allows us to question research methods and ambitions, and how legal, colonial, or urban planning histories, or any interdisciplinary gaze in the field, can help to better frame such balance.

Is it not because research is performed from a certain angle that professional activities which do not fit the canonical definitions of profiles stand either unnoticed or labelled as ‘not pure’ and hence of ‘lesser’ importance? Is the label ‘bread-and-butter’ as well as its association with an activity that is less relevant for the discipline not created by a specific historiographical position? And what would the historical profession be without bread-and-butter activities? What is the societal gain or necessity of these practices, and what does it tell us about the entanglement of architecture, construction, or building in general with other professional fields, societal projects, and needs?

The interest in the case of Ide stems from the mission to cross legal history with construction history: an exploratory, but pre-defined historiographical practice which is the methodological experiment in our project. This practice requires knowledge from different domains, insight in archival collections, and some luck. The experiment might recall the set-up of architectural historian Peter Collins for his book *Architectural Judgement*, for which he enrolled as a law student for a

1 John Summerson, “Bread & Butter and Architecture,” *Horizon. A Review of Literature and Art* 34 (1942), 235.

2 John Summerson, “What Is the History of Construction?,” *Construction History* 1 (1985), 1-2.

3 Ricardo Agarez and Nelson Mota, “Architecture in everyday life,” *Footprint* 2 (2015), 6.

year.⁴ To understand the fundamental keys of historiographical positioning and the practice of criticism, Collins developed a parallel between architecture and (Anglo-Saxon) law: how do these very different disciplines deal with history to determine what is relevant or constitutes a valuable precedent, and how do we (employ them to) build criticism? In the case of Collins, his points on the multiplicity of the frames of reference and the changing criteria to construct them also hint of the postmodern practices of (re-)writing history during the time of his experiment.⁵

When we cross between fields of history, do we develop a method for that crossing, or are we in fact looking only at activities that performed that crossing in a historical context? The legal practices of Ide or De Koninck exemplify such activities and shed light on how bread-and-butter activities may precisely stem from cunningly exploiting untapped professional opportunities. As Robby Fivez's work on contracting companies operating within the construction sector of (post-)colonial Congo reveals, such building activities unavoidably became manifestations of colonisation or post-independence nation-building as well, even if – as Fivez's work on the port of Ango-Ango in the Belgian Congo demonstrates⁶ – individual builders themselves predominantly participated for bread-and-butter reasons. The research of Tom Broes hints of a wide agency for materials federations, well beyond the technological and financial capacities of individual producers.⁷ The federations' insights in a commercial logic and hands-on approach to building reveal a narrow entanglement between the materiality and technicality of building, in addition to the structured occupation of space on a national scale – or a complex form of planning, as Mirte Wambacq equally demonstrates in this volume with the case of Maurice Cauwe and the GB Edegem distribution centre.

What ties these diverse examples together is that most are part of historically dispersed, private approaches engaged with the development or demonstration of specific expertise, responding to specific societal needs and opportunities. In the case of captains of industry like Cauwe, endeavours can be situated in a postwar

4 Peter Collins, *Architectural Judgement* (Montreal: McGill-Queen's University Press, 1971).

5 Lisa Haber Thompson, "Speculations on a future for the concept of precedents," *Thresholds* 50 (2022), 89-97, but also Pierre Lebrun on Collins in his "Introduction" to Peter Collins, *Juger l'Architecture* (Gollion: Infolio, 2017), 8.

6 Robby Fivez, "'Des millions à l'eau': European 'experts' and the construction of the Ango-Ango harbour, the Belgian Congo, 1925-1930," in: James Campbell et al. (eds.), *Studies in Construction History: The Proceedings of the Tenth Annual Conference of the Construction History Society* (Cambridge: CHS, 2023), 459-473.

7 Tom Broes, "Urbanization through concrete plants, or the marketization of cement as terraforming practice: the Belgian case 1955-85," *Bulletin KNOB* 124 (2025), 20-40.

urbanisation process which understood the city not as a result of planning, but as a result of building.⁸ Similarly, the activities of Ide or De Koninck not only opened up “opportunity for a financially fragile profession”,⁹ but they were also instructive for clients and peers, pushing them to streamline judiciary procedures and building quality, thereby impacting larger processes of juridification in which professional building actors co-produced the rules of the trade.

Actors

The focus on historical activities of crossing revealed new professional profiles. When we cross between fields of history, we find historical actors who developed expertise in that crossing and who were most often well aware of their position. They did not necessarily stand with one foot in building and one foot in another field but established a coherent identity in between. As a subject of study in their own right, their historical profiles question current definitions of fields in history. In between these historical actors, information was shared and translated for the other discipline to facilitate that sharing. Institutions also shaped this sharing, and did so in informal and formal, bureaucratic ways. The historical actors who developed this sort of professional activity had a precise understanding of the needs of different fields and developed the capacity, skill, and attitude to connect professional worlds or facilitate processes. These profiles are often referred to as mediators in the building process, but – as Martin Kohlrausch convincingly demonstrated in his book *Brokers of modernity*¹⁰ – some also stood in between the profession and major societal change, as well as facilitated this change.

How can we contribute to the writing of construction history through these non- or less-aligned profiles? What do the fields of colonial, legal, or urban history bring to this exercise? The research of Laurence Heindryckx on construction site control by project developer Amelinckx provides clues. Erecting over 50,000 apartment units during its existence (most of them in the postwar era), the firm quickly saw the importance of Taylorist optimisation of building processes and, with it, the

8 Tom Broes et al., “Het verstedelijken van constructiegeschiedenis. De stad als assemblage van bouwpraktijken?,” *Stadsgeschiedenis* 1 (2023), 39–56.

9 Agarez and Mota, “Architecture in everyday life,” 3.

10 Martin Kohlrausch, *Brokers of modernity. East Central Europe and the rise of modernist architects, 1910–1950* (Louvain: Leuven University Press, 2019).

need for increasing control.¹¹ The controlling agent, then, became a key profile to everything involved: the company image, team functioning, the possible increase of individual revenue, and the later refinement of processes. As the controlling agents had to evaluate the quality of work performed by colleagues, it was a profile that was considered unfavourably by these workers. They were disdainfully called “failed architects” by site supervisors, as the general technical knowledge of an architect (or similar) was needed for correct evaluations. In reality, they were indeed drop-outs of engineering school or had a background with limited technical professional training. Their specific role is only one illustration of the diversity of actors in the historical processes of building revealed in this project. Obviously, they were part and parcel of the tasks of professional builders like architects, engineers, or contractors, although managerial skills and hands-on knowledge in historical actors were often underestimated and, even today, their actions are poorly documented in the histories of architecture and construction. However, at least in Belgium, coordinating and following up on the paperwork of a building operation has been one of the architects’ tasks since the 1939 Architects’ Act.¹² Importantly, these tasks of mediation require different skills and networks than building design and are acquired only through practice, hence without (traces of) formal schooling.

The historiographical position of the researcher affects the understanding of the professional profiles not only of individual actors, but also of institutions. Many of these organisations are relatively well-known actors in architecture or construction history. An organisation like SCAB (*Société Centrale d’Architecture de Belgique*, founded in 1872) is central to the history of architecture in Brussels and Belgium and played an important role in the professionalisation of architects in the nineteenth and early twentieth centuries. The organisation took the lead in the juridification of the profession: not only by promoting the creation of laws, but similarly by offering its members support in legal questions. Yet the grey and bureaucratic parts of its archives on these activities remain under-studied, while it is precisely those files that make it possible to document divergent activities, including the actors that go with them, necessary to sustain the front office. Other institutions even put a whole new set of under-studied actors on the map. Remarkably off-radar in

11 Laurence Heindryckx, Rika Devos, and Stephanie Van de Voorde, “From Labour to Logistics: Amelinckx and the Art of Planning,” in: James Campbell et al. (eds.), *Construction Innovation: The Proceedings of the Eleventh Annual Conference of the Construction History Society* (Cambridge: CHS, 2025), 483–493.

12 Laurens Bulckaen and Rika Devos, “The Belgian Architects’ Act of 1939: turning point or gradual shift? Professional discussions and legal framework affecting the historical collaborative efforts of the building professionals,” in: James Campbell et al. (eds.), *Studies in Construction History: The Proceedings of the Tenth Annual Conference of the Construction History Society*, 499–509.

construction history, labour unions and the construction workers they represent are a particularly telling example. Zooming in on these actors sheds light on alternative forms of embodied, onsite knowledge that has fallen in between the cracks of conventional histories; it reveals how the expertise of manual labour extended beyond the construction site, shaping social and safety legislation of the building sector.¹³ Institutions and professional organisations also allow us to consider actors and networks on a broader scale and to better understand their strategic positions in the field. As the research of Tom Broes on the materials industries' associations reveals, these organisations possess clear economic importance. By acting on networks, they can count on the economy of scale of their initiatives while bridging in between fields as an umbrella between the profession 'on the ground' and politics, policies, and regulations of all kinds.

Yet not all historical actors in between follow this logic of applied or embedded knowledge that is often proper to the self-conscious bottom-up actions described above. The crossing has been similarly formalised in the historical bureaucratic handling of building activities at all levels.¹⁴ The bureaucratic apparatus of states, provinces, cities, and towns administers acts of building, producing building products, mining or harvesting their materials, public safety, and well-being of workers. Setting up structures and procedures for approval of projects or actions – as well as the evaluation of conformity with regulations, further control, and enforcement – requires expertise on building, law, and management, implying a crossing of knowledge in all domains. In essence, the public servant is an actor in between the apparatus of the state with the general interest it ought to defend and a profession. Yet also in this in-between, activities related directly to building are diverse and include more canonical profiles as well.

Archives

Surprisingly, maybe, the historical crossings we study are often documented in archival institutions already commonly used for research in architecture and

13 Simon De Nys-Ketels, "De wetgevende macht van de Belgische bouwvakker: Verkenning van een vergeten geschiedenis," *Bulletin KNOB* 3 (2025), 1-20.

14 Ricardo Agarez, Fredie Floré, and Rika Devos, "Introduction: The Puzzle of Architecture in Bureaucracy," *Architectural History* 65 (2022), 1-20.

construction history. These analyses of historical expertise in building rely on strategies of re-visiting known archival sources. In the case of Ide, the activity was fully covered in the professional archive of the office, and the search was limited to finding this entry. The challenge consisted of testing how our historiographical practice could be articulated, but the data were clear. In other cases, metadata do not always allow easy identification of non-conforming activities, or are not available in sufficient detail, which can make the research laborious. Archival traces of bread-and-butter activities, for example, can have a more hidden, modest appearance in the tacit information shared by those archival documents which have survived archivists' selections: labels of plans, headings of letters specifying the juridical activity, or clippings attached to correspondence, and the like. This information can be retrieved quite literally next to the main content of the document and can be used to compose a more complex profile of an actor or group of actors, as demonstrated by exploratory work by our students, who traced a prosopography of lesser known architects in Belgium.¹⁵ Their preliminary results hint at a swift reaction by the architectural profession to processes of juridification, on the one hand, and reveal an economic necessity in a period of deep crisis, on the other. While only fragments, the results offer valid 'proof' of a widespread practice still poorly documented. It may be presumed that many Belgian architects from the interwar period up to the 1960s were active as experts in simple legal disputes (garden walls, damage cases, etc.), but this status is often the part of the archive without any trace left today – the letterheads are the only systemic indication.¹⁶

Actors in the in-between also created their archives proper. This is the case for governmental institutions like the colonial authorities, legal courts, archives of institutions, professional organisations and political factions, captains of industries or sectoral associations, and so on. A telling example are the archives of religious orders, like the archives of Scheut as studied by Igor Bloch to document the order's complex involvement in the professional training of young Congolese – not only as a religious mission involved with building, but also as a practice of colonisation.¹⁷ These archives fundamentally document the societal entanglement of building – in the way we map it in this volume, these collections can be considered as *sites of*

15 MA1 students in architectural engineering of the Bruface programme, in the context of the course Post-war History of Construction and Architecture (2024–5), supervised by Simon De Nys-Ketels and Rika Devos.

16 Dave De ruysscher and Simon De Nys-Ketels, "Building the Law: Law-Making and Lobbying in Belgium's Construction Sector (c. 1890 – c. 1940)," *Tijdschrift voor rechtsgeschiedenis (The Legal History Review)* 1-2 (2025), 237–263.

17 Igor Bloch, "House construction and social engineering in the *beaux métiers* and *formation sociale* manuals of the Bibliothèque de l'Étoile (1943–1966)," *ABE Journal* 23 (2024).

construction themselves. Again, we must observe the valuable work of historians who were not engaged in methodological concepts of crossing disciplines, but who did identify institutions as valuable actors in the conception and production of the built environment. The historiographical practices developed in our project might be more explicit and systemic, but we cannot claim that the individual approaches and specific findings are either devoid of such historiographic contexts, or fundamentally novel. Nonetheless, the archives of the umbrella structures of institutions do not always have entries or metadata dealing with building and construction, and broad contextual knowledge is necessary to identify relevant files. Here lies a dynamic challenge to archival collections and the institutions managing them. Conversely, some of these archives remain underexplored in construction history and similarly possess potential to broaden disciplinary horizons.

However, our historiographical practice reaches beyond identifying archives, relevant collections, metadata analysis, and key documents. The research act of crossing is embedded in the way archives and documents are treated, activities and actors are identified, and their stories interpreted and activated in our discourses.¹⁸ To document the in-between, some of our histories unavoidably sit in between archives. The combination of data stemming from different collections, different logics, and different urgencies help to start grasping the in-between and understanding what is missing. In the archive, the in-between of documents (meetings, phone calls, external factors, etc.) obviously contribute to constructing a narrative. The narrative also helps to question what is missing. Nonetheless, we should remain aware that in between lines of archival documents, nothing is (literally) written. What is this thin surface of empty paper and what is its interest, how can it be proof of tacit communication overall? When we look for the in-between, we do not just read in between lines but go after it deliberately. So what is it *exactly* that we do when we read in between lines? Do we contextualise, or are we engaging in subjective projections, creating our own stories and truths to fill in the gaps? Surely, both options help to understand history, yet we should keep methods and ambitions clear and evaluate them critically: where does a specific practice of reading between the lines stand in between evidence and fabulation? Yet gaps can also be filled with interviews, revealing personal views on undocumented day-to-day practices, in

18 See also the blog on the roundtable discussion *Expanding the Archive: Expanding the Archive: Fact and Fiction, Reading against the Grain, and Formats of Engagement* – German Historical Institute London Blog (last consulted 9 December 2025).

addition to life and social relations in building,¹⁹ as becomes clear in the interviews of students with former construction workers “who built Brussels”.²⁰ With this in mind, the work of Christine Wall with the construction workers of the London Barbican also serves as a revealing example.²¹ Like the archival documentation, the practice and outcomes of oral history invite us to reconsider our historiographical position in writing construction histories of the in-between as well.

Positionality

We initially framed the project by means of its goals, suggested methods and defined the interacting historical fields, delineated focus per track, yet without fully defining topics or detailed questions. Consequently, engaging in the project meant that we needed to further define themes and topics, an exploratory approach which interacted intensively with the testing of methods and sources. This intellectual freedom made it possible to tap relatively freely into the different fields of history, testing how concepts from colonial, legal, or urban history resonated in construction history and, reversely, how construction history could bring a specific hands-on approach to our tests. The experimental set-up comes with a certain ethics, of course, an urgent invitation to reflect on the conditions, references, interests, and reflexes that are at the basis of our choices, in an attempt to capture what is unique and generic in our approach. While initially not inspirational to the set-up of the project, the Collins experiment eventually led us further than the self-evident parallels between construction history and legal history. Collins’s examples help us to evaluate the findings of the project as a challenge to positionality in research, which we consider not only shaped by a given personal context and knowledge (our position) but equally by the design of the research (our method), its ambition and

19 See also: J. Gosseye, N. Stead, and D. Van der Plaat (eds.), *Speaking of buildings. Oral history in architectural research* (New York: Princeton Architectural Press, 2019), but no less the ideas forwarded by D. Abramson, Z. Çelik, and M. Osman, “Introduction: Evidence, Narrative, and Writing Architectural History,” in: Aggregate Architectural History Collective (eds.), *Writing Architectural History: Evidence and Narrative in the Twenty-First Century* (Pittsburgh: University of Pittsburgh Press, 2021), 3–16.

20 In the context of the BCUS project and the course History of Urbanism (BA2, VUB, with Robby Fizev et al.), students in architectural engineering of VUB interviewed construction workers who contributed to the buildings and infrastructure of ‘Bruxellisation’ in the postwar era. See Building_Capitals, YouTube (last consulted 9 December 2025).

21 Among other publications, see: Christine Wall et al., *Building the Barbican 1962–1982: Taking the Industry out of the Dark Ages* (London: University of Westminster, 2012); Ch. McGuire, L. Clarke, and Ch. Wall, “Battles on the Barbican: the struggle for trade unionism in the British building industry, 1965–7,” *History Workshop Journal* 1 (Spring 2013), 33–57.

deliberately chosen strategies to unravel the complexity of building and its societal entanglements. Only in a later phase of the project, we experienced that our endeavours to assemble traces and to strategically write histories very much resemble what happened in the historical procedures for collecting evidence in criminal investigation, demonstrated by Louis Debersaques in this volume. The critical analysis of these procedures not only allowed him to understand the functioning of experts, but also to develop the concept of *translocation*: an initially intentional and procedural displacement of materials and, by extension, situations and words. Captured in this volume as one example amongst a collection of sites of construction feeding into construction sites, this historical legal procedure – and what it means to take objects or documents out of context to illustrate a specific element of that context – turned into an essential insight for any attempt to collect archival documentation in this EOS project, including its eventual reconfiguring in text.

From Collins's work and from the exploration of activities and actors in the in-between emerged the understanding that our positionality is not simply a personal, partially subconscious given. Our positionality is equally influenced by a deliberately chosen strategy, an explicit historiographical practice. As Collins's book demonstrates, along with the critique to his work, these endeavours are shaped by field-related references and practices, education, personal interests and knowledge, and evolving tendencies in writing histories. The most difficult task of our experiment is to understand and balance out this position and practice in a personal trajectory – a struggle that each individual researcher undertook alone in their daily research.

In our experiments, we tried to understand the in-between of the historical actors, activities and archives not as a space of transition, but of individual identity; not as a label of non-alignment, but as a more complex understanding of practices; not as an indication of implicit failure to conform (or even of fraud), but as an entanglement of interests and concerns aiming to impact society.

Even in this text, our positionality is influenced by an implicit balancing: a crossing between architecture and construction history, two obviously related fields too often considered exclusive. Yet what it tackles is the awareness that in between scientific fields, focused areas of study and disciplinary concepts, historical reality and intellectual curiosity continue.

An important question unanswered for now is the desired relation between our historiographical practice and today's practices in building. "History is not out there," wrote Réjean Legault,²² pointing at the importance of interaction between contemporary historiography and criticism, and practice. This relation is different from field to field in history. We only start to observe the complex relation between the history of construction and the contemporary practice of building, where, different than in architecture culture, criticism is less present on professional platforms and, therefore, is perceived differently. In light of this condition, we take full responsibility for the narratives developed in our experiment, even beyond academic and method-based considerations. While our research does contribute to provide crucial information on historical processes of change in construction issues and on the mutual influence between fields and sectors, some project outcomes might not be appreciated by all contemporary actors in building. What comes out of this project in the documentation of, for example, historical labour conditions, colonial practices, and environmental history, along with the concerns they bring to today's challenges, actors and networks, is only fragmentary, yet it does touch on fundamental contemporary questions for today's practices, which might, or might not, find fertile soil.

22 Réjean Legault, "Architecture and Historical Representation," *Journal of Architectural Education* 4 (1991), 204.

Paths Not Taken

My work has always been conceived within the field of the history of modern architecture, mobilising the insights and tools of construction history to shed light on the ‘constructional’ dimensions of modern buildings. Most influential in this regard were the lessons I learned from colleagues in the *Dessin / Chantier* research lab, which was based at the Grenoble school of architecture from 1985 to 1996.¹ The special lens they developed encouraged me to consider the agency of engineers, building firms, building methods, construction workers, and – unwittingly – building materials. That being said, my work has almost always focused on heroic architects and iconic buildings, with the ‘constructional’ bias deployed to highlight the tension between *dessin* and *chantier*, between conception and materialisation, that is, the complexities and contingencies of architectural production.

The observations of the cluster’s position paper offer an original take on the objects and goals of construction history. By focusing on what can be learned from investigations conducted ‘in between’ fields, the position paper encourages historians to pay attention to the alternative activities, actors, and archives that make up the practice of architecture. It also hints at the prospect that the ‘discipline’ of architectural history could be reconfigured, or at least challenged, by that of construction history. In this note, I revisit three of the building studies I conducted in light of the insights put forth in the position paper. Focusing on the Yale Art & Architecture Building, the Salk Institute, and Habitat 67, these articles are a far cry from the studies of anonymous characters and invisible practices advocated in the position paper. Yet by revisiting them, I seek to bring out different avenues my work could have taken and to reflect on the cluster’s possible import on the writing of architectural history.

The first case is the Yale Art & Architecture Building (1958-63) in New Haven, Connecticut, by Paul Rudolph.² One of the most provocative, but also most memorable, aspects of the building is the rough, corrugated concrete surface that encloses it inside and out. The author of a ground-breaking article on the A & A had insisted on the primary role of drawings as the source for its textured surface.³ By contrast, in an attempt to challenge both the primacy of design over construction and the

1 For the theoretical foundations of the research lab, see: Sérgio Ferro, *Dessin / Chantier* (Paris: Éditions de la Villette, 2005).

2 Réjean Legault, “Paul Rudolph and the Shifting Semantics of Exposed Concrete,” in: Timothy M. Rohan (ed.), *Reassessing Rudolph* (New Haven: Yale University Press, 2017), 76-89.

3 Timothy M. Rohan, “Rendering the Surface: Paul Rudolph’s Art and Architecture Building at Yale,” *Grey Room* 1 (2000), 85-107.

‘mythology of the architect as the hero-author’, I chose to focus on the part played by the construction site and the making of the building’s concrete surface.⁴ My research revealed that the creation of this unique texture required extensive experimentation over five months, a period of time during which three dozen prototypes were tested. If launched by the architect’s desires, this phase was wholly indebted to the dedication and financial support of the building’s general contractor. The crafting of the striated surface was a two-step process: first the moulding, then the hammering. After the forms were removed, the fins were hammered by hand to expose the aggregates. The treatment ultimately devised for the building was nothing less than a rejection of industrial methods in favour of hand-made, onsite production. This all-over treatment was both expensive and obsessive, enticing some contemporary critics to talk about the A & A in terms of exhibitionism and excess. If drawings (*dessin*) had no doubt played a role in imagining this concrete texture, I believe I made a convincing demonstration that it is the construction site (*chantier*) which presided over its creation.

To demonstrate my point, I explored published and unpublished sources and conducted extensive research in the architect’s archive. I also searched for the building firm’s archives, but they resisted recovery. My only original eyewitness was the photographer who documented the construction. The photographs he provided to me – views of the workers on the construction site – could have been the starting point of an entirely different project, one that would have focused on the indispensable but somewhat anonymous actors of the building process, namely, the construction workers. For by arguing that the construction site was key to the building’s memorable surface, the next step could – or perhaps should – have been to focus on the primary protagonists in its making. As the position paper reminds us, the gaps – or silences – in the archive can be productively filled by the voices of the anonymous actors.

The second case is a building famous for its siting and its material expression: the Salk Institute (1960-66) in La Jolla, California, by Louis Kahn.⁵ Focusing once again on the production of the building’s exposed concrete surface, my essay explored the complex relationship between the architect and his chosen material. Largely

4 Ricardo Agarez and Nelson Mota, “Architecture in everyday life,” *Footprint* IX 2 (2015), 6.

5 Réjean Legault, “Louis Kahn and the Life of Materials,” in: Mateo Kries et al. (ed.), *Louis Kahn. The Power of Architecture* (Weil am Rhein: Vitra Design Museum, 2012), 219-233.

based on Kahn's famous dialogues – “what does a brick want to be?”⁶ – the idea that he treated building materials in sympathy with ‘what they really are’ had become part of the mythology that surrounds his legacy. Inspired by works that mobilise the concept of material agency, my research revealed that every phase in the crafting process of the Salk's concrete surfaces involved a protracted struggle between the two protagonists. The experimental phase had its share of challenges: the testing of the concrete mixes for colour and strength as well as the painstaking design of the module, pattern, and joints of the formworks. Yet the real struggle came after the formworks were removed: honeycombing, blotches, and a mysterious dust kept appearing on the concrete surfaces. And the carefully designed V-shaped relief that outlined the concrete modules kept breaking – testimony, I argued, that the material resisted the constructional logic of the architect. In short, I was able to show that the construction process of the Salk Institute was a long and drawn-out struggle, not a revelation of the material's ‘true nature’.

To support this argument, I delved into the architect's archive, which was rich in graphic and written documents about the unfolding of the construction site. Though challenging Kahn's discourse, my narrative was still focused – in the end – on the figure of the architect-hero. However, echoing the insights of the position paper, another story of the building might have been possible, one that would have focused more explicitly on the material itself, from the extraction and/or production of its primary components (sand, aggregates, cement, pozzolan) to their combination into a concrete mix.⁷ This story would have situated the material within the network of actors – human and non-human – that gave it its architectural existence in La Jolla. In such a narrative, the will of the architect becomes only one of the many entangled vectors that configure the realm of concrete construction in architecture.

The third case focused on Habitat 67 (1963-67) in Montreal by Moshe Safdie.⁸ An iconic work of postwar architecture, Habitat is a high-density urban housing complex made up of 354 prefabricated modules in reinforced concrete, stacked in a 12-storey high-rise in a stepped-up pattern. While the canonical interpretation had always focused on the young Safdie as the sole author of this pioneering building – a view encouraged by the architect's own narrative – my research sought to

6 See Alessandra Latour (ed.), *Louis I. Kahn: Writings, Lectures, Interviews* (New York: Rizzoli International Publications, 1991), 285-293.

7 M. Motylińska et al., “Swimming in an ocean of materials,” *ABE Journal* 23 (2024).

8 Réjean Legault, “The Making of Habitat 67: A tense *pas de deux* between Moshe Safdie and August Komendant,” *Journal of the Society for the Study of Architecture in Canada* 46 1 (2021), 30-50.

draw in the role played by the engineer August Komendant more closely. To do so, I again explored – and compared – the archives of the architect and the engineer, both of which richly document the design and construction of the building. This research revealed the leading part played by Komendant during the many phases of the project, from the initial assessment of the building’s constructability to the many crises that plagued the construction site. It also revealed authorial tension between the two main protagonists.

Though the article succeeded in highlighting their tense relationship and, in so doing, in challenging the heroic position of the architect, it was done at the expense of acknowledging the many other actors, networks, and institutions that participated in the building’s materialisation. These various agents kept appearing in Safdie’s narrative as well as in the archive, but they were routinely overshadowed by the drama around the two main protagonists. Likewise, many questions kept popping up between the lines of the archival documents: Why employ concrete in the first place? What was the intention? Who decided what? By shifting attention away from the architect and engineer, other activities could have been identified, other actors could have been heard, other archives could have been engaged. In short, other storylines could have been written.

In revisiting these cases, my goal is not to express regrets for research roads not taken, but to highlight one of the key imports of the cluster’s position paper: that of the positionality of the architectural historian. More than three decades ago, Donna Haraway brought forward the concept of ‘situated knowledges’ to argue that all knowledge is partial, historically and culturally specific, and developed from a particular perspective. Instead of pursuing a false, disembodied view, she advocates for a feminist objectivity that embraces the “privilege of partial perspective” by being accountable for one’s positionality.⁹ A clear historiographic position did indeed condition the writing of these three building case studies. However, it is an even more self-reflexive positionality, grounded on the acknowledgement of the material, social, and embodied factors that shape what and how one sees and knows, that should – hopefully – guide our future investigations.

9 Donna Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” *Feminist Studies* 14, no. 3 (1988), 575–599.

Christine Wall

Notes on Researching the In-Between

Being ‘in-between’ is a matter of perspective and position. For decades my research sat on the margins of mainstream architectural history because it concerned production processes; at the same time, it was peripheral to construction history as it focused on construction labour. Recently, as the fields of interest of both architectural and construction history have broadened, my work has shifted to the centre, albeit still taking an intermediate position and informed by a range of disciplines within history. The ‘in-between’ is, as Devos and De Nys-Ketels describe, an area rich in possibilities for exploration. Existing methods, archives, and theoretical frameworks span this space, forming a scaffolding for new perspectives, investigations, and the creation of new archives and knowledge, though critically dependent on the positionality of the researcher, and to some extent the ways in which their research is disseminated and the audiences it reaches.

Much of my work as an architectural and construction historian has focused on the social processes of production alongside a search for various means of articulating these activities. One of the earliest iterations was the decision to examine the interfaces in a building: the point at which different materials and trades meet, like, for example, the junction between a door frame and wall.¹ This approach revealed much about how different construction industries are organised, and the range of tasks undertaken by different trades onsite. However, it omitted detail on the social aspects of production, the cooperation, or conflict, between workers, supervisors, and employers, as well as the wider nexus of relationships that is usually left out of architectural and construction histories – in other words, the conditions of work at the point of production: the construction site. This concern is not new for historians; it can be traced from Ruskin and Morris through to the Marxist analyses of the Bartlett International Summer School and the recently translated work of Sérgio Ferro, among others. These thinkers have provided an essential theoretical framework for understanding different modes of production, but direct input from workers is rarely included. The construction site, however, is the quintessential in-between space, a temporary and constantly changing artefact situated between idealisation and realisation. My aim, as a historian, is to focus on construction sites and attempt to give agency and voice to those usually invisible, so that workers’ contribution, including physical labour, skill, and knowledge, is recognised as integral to any appreciation of architecture and infrastructure. Thus, the construction site becomes, not an abstract theoretical space of extraction and production, but a

1 Christine Wall and Linda Clarke, *Skills and the construction process: a comparative study of vocational training and quality in social housebuilding* (Bristol: Policy Press, 1996).

place inhabited by people and their working lives, hopes, and aspirations. The key method for recording and understanding these lives is oral history.

An awareness of positionality is central to the practice of oral history, where each interview is understood as a co-creation particular to a temporal and spatial moment. The interview is an interaction between the actively constructed subjectivity of the interviewer, the interviewee, and sometimes a third party: the imagined audience. As an interviewer, I am aware that to interviewees who do not know me I present as a white, educated, older woman, but to interviewees participating in a project where I am an 'insider' and thus known to them, this position is problematised by our shared pasts. When interviewing male building workers and construction industry white-collar staff, my role was relatively straightforward. Even when I made it known I had myself worked in the trades, this experience did not seem to make any difference to the ways in which these men related to me and recalled their past working lives. This finding was verified by comparing the nature and content of interviews with those undertaken by a young, male academic and former tradesman who was a researcher on the same project. We found very little difference between the content of our interviews, although in other research projects marked differences in responses have been noted. In my recent research on women who trained and worked in the trades in the late twentieth century, my role was complicated by common histories of political activism and working life, but at the same time enhanced by a deeper understanding of the struggles, and achievements, of being a woman working in construction, resulting in longer, more reflective interviews. In all cases, oral historians are an active part of the research process and shape the resulting outcome, but in a sense, it is only a more transparent form of our work as historians in interpreting an archival text or drawing.

Oral history interviews, then, serve not only to illuminate the lives of under-researched actors in construction but also undermine official narratives. Recording the memories of former workers on the Barbican allowed us to consider a contentious aspect of this renowned example of 1960s Brutalist architecture: the specification for a bush-hammered finish to large areas of the concrete, considered an integral part of its architectural significance. Interviews revealed the human consequences of this specification – the person holding a heavy, juddering bush hammer, horizontally for hours on end, risked muscle strain and the occupational injury of nerve-damaged 'white finger' from the vibrating hammer as well as dust inhalation. By contrast the construction site of the South Bank Arts complex, another Brutalist masterpiece, was benign in comparison. Here the complexity

of the scheme, although smaller in scale, and the concrete specification in situ made significant demands on the workforce. However, a paternalistic contractor maintained good working conditions. No casual labour was employed, resulting in a structure built to exacting standards and careful craftsmanship. Interviewing the men who had physically worked on these schemes, yielding supplementary accounts of the differing conditions of work on each site previously not included in conventional architectural appraisals, enables a more nuanced architectural narrative for Brutalism.

Another outcome of these interviews was the discovery of the important role of newly arrived Sikh carpenters who worked on the formwork for many in situ concrete buildings of the 1960s. These interviews revealed the ethnic diversity of large, mid-twentieth-century construction sites, as entry points to employment for immigrants from former British colonies, thus providing material for reassessing current notions of national, architectural heritage sites to include the legacies of postcolonial migration policies. Interviews also confirmed sites as all-male environments, which only began to change in the 1970s when feminist activists challenged construction industry norms.

The gendered embodiment of a state of ‘in-betweenness’ can be understood from the precarious position of skilled tradeswomen on site. In 1975, the introduction of the Sex Discrimination Act in Britain allowed women to use the law to access previously barred training in construction trades. Interviews with 33 women who succeeded to train and gain employment in the construction industry revealed the commonality of their experiences.² Many, finding that they were the only woman on site, described their working days as comprised of staying ‘under the radar’ to avoid attracting hostile attention, while having at the same time to prove that they were fully capable of working as a skilled tradeswoman alongside the men. One interviewee who had worked on a large housebuilding site described how one or two women were tolerated and welcomed by most men, but if numbers of women increased male workers felt threatened, and women became ‘the enemy’. At the same time all the women interviewed described how their lives were transformed by acquiring building skills and the huge satisfaction gained from directly shaping the built environment. While understanding the contribution of labour is becoming integral to architectural criticism, analysis of gendered labour in different

2 Part of the research project *‘If I had a hammer’: Feminist Activism and the Built Environment 1975–2000*, funded by the Leverhulme Trust and undertaken by the author while holding a Leverhulme Emeritus Fellowship, 2022–25.

geopolitical, historic settings holds great promise for further study, in elucidating a feminist analysis of the role of labour and a concomitant shift in mainstream historical analysis of the built environment.

The construction site endures as a compelling locus for providing in-depth, socio-political analysis of wider geopolitical contexts. An appraisal of a modular township, designed by British architects in 1961, and built by local labour under the military, colonial system of British authority in Aden, Yemen, provides an illustration.³ Only by re-visiting and re-listening to an interview with a site architect I had recorded 20 years earlier did I realise that the gridded construction drawings of modular components were key to understanding control of workers onsite. A final example of how, throughout my research, the most important outcome is the creation of new, permanent, and accessible archives of oral history recordings allowing historians in the future to ask different questions, critique our findings, and shift our present understandings of the past.

3 Christine Wall, "Modular Dimensions on Site: implementing a conceptual framework," in: J. Mack and P. Carranza (eds.), *The Combinatorial Imperative. Architectural Modularity in the 20th Century and the Problem of "Difference"* (Delft: TU Delft OPEN Books, forthcoming 2026).

Martin Kohlrausch

Temporality, Profession, and Visibility

Three core aspects of in-betweenness



Figure 26. Franz Wilhelm Seiwert, "Der Architekt," 1931. (LVR Rheinisches Landesmuseum Bonn)

I discuss the notion of in-betweenness from perspectives derived from my research on the transformation of the architectural profession in the first half of the twentieth century and, in particular, architects' engagement with the project of modernism.

While the profession of architect today is one of the professions with the longest historical lineage, and although its essence – designing and planning buildings – in a broader sense has remained unchanged since the Middle Ages or even ancient history, we could still argue that in the twentieth century the profession has undergone a profound transformation. The latter also holds true for a third dimension of the profession: overseeing the building process and negotiating the planning and erecting of a building in a political, social, economic, and cultural context. This intervention starts from this postulation and addresses the changing delineation of what constitutes the activity of an architect in the twentieth century. I assume that it is within this broader process of transformation and change that we can best gauge the relevance of the observations on in-betweenness.

“Der Architekt”, a picture by the *Neue Sachlichkeit* painter Franz Wilhelm Seiwert (1931) that is relatively unknown today, captures different relevant dynamics at stake (fig. 26). Painted in abstract form, the figure of the architect is only distinguished by a pair of compasses he is holding, not by any individual features. The facial contours blend in with the different manifestations of his profession emerging at the sides and in the background. Technology and new materials form the vanishing point of the composition, both in an actual as well as in a more metaphorical form. A crane and concrete structures catch the eye, stressing the industrialisation of the building process, which was more expected than actually realised at the time the painting was made. And while the painting presents the architect with the visual means of *Neue Sachlichkeit* as a product of modernity, significant parts of the built structures we see are executed in bricks, which characterised building for centuries.

In this respect, the painting may serve as an illustration of the tension described in this cluster. In particular, three aspects of ‘in-betweenness’ come to mind. These are all related to the transition mentioned, that aspects of the profession of architects underwent in the twentieth century.

First, in a temporal dimension, architects in the twentieth century entered a new situation in between new technological opportunities – glass, reinforced concrete, steel – which at least existed on paper, and a reality that more often than

not continued to be defined by established building practices. Abstract academic knowledge always had to withstand the reality check of what worked and what was available and feasible in terms of material or financial means. The disruption by new technologies, which marked so many other fields in the twentieth century, hardly describes a reality for architecture.

Second, against this background, the architect also entered into a more complex position in between numerous old and new trades, crafts, professions, and stakeholders. We should not forget that what we call a profession is man-made, evolving, and subject to political, technological, social evolutions along with national path-dependencies (which then have an impact on gender composition, seniority, etc.). Strikingly, what actually constituted an architect was only legally formalised in the very period under scrutiny here (and the result of the exclusion of parts of the profession not always on formal but also on social and political grounds). Moreover, many of the stars of the modern movement like Le Corbusier, Walter Gropius, or Ludwig Mies van der Rohe did not hold a formal university diploma. At the same time, the redefinition of the profession as based on scientific insights clearly commanded a more structured and formalised education. Tellingly, it seems, architects like Le Corbusier did not see their lacking academic merits as an impediment to claiming superior knowledge of building based on deeper insights into science and technology. While the discipline specialised and formalised – in particular along the lines of the architect-engineer trained at new schools, following the successful nineteenth-century model of *Technische Hochschulen* – it did not mean that the more generalist side of the profession disappeared. This is supported by the insights of this cluster.

A third dimension of in-betweenness for architects redefined in the twentieth century, and in the high phase of modernism specifically, was between the profession and society. Seiwert claimed that his painting captured the notion that the architect had “turned into an emblem of planning thought (*planerisches Denken*) aimed at building and thus into a symbol of progress through modern technology.”¹ This progress was to be understood broadly and positioned architects at a key node where they would enable emancipation and social progress at large. Of course, this understanding implied that architects would also influence other disciplines

1 Caption of painting *Der Architekt*, Rheinisches Landesmuseum, Bonn. See also: Annedore Scherf, *Franz Wilhelm Seiwert und die rheinische Tradition: Seiwerts Bildsprache zwischen Tradition und Moderne* (Norderstedt: Books on Demand, 2013), 69.

like statistics, hygiene, psychology, and so on – all contributing to the new overarching concept of urbanism. This seminal trend – describing, again, partly a new reality, partly a self-empowerment of architects that answered societal needs (here expressed in a painting) – is strongly linked to the dynamics underlying the argument in the cluster, which describes architects as acting in historically new roles.

In an earlier work, I tried to capture this new dynamic in the term ‘brokers’, which is intended to capture the in-between dynamic of architects and society and the way architects successfully claimed knowledge of how to reach a future improved by and through architecture.² The promise of modernity and its underlying narratives were partially developed by architects themselves. At the latest during European Reconstruction after the Second World War, the successful identification of the profession with the project yielded concrete results for architects as masterminding a new, more broadly conceived and more standardised building process.

While architects could claim a more important role based on their alleged or factual new competences, they also became more reliant on what the Polish modernist architect Szymon Syrkus in the interbellum aptly called ‘realisers’. What he meant were those in-between figures who steered genuinely modern institutions like large housing cooperatives or insurances, and which – in his mind – would enable and facilitate large-scale building in financial, legal, and political terms. The term ‘realisers’ is relevant here not only in describing a genuine in-between activity as outlined in the cluster, but also in describing a tension that marked the project of – in particular the leftist – variant of modernist architects. With the breakthrough of state socialism after the Second World War, many architects welcomed the new opportunities as a fulfilment of their political and professional aspirations – as, for example, in the immense new planning bodies that provided architects with historically new powers to shape cities. They also had to realise, however, that the new collective forms of work came with a significant curtailment of their professional leeway. While the state-socialist situation was arguably specific if not extreme, it was in some respects a broader trend that also affected architects working in the West and mired in all kinds of new dependencies. The question of who achieved name recognition and who remained anonymous arguably had a specific relevance for the profession.

2 Martin Kohlrausch, *Brokers of Modernity. East Central Europe and the Rise of Modernist Architects, 1910–1950* (Louvain: Leuven University Press, 2019), 25.

To better understand what in-betweenness meant for creating both new autonomy and new dependencies, the category of visibility might be helpful here. Often, visibility is seen as a strange corollary of architects' relation with society in, for instance, the often frowned-upon example of the starchitect. However, when looked at from the different forms of in-betweenness as analysed in the cluster, visibility might be seen as an important category, providing structure and assigning hierarchy. Visibility then might become a resource which, in part, was necessary for architects to enter the process of construction, of enabling and negotiating construction vis-à-vis society and politics. Of course, visibility was also a resource with a clear economic benefit. The convincing suggestion in the cluster of a new evaluation of architects' archives might, for these reasons, benefit from foregrounding the category of visibility. And foregrounding visibility might also bring into the picture groups we could address as intermediaries and translators of what architects do, linking certain styles or architects to specific social trends – like Siegfried Giedion or Catherine Bauer and those who made architecture intelligible to the broader public, which became so crucial for the profession in the twentieth century. Strangely, many of these – often female – intermediaries working in these in-between positions are hardly known today even though they were preoccupied with publicity as a crucial resource. And, if they are, they are rarely recognised as crucial actors in the construction of what we call architecture as a relevant social phenomenon.

Michiel Dehaene, Tom Broes

Enabling Conditions of Industrialised Construction

*Looking at extended urbanisation through the conditions of
its production*

(with comments by Linda Clarke, Lionel Devlieger, and Carl H. Nightingale)



Figure 27. It takes a city to build a city. Construction of permanent housing at Gretna, next to temporary wooden barracks for the construction workers, 1916. (Courtesy of Jesse Foster Honsa _ UK National Archives MUN 5/159/1122/7/19)

Introduction

In this chapter we want to reflect on what it means to expand a series of insights from construction history and production studies.¹ We intend to take these insights beyond the focus on the construction site and translate them to the study of the city and the urbanised order of extended urbanisation. This chapter proceeds from the perspective opened up by looking at the city through the simple question of how it is constructed and what it takes to build a city. In particular, our position text explores the various ways in which the city is not only what is being constructed, but is also the condition or, rather, range of conditions within which construction takes place. These conditions co-determine the kind of construction that is possible, the types of materials commonly available, the types of skilled labour at hand, and

1 We are thinking in particular of the TF/BK project (<https://productionstudies.com/>) (last consulted 5 February 2026), and the pioneering work of Linda Clarke, Christine Wall, Katie Lloyd Thomas, and others.

thereby the construction practices that are mainstreamed and normalised.² The city produces, as it were, the conditions of its own production.

Within the EOS project, we explored this broad concern in the context of postwar Belgium, and thus in the context of the production of the distributed urban landscape, studying what it takes to produce sprawl, but also how these extended urban landscapes have conditioned the path of the industrialisation of construction technologies and led to the selection of certain technologies and materials rather than others. The literature on planetary urbanisation engages in the interpretation of the shift from the city to extended urbanisation and the changing relations between production and consumption. Less studied, however, is the role extended urbanisation plays not only in the organisation of growing markets of mass consumption and commodified residential real estate, but also in setting up all the sites where the final consumption of what the construction industries produce is realised.³ Rather than painting a picture – as Lefebvre would have it⁴ – of the postwar period as one in which questions of urbanisation gradually became more decisive than concerns about industrialisation, we are interested in examining how these processes became entangled in the industrialised production of the commodified landscapes of extended urbanisation. By looking at urbanisation through a production perspective, we not only bring out other aspects of the history of extended urbanisation, but we hope also to contribute to a different account of the history of the industrialisation of construction.

In what follows, we reflect on four aspects of the construction of this history. We look at the changing (half-)industrialised labour relations defined by the distributed patterns of urbanisation. We comment on the strategising work of the captains of industry who tried to scale their activities within a distributed geography. We point to the efforts to federate the material industries to secure the generalised and incessant use of their mass-produced products. We revisit the planetary perspective on urbanisation and highlight the direct contribution of its industrial production to the terraforming of the Anthropocene. In each passage we discuss some of the key insights from construction history on which we relied, while also explaining how we tried to urbanise construction history in the process.

2 We have explored these themes in a recent thematic issue of *Bulletin KNOB*. <https://bulletin.knob.nl/index.php/knob/issue/view/390/399> (last consulted 5 February 2026).

3 David Harvey, *Abstract from the Concrete* (London: Sternberg Press, 2017).

4 Henri Lefebvre, *The Urban Revolution* (Minnesota and London: University of Minnesota Press, 2003 (1970 original French edition)).

Always labour

Linda Clarke's work was fundamental in helping us to understand the force of a production perspective in urban history. In her contribution to the edited volume *Producing non-simultaneity: construction sites as places of progressiveness and continuity*,⁵ Clarke revisits the central case study from her seminal book *Building Capitalism*.⁶ The development of Somers Town throughout the eighteenth and nineteenth centuries offers the canvas to retrace in detail the shifting and contradictory social relations between artisan builders and waged labour, in addition to the changing control over building materials, tools, and machinery involved in the construction of this specific part of the expanding urban agglomeration of London. The chapter demonstrates how these changing relations have defined the internal variation in the morphology and visual landscape of Somers Town. It develops a crossed history with attention duly given to the conditions present in the development of the city. At the same time, it examines the urbanisation process in which these shifting productive relations come together and co-define the formation of the socio-spatial reality of this particular part of the city.

*All in all, about half of the houses built between 1785 and 1787 were built by just three such "contract builders" while the remainder were completed by small traditional builders, building between two and six houses each. In this way Somers Town became a "builders" town, accommodating those involved in building and providing the tenements and occasional workshop space necessary for further building in the outskirts to proceed.*⁷

In Clarke's work, the city provides the natural entry point for a multi-sited construction history. The city is not just what is being built, it is also the very context in which that construction work takes place, where material, land, and labour are made available under circumstances that are reshaped as the city evolves. By reconstructing the construction work, the link between the changing labour relations and

5 Linda Clarke, "Contradictions between artisan and wage labour production. Non-simultaneity in the building of Somers Town from the end of the eighteenth century," in: Eike-Christian Heine and Christoph Rauhut (eds.), *Producing non-simultaneity: construction sites as places of progressiveness and continuity* (Abingdon: Routledge; 2018), 161-184.

6 Linda Clarke, *Building Capitalism: Historical Change and the Labour Process in the Production of the Built Environment* (New York: Routledge, 1992).

7 Linda Clarke, "Contradictions between artisan and wage labour production," 175.

urban development appears not in its classical form of housing provision for factory workers but also raises the question of where urban artisans had their workshops and where both wage workers and brick producers were housed.

These types of questions are also raised in the beautiful oral history project that Linda Clarke and Christine Wall conducted on the New Town of Stevenage – a world in which the workers could still aspire to live in the houses they were building.⁸ In a special issue we edited as part of the EOS project, Jesse Foster Honsa takes direct inspiration from this work and looks at the challenge to supply labour in the new geographies proposed by the garden city movements in Belgium and Great Britain. In the British context, the basic formula of using mobility systems to be able to build on cheap, available land created a situation in which one needed to build in a context where there was little service infrastructure and limited availability of skilled labour. This led to some construction workers being housed in the nearest village, along with the provision of temporary barracks for the majority of them. It takes a city to build a city; it takes investment in the social reproduction of labour to be able to produce the garden city (fig. 27).

In the Belgian context, this labour question seems to have played out differently. First of all, as Jesse Foster Honsa suggests, there was the presence of dense transportation systems that had been used since the end of the nineteenth century to make labour commute over long distances.⁹ As Janet Polasky has shown,¹⁰ at the beginning of the twentieth century construction workers were part of the reserve army that could be recruited throughout the country(side) and employed in seasonal labour patterns, including in construction. This situation was facilitated by policies aimed at the production of affordable housing by supplying housing (for these workers) where land was cheap and by mobilising the local efforts of small contractors and craftsmen in many small construction projects throughout the country.¹¹ Perhaps more importantly, though, the formula of providing affordable

8 Christine Wall et al., *Building a Community. Construction Workers in Stevenage 1950–1970* (London: University of Westminster, 2011), <https://files.libcom.org/files/Stevenage-pamphlet.pdf> (last consulted 5 February 2026).

9 Jesse Foster Honsa, “Housing for workers, by workers. Contradictions in English and Belgian garden cities,” *Bulletin KNOB* 124, no. 4 (2025), 6–19.

10 Based on the work of Mahain (1910), Janet Polasky shows that up to 41% of commuters coming into Brussels were construction workers. “Their place of employment shifted so often that they could not move with their jobs.” It is not clear whether the dense commuter rail also provided access to construction sites in the countryside, but it is clear that the strategy of keeping labour in the countryside did include many construction workers. Janet Polasky, *Reforming urban labour: routes to the city, roots in the country* (Ithaca: Cornell University Press, 2010), 172.

11 Bénédicte Grosjean, *Urbanisation Sans Urbanisme: Une histoire de la “ville diffuse”* (Wavre: Mardaga, 2010).

housing by building where land was cheap took place in a finely grained pattern of state policies promoting individualised ownership and construction.

These housing strategies, though not easy to prove as such, made it difficult to implement industrial construction models.¹² According to a report on the industrialisation of the construction industry in 1971, only 2% of the sector had adopted industrial construction methods (in contrast to 10% in France and 19% in the Netherlands).¹³ Even the government-promoted experiments to move production offsite and produce prefabricated houses in an attempt to control growing labour costs throughout the 1970s had limited and, above all, short-lived success in this context.¹⁴

The inherent resistance in the construction sector along with the distributed geography of private ownership produced another path for the application of industrial technology. It led to the supply of building materials that would make the continued predominance of manufacturing practices¹⁵ more efficient, by providing new construction material that would reduce the labour time involved in manufacturing.¹⁶ The example of the industrial brick documented by Tom Broes in this volume is a case in point. The industrial brick made the mass production of a highly individualised housing model feasible and competitive. The result is not a fully factory-produced housing landscape, but rather a semi-industrialised building sector, elsewhere described by Stephanie Van de Voorde by way of a quote from Marcel Lods as “*le traditionnel évolué*”.¹⁷ Dominated by an industrialised supply of building materials, such development efficiently assembled into rather traditional building forms within the distributed geography of extended urbanisation. It is important, however, to recognise that it often went hand in hand with the ultimate reduction

12 For a similar assertion: Ernest Mandel, *Late Capitalism* (London: Verso, 1978 [1972]), 504.

13 Nelly Schmitz and Michel Ducuroir, “Vers l’industrialisation du bâtiment en Belgique,” *Brussels Economic Review* 49 (1971), 5–50.

14 See chapter six of Stephanie Van de Voorde, *Bouwen in beton in België (1890–1975)*. *Samenspel van kennis, experiment en innovatie*, unpublished PhD Dissertation, Ghent University, 2011.

15 Sérgio Ferro, “Dessin / Chantier: An Introduction for Newcastle,” in: Silke Knapp and Mariana Moura (eds.), *Sérgio Ferro. Architecture from Below: An Anthology* (London: Mack, 2024), 25–41.

16 The necessary continued reliance on manufacturing in construction went hand in hand with the active transition to the introduction of idiot-proof products (no longer materials) that could be easily assembled with little training. The emerging DIY sector offered a fertile ground for the introduction of such products. See Tom Broes, “The Rise of Do-It-Yourself in Belgium (1965–1985) and the Mutual Entanglement between Construction History and Planning History: An Exploration,” in: Stefan Holzer et al. (eds.), *Construction matters: Proceedings of the Eighth International Congress on Construction History* (Zurich: vdf Hochschulverlag, 2024), 260–267.

17 Stephanie Van de Voorde, *Bouwen in beton in België (1890–1975)*, 429.

of construction labour to an utterly repetitive matter of speed and productivity – provoking strong social resistance among the unions who insisted that building not be reduced to assembly-line work.¹⁸

Distributed urbanism

In the postwar period in Belgium, the historically distributed development patterns of industrialisation and urbanisation were facilitated by redistributive policies that tried to overcome the geographically uneven distribution of wealth through regional expansion policies.¹⁹ These logics, which Neil Brenner has described as spatial Keynesianism,²⁰ in Belgium took the form of regional policies that literally rely on the distribution of land, housing, industry, and commercial development to organise the redistribution of wealth. A construction-historical perspective helps to understand the intersection of territorial distribution and the redistribution of wealth, constructing a world in which investment in infrastructure was used to simultaneously create growth and give an important part of the population the option to participate in this growth – often through adjacent construction programmes on cheap land that in turn affirmed and reinforced the accumulated value of public investments in infrastructure.²¹

More specifically, we were interested in the producers of the distributed forms of urbanism of the welfare state which created the conditions in which suburban construction could pick up speed and could be serviced, seeking to understand the overlap between the logistics of producing this world and the logistics needed to support the urban functioning of this distributed world. To feed these extended housing landscapes, to fill these houses with all the appliances of suburban living, to distribute the services delivered at home, and so forth, a radical new distribution landscape was simply needed. It would look for its very own construction

18 Jelle Angillis, *Building in a transforming society. An exploration of the dynamic interplay between construction workers and contractors in post-war Belgium, 1944–1980*, unpublished PhD Dissertation, Antwerp University, 2024.

19 Michael Ryckewaert, *Building the economic backbone of the welfare state in Belgium* (Rotterdam: 010 Publishers, 2011).

20 Neil Brenner, *New State Spaces: Urban Governance and the Rescaling of Statehood* (Oxford: Oxford Academic, 2004), 114–171.

21 Nelo Magalhães, *Accumuler du béton, tracer des routes. Une histoire environnementale des grandes infrastructures* (Paris: La Fabrique Éditions, 2024).

efficiencies, to serve the Belgian ‘welfare state’ that grafted its housing policies onto private homeowners and private builders.

In her dissertation, Laurence Heindryckx studied the invisible city – more than 70,000 units in total – of private apartment building, produced by Amelinckx NV and Etrimo. Heindryckx explains how the success of Amelinckx NV depended on a construction method that used rather traditional construction methods but streamlined the logistics of the construction site in a way that efficiently moved around its workers and building equipment from site to site, reducing the idle time, as well as the need to store equipment and materials offsite.²² These construction techniques, which relied on concrete poured in situ, also took advantage of ready-mix concrete that became readily available during the company’s most successful years. Consequently, Amelinckx’s distributed construction activities closely mirrored the progressive urbanisation of ready-mix concrete availability across Belgium.²³

Building on this earlier research, we studied the work of another captain of industry, Maurice Cauwe (1905-1985), who spent his entire professional life in the retail distribution sector. Cauwe was able – from the 1950 onwards, following the gradual removal of the padlock law that prohibited the development of supermarkets in Belgium – to quickly develop the GB network.²⁴ This success was directly related to the speed at which he was able to claim a dominant regional position, and thus a key position in the emerging suburban markets. Mirte Wambacq explains, in this volume, how the territorial strategy was grafted not only on building the central coordination capacity through the construction of a distribution centre. While anticipating the construction of supermarkets to be served, Cauwe could also gain control over key locations within an emerging infrastructure network. The building of the big box retail landscapes followed a different construction path, and in contrast to the residential landscape, provided a fertile terrain for prefabricated construction. The predominance of concrete may be attributed to the fact that several key figures in the cement industry – among them Jules Plaquet, owner of the Compagnie des Ciments Belges and founder of the Belgian Cement Industry

22 Laurence Heindryckx, *Practices of Commodification: The Private Mass Housing Development of Etrimo and Amelinckx (1924–1985)*, unpublished PhD Dissertation, Ghent University, 2023.

23 Tom Broes, “The urbanization of cement and concrete. Urbanization through concrete plants and the realization of cement as a terraforming practice: The Belgian case, 1955–85,” *Bulletin KNOB* 124, no. 4 (2025), 20–40.

24 Peter Heyrman, “The introduction of self-service and the supermarket in Belgium (1945–1975): The soft underbelly of Europe?,” *History of Retailing and Consumption* 6, no. 3 (2020), 197–215.

Federation – held vested interests in GB-Entreprises from the onset.²⁵ The models were simple, extremely repetitive, and only had one floor: cheap construction on cheap land.

One of the more surprising findings of the research is that entrepreneurs like Maurice Cauwe would simultaneously invest in home improvement industries, playing a role as retailer in the distribution of supplies for the inner-city DIY builders that were taking on the task of fixing the homes vacated by the ongoing process of suburbanisation. These DIY chains displaced a traditional landscape of family-owned hardware stores while opening up their traditional business to individual consumers. In turn, these chains ended up supporting the mobilisation of free labour of inner urban grassroots, regenerating the inner-city neighbourhoods of Belgian cities for which no market-conform scenario was at hand.²⁶

What stands out in the pioneering phase is the capacity of key players to adjust to a changing geography by simultaneously operating their business and building their way within these landscapes. They simultaneously constructed a world in which consumer goods could circulate while using this world to construct this platform which increasingly relied on methods of industrial construction in the production of the ‘grand surface’ (supermarket) – a segment of the building sector that could be industrialised much more easily than the residential market.

The politics of realisation

In *Reciprocal Landscapes*,²⁷ Jane Hutton reconstructs material practices in the production of a number of prominent urban landscapes in New York. She not only retraces the ‘invisibilised’ world where these materials were subsequently found to be installed in “highly visible public landscapes”, she also reconstructs the relational geography these materials were part of. While relying on increasingly remote sites, this relational geography is to a large extent an urban geography, animated and structured by dynamics and practices of urbanisation – not only because the extraction and circulation of material depends on urban infrastructure, but also

25 Tom Broes, “The urbanization of cement and concrete,” 32.

26 Tom Broes, “The Rise of Do-It-Yourself in Belgium (1965–1985)”.

27 Jane Hutton, *Reciprocal Landscapes: Stories in Material Movement* (Abingdon: Routledge, 2019).

because they are reproduced within an increasingly asymmetrical, urbanised extractive world.

The urban projects that Jane Hutton selected as the most visible end of the reciprocal landscapes also point to the places where the final value of the production chain continuously needs to be realised. In *Abstract from the Concrete*, David Harvey builds on the textbook Marxist intuition, namely that “the potential value created in production comes to nothing if it is not realised through a sale in the market.”²⁸ Harvey explains how the unprecedented consumption of concrete depends on the accelerated urbanisation of China. Harvey doubles down on his long-term interest in the role of cities in absorbing capital surplus. In his earlier work, he demonstrated how cities stabilise the tendency of industrial capitalism towards overproduction through a spatial fix (taking urbanisation to increasingly new fields) and through mechanisms of capital switching from primary towards secondary (real estate and services) and tertiary (state-coordinated investment in innovation) circuits of capital.²⁹ In *Abstract from the Concrete*, Harvey gives this thesis a material reading. Concrete not only flows into the city to enable its expansion; the city also satisfies the need for material industries (like cement) to realise the value of their continuous production capacity. Urbanisation is complicit with the politics of realising concrete.

In the Belgian context, Tom Broes looked in detail at the strategies developed by the cement and clay industries to gain control over dynamics of urbanisation.³⁰ It is one thing to develop a specific technology and to build the factories that make use of that technology in mass production (of cement or industrialised brick); it is yet another to organise the use of these materials on the many construction sites of Belgium’s distributed geography where the value of industrially produced materials was to be realised.

This logic is clearly reflected in the installation of the various federations of material industries created to coordinate the organisation of the markets for their mass-produced products in the early aftermath of the Second World War. The cement industry, for example, produced a federated landscape of concrete plants

28 David Harvey, *Abstract from the Concrete*.

29 David Harvey, *The Urbanization of Capital: Studies in the History and Theory of Capitalist Urbanization* (Baltimore: Johns Hopkins University Press, 1985).

30 Tom Broes, “The urbanization of cement and concrete”.

from where it could send trucks with ready-mix concrete to every corner of the nation. This setting included involvement in the ever-moving construction sites needed to realise a growing road network, as well as in the delivery of concrete, by sending mixers over these roads to supply concrete for an ever-expanding urban territory. This dense network of concrete plants with mixers travelling every day within a typical radius of 15-20 km continues to this day to feed a construction sector that has grown addicted to the ready availability of this material, accounting for the overconsumption of a product that is intensive in both energy use and carbon emissions.

Broes's chapter in this volume on the introduction of industrial brick in the Belgian market also shows the geographical strategising work within the material federations, identifying the suburban market of single-family home building as the suitable terrain for the realisation of industrial clay products. As mentioned above, this strategy proved successful in addressing the continued dependence of manufacturing practices in small-scale residential production. The introduction of industrial brick sealed the fate of the historical use (and the reuse) of all-round traditional bricks. As perforated industrial bricks were increasingly tailored to the suburban housing market, their 'quality' shifted from compressive strength to properties such as thermal and acoustic insulation – achieved by reducing clay content and adding lightweight admixtures to increase porosity. Moreover, these fragile bricks began to be glued together with irreversible high-performance mortars, de facto turning industrial brickwork into future rubble.

One of the ironies of the production of industrial brick is that it led to the accelerated extraction of clay in Belgium's Rupel region around Boom, leaving big depressions in the landscape that were then filled with industrial and household waste, thus producing a second generation of reciprocal landscapes. By inscribing these extraction landscapes within the metabolism of urbanisation we better understand the fate of their afterlives. Urbanisation provided the enabling conditions to realise the products of material extraction, but also to realise the value of its waste flows in the recycling of the extraction sites as waste dumps, and even as the grounds where the annual festival Tomorrowland takes place.

Practices of urbanisation

At the start of the EOS project, we had aspired to use an urban lens to confront construction history with a consumption perspective. We wanted to look at urbanisation dynamics to study the ebb and flow between moments of production and moments of use and appropriation, including questions of maintenance and repair. While carrying out this research agenda, engaging with construction history became an important reminder of the importance, and also the critical force of a production perspective in the study of urbanisation. The field of production studies in architectural history, in particular, provided an important source of inspiration.

Our initial motivation to move away from a production perspective in studying the city was mostly informed by a desire to conceive urban planning as only a small part of the making of urbanisation and overcome the limitations of a form of planning history conceived as a history of ideas. Similarly, construction history and production studies offer a critique of the approach by which the study of architecture has privileged the architect's work at the expense of that of all the hands involved in its construction. The focus on the construction site makes this bias clear and seeks to dismantle the hegemony through which the architectural discipline has framed design as intellectual labour preceding the building work and divorced from the work on site.³¹

Forceful as this critique may be, it runs the risk of romanticising the role of production and productive labour in construction. More importantly, the schism between architecture and building may be historically convincing, but it requires a deeper analysis of how profoundly both architectural practices and building practices have been transformed through changes in the construction industry. In fact, the industrialisation of construction and the commodification of urban development have marginalised the work of the architect and that of the construction worker alike. In this light, it is slightly ironic that a counter-hegemonic narrative can be drawn from documenting construction – reminding ourselves of the role of productive labour – in a world consumed and ruled by a productivistic logic and, in many respects, the overall hegemony of a production perspective.

31 Marvin Trachtenberg, *Building-in-time: from Giotto to Alberti and modern oblivion* (New Haven: Yale University Press, 2010).

Here we see room for the urbanisation of production studies positioning construction work in a broad perspective that looks at the many interdependencies construction work is part of, and the many practices of urbanisation that animate the city-making process. Looking at urbanisation through a construction perspective makes tangible and concrete what we may understand by practices of urbanisation. By studying the city as an assemblage of construction practices, that is, as an extended and distributed construction site, we understand that the construction of the urban environment does not take place in isolation. Rather, it involves a high level of control over the enabling conditions of its construction – namely, making labour available, circulating material within a distributed geography, and securing the incessant consumption of industrially produced materials. Conceived as such, we understand how the long history of construction may itself be reconceptualised as a practice of urbanisation.

To develop this perspective, we found support and inspiration in the work of global urban historian Carl H. Nightingale who states that a history of urbanisation “needs verbs”, needs a perspective that looks at what is done while urbanising, and looks at what urbanisation is made of. Building on the work of Henri Lefebvre, he invites us to focus on the study of “practices of urbanisation.” His programmatic text *Our Urban Planet in Theory and History* explores the study of global urban history in response to three intersecting debates: global history, planetary urbanisation, and the Anthropocene. One particular set of practices of urbanisation is related to the verb ‘to build’ or, more inclusively and expansively in Nightingale’s words, “to terraform”: “that is to rearrange materials from the Earth’s biosphere and geosphere to meet the human purposes inherent in previous acts of energising, situating and design.”³²

Looking at urbanisation through a construction perspective, in particular planetary urbanisation, is to study building (and other practices) as terraforming and re-present terraforming as made of practices of urbanisation. We come to understand how “extended urbanisation” is dialectically intertwined with the requisite industrialisation, scaling, and acceleration of building practices, and material production, within which human labour and energy is replaced by the injection of “technology and thermo-chemical processes” financed by industrial capital.

32 Carl H. Nightingale, *Our Urban Planet in History and Theory* (Cambridge: CUP, 2024), 25.

We have tried to argue in this text that construction history helps us to understand that urbanisation is not only a product of terraforming processes but also defines the conditions in which certain practices of terraforming rather than others can be realised. The industrialised production of extended urbanisation is part and parcel of what Brenner and Gosh have termed the “hidden abodes of the geometabolic escalation of capitalist urbanization”.³³ Construction history helps us to identify the sites and practices where planetary urbanisation takes form and, hopefully, conceive the alter-urbanisations that may condition and enable other, less extractive, and more equitable landscapes.

We find that a focus on practices of urbanisation may help to extend the critical perspective of production studies, which seeks to break the hegemonic role of the architect and the designing profession in the study of the built environment. Looking at practices of urbanisation may help to pluralise what we see as the role of designing professions, moving beyond the binary opposition of designers and builders, to explore the pluriversal knowledge involved in the city-making process³⁴ and its many practices of urbanisation. Once we begin to see the city and the extended urban landscape as a perpetual and ongoing construction site, we can see (in contrast to architecture) design practices that always remained attached to practices of building. Even in its most technocratic and state-led version, city-making was never a matter of the execution of intellectual work conceived on paper. It always remained attached to the city as a construction site and the plurality of city-making practices, from infrastructure works, planning and coordination work, maintenance, and management to the actions of individual builders, developers, business owners, and so on. The efforts to intellectually dominate the production of the city from behind the drawing board were never total, were always broadly contested, and emphatically inscribed in longer development cycles than the production of architecture.

The study of urbanisation practices reveals a production history that is complicit in the accelerated consumption of resources and the linear extractive economies supporting the supply of industrial materials. We are convinced that it is necessary to know those enabling/disabling conditions well and to be aware of them if

33 Neil Brenner and Swarnabh Ghosh, “The Monster ‘Within’: Capitalist Urbanization as Geometabolic Escalation,” *Development and Change* 56, no. 4-5 (2025), 668-728.

34 Arturo Escobar, *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds* (Durham: Duke University Press, 2018).

we want to ever be able to evolve towards less extractive ways of building. We are convinced that by understanding the enabling (and disabling) conditions that have made these extractive economies possible, we also are able to understand how alternative forms of urbanism, different ways of urbanising, are needed to construct new regional solidarities and to create the environment in which non-extractive practices of urbanisation could thrive. All practices of urbanisation that have the aspiration to be more circular, more caring, more reproductive – intentions that do not include aspects of material production as it proceeds – are bound to be dependent on extractive logics that have been rendered invisible. As long as (bio-based) alternatives or circular building methods do not form a well-organised, responsible, and resourceful industry and become embedded and anchored in urbanisation practices, the settlement of human life on earth will, for a long time to come, have to continue to rely on the unsettling and extractive industries that supported the construction boom of the *trente glorieuses* following the Second World War. If it takes a city to build a city, then new ways of building will have to come with new practices of urbanisation too.

Linda Clarke

Contradictions in and Limitations of Building Capitalism

The example of municipal socialism

The urban built environment, including its housing and infrastructure, tends to be regarded as a physical object, as a product to be exchanged and consumed, rather than a process. Indeed, the social relations involved in the production of houses and infrastructure disappear, and thus appear almost as abstractions, once these have been rented or bought and inhabited. However, the kernel of the problem involved in, for instance, providing working-class housing lies not in its consumption, but in the construction industry (the production and labour process); in treating housing as a commodity (as an exchange value), rather than a need (as a use value); and in having a workforce trained and qualified to build (the reproduction of labour). This view may imply seeing ‘the urban landscape as a perpetual and ongoing construction site’, as ‘an assemblage of construction practices’, but is this enough?

It is all very well to identify where the problem lies and yet another to propose solutions, especially given the capitalist nature of the construction industry, driven by profit maximisation and prioritising exchange over use values, not by the provision of affordable and secure housing.¹ A more radical and far-reaching set of priorities is necessary to address the housing crisis, now as in the past, and we need above all to understand the dynamic of development. Does it really lie with technological innovations in construction, the introduction of new materials, methods of production, or designs? Surely, as argued here, labour, including the labour movement, is the motor?

This dynamic was nowhere more apparent than in the 1890s, the heyday of municipal socialism across Europe, when the social relations of building production and the labour process changed as privatisation and speculation were countered and housing and infrastructure were built on a not-for-profit basis. In Britain this project occurred through the local authorities, underpinned by the labour movement, setting up their own building departments, known as direct labour organisations (DLOs), whilst on mainland Europe – for instance, in Vienna – it was more commonly instigated through the unions.

1 Maria Wallstam and Ståle Holgersen, “Building beyond profit: the history and potential future of non-profit construction companies,” *Housing Studies*, published online 24 November 2025.

A recent spate of publications on municipal socialism is indicative of a new interest in the movement that took place all over Europe from the end of the 1880s.² For instance, Shelton Stromquist in his book *Claiming the City* defines municipal socialism as “an inclusive, locally grounded social democratic politics that sought to institute or expand a robust public sector of services essential to the health and well-being of urban populations.”³ Yet missing from the different accounts are the significance of the social relations of production and the labour process, the importance of empowering and reproducing labour, and the role of the labour movement that are so critical to challenging capitalist exploitation and building a more socialist society. It is these, and not just the ownership of the means of production, that give us an insight into the dynamic arising from the contradictions and limitations of capitalist production, especially in relation to the construction sector, which is inherently local as well as national and global.

The first DLO (direct labour organisation) was set up in London by the London County Council (LCC) in response to the failure of private contractors to provide an adequate building service and better employment and working conditions for building workers, and to fulfil the terms and conditions of the Housing of the Working Classes Act of 1890. The history of council housing and local authority public works in Britain has since been entwined with the role of the DLOs, with the departments gaining a new impetus after the First World War, when 70 were founded as the government pursued a massive council housing programme.⁴ Post Second World War, DLOs again expanded, with their number doubling, so that by the end of the 1960s DLOs employed over 200,000 building workers, with those in Manchester, the Greater London Council, and Glasgow alone each employing 5,000.

Not only did the DLOs have good union negotiated employment and working conditions and construct and maintain good quality buildings, but they also played a critical role in providing vocational education and training (VET) for the building industry, in introducing notable innovations in building methods, and in pioneering the

2 Shelton Stromquist, *Claiming the City: a global history of workers' fight for municipal socialism* (London: Verso, 2023); Shelton Stromquist, “Municipal Socialism,” in: Marcel van der Linden (ed.), *The Cambridge History of Socialism* (Cambridge: CUP, 2022), 366–388; Patrizia Dogliani, “European Municipalism in the First Half of the Twentieth Century: the Socialist Network,” *Contemporary European History* 11, no. 4 (2002), 573–596; Patrizia Dogliani, *Le Socialisme Municipal en France et en Europe de la commune à la grande guerre* (Nancy: Arbre bleu, 2018).

3 Stromquist, “Municipal Socialism,” 367.

4 For a more detailed account see Linda Clarke “Building by Direct Labour: the significance of Direct Labour Organisations in the provision of public housing in the UK 1890–1980,” in: James Campbell et al. (eds.), *Proceedings of the First Construction History Society Conference* (Cambridge: CHS, 2014), 81–90.

employment of women and those from ethnic minority groups.⁵ By the late 1970s, and against strong opposition from construction employers and the Conservatives, the expansion of DLOs, coordinated and developed at national and regional level, together with the establishment of a National Building Corporation, was even proposed by the Labour Party as the means to nationalise and decasualise the construction industry.⁶ Today too they have a new lease of life as local authorities in Britain insource activities and seek to maintain and renovate council property themselves by training and directly employing the labour required.

The prominence the DLOs assumed in Britain in building and maintaining council housing and other public buildings at different periods from the 1890s and throughout the twentieth century is testament to the lasting impact of municipal socialism, evident also in the physical infrastructure. They were born out of a combination of the many decades of struggles by building workers and their unions to improve employment and working conditions in the industry and of the labour movement in general to overcome the peculiar conditions affecting the building of houses for the working classes. A book produced by the Labour Research Department (LRD) in Britain in 1929 entitled *Direct Building*⁷ situates DLOs firmly in the context of the extension of municipal services and as the outcome of a seemingly irreconcilable alliance between those seeking to increase the efficiency of capitalism and those favouring municipal services as a direct encroachment on capitalism.

The DLOs, therefore, existed side by side and interacted with the private construction sector, characterised by increasing fragmentation, especially after the Second World War, as subcontracting – much of which was labour-only – and self-employment increased, apprenticeships declined, and a work-based training infrastructure was eroded. They signify the limitations of capitalism to meet the needs of workers for good quality, secure, and affordable housing; to provide long-term and safe employment for building workers; and to qualify the workforce required for an ever more knowledge-intensive labour process. As a result, increasingly, the state has assumed these responsibilities, in some European countries more than others.

Thus, if we look at this urban landscape, we need also to see such contradictions, including between, on the one hand, housing built on a not-for-profit basis and

5 Christine Wall, *Women in the trades: oral histories 1975–2000* (Leiston: Leiston Press, 2025).

6 Labour Party Pamphlet, *Building Britain's Future* (1978).

7 Labour Research Department (LRD), *Direct Building* (London: LRD, 1929).

owned by the public sector and, on the other hand, private speculative housing built for profit. If we look at construction sites, we can discern those on which building workers are exploited (for instance, where scaffolding is unsafe or non-existent and where workers have insufficient protective equipment) and those which are well regulated (with good employment and working conditions). And, if we look at the buildings and the infrastructure, we can begin to decipher the division of labour at different periods, divisions between, for instance, carpenters and bricklayers, plasterers and painters, as evident in the interfaces between walls and doors. We can also discover how far labour is valued and qualified, whether evident in cracked, badly laid paving or in good quality, energy efficient housing. Finally, we can uncover class relations, so clearly described, for instance, by ‘architect’ John Nash in his design of Regent Street in London as a social barrier: “A boundary and complete separation between the streets and squares occupied by the Nobility and Gentry and the narrow streets and meaner houses occupied by mechanics and the trading part of the community.”⁸

8 John White, *Some Account of the Proposed Improvements of the Western Parts of London* (London: 1815), 1st Report, Appendix XII B, 89.

Lionel Devlieger

Dust under the Rug

The industrialised unmaking of the city

This text revisits the question of the conditions of urbanisation, previously introduced by Michiel Dehaene and Tom Broes, through the lens of its materiality. It does so by focusing on a single material that reveals key dynamics of city-making in the age of industrialisation: certified mixed rubble, a form of demolition debris. My attention was drawn to this material years ago, in the context of my former occupation. Between 2005 and 2021, I was involved in an organisation advocating for the reuse of building components, where we repeatedly witnessed how obsolete buildings were processed. Then as now, dominant demolition routines consist in reducing often still functional components to shreds, rubble, and dust – a process that irrevocably destroys residual use value.

From a political ecology perspective, I will argue, the industrialised production of the built environment cannot be understood without examining the conditions of its industrialised destruction. Certified mixed rubble is a relevant object of study not only because of its ambiguous status within the contemporary environmental discourse and circular economy rhetoric, but also because of the sheer quantities in which it is produced. Archaeologists of the future may well use it as a stratigraphic marker of our civilisation.

Just like municipal waste, construction and demolition waste hardly existed for centuries. When resource extraction, fuels, and transportation were expensive, materials resulting from demolitions were reincorporated into nearby construction projects. The availability of cheap skilled labour enabled large-scale reuse of natural stone, bricks, timber, and carpentry, alongside the recycling of metals, plaster, and other valuable substances.¹ Second-hand building materials were qualitative and competitively priced compared to new products. It was only in the twentieth century, and with increased speed after the Second World War, that large-scale reuse disappeared in favour of industrialised modes of demolition.²

By the end of the twentieth century, demolition projects had largely been reduced to a standardised sequence of mechanised operations: buildings are stripped of finishings and other non-inert materials – such as interior partitions, ceilings, bituminous roofs, insulation, wood, metals – after which the remaining inert materials,

1 Michaël Ghyoot et al., *Déconstruction et réemploi. Histoires, tendances et perspectives* (Lausanne: PPUR, 2018).

2 Jeff Byles, *Rubble. Unearthing the History of Demolition* (New York: Harmony Books, 2005); Ph. Bernardi, Ph. Dillmann, and M. L'Héritier (eds.), *Démonter pour construire. Une histoire des matériaux de seconde main* (Dremil-Lafage: Éditions Mergoil, 2025).

primarily concrete and brick, are crushed into rubble by heavy machinery. The rubble is then transported to industrial breaking and sieving plants. While certain sorted components, notably metals, allow for relatively high-grade recycling, the overwhelming bulk of demolition debris consists of inert materials. In Belgium, this matter accounts for approximately 95% of construction and demolition waste by weight.³

An examination of demolition rubble management since the postwar period reveals the interplay of two simultaneous logics. The first centres on speed, efficiency, and the continuous processing of waste flows. To facilitate new construction, sites needed to be cleared rapidly, for the benefit of all economic actors involved. To this end, a well-integrated reverse supply chain was developed, overlaying urbanised territories with networks of heavy-duty roads and strategically located collection and sorting facilities. These infrastructures closely mirror the equally dense logistic networks that supply new building materials, such as ready-mixed concrete.⁴

As labour costs increased, these reverse supply chains became progressively more automated and capital-intensive. Like postwar supply chains – be it with a temporal lag – waste management chains were subjected to processes of scientification and increasingly detailed regulation. Public authorities and large industrial actors took the lead in shaping this framework. From the contractors' perspective, the priority was to establish waste categories compatible with existing earth-moving equipment. Regulatory attention, meanwhile, focused primarily on mitigating risks associated with toxic or hazardous materials. The European Waste classification (EURAL), introduced in 1993, reflects these priorities, codifying an approach to construction and demolition waste that assumes crushing and sieving as the default treatment.

A second logic emerged over the past five decades, particularly in densely populated countries such as Belgium and the Netherlands, where open land is scarce, landfill capacity limited, and public opposition to waste disposal sites strong. As early as 1979, the Dutch parliament adopted a motion establishing prevention,

3 "It is assumed that in Flanders more than 95% of construction and demolition waste is recycled." Translated by the author. <https://publicaties.vlaanderen.be/view-file/26607> (last consulted 5 February 2026).

4 Tom Broes, "The urbanization of cement and concrete".

reuse, and recycling as preferable alternatives to landfilling.⁵ From that point onwards, waste sorting and recycling gained prominence, alongside the concept of ‘secondary raw materials’ or ‘by-products’: unintended material streams from one industrial operation which could be mobilised in another. In line with ideas of industrial metabolism,⁶ governments and industrial players sought ways to substitute virgin resources with waste-derived materials. Mixed rubble was soon on their radar.

A straightforward improvement in demolition waste management would have been to consider potential uses and markets for materials and components prior to their being crushed into anonymous rubble. Instead, attention was directed virtually exclusively towards post-demolition debris. Industrial actors, scientists, and policymakers invested considerable effort in imagining high-end applications for ‘mixed rubble’. Over the past three decades, for instance, a plethora of studies have explored the substitution of mineral aggregates in concrete – normally sourced from natural stone quarrying – with mixed rubble. Overall, however, the results of these experiments have been disappointing in terms of technical performance, feasibility, and environmental benefit.

Beyond its limited use as an aggregate substitute in concrete, mixed rubble has found a more substantial outlet as ‘filling’ material in earthworks and as a sub-base in road construction. It is primarily this application that enabled mixed rubble to acquire the status of ‘useful’ by-product, and consequently a ‘commodity’ in the construction materials market. Crushing and sieving inert demolition debris thus came to be officially classified as ‘recycling’. For many years, the majority of inert rubble in Belgium was used as sublayers in road construction or road base material. These practices are closely monitored by state and industry-backed certification bodies, such as the COPRO, founded by the Belgian government in 1983 to certify road construction materials. COPRO is responsible for regularly taking samples at major recycling centres and certifying their quality, particularly as regards the absence of reactive or hazardous substances.

5 It is no coincidence that the waste management hierarchy now referred to as 3R (Reduce-Reuse-Recycle), later extended to 10R or more, was first introduced as government policy in the Dutch context (namely by chemist and politician Ad Lansink, 1934).

6 Robert. U. Ayre, et.al. *Industrial Metabolism, the Environment and Application of Materials-balance Principles for Selected Chemicals* (Laxenburg, Austria: International Institute for Applied Systems Analysis, 1989).

The certification of mixed rubble as a legitimate recycled material has meant that downcycling went largely unquestioned for decades. Today, however, Belgium and the Netherlands are confronted with a rapidly escalating problem.⁷ Building replacement rates are increasing, and the annual tonnage of produced rubble has doubled in less than two decades.⁸ Traditional outlets – road construction and limited aggregate substitution – are no longer capable of using up the continuous production of mixed rubble.⁹ Because transport distances rarely exceed 50 km for economic reasons, and international waste export is tightly regulated if not prohibited, surplus rubble inevitably accumulates in the landscape.

This phenomenon has yet to be studied systematically. It remains difficult to trace precisely because it unfolds incrementally and largely out of sight, mediated by the routine operations of earthmoving machinery in roadworks and groundworks. The cumulative effects, however, are substantial. They included excessive thickening of foundations through ‘backfilling’, inflated road subbases, unnecessary road widening, and the arbitrary raising of terrain levels. This stealthy territorial reconfiguration from below the surface resembles the act of sweeping dust under the rug: a spatial displacement of waste that obscures rather than resolves untenable material management regimes.

A more comprehensive investigation of the landscape-shaping agency of downcycled demolition debris would require both quantitative and qualitative approaches. Statistical analysis of demolition waste flows would need to be complemented by fieldwork, including the mapping of large-scale rubble deposits. Such research would make it possible to assess the environmental impacts of these practices. While raising land levels in northern Belgium and the Netherlands may appear advantageous in the context of the future sea-level rise, these regions are

7 “Countries like Belgium and The Netherlands are already facing a problem of saturation of low-quality RA [recycled aggregate] in the aggregates market.” See Andrea Di Maria et al., “Downcycling versus Recycling of Construction and Demolition Waste: Combining LCA and LCC to Support Sustainable Policy Making,” *Waste Management* 75 (May 2018), 3–21.

8 Amounts of C&D Waste evolved as such in Belgium: 11 Mt in 2004 to 26 Mt in 2022. In the Netherlands: 50 MT in 2004, to 98 MT in 2016. <https://statbel.fgov.be/en/themes/environment/waste-and-pollution/waste-production#-figures> (last consulted 5 February 2026). Eurostat: <https://ec.europa.eu/eurostat/databrowser/view/TEN00106/bookmark/table?lang=en&bookmarkId=7986e27d-7163-4b39-b022-8cda45962f1f&c=1578653073362> (last consulted 5 February 2026).

9 “In the Netherlands the recycling rate for C&D waste has reached 95% since 2001, due to the landfill ban which came into force in 1997. EOL concrete represents 40% of C&D waste. This stream is 100% recycled with more than 97% of it used in road construction as road base material (RBM). However, the generation of EOL concrete is expected to increase from 10.5 million ton (Mt) in 2003 to 22 Mt in 2025 (VROM 2008), while road construction will be stable. Consequently, a solution will need to be found for over 10 million ton/a of EOL concrete that cannot be absorbed in roads.” Mingming Hu et al., “An Approach to LCSA: The Case of Concrete Recycling,” *The International Journal of Life Cycle Assessment* 18, no. 9 (2013).

simultaneously experiencing increasing droughts and declining groundwater levels – conditions that are unlikely to be alleviated by the widespread deposition of thick rubble layers.

In parallel, an in-depth historical analysis is needed to understand the institutional and regulatory conditions that have enabled these dynamics. The term ‘perverse’ seems appropriate to describe a system that first destroys usable materials and subsequently searches for applications for the resulting rubble. The approach directly contradicts waste hierarchy principles that governments have publicly endorsed since the late 1970s and have more recently reaffirmed under the banner of the circular economy.

One hypothesis that warrants further investigation is the existence of structural ties between forward supply chains and reverse waste chains in the construction sector. It is conceivable that the building materials industry has actively supported policies favouring downcycling to prevent the emergence of a robust reuse sector that might threaten established markets. Empirical research into the development of key regulatory frameworks, such as the European Waste Framework Directive of 2008, could shed light on the influence of industry lobbying during critical moments of policy formation. Anecdotal evidence suggests that deliberations surrounding this regulation – initially welcomed by reuse advocates – were steered towards recycling-friendly outcomes.

Finally, a critical examination of how governments report circularity metrics would help clarify what remains systematically opaque. In Flanders, for example, policy discourse emphasises the percentage of construction and demolition waste that is recycled, while absolute quantities – and their dramatic increase, unparalleled among other waste stream types – are largely omitted. From an urban political ecology perspective, such reporting practices obscure the material consequences of contemporary urbanisation and contribute to the normalisation of extractive and destructive cycles under the guise of sustainability.¹⁰

10 We could add also that, thanks to the huge percentages of ‘recycling’ of inert waste materials attained, in Belgium and the Netherlands, these countries also tend to yield high scores on circular economy indexes. The question is whether these scores are justified and whether such indexes should not be revised. See, as a case in point: Andrea Di Maria et al., “Downcycling versus Recycling of Construction and Demolition Waste: Combining LCA and LCC to Support Sustainable Policy Making,” *Waste Management* 75, May (2018), 3–21.

Carl H. Nightingale

To Build ... an Urban History for Our Time

To build. It's a verb so deeply associated with cities – and 'the urban' – that it's tempting to imagine that the act and the thing theorise each other. Cities are where most acts of building occur, homes to most buildings and most of the biggest, the site of most construction sites. However, as Michiel Dehaene, Tom Broes, and Linda Clarke show us, this seemingly symbiotic relationship can only be theorised historically, for it is contingent upon the vexed and changing intersections of many other foundational historical acts, most vexed among them being labour exploitation and reproduction, consumption, capital accumulation, and technical innovation, such as in the production and disposal of building technologies. Extractions are involved as well, mostly in beyond-city built spaces where mobilised labour, capital, and technology transform Earth's lithosphere into building materials – with cities as the most prominent by-product. Since city building cannot happen without such spaces, building requires us to 'extend' the scope of the 'urban' beyond cities to a kind of 'non-city, built, building-hinterland' of quarries, clay pits, and mines, not to mention the heavy vehicles (built environments in their own right, if mobile ones) required to extract heavy material from Earth. From there, large-scale infrastructure, in the form of roads, canals, rails, and ports, along with still more heavy vehicles, must all be built to move building materials into cities, adding elongated, nodal, and mobile built spaces, both to the act 'to build' and to the urban category. In cities themselves meanwhile, building, the act itself, and building materials in their very bulk, force city builders to build specialised spaces devoted to building that themselves change in size and shape along with labour, capital, and technology and that thus change cities themselves.¹

Building, as Lionel Devlieger also reminds us, always requires unbuilding, either of a pre-existing building or a pre-existing landform, and thus rubble. The Greatest Acceleration in city building also marks a rupture in a nearly six-millennia practice, going back to the ziggurats, of reusing rubble on site to build new buildings. Now, just as cities' materiality is imported in greatly accelerating quantities from elsewhere, so the Great Acceleration of rubble must be re-exported to ever larger spaces beyond cities, entitling them to consideration as urban too.² As Earth becomes city and cities return to Earth, spreading urban space in all directions, builders rebuild the lithosphere, and with it our planet's fossil record – likely for all future time. And for all future urban pasts: treating building as a subset of broader acts of 'terraformation,' as Dehaene and Broes rightfully do, forces urban historians to

1 See Michiel Dehaene and Tom Broes, and Linda Clarke's chapters in this volume.

2 See Lionel Devlieger's chapter in this volume.

add non-city spaces that make cities possible plus non-city spaces that cities bring into being into a radically extended category urban – and declare that, though cities are crucial to the urban, varying amounts of non-city space belong at least partly under the purview of urban history too – including not only new infrastructures, but spaces thought of primarily (or even entirely) as ‘rural’ and ‘natural.’

If extending one verb can extend our field as much as ‘build’ can, we should expect still other acts with an equally elemental connection to cities – and to acts of building – to do the same. Upstream from ‘to build,’ for example, there is no city, nor is there any building, without prior verbs ‘to situate,’ ‘to design,’ and ‘to energise.’ All three also expand our notion of terraformation. Humans may have taken on a new outsized role, for a single species, in the business of making Earth, even remaking its relationship to the Sun. But Earth, with mighty help from the Sun, also constantly remakes – terraforms – itself, and urban history. This matters ‘foundationally’ to acts of urban siting and design, as a geologist collaborating with an archaeologist argued in a provocative paper about the first cities in southern Mesopotamia, speaking of ziggurats. Any ingenious human acts that may have been involved in building the first cities only occurred in the context of astro-geophysical ones, including rising seas and changing precipitation cycles in the early Holocene that resulted in a back-and-forth dance of silt, salt, and sand deposits in the region. These eventually determined where people could situate, design, and build solid-sided irrigation channels parallel but higher than rivers that were capable of directing liquid water along with nutritious suspended solids and more efficient human-assisted inputs of photosynthetic energy into the seeds of grain-bearing grasses planted in larger, wetter, ploughed (i.e., terraformed, in this case more efficiently using teams of oxen) stretches of soil between the ditches and the Euphrates and Tigris Rivers. Find the Earth-built sites best suited to those acts of extra-city design, energising, and building in the fourth millennium BCE, and you find the sites of the first human settlements that made the crucial quantum leap from housing mere hundreds or thousands of inhabitants to tens of thousands, the first settlements that could be called cities.³

City-building may have dialectical relationships with acts of labour, capital formation, technological innovation, and earth-moving, but it is also helpful to expand our concept of building by expanding what it means to energise a city. If we are serious about the ‘materiality’ of the city, we should be clear that states of matter

3 Livio Giosan and Reed Goodman, “Morphodynamic Foundations of Sumer,” *PLOS One* 20, no. 8 (2025).

and states of energy are inseparable things, and that ‘energy’ encompasses not just combustible fuels and electricity, but water, food, people, animals, plants, and building materials too. To Build: the strategically designed re-situation of substances that exist in a solid energy state on Holocene-Epoch Earth – created over billions of years by solar, geological, and biological energies in the first place – so as to govern substances in liquid and gaseous energy states, as well as life forms that inhabit such states, all of these with often unpredictably shifting caloric properties, to in turn delimit and fortify a parallel and largely separate ‘built environment’ whose energy conditions are far less volatile than those in the ‘natural environment,’ and are absolutely essential – even in the relatively stable energy regime of the Holocene Epoch – to the labours, pleasures, longevity, accumulations, and reproduction of human bodies, and thus to species survival.

From there, it’s a small jump to the largest action downstream from ‘to build’. To build is to gamble that channelling raw geo-solar energy into spaces we situate and design for our own amplified survival will in fact enable us to remake that energy into amplified human power. Some may soft-pedal this chancy human power grab as ‘adaptability,’ ‘resilience,’ or ‘sustainability,’ but the natural scientists who prophesy a new ‘Anthropocene Epoch,’ whatever their limitations, have done us the great service of calling the elephant in the planet what it is. Human power their data tell us – whatever the obscene inequalities in its actual use – now exceeds the Earth-Making capacity of any other life-form since anaerobic bacteria created atmospheric oxygen. Our terraforming power equals or even trumps biological and geophysical forces of terraformation, scrambling the always vexed but recently stable relationship between Sun and Earth in the bargain.

Urban History – starting with cities – should treat the verb ‘to build’ with much more respect, because to build not only evokes making space – ‘producing’ space in Lefebvrian terms – but also *growing* that space – another act required for building any city – and not only making and growing space in cities but also using cities to grow and use human power. The semantic mimesis (in English anyway) of ‘to build’ and ‘to grow’ offers a further hinge between acts of building a hamlet, a village, or a town (respectively habitats for tens, hundreds, and thousands of humans, in archaeologist Ian Morris’s ingenious taxonomy⁴) and a very different act, namely

4 Ian Morris, “The Rise of Urbanisation and its Impact on Europe,” in: Maarten Prak, Penelope J.E. Davies, and Christian G. Williamson (eds.), *The Cambridge Urban History of Europe, vol. 1 Ancient Europe* (Cambridge: CUP, 2025), Table 2.1, 30.

building/growing settlements in both size and density to gather tens of thousands, hundreds of thousands, millions, and now tens of millions of people. ‘To build’ in its guise as to grow clarifies the gamble at stake as well: that these exponentially larger settlements will multiply the possibilities for varying human activities (and multiplying cities’ vaunted ‘specialised functions’), and from there will grow the possibilities of catalysis of human action to the point that humans will need to devise more complex institutions of governance, capital formation, labour exploitation, and cultural and technological innovation, and will then need to engage in new acts of situating, design, energising, and building to make cities (with attached urban hinterlands) into the premier spatial arrangement in human history for exponential bursts of our own species’ power-building vis-à-vis Earth and Sun.

Cities are Power, and the act ‘to build to grow’ is a principal ante in our gamble on the equation of space and power. Building for growing is a gaming of Earth, Sun, and the shape of the human habitat. That game did not unfold in theory; it unfolded in human history, on a changing but very material solid, liquid, gaseous, caloric, and living planetary gaming table, over the six millennia that constitute all global urban history and the entire second half of the Holocene Epoch. During that time cities helped us generate massive bursts of power, but they were always deeply unequal, both within and between cities. City-generated power was always rivalled by power generated in smaller places like villages and nomadic camps. Bursts of city-generated power were also subject to massive retreats – unbuilding – for most of the six millennia of urban history, some ensured by wielders of city-based power themselves, others partly governed by retreats of geo-solar energy. All along, though, cities retained the title of premier human power-making human spaces. The job of the urban historian today is to assess how well we have done with our great gamble on cities on Earth during a period when Sun and Earth otherwise related to each other in a uniquely humano-philic fashion that made cities even remotely possible.

Therein lies the ultimate reason to ponder the verb ‘to build’, to extend it alongside our notion of the urban, and to link space and power. Acts of interpretative imagination – like these, actionable in archives – are essential to wrapping our minds around a new Epoch. In Our Time, power generated in ‘artificially intelligent’ ‘virtual’ space by human-made machines located in massive, energy-sucking, mostly extra-city, but definitively urban spaces, may now present the largest threat to the primacy of city-generated forms of power. We face that predicament just at the time when we need to rebuild (read: resituate, re-energise, redesign, regrow) all

urban spaces – in cities, along infrastructures, in rural places, in virtual spaces, and in natural ones – to meet the challenges faced by all lifeforms on a planet beset by a suddenly much hotter and much more volatile energy state: a predictable outcome that, as urban historians must acknowledge, we can attribute in great measure to our gamble on building cities.

Dave De ruysscher, Louis Debersaques

The Expert's Not-knowing

Authority as art

(with a comment by Tijl Vanneste)

Introduction

This chapter analyses the notion of ‘know-how’ in connection to construction history. Expertise in building is often understood as a skill that is acquired through experience and practice. Knowledge concerning building is typically considered as fixed and as shared among professionals. However, the argument developed below investigates how that expertise in construction, historically, referred to the expert’s status in connection to uncertainty and to views on the epistemology of truth. The latter approaches persisted until the late nineteenth century and can be traced back to the Middle Ages. Unforeseen challenges and errors of experts mark focal points in the text below, which make it possible to shed light on the historical interpretation of expertise. The social element in expertise – the expert’s ‘authority’ – was closely connected to a perception of knowledge as being ‘present’, even if this knowledge was absent and an ad hoc solution had to be found. Knowing how to handle unexpected, even previously unknown, situations – the redressing of mistakes made, included – was an ‘expert’ approach, as well.

Expertise as art and dexterity

“An expert is a person who has made all the mistakes that can be made in a very narrow field.” Albeit apocryphally, this quote has been attributed to theoretical physicist Niels Bohr (d. 1962). Even though Bohr was lauded by his peers (he was awarded the 1922 Nobel Prize in Physics), his theory of the angular momentum, explaining the stability of atoms, has been found incorrect or at least flawed.¹ However, no one would claim that Bohr was not an expert because of it. One could argue that expertise is inevitably defined by a margin of error. Following this logic, the expert can be considered as someone who has experience in an art or craft, which implies the lived experience of falling and failing. Failures often occur when a certain framework or method proves inadequate and is found to require adaptation. Unforeseen challenges and subsequent changes of tactic or perspective can thus be seen as part of the realm of expertise.

1 See, for instance: Helge Kragh, *Niels Bohr and the Quantum Atom: The Bohr Model of Atomic Structure 1913-1925* (Oxford: OUP, 2012), 253.

However, handiness and the capability to improvise not only refer to experience but also to how expertise is understood. In this regard, a historical analysis of expertise, as embedded within cultures of epistemology and philosophy, offers an angle that contributes to construction history. Indeed, besides critical and social approaches to the history of building activities, a semi-structural historical approach from the perspective mentioned is possible. The rules and practices of building have often changed over time. Yet the deeper beliefs underlying standards and expectations in building are more durable. A turn towards context of this type has the potential to enrich other approaches to the history of construction. The deeper beliefs mentioned mark a field that intersects with other fields, such as the social and economic ones, which contribute to the dynamic nature of construction processes.

Unforeseen challenges are determined by the extent of predictability. Lorraine Daston argues that disciplines like medicine and carpentry attest to a certain “resistance of matter to form”.² In other words, materials may limit predictability. The use of physical materials comes together with observation, not just calculus. Nonetheless, expertise in the subjects mentioned was considered ‘mechanical’. In the twelfth century, the *artes mechanicae* encompassed activities that were considered ‘vulgar’. They included, among others, weaving, agriculture, masonry, warfare, trade, cooking, and blacksmithing.³ Mechanical arts were situated in between the sciences, which claim both predictability and certainty, and the crafts, which are characterised by “unthinking routine and at the mercy of chance”.⁴

The connotation of activities such as building and masonry as ‘art’ referred to the idea that they not only involve acquiring a set of best practices (routines, precedents); they require sensing a logic that is often not explicit as well. Therefore, not only the matter that is manipulated, but also the perspective and method chosen are crucial components in the metaphor of the *ars mechanica*. The “mechanical” part of *ars mechanica* refers to conventions; the *ars* component of its definition hints at an underlying logic that is more than best practice.

Similarly, the notion of *ars* was used for other disciplines and intellectual activities. In the Middle Ages, for example, lawyers typically defined legal interpretation as an art. In Roman times, legal interpretation along with crafting and imposing rules

2 Lorraine Daston, *Rules: A Short History of What We Live By* (Princeton: Princeton University Press, 2022), 54-55.

3 Daston, *Rules*, 76-77.

4 Ibidem, 55.

were deemed an “*ars boni et aequi*”. The law of humankind (positive law) was considered as reflecting *aequitas* (equity). The formula of “*ars boni et aequi*” referred to the act of the legal interpreter who devises rules that link the facts at hand to equity. The Roman jurist Paulus distinguished between law and the totality of rules.⁵ Rules evoke legal relations but are brief and they refer to their instances of formulation. In contrast, law is universal and rules are derived from it. For Paulus, underlying the law was a set of principles, all founded on *aequitas*, but in reference to the societal features of law, too. For the Romans law was not universal or imbued with divine values. Rather, it was about “*suum cuique tribuere*”,⁶ to give all their due. This maxim pointed to claims that were considered just within the context of a given community. Equity was not an absolute but a relative directive. As a result, the art-like understanding of law goes beyond a ‘deeper understanding’. It is not a hermeneutical endeavour to trace the universal values from which concrete solutions can be distilled. Because of its real-world characteristics, the law is not merely ‘found’ but also ‘crafted’.

In the Middle Ages, arts implied “head and hand, understanding and dexterity”.⁷ This reminds us of Immanuel Kant’s (d. 1804) perspective of the hand as the window of the mind.⁸ Interaction between mind and body are core constituents of what in the construction sector of the past was called *the rules of the art*. These rules refer to the physical characteristics of materials and the laws of physics that determine choices to be made at construction sites. However, in their combination, the handling of materials of different nature can pose new challenges. Moreover, the design of buildings can require novel approaches that have to be implemented during construction. Decisions about the use of materials can follow from direct experience when well-trodden paths are abandoned. What experience does not account for has to be tested in practice. The expert judges which choices are to be made when they are uncertain. This characteristic marks the difference between a practitioner and an expert; the latter’s assessment can be followed even in the absence of precedents.

Knowledge is borrowed, skills are acquired, and expertise encompasses both. There is a dialectical relationship between know-how and the ability to handle concrete

5 Digest of Justinian 50,17,1.

6 Digest of Justinian 1,1,10.

7 Ibidem, 77-78.

8 Raymond Tallis, *The Hand: A Philosophical Inquiry into Human Being* (Edinburgh: EUP, 2003) 4; Richard Sennett, *The Craftsman* (London: Penguin Books, 2009), 149.

problems. On the one hand, skills can be taught and learned. On the other hand, action creates knowledge. Therefore, 'knowing' is both the result and the cause of dexterity. '*Savoir-faire*' is a skill that both follows from and produces knowledge.

And yet, dexterity in new circumstances is more than improvisation. Expertise is closely connected to mastery of a logic that makes it possible to address unexpected events and situations. Both Plato and Aristotle considered *technè* a kind of skill or knowledge. For Plato, *technè* was the ability to master a complex set of rules and interlinked facts. He refers to *technè* in relation to music and medicine, but also politics, for example. Plato considered that a *technè* can be learned but not by everyone at the same level. A *technè* went together with *ergon*, which was its goal, and typically, a *technè* involved activities that were not identical with its goal (for example, building as compared to putting up a house). In the *Gorgias*, Plato refers to Socrates who considers medicine, judging, and legislating as *technè*. For Plato, *technè* is related to *empeiria*, experience, but both concepts are nonetheless different. For Plato *empeiria* is 'practice', that is, repeated actions that through memory create experience. However, *technè* refers to a broader assessment of different elements, as well. The medical doctor diagnoses the patient after having assessed different symptoms in combination. The doctor's 'skill' (*technè*) cannot be reduced to experience, since the symptoms, their intensity, and other features are unique.

One of the main differences between the accounts of Plato and Aristotle, in reference to *technè*, relates to epistemology. Plato connected *technè* with *gnosis* (understanding) and *epistèmè* (knowing). According to Plato, the 'expert', when acting outside the boundaries of routines, 'sees' and addresses that which is there. In contrast, Aristotle considers an 'art' (*praxis*) as 'reasoning' (*to logistikón*) and distinguishes the latter from science. Reasoning produces a result that could be different. Science demonstrates a truth that cannot be otherwise. For Plato, experts' understanding of reality thus ensures the validity of their judgements; for Aristotle there is a limit to understanding reality as a given. The expert is also the one who creates knowledge out of thin air, when addressing issues that are not usual.

The above difference between Plato and Aristotle is evident in their categorisations of medicine and law-making. According to Plato, both were involved with the discovery of knowledge through experience. For Aristotle, they are more concerned with careful reflection. In that regard Aristotle does not consider medicine and law-making as *technè*, which for Aristotle is mere crafting and designing. Instead, he categorised them as *praxis*, which can be translated as 'practical wisdom'. *Praxis*

is granular and is the interaction with a reality that is messy. It is not surprising that Plato's conviction in the existence of universal values transpired into a categorisation of law-making as a deductive exercise. For Aristotle, it came more from the bottom up. According to Aristotle, law reflected the needs of a community more closely than universal truths.

Admittedly, Aristotle was not 'postmodernist' in the sense that he denied all kinds of pre-existing values and facts. Aristotle states that experienced craftsmen are wise because they know the reasons why things need to be done. The mere producer (*cheirotechnês*) acts without this knowledge.⁹ Here Aristotle distinguishes between the expert and the practitioner along the lines mentioned above. Acting according to rules and precedents is the craftsman's remit; judging on the basis of practical wisdom, the expert's. Even in the messiness of reality, when ad hoc decisions have to be taken, an individual must consider the reasons for their actions and after some time might become better at it. However, *praxis* according to Aristotle is different from 'experience'.¹⁰ The reason that one can teach *praxis* is due to the grasp of the underlying logic which explains the reason for what is or has to be done. Here, again, Aristotle did not consider this 'logic' as a universal truth, unlike Plato.

Trial and authority

Throughout the history of construction, there are several examples of established practices that were adjusted in time. Products of which initially it was thought that they were beneficial might reveal flaws after a while. In this regard, small gains could mask deficiencies, which emerged only after some time. One example relates to carbolineum. Beginning in the eighteenth century, this tar-derived product was used to treat wooden walls and fences. It made them resistant to moisture and mould. However, it was only after several decades that it was found out that the wood, once treated with carbolineum, could no longer breathe, causing it to dry out from the inside and become less stable. At first, carbolineum was hailed as a better product than lime; later, experience rendered it less useful.¹¹ For products

9 Aristotle, *The Metaphysics*, Hugh Tredennick (transl.) (London: Heinemann, 1933), book 1.1 (981a30–b5).

10 Ibidem, 981b10.

11 William Dallimore, "Wood Preservation," *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)* 5 (1918), 181–189.

that eventually proved dangerous to public health, such as asbestos and lead paint, a similar reconsideration of their benefits occurred.¹²

Overcoming challenges such as those caused by unforeseen situations are within the expert's range of action. The expert combines the ideal of structural knowledge with responsiveness to the unexpected. Moreover, the authority of *knowing best* rests on recognised competence and professional trust. In other words: skill provides authority its substance, while recognition reinforces it. In this way, a tension arises: the individual authority of a person is linked to a general validity – the expert articulates an opinion, which one is expected to follow.

As a result, the expert could be acclaimed for work of which he personally was not convinced. It could involve a certain way of working or even the eventual product. In other words, experts can be considered authoritative, even when this is in fact unintended or even discouraged by the expert. Mimar Sinane (1488-1588) is a good example of this. He was perhaps the most famous Ottoman architect, receiving commissions from the sultans. Hired by Suleiman the Magnificent, Sinane finished the Sehzade Mosque, named after his deceased son, in 1548. According to the master builder, though, the mosque was merely “an imperfect fruit of his apprentice days”.¹³ However, despite Sinane's modesty, his work marked a “significant innovation” in dome building and became highly influential. Its method was adopted in later major constructions, such as the Blue Mosque (1617).¹⁴ Another example is the ancient theatre of Epidauros, built by Polykleitos the Younger (c. 300 BCE). This theatre unintentionally set a new standard in acoustics. While it is clear that the Greeks knew that sound waves travelled, ancient architects were not aware of the crucial element that enabled the acoustic brilliance of the place, namely the limestone seats which filter out low-frequency sounds.¹⁵ Examples of the type mentioned remind us of *The Sleepwalkers* (1959), in which Arthur Koestler argued that

12 David Gee and Morris Greenberg, “Asbestos: from ‘magic’ to malevolent material,” in: Paul Harremoes et al. (eds.), *The Precautionary Principle in the 20th Century. Late Lessons from Early Warnings* (Abingdon: Routledge, 2002), chapter 5; Laurence Lestel, “The Banning of White Lead: French and International Regulations,” in: Ernst Homburg and Elisabeth Vaupel (eds.), *Hazardous Chemicals. Agents of Risk and Change, 1800–2000* (New York: Berghahn, 2022), 87–106.

13 Nihad Babović, “Sinan's mosque: eternal values of architect, age and society,” *Islamic Urban Heritage (Summer School 2012)*, 81; Rubén García, Mehreen Rahman, Roshan Sugaina, “Innovating the Mosque: The Architecture of Mimar Koca Sinan,” *The International Journal of Architectonic, Spatial, and Environmental Design* 15/2 (2021), 127; Godfrey Goodwin, *A History of Ottoman Architecture* (London: Thames & Hudson, 1971), 210.

14 Quote from: García, Rahman and Sugaina, “Innovating,” 127.

15 Richard Foqué, *Building Knowledge in Architecture* (Brussels: Academic and Scientific Publishers (UPA), 2010) 73–4; Nico Declercq and Cindy Dekeyser, “Acoustic diffraction effects at the Hellenistic amphitheater of Epidauros: seat rows responsible for marvelous acoustics,” *The Journal of the Acoustical Society of America* 121, no. 4 (2007), 2011–2022.

discoveries or scientific progress are not always intentionally propelled.¹⁶ However, this phenomenon goes beyond mere serendipity, which is when the finder recognises the merit of the idea or novelty found. Architects could harbour thoughts of failure for projects that nonetheless were admired.¹⁷

In this regard, Aristotle may be helpful again because he considered that truth reflected correspondence to reality. Even though reality could be messy and complex, it was ‘understandable’. Its ‘knowability’ depended on the skill (*praxis*) of the person who navigated reality. In this regard, as was already mentioned, design and *praxis* are different for Aristotle. Design refers to an anticipated outcome that is not ‘out there’, and which could have been different. However, the implementation of a design is fixed. In contrast, for Aristotle, *praxis* is connected to an ‘art of trying’, in which arguments are ‘put to the test’ (*peirastikē*).¹⁸ According to Aristotle, the test is one of refutation, pointing to contradictions between beliefs and reality. What emerges therefrom, as tested experience, is *praxis*.

Practical wisdom

Expertise in relation to unforeseen situations in construction was at stake in workplace accidents. Such accidents could be caused by a negligent behaviour, which then triggered a judicial inquiry.¹⁹ In nineteenth-century Belgium, investigating magistrates (*juges d'instruction*) appointed experts to scrutinise to what extent builders could have *foreseen* the mishap. Experts were typically architects or engineers by training; they based their findings not only on the inspection of the scene or witness interviews but also on their own experience and personal knowledge of the rules of building. In 1873, during the construction of a dwelling, three masons were injured after part of the façade collapsed.²⁰ In his official report, the expert claimed that “I must conclude that [the building] has been established without respect for the rules of the art and even the most elementary prudence.” When

16 Arthur Koestler, *The Sleepwalkers* (London: Hutchinson, 1959).

17 On the stereotype of the tragic architect, see, for example: Ch. Van den Broeck, *Bold Ventures* (London: Chatto & Windus, 2022). This novel sums up 13 stories of architects who committed suicide out of grief for their lack of accomplishment.

18 Aristotle, *Sophistikoi Elenchoi*, Edward Poste (transl.) (London: Macmillan, 1866), 73-76 (169b 25-27).

19 See Louis Debersaques's chapter in this volume.

20 State Archives of Belgium (Forest), *Inventaire des archives de la cour d'appel de Bruxelles, affaires correctionnelles 1811-1884*: no. 2384, 1873. Citations translated from French to English by the author.

evaluating the routines and practices on a construction site, the expert tests them against (his interpretation of) the aforementioned rules of the art. In the above case, the expert stated that the consistency of the mortar used did not comply with what “experience has always shown”.²¹ As such, the authority of the expert does not follow just from his position, or the fact that he is appointed by a judge. The expert’s statements underscore this authority by way of reference to a (thus perceived and presented) universal truth.

Upon his appointment by a judge, the expert acted as a mediator between the law and the building profession, in line with the age-old epistemology of the mechanical arts. With Aristotle one can say that in the nineteenth century the expert’s *praxis* also allowed him to make generalising statements on a messy reality. A crucial ingredient to the art of building was knowledge of the dangers within the environment/workplace/construction site. The expert’s know-how was deemed to “concern the various hazards associated with the territory”.²² However, even when these dangers are known, remedies to address them are far from self-evident. This condition does not keep the expert from analysing whether a response to a challenge was adequate.

The nature of this type of knowledge is practical. Moreover, knowledge here actually refers to the ability to use knowledge, which can be defined as wisdom. When assessing responses to unforeseen circumstances, the expert applies some kind of practical wisdom. Experience is a necessary condition for determining the method of working, all things (context) considered, or as the critic John Ruskin (1819-1900) said: “In art you must not talk before you do.”²³ Aristotle uses the term *phronèsis*, which is the pragmatic skill of finding solutions for any given problem, and which is at the core of *praxis*. “*Phronèsis* includes a knowledge of particular facts, and this is derived from experience, which a young man does not possess; for experience is the fruit of years.”²⁴

21 State Archives of Belgium (Forest), *Inventaire des archives de la cour d'appel de Bruxelles, affaires correctionnelles, 1811-1884*: no. 2384, 1873.

22 F. Cairoli Giuliani et al., “The conception of building in ancient architecture and the ‘rules of art,’” *WIT Transactions on The Built Environment* 95 (2007), 603.

23 John Ruskin, *The Eagle’s Nest* (London: George Allen, 1872/1900), 4-5.

24 Aristotle, *The Nicomachean Ethics*, H. Rackham (transl.) (Cambridge (Mass.): Harvard University Press, 1956), 349-351 (VI, 8.5-6).

While *praxis* refers to the actions, *phronesis* refers to the practical wisdom that underlies them, or is gained from them. As was mentioned, *phronesis* can be applied in concrete, even unexpected situations. Given the practical and situational characteristics of this type of wisdom, it should not come as a surprise that *phronesis* is often linked to (or translated with) concepts such as common sense and prudence.²⁵

Prudence, in particular, relates to unforeseen circumstances, as the capacity to anticipate uncertainty and thus act cautiously. According to Thomas Aquinas (d. 1278), prudence is “the charioteer of the virtues”.²⁶ It therefore determines the appropriate means to measure the application of practical wisdom to concrete situations, something we have addressed earlier as dexterity. In this regard, the approaches of the Middle Ages combined theological thought with the views of Antiquity. Aquinas stated that Creation was an order based on rules, which were accessible to those who looked for them. As a result, in the Middle Ages an epistemology prevailed according to which all events had a cause and nothing happened by chance. In that regard, the Aristotelian *phronesis*, which was a tactic to deal with events and phenomena that *could* be, was altered. Aquinas stressed the ontology of unexpected things; they existed before they were discovered and were not merely accidental.

In the above-mentioned example (the accident of 1873), the violation of the rules of the art, as identified by the appointed expert, is connected to prudence. As a result, the art of building encompasses a kind of moral code by referring to a certain embodied, situational, and tacit judgement of the expert. As such, danger was managed or mitigated through skill and experience. This approach is also true in novel (non-crisis-like) situations which, to a certain extent, can be seen as (literally) unforeseen. In this context, the art of the builder, especially when new materials were tested or constructions were higher or bigger than before, invoked *phronesis* by carefully deciding which course of action to take.

For experts, the skill of assessing situations – even unknown ones – is therefore just as important as their knowledge and application of rules. In the course of the EOS project, the perimeters of the research organised within the legal track were adjusted once this insight emerged. Initially, the legal-historical analysis of building

25 Olav Eikeland, *The Ways of Aristotle Part 2: Aristotelian Phrónêsis, Aristotelian Philosophy of Dialogue, and Action Research* (Bern: Peter Lang, 2008), 19.

26 St Thomas Aquinas, *Summa Theologica* (London: Encyclopedia Britannica, 1923), vol. 1, 256-259 (I, q. 47 § 2).

processes assumed norms to be objective and pre-existing. At first, it was thought that building professionals implemented rules they knew. As a result, the legal track of the EOS project was designed to analyse the references to such rules in the context of lawsuits on building accidents. This exercise, which was conceived of as an empirical one, soon proved impossible. What was invoked as a rule was not always fixed in legislation or precedent. A notion of ‘custom’ did not help here, either. Building conventions could be taught from one generation of building professionals to the next. However, over the course of the past years, it became clear that *ex ante* rules were not always present. Moreover, the formulation of rules was often done in specific situations, by ‘experts’. The authority of these experts lay in their perceived ability to make ‘the rules of the art’ concrete, even when they did not know them. As a result, expertise was analysed as interacting with social and cultural variables.

The art of restoring order or repairing

The ability to decide when and how to craft something also relates to the act of repairing. When a craftsman repairs something, he (although this is not necessary) “restores a function”.²⁷ Moreover, looking at the example of *kintsugi*, repairing can in fact be approached as an art. Kintsugi (from the Japanese words ‘gold’ and ‘joinery’) refers to the seventeenth-century art of repairing broken pottery by mending the cracks with substances like lacquer or gold.²⁸ According to this philosophy, repairing is an art of caring and using one’s know-how to restore the object’s function. By repairing that which was once broken, kintsugi dictates that the object is elevated in beauty. As a “knowledge-driven activity”, repair evokes the practical wisdom of the expert, to the extent that he or she has to carefully determine how, and in what order, the cracks of the pot (the eventual size of which is indeed unforeseen) are to be remediated.²⁹

In the building industry, however, the stakes are higher. Ideally, the expert’s skill prevents certain disasters like accidents or the building’s collapse from happening.

27 Tiago Mesquita Carvalho, “There, I fixed it! On the status and meaning of repair,” in: Mark Thomas Young and Mark Coeckelbergh (eds), *Maintenance and Philosophy of Technology* (New York: Routledge, 2024), 93.

28 Guy Keulemans, “The geo-cultural conditions of kintsugi,” *The Journal of Modern Craft* 9, no. 1 (2016), 15-16.

29 Carvalho, “There, I fixed it!,” 97.

But what happens if the expert builder, the one who conceptualises and leads the building process, is confronted with a crisis so great that things need to be redone? What if certain repairs are necessary but uncertain, which is when they depend “on the best available knowledge”?³⁰ Who, in this instance, has more *phronesis* than the builder himself?

In July 1978, a newly finished skyscraper in New York City called Citicorp Center (now Citigroup Center) was found to have a potential structural defect. Following numerous third-party examinations, William LeMessurier, the building’s structural engineer, discovered that the building’s design put it at risk of collapse. Over the course of the following few months, workers undertook covert renovations to prevent catastrophe. Although he was responsible for the flaws, he was nonetheless engaged to address them. LeMessurier briefly considered taking his own life before anybody else discovered the flaw, as he mulled never flagging the issue. However, he changed his mind and ultimately contacted the client’s lawyer and insurer. Citicorp then approved LeMessurier’s suggestion to weld steel plates over the bolted joints. Very few people were made aware of the matter. LeMessurier included many unusual elements in the design. The Citicorp skyscraper was the first structure to incorporate active mechanical elements for stabilisation, including a tuned mass damper on the top, diagonal bracing to absorb wind loads from upper storeys, and an elevated foundation supported by four offset stilts.³¹

Soon after its completion around 1975, the John Hancock Tower in Boston was revealed to have a series of serious issues: huge glass panes began detaching and crashing to the street below, and the building swayed so severely in the wind that occupants experienced motion sickness (fig. 28). To address these failures, engineers were brought in to undertake massive remedial work: thousands of windows had to be replaced, and a huge “tuned mass damper” (a giant weight that sways to counter building movement) was installed to stabilise the building against wind-induced sway. The same architects and engineers remained responsible for the fixes and corrections – effectively repairing errors discovered post-construction.³²

30 Ibidem, 87.

31 Joe Morgenstern, “The Fifty-Nine Storey Crisis,” *The New Yorker* 29 May 1995, 45-53.

32 Robert Gannon, “Wind engineering: Predicting what skyscrapers and the wind will do to each other,” *Popular Science* (Oct. 1975), 84-87, at 85-87.



Figure 28. The John Hancock Tower with broken windows, 1973. (US National Archives)

The art of not-knowing

We have argued how the expert evaluates a situation based on situational expertise (*phronesis*). Unforeseen challenges test a structure by definition. When something goes wrong on site, the builder will try to return the situation to normal, thus adding experience to acquired knowledge. Here, the embodied knowledge and artisanal evaluation of master builders guide decisions, thereby restoring order. As a result, practice turns into a rule and experiences build expertise.

In modern times, however, the idea that the art makes the master made way for the idea that education guarantees insight. In this regard, for some disciplines, education was designed in such a way that practical skills could be combined with theory. The changes in the training of architects in the nineteenth century provide an example of this shift. In 1840, a training programme for architects was organised at the Academy of Fine Arts in Brussels. Over the course of the nineteenth century, more ‘exact’ courses were added, such as mathematics, descriptive geometry, etc.³³ This happened in other countries as well. The growing emphasis on ‘exact’ subjects came in tandem with more standardisation in public works and the rise of the profession of the engineer.

At the same time, this change triggered contrary reactions. Some emphasised the need for creativeness and experimentation. An attempt was made to separate art from science, but this never materialised. Universities and technical schools set up programmes that combined both. Moreover, in Belgium and France, architects no longer were contractors from the beginning of the twentieth century onwards, but were hired by clients alongside contractors, who executed the architect’s plans.³⁴

In the nineteenth century, similar discussions on the content and goals of education existed with regard to medicine and law. Lawyers in common-law countries acquired their skills by apprenticeship and practical training. They were enrolled at Inns of Court, where they were taught cases and trained in pleading and rhetoric. Although you could study law at university, the education there was more

33 Daniela N. Prina, “Une alternative à l’enseignement académique,” *Source(s)* 19 (2021).

34 Inge Bertels, “Building Contractors in Late-Nineteenth-Century Belgium: From Craftsmen to Contractors,” *Construction History* 26 (2011), 1–18; Jelena Dobbels, Inge Bertels, and Ine Wouters, “The general contractor, the architect and the engineer. The contractors’ path to become professional building practitioners in Belgium (1870–1960),” *Construction History* 32 (2017), 19–37; Laurence Heindryckx, Rika Devos, and Laurence Bulckaen, “The ambiguous position of architects during the interwar period: the case of the engineer Eugène François,” *The Journal of Architecture* 26, no. 4 (2021), 431–452.

theoretical. In the early 1800s, the Inns of Court were criticised because the prevailing idea was that the training provided there was inadequate. Moreover, the swift changes in law, which followed from the Industrial Revolution and the establishment of the British Empire, had not been incorporated in the teaching at the Inns. Therefore, universities were considered as providing a better legal education than the Inns. Some subjects, typically not given at the Inns, such as international law, could be taught in law faculties. However, the entry into the legal professions of barrister and solicitor was not dependent on university training until 1971.³⁵

In France and the United States, the discussion over whether law was vocational or a liberal art started from the 1870s. In both countries, an intermediate method was developed. Christopher C. Langdell made use of decisions of Courts of Appeal to train students in legal analysis. This method did not invest much in memorising statute law or theory. Rather it trained jurists-to-be in crafting legal arguments and using precedents. In France, François Géný proposed a similar approach with regard to decisions of the French Court of Cassation. However, Géný's ideas were not fully implemented in legal training programmes. French lawyers went to university first, followed by an internship with a lawyer. Géný's ideas and the influence of Langdell's method resulted in the integration of practical seminars and legal clinics into the law curriculum.³⁶ In the nineteenth century, medical schools were created. They systematised the training of medical doctors by combining theory, experimentation, and dissection. As a result, the theoretical and practical skills of general practitioners were acquired in a combined fashion.³⁷

The aforementioned educational changes were combined with conveying the idea of art as expertise. When it comes to legal interpretation, different conclusions and insights can be drawn from the same source materials. However, there is always a certain bandwidth, marked by *communis opinio*, the majority opinion of commentators. In medicine as well, the diagnosis made can be different from one MD to the

35 Anton Hermann Chroust, "The Beginning, Flourishing and Decline of the Inns of Court: The Consolidation of the English Legal Profession After 1400," *Vanderbilt Law Review* 10 (1956), 79-123.

36 Jean Louis Halpérin, "Legal Education Turns Its Attention to the Harvard Model," in: S. Bartie and D. Sandomierski (eds.), *American Legal Histories Abroad: Critical Histories* (New York: NYU Press, 2021), 243-257.

37 Renaud Bardez and Pieter Dhondt, "Ways of knowing medicine," in: J. Vandendriessche and Benoît Majerus (eds.), *Medical histories of Belgium. New narratives on health, care and citizenship in the nineteenth and twentieth centuries* (Manchester: Manchester University Press, 2021), 171-205, 174-189; Thomas Neville Bonner, *Becoming a Physician: Medical Education in Britain, France, Germany, and the United States, 1750-1945* (Baltimore: Johns Hopkins University Press, 1995); Rita M.J. Schepers, "Towards Unity and Autonomy: The Belgian Medical Profession in the Nineteenth Century," *Medical History* 38 (1994), 237-254.

next. However, this does not preclude the fact that, generally speaking, medical judgements from different doctors will be roughly similar.

Note how these features contradict the methodical order of the art of kintsugi, where the conclusions remain the same: there is only one combination in which all fragments fit (but there are different methods to reach the final outcome). What about the expert builder, then? Unlike the final product in kintsugi, the final design/product of a building is not preconfigured like a vase. When something goes wrong on the construction site or the building is (partly) damaged, the expert has a wide range of options to remediate the situation. Unlike kintsugi, he bears a responsibility because lives and careers are at stake.

Like the medical doctor, the expert builder has to keep in mind the context of the event (e.g., accident or other unforeseen situations). Both professionals blend science and art for the benefit of human well-being, working with both *head and hand* (see above). Whereas the physician's *phronesis* is made up of previous clinical experiences, the builder's practical wisdom is determined by past trial and error: "Product deficiencies and weaknesses are discovered by experience and subsequently improved upon."³⁸ For all the professions and trades mentioned, practical education seems to have replaced an older epistemology. Before the early twentieth century, expertise was a combination of acquired knowledge and experience, both culminating in *praxis*. Nowadays, the training for the professions mentioned is aimed at internalising practice. However, a more honest approach would consist of considering newness in situations and facts to be addressed as an integral part of what experts do. Considering their responses in those situations as *praxis* makes it possible to regard them as more than improvisation. Not knowing and still moving forward is the true art of the expert.

The example of expertise illustrated here demonstrates how a contextual analysis of cultural beliefs, not being intrinsic to construction, can help to understand aspects of construction history that are seemingly out of place.

38 Foqué, *Building Knowledge*, 74.

Tijl Vanneste

The Expert as Court Witness

In the Dutch language, the word ‘expert’, derived from Latin, has been used as an adjective at least since the late fifteenth century, to designate ‘experienced’, or ‘skilled’, two predicates that apply to individuals well versed in an art or craft. Such skill requires external recognition, through the establishment of social prestige for their expertness and recognition for work done. Historically, social prestige for an expert artisan has been connected to membership in guilds and the resulting recognition of the status of master. One could only become a master in an art or craft over time, and it is through the passage of time and the aforementioned “lived experience of falling and failing” that one became an expert. Expert craftsmen acquired expertise, which allowed for not-knowing and knowing. Experts can handle the unexpected and are able to navigate into the unknown, trusting that their expertise will keep them on course. Such trust, of course, needs to be internalised as well as externalised. Experts in any art or craft need the self-understanding of what they are as a condition to operate.

The identification of the self as an expert was consolidated in the nineteenth century, when the word ‘expert’ came into use as a noun.¹ Around 1850, experts started to identify themselves as such, as can be observed in the records from Antwerp’s civil administration from this period. Abraham Cornelisse, a man who died in November 1853, was referred to as a ship’s captain and an expert. Other experts can be found in death notices, several of them experts at Antwerp’s Court of Commerce.² Most of these experts were operating in a judicial context, advising judges on matters of commerce and maritime matters. Men – invariably men – have been fulfilling such roles since the late Middle Ages and the beginning of the early modern period; their involvement in court cases has been cemented in a variety of contexts.

With the expansion of international trade, for instance, cross-cultural commercial interaction grew. It was not always easy to resolve disputes between merchants who lived far away from one another, and who came from different legal traditions. Increasingly, such disputes came to be solved at courts – sometimes specialised – that relied on the expertise of individuals with concrete experience in commerce. They might be asked to act as co-judges, as was for instance the case for Dutch

1 *Etymologisch woordenboek*, <https://etymologiebank.nl/trefwoord/expert> (last consulted 23 February 2026).

2 Felixarchief Antwerp, *Burgerlijke Stand en Bevolking*, for instance MA#76087 (4 November 1853) and MA#76091 (22 April 1857).

consular courts in the Levant, settling disputes between merchants.³ Merchants from different backgrounds were also asked by litigating parties or by the consul to issue declarations on certain commercial practices. The parameters of such declarations were set by legislation, and two aspects are essential in this. The first is that such declarations were made by insiders, by people with direct experience and skill within the field, that is, international trade. In that sense, they fit perfectly within the epistemological confines expanded on above. These people were asked for their professional opinion, based on experience – they were supposed to be “seasoned in an art or craft”, that of international commerce. Second, in the early modern period, being an expert was not a profession. This status not only meant they were asked to opine as peers of the litigating parties, but also that, as a rule, expert declarations were not issued on an individual basis. Declarations made and signed by merchants that clarified certain business practices, therefore assisting judges in their sentencing, were always issued by a group of merchants. The expertise was collective. Naturally, such declarations were often contested by the litigating party who was disadvantaged by them. However, the tension between individual authority and general validity did not yet exist because individual authority was not yet a characteristic of invoked expertise.

This development was slightly different in the context of a second type of expertise commonly used in a judicial context – that of the ‘expert witness’, defined by Katherine Watson, an eminent scholar on medico-legal expertise, as a person “permitted to give evidence of both facts and opinion, to help judges and juries come to accurate decisions”.⁴ This modern interpretation of the ‘expert witness’ came into existence in the eighteenth century, in the context of English law.⁵ This role extends beyond the remit of the older, early modern expert, in the sense that experts are now supposed to “form opinions on causation based on a complex interpretation of past events”.⁶ As the above text points out, the expert thus becomes a kind of mediator, between the field of expertise – for instance, medicine, international commerce, or construction – and the law. Their role often extended beyond a simple interpretation of facts or events within the context of litigation. Early modern peers who drafted group declarations on merchant custom can be said to offer

3 These co-judges were called ‘assessors’ and were elected amongst the ‘most qualified’ merchants of the Dutch nation. See Tijl Vanneste, *Intra-European Litigation in Eighteenth-Century Izmir: The Role of the Merchants’ Style* (Leiden: Brill, 2021), 95.

4 Katherine D. Watson, *Forensic Medicine in Western Society: A History* (London: Routledge, 2011), 46.

5 Watson, *Forensic Medicine*, 47-48.

6 Ibidem, 49.

their expertise within a limited context of peer judgement. However, particularly in criminal law or in cases of public interest, which often is the case in problems of construction, society itself is one of the involved parties. This situation makes the task of the expert more important in the sense that they are not only interpreting, through expert eyes, for the benefit of judges, but for the benefit of society. With the rise of modern public opinion, the expert's ability to address legal questions about crimes or, for instance, whether a builder who made a construction error could reasonably have avoided such a mistake, meant that the expert has become a mediator between their field of expertise and the public. Legal rulings can carry weight outside the courthouse, after all.

For this wider societal implementation to be valid, an expert witness needs recognition, which refers to the importance of externalised expertise. The professionalisation of the expert that occurred in the nineteenth century was a crucial element in this regard, as was the development of more practical forms of education.⁷ With the weight of the individual expert growing, the tension between individual authority and general validity comes to full fruition. Experts started to form professional associations, and, particularly in the Anglo-American academic context, experts came under scrutiny themselves.⁸ With the growing mediatisation of everything, experts are now a recurrent presence in the public sphere and in the media, opening new lines of questioning in which new mediators, most notably journalists, are now being charged with a responsibility to assess the expert's expertise.⁹

7 Meanings of words such as 'expert', 'scientist', and 'professional' were changing in the course of the nineteenth century, reflecting newer realities. For the US, for instance, see Paul Lucier, "The Professional and the Scientist in Nineteenth-Century America," *Isis* 100 (2009), 699-732.

8 See Thomas L. Haskell (ed.), *The Authority of Experts: Studies in History and Theory* (Bloomington: Indiana University Press, 1984).

9 Michel Croce, "Expert Interviews, Good Questioning, and the Epistemic Duties of Journalism," *Episteme* (2025), 1-20.

Johan Lagae

S is for Small

Some notes on writing construction history

(with comments by Jean Souviron, Amit Srivastava, and Peter Scriver)

Feb. 18, 1936.

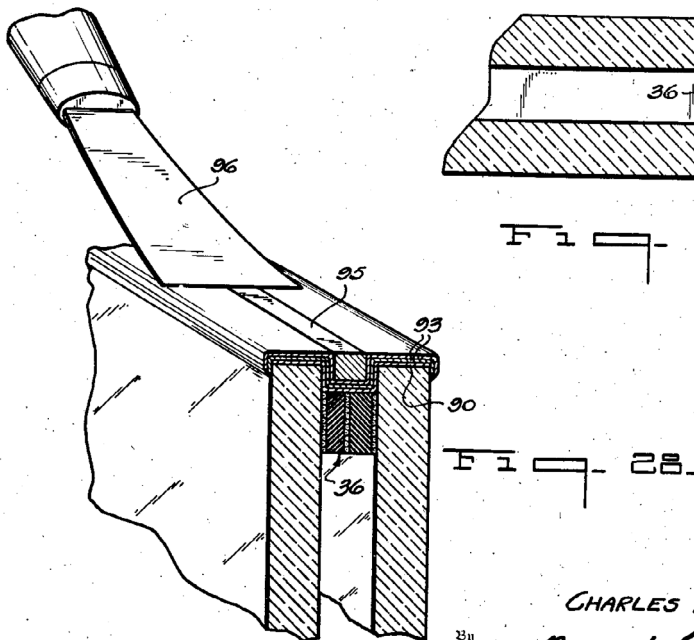
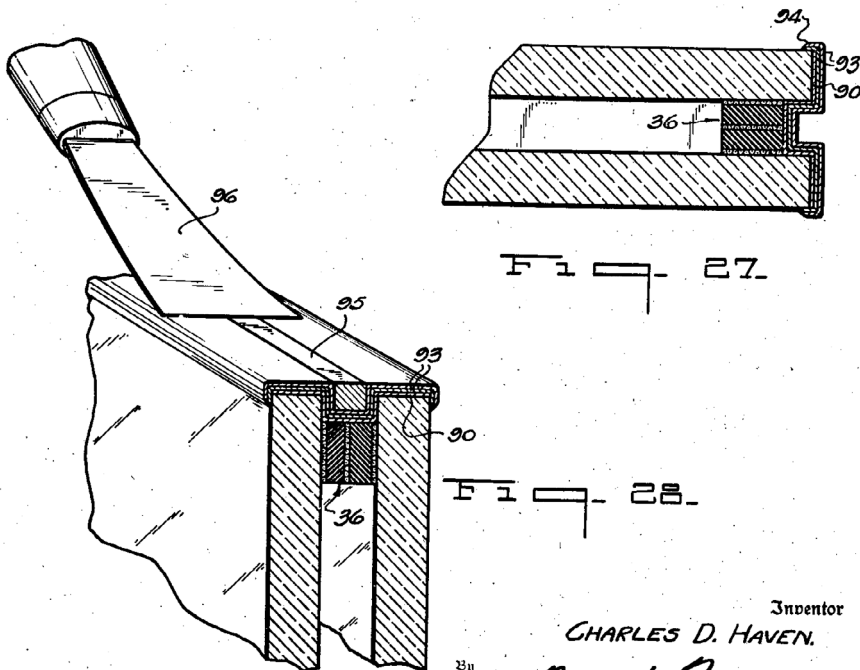
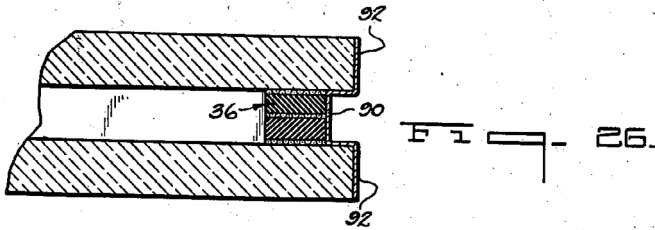
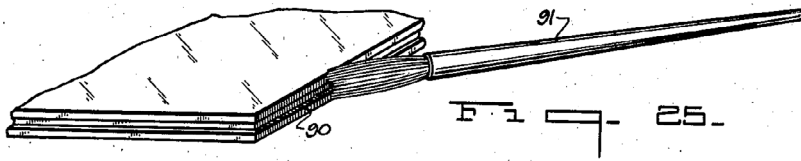
C. D. HAVEN

2,030,869

MULTI-PLY GLASS SHEET GLAZING UNIT

Filed Oct. 12, 1934

8 Sheets-Sheet 7



Inventor
CHARLES D. HAVEN.
Frank Fraser
Attorney

Figure 29. Illustration of the patent filed in 1936 by Charles D. Haven for a sealing technique of a "multi-ply glass sheet glazing unit." Charles D. Haven, "Multi-ply glass sheet glazing unit", sheet 7, patent no. US2030869A, published February 18, 1936. (Google Patents)

Small is (not necessarily) Microhistory

How can we expand the discipline of construction history to enlarge its potential as a way of writing history? At some point during the EOS project, we returned to John Summerson's proposition of 1985, published in the first issue of *Construction History*, namely that this discipline could be conceived as "the history of building practice", which "involves the total process of getting a building up on the site, including everything from the recruitment of labour, selection of materials, transport of materials and equipment on the site, down to the supply of drawing materials for the office, the method of payment to builder and architect and so on and so on."¹ As stimulating as it is, this proposition is a daunting one, for how does one write such an all-encompassing history? Where to begin?

In this chapter, which is deliberately conceived as a position paper, to which some invited scholars (Peter Scriver, Amit Srivastava, and Jean Souviron) have responded, I want to argue that the notion of the 'Small' might provide us with a useful framework. This notion was inspired by reading the work of three architectural historians whose research I admire because of the way that it is firmly grounded in sound empirical research, is theoretically engaging, and, not least, is adventurous in its selection of surprising subject matter that explicitly defies canonical histories of architecture. Ever since Thomas Van Leeuwen published an "intimate history of the swimming pool" in 1998, I have been intrigued by his methodology. In his most recent book entitled *The Thinking Foot. A Pedestrian Study of Paving*, he defines it as "first stripping down the architectural object to its smallest possible particle and then fanning out to the widest possible ramifications."² From Robert Jan Van Pelt (author of a 2024 book on the long history of the building type of the barrack, that "alien interloper in conventionally built-up areas"), I have adopted the attention to "small evidence" embedded in his forensic gaze. That perspective comes to the fore most explicitly in his architectural history work on the extermination camp of Auschwitz, research I rediscovered through a conversation with Michiel Dehaene in the context of the EOS project.³ Finally, as a scholar working

1 John Summerson, "What Is the History of Construction?," *Construction History* 1 (1985), 1-2. As becomes clear from this volume's introduction, Summerson's text forms a key reference for the EOS project as a whole.

2 Thomas Van Leeuwen, *The Thinking Foot: A Pedestrian Study of Paving* (Paris/Amsterdam: Les Éditions du malentendu/Jam Sap Books, 2023); Thomas Van Leeuwen, *The Springboard in the Pond: An Intimate History of the Swimming Pool* (Cambridge (Mass.): MIT Press, 1998).

3 Robert Jan Van Pelt, *The Barrack 1572–1914: Chapters in the History of Emergency Architecture* (Zurich: Park Books, 2024); Robert Jan Van Pelt, *The Case for Auschwitz: Evidence from the Irving Trial* (Bloomington: Indiana University Press, 2016).

on all things colonial, Swati Chattopadhyay's recent book entitled *Small Spaces: Recasting the Architecture of Empire* strongly resonates with my long-standing interest in and preference for the more mundane, everyday (infra)structures, buildings, and spaces that were required for a successful *mise-en-valeur* (economic exploitation) of the immense Central African territory under Belgian rule.⁴ Triggered by the approach of these scholars, this text advocates in favour of going beyond the often hagiographic narratives of the technologically advanced and the engineering genius – which have dominated the writing of construction history for a long time – and to instead develop alternative stories about anonymous building actors or small and easily overlooked components, taking a wide array of often neglected source material and snippets in the archive seriously.

One might be tempted to define 'Small' in terms of Microhistory, a strand of history writing with a particular focus on the 'hyper-specific' and 'minor evidence'. While this approach had already emerged in the 1970s, its potential has, according to the organisers of a recent conference, remained "largely untapped" in the field of architectural history and its adjacent discipline of construction history.⁵ In 1985, the year of Summerson's seminal position piece mentioned above, the prominent architectural history journal *Rassegna* featured a thematic issue entitled *Microhistories of Architecture*.⁶ In his introduction, editor Manolo De Giorgi, in line with the work of Lucien Febvre and the *Annales* School, made a case for writing an architectural history that would counter the heroic narrative of master architects and canonical buildings, instead delving into detailed investigations of construction methods and building materials, based on 'insignificant' and 'non-official' sources. While this issue, as well as a later one on Reinforced Concrete (1992),⁷ resonates with some of the interests of the EOS project, and, in particular with what we sought to investigate in its colonial track, I would nevertheless argue that the notion of Microhistories does not fully capture what 'Small' can do in methodological terms for writing construction history, as an approach via the 'Small', as the work of Chattopadhyay makes clear, is about writing more entangled histories across, or even jumping scales. Such attention to connectivities and multi-scalar analysis has been a focus in

4 Swati Chattopadhyay, *Small Spaces: Recasting the Architecture of the Empire* (London: Bloomsbury, 2023).

5 *Microhistories of Architecture*, European Architecture History Network Thematic Conference, ETH Zurich 12–15 June 2025.

6 *Microhistories of Architecture*, thematic issue *Rassegna* VII, no. 24 (1985).

7 *Reinforced Concrete. Ideologies and Forms from Hennebique to Hilberseimer*, thematic issue *Rassegna* XIV, no. 49 (1992).

my own research on colonial Congo for quite a long time.⁸ Informed by the reading of the work of Van Leeuwen, Van Pelt, and Chattopadhyay, complemented with (recent) scholarship resulting from the ecological and material turn in architectural history, and based on some of the work done in the context of the EOS project, I thus seek to open up some lines of inquiry below on the notion of the ‘Small’ that can result in other narratives within the field of construction history.

Small engineering

In a short text entitled “A Case of Erotic Engineering” (2009), Thomas A.P. Van Leeuwen discusses the ingenious clasp known as *pince-jarretelle* as a remarkable object of small-scale engineering.⁹ He explains how the “clasp’s engineer opted for a quick-release mechanical solution” and then goes into the question of authorship, demonstrating that its “*belle mécanique*” was “not in Eiffel’s style of sturdy, nineteenth-century overengineering”, but that in its conception and design this small piece of engineering was closer to the elegant and somewhat frivolous transporter bridge of Marseille, that ingenious early twentieth-century structure often highly celebrated for its ‘economy of means’ by, among others, such an eminent propagator of Modernism as Siegfried Giedion. Beyond demonstrating that even a “minute accessory of the lingerie industry” can form a worthy subject of serious study, and that innovation should not be read exclusively through the lens of the large-scale or the spectacular, Van Leeuwen’s short text can be read as a compelling piece of what construction history writing could be: well researched, scholarly sound, with attention to technical detail and materiality, yet also exploratory, engaging, and at times provocative.

An appreciation of the ‘Small’ and the easily overlooked pervades Van Leeuwen’s whole oeuvre. His most recent publication from 2023, *The Thinking Foot. A Pedestrian Study of Paving*, demonstrates how one can write profound and fundamental histories of urban development and culture by focusing on cobblestones used in paving,

8 See, for instance, Johan Lagae, “The Territory and the Network: Towards a transnational and trans-local architectural history of the former Belgian Congo, 1880–1960,” in: Murray Fraser (ed.), *A World of Architectural History*, Video proceedings of the Conference held at the Bartlett School of Architecture, Bartlett Faculty of the Built Environment, University College London, UK, 2–4 November 2018 (online since 2021).

9 Thomas Van Leeuwen, “A Case of Erotic Engineering. Looking for Gustave Eiffel in the lingerie department,” *Cabinet magazine* 33 (2009), s.p.

metal piss-deflectors integrated in public buildings' façades, stoops' landings, or manholes covering underground sewers. Extremely well researched and drawing on those "clues" and "trifles" from "insignificant" archival sources,¹⁰ his approach seems close to that of the microhistorian, but cuts across time and space in stimulating ways. He includes, for instance, a "note" on how the necessity of ballast in the hulls of sailing ships for the Far East explains the presence of pavements in Batavia (today Jakarta, Indonesia), made from handmade bricks of Rhine and Ijssel clay.¹¹

In *The Thinking Foot*, Van Leeuwen's attention for the 'Small' is anchored in the materiality of everyday and the mundane. In contrast, his short piece on the *porte-jarettelle* still aligns with the historiography of innovative engineering that pervades a large part of construction history scholarship, in particular the work done on the small engineering embedded in the building detail. The chapter on the development of the mullion since the late nineteenth century in Zaera Polo and Anderson's recent book *The Ecologies of the Building Envelope* is a case in point.¹² Describing the mullion as "a sort of miniature of the whole [building] envelope" in which "structural and weatherproofing functions are resolved in a single element", their discussion of its "exponential complexification" over time presents the technical developments needed to make this building detail work, both tectonically and environmentally. At the same time, it reveals, first and foremost, the profound impact this detail had on architectural design and expression. Tellingly, the book starts with a chart documenting the development of typical mullion details over the last century, including those of iconic projects such as Gropius's 1911 Fagus Factory, the 1952 Lever House by SOM, or Norman Foster's 1985 Hong Kong Shanghai Bank.¹³ This chart thus reveals a fascination with the design of the detail understood in prescriptive terms, through which architects "impose a specific method of execution on builders and control the appearance of the constructive assemblies",¹⁴ or what Cyrille Simonnet discussed as "*la duplicité de la perfection*," which often results in an explicit, designerly articulation of joints and assemblages, as evidenced in the work of architects such as Carlo Scarpa or Mies van der Rohe.¹⁵

10 The notions of "clues" and "trifles" as ways to describe the "minor evidence" that the discipline of Microhistory engaged with are taken from the work of Carlo Ginzburg and Edward Muir. See the call of the *Microhistories of Architecture*-conference at the ETH, footnote 5.

11 Van Leeuwen, *The Thinking Foot*, 58.

12 Alejandro Zaera-Polo and Jeffrey S. Anderson, *The Ecologies of the Building Envelope: A Material History and Theory of Architectural Surfaces* (New York: Actar, 2021), 166-187.

13 Ibidem, 4-5.

14 Tiphaine Abenja et al. (eds.), "The Ethics of Detailing. Introduction," *Clara* 11 (2025), 14.

15 Cyrille Simonnet, *La fiction constructive* (Paris: Parenthèses, 2023), 93-108.

(Many) small components

For several years now, Kiel Moe has been inviting us to go beyond such “fetishization” of the detail in architectural projects, instead analysing buildings as “terrestrial events”. His “construction ecology” of one of the most iconic architectural projects of the postwar era, Mies van der Rohe’s Seagram Building in New York, introduces a fundamental break from the formal and technical fictions about architecture embedded in the ‘God is in the detail’ trope that is still so dominant in scholarship on Mies. Moe replaces this account with a narrative acknowledging the contingencies of architecture, as well as the sociological and political implications of the act of building.¹⁶ During the EOS project, I became acquainted with exciting scholarship demonstrating that even less articulate building details – the design of which does not even seek architectural expression, but rather just ‘does the job’ – can form promising starting points for new forms of construction history writing. A case in point is Jean Souviron’s investigation of the development of double glazing applied in the postwar urban landscapes of Brussels and Paris. It was, above all, Souviron’s emphasis on the “wider ramifications” of the tiny component of the sealing gasket, crucial for securing the airtightness of double glazing, that caught my attention during a lecture he gave on his research.¹⁷ Combining a quantitative analysis with a qualitative one, Souviron is indeed able to reveal the major unsettling environmental persistence of this tiny building element, as can be seen from his response to this chapter below. The attention to the ‘Small’, in other words, is not an invitation to eliminate thinking in large numbers; quite the contrary.

Following the trajectories of small components, paying attention to economic and political dynamics underlying these, enables the writing of a more inclusive global construction history. Stimulating work has, for instance, been done already more than a decade ago on the large-scale application of the prefabricated Soviet I-464 concrete panel system in Cuba and Chile, while others have recently pointed at the unsuspected global repercussions of the Norwegian building industry by drawing our attention to the remarkable presence of *Siporex* façade elements in large-scale 1970s housing schemes in Abidjan, Ivory Coast.¹⁸ I want to suggest that the time is

16 Kiel Moe, *Unless: The Seagram Building Construction Ecology* (New York: Actar, 2021).

17 Jean Souviron gave a talk at Ghent University on 16 April, 2025 entitled “Sealed Climates. Mapping the Ecological Impact of the Western European Thermal Modernity”.

18 Pedro Ignacio Alonso and Hugo Palmarola Sagredo, “A Panel’s Tale. The Soviet I-464 System and the Politics of Assemblage,” in: Patricio del Real and Helen Gyger (eds.), *Latin American Modern Architectures: Ambiguous Territories* (New York: Routledge, 2013), 153–169; On *Siporex*, see Nicholas Coates, “Element,” in: Uwe Fleckner and Mari Lending (eds.), *Provenance in Architecture. A Dictionary* (Berlin: Hatje Cantz, 2025), 88–89.

ripe for an in-depth investigation into the application in Africa of the *bac- autoportant*, a building component invented by Jean Prouvé and used in his acclaimed *Maison tropique à portique* of 1948-1949.¹⁹ Due to its often invisible integration in roofs, its large-scale application has hitherto been overshadowed by the omnipresence in visual sources of façades with Prouvé-designed, adjustable louvres in aluminium, that signature element of postwar ‘tropical modernism’.²⁰

Within the EOS project, the importance of large numbers of the ‘Small’ came to the fore in Tom Broes’s innovative work on the “politics of realisation”, as in his investigation of the impact of the production of industrial brick on urbanisation in Belgium. Within the colonial track, a previous research project on postwar building materials applied in Belgium provided a useful starting point when investigating the building components used in the Ministry of Foreign Affairs building in Kinshasa, built between 1968 and 1973.²¹ One such component, at first sight of a rather mundane nature, are the Glasal panelled doors used in the office block of the complex, the presence of which was revealed through *bons de commande* (purchase orders) found in the archival fund of the *Compagnie Congolaise de Construction*.²² Glasal panelling is a well-known signature element in Brussels’s postwar cityscape. As a building material consisting of *amiante-ciment* or asbestos cement, however, its use immediately raised for us more unsettling questions when viewed from the material ecology perspective informing a large part of the research within the colonial track. Hannah le Roux’s seminal work on the global circulation of asbestos was eye-opening in this respect, and it forms a masterly demonstration of the “wider ramifications” of the ‘Small’. As le Roux argues, “[asbestos] fibrils are too small to see, but their reach has been too global to confine within the boundaries of design networks.”²³ A preliminary investigation on *Eternit-Congo* within the EOS project – a profound history of which remains to be written – inevitably forces us to engage with what Ann Laura Stoler has termed “imperial debris” and the “rot that remains”.²⁴

19 For Prouvé’s 1939 invention of the *bac autoportant*, see Peter Sulzer et al., *Jean Prouvé: œuvre complete vol. 2, 1934–1944* (Basel: Birkhäuser, 2000), 231–236.

20 During 30 years of our research on postwar architecture in Africa, we stumbled on many occasions on the presence of such *bac-autoportants*, based on Prouvé’s invention.

21 Stephanie Van de Voorde, Inge Bertels, and Ine Wouters, *Post-war Building Materials in housing in Brussels 1945–1975* (Brussels: ULB, 2015).

22 Together with Robby Fivez, we are currently preparing an exhibition on this building for KANAL-Pompidou, Brussels, scheduled for autumn 2027.

23 See, Hannah le Roux, “Northern/Cape: The Fibrils of an Asbestos History,” *Perspecta* 52 (2019), 258–262.

24 Ann Laura Stoler (ed.), *Imperial Debris: On Ruins and Ruination* (Durham: Duke University Press, 2013). Simon De Nys-Ketels is planning to write such a history on *Eternit-Congo*.

Small (building and archival) evidence

Already in the grant application, we stressed that the archival question would form a central question in the EOS project. Each one of us has been both stimulated and frustrated by the oftentimes ‘odd’, awkward, and lacunary nature of the source material we encountered. Archival work within the EOS project confronted us with our own disciplinary limitations – do we really have the skills to fully unpack financial sources found in contractor’s archives? – but also raised an issue that is key in any reflection on the writing of architectural history, namely that of evidence. Extending my plea for the ‘Small’ to the domain of evidence, which has recently gained significant scholarly attention among architectural historians,²⁵ I want to invoke here the work of architectural historian Robert Jan Van Pelt, author of the 2024 book *The Barrack, 1572-1914: Chapters in the History of Emergency Architecture*.²⁶ This meticulously researched study strongly resonates with my profound interest in mundane built infrastructures, which, in turn, was triggered already many years ago by, among others, Peter Scriver’s pioneering work on the built production of the Public Works Department in British India, captured under his metaphor “the scaffolding of empire”.²⁷ However, an earlier book by Van Pelt offers a powerful starting point for a discussion on how ‘small evidence’ matters. He is, in fact, best known for his painstakingly detailed analysis of the architecture of the death camp of Auschwitz. Architectural historians have recently argued, and rightly so, that we should not limit “evidence” to something that “furnishes proof, that has legal status in determining the truth of the matter”.²⁸ Yet, I want to contend that reading Van Pelt’s 2002 book *The Case for Auschwitz: Evidence from the Irving Trial* is particularly helpful to become “more self-conscious” of the way we, as scholars working on buildings and architecture, “choose our evidence with which to make arguments and develop structures for telling stories”, a dimension of our practice of history writing that, as Michael Osman and David Abramson rightly argue, has too often

25 On Evidence, see Andrew Leach, *What is Architectural History?* (Cambridge: Polity Press, 2010), 76-96; see also “On Evidence,” *Journal of the Society of Architectural Historians (JSAH)* 76, no. 4 (2017), with contributions by Patricia A. Morton, Claire Zimmerman, Caroline Bruzelius, Irene Cheng, Charles L. Davis II and Mabel O. Wilson, and Michael Osman and Daniel M. Abrahamson. As members of the Aggregate collective, the latter two were also involved in editing the volume *Writing Architectural History: Evidence and Narrative in the Twenty-First Century* (Pittsburgh: University of Pittsburgh Press, 2021).

26 Van Pelt, *The Barrack 1572-1914*.

27 Peter Scriver, *The Scaffolding of Empire: 4th international symposium of the Centre for Asian and Middle Eastern Architecture* (Adelaide: University of Adelaide, 2007). See also his response to this chapter below.

28 Patricia Morton, “On Evidence,” *JSAH* 76, no. 4, (2017), 433.

remained implicit.²⁹ Precisely because Van Pelt needed to “furnish proof” with “legal status” in a highly mediated court case on Holocaust denial, he took a very considerate and articulated approach to a wide array of sources. From written documents discussing quantities and timetables of deliveries, to technical source material on equipment installed, as well as architectural drawings, photographs, and information gathered through witness accounts, Van Pelt demonstrates the potential of the gaze of a forensic expert for whom the size and position of a ventilation opening, the way a door opens in a building, or the minor slippages in terminology traced in the immense bulk of mundane bureaucratic documents can make a world of difference. Was not the microhistorian to become a “detective”?³⁰ On various occasions, Van Pelt’s discussion of the Irving Trial and his role in it is interspersed with many relevant methodological remarks about writing history, containing several important warnings: that evidence is never produced by one single document but instead requires the careful and considerate confrontation of various sources; that much is to be gained through an equal attention for both quantitative and qualitative sources and a sound understanding of their specificities; that in-depth research inevitably requires slowness in order to avoid hasty and all too easy conclusions; and that making a case in historical investigation is a question of striving towards uncovering what was “probable” – ‘beyond reasonable doubt,’ one might add – rather than what was “possible”.³¹ Yet perhaps the key point of the book, and of Van Pelt’s oeuvre more broadly, is that architectural historians should not shy away from engaging with difficult building histories.

This might seem obvious for those like me who work on the built environment in colonial contexts, but the EOS project also offered new possibilities to do so. Research was done, for instance, on aspects of toxicity by Simon De Nys-Ketels, who started to investigate the use of lead paint in buildings during the interwar period and the potentially dangerous conditions it produced for labourers applying it; Robby Fivez unearthed the unsettling material ecology of the plywood panels of the Eames house, the origin of which can be traced back to the activities of the US logging firm Agrifor in the Lower Congo region. However, Van Pelt’s Auschwitz book is a strong reminder that we should treat such difficult histories with caution, pause, and extreme precision. If (micro)historians seem to act, at times, as detectives, it

29 Van Pelt, *The Case for Auschwitz*, footnote 3. Michael Osman and Daniel M. Abramson, “Evidence and Narrative,” *JSAH* 76, no. 4, (2017), 443–445.

30 Yehuda Safran and Daniel Sherer, “An Interview with Carlo Ginzburg,” *Potlach* (March 6, 2022), 2.

31 Van Pelt, *The Case for Auschwitz*. I draw such methodological remarks mainly from chapter 5, “Witnesses Despite Themselves,” as well as chapter 2, “Marshaling the Evidence for Auschwitz”.

can be debated whether they should also act as judges. Such questions require our attention when engaging in construction history writing that touches on issues of failure or the aforementioned “debris” and “rot”, and, consequently, on related questions of liability and accountability of the actors involved. Such questions have lately garnered significant scholarly interest, especially in the context of the decolonial turn in architectural history.³²

In this respect, we should not forget that our narratives on building matters can be biased because of the availability of source material. As we discovered during the EOS project, it is often precisely when things went wrong in a building process that a bulk of rich and appealing archival material becomes available to the researcher. Robby Fivez’s PhD dissertation on the introduction of concrete technology in (post) colonial Congo forms a case in point, as it presents a series of compelling stories that could be categorised as ‘failed construction experiments’, resulting in a rather bleak portrait of the empire builders in the (former) Belgian colony.³³ More recently, Boris Hamzeian was able to produce an eye-opening book on the construction of the Centre Pompidou. His investigation raises important questions of how sometimes surprising decisions were made by the various actors involved regarding the structural reliability of certain building components, in particular the prefabricated *gerberettes*. The design of that ‘small’ but crucial component of the complex’s structural system proved to be the outcome of intense collaboration between the architectural team and engineers from the office of Ove Arup.³⁴ Drawing on the extensive available source material relating to the complex’s construction, Hamzeian tellingly frames his narrative in terms of “challenge” (“*défi*”) rather than of “failure” or “irresponsibility”. His book is a strong reminder of the many contingencies, both major and minor, that define the “total process of getting a building up on the site”.

32 It is telling in this respect that I was asked a question on my position regarding these issues of ‘liability’ and ‘accountability’ after having presented the colonial track research of the EOS project during a keynote talk at the second Colonial and Postcolonial Landscapes Conference in Lisbon, January 2024.

33 Robby Fivez, *A concrete state. Constructing materials and building ambitions in the (Belgian) Congo*, unpublished PhD Dissertation, Ghent University, 2023.

34 Boris Hamzeian, *Centre Pompidou. Le défi du Total Design. Histoire des composantes d'une architecture technomorphe* (Saint-Etienne: Presses Universitaires de Saint-Etienne, 2024). I thank him for a very productive conversation on his book following a guest lecture at Ghent University on 24 November 2025.

Small acts, gestures, and tools

The observation of the Brazilian architect and researcher Sérgio Ferro – that “the world of building construction more closely resembles an endlessly precarious amalgam of heterotypic forces than a coherent ‘productive body’” – forms another powerful reminder of the complexity of this “total process”.³⁵ The recent rediscovery of Ferro’s work, in particular his invitation to develop (construction) histories that “[enable] one to see both [...] the magnanimous ideal and the muck down below”, or, put differently, to develop “a history of architecture seen from the construction site”, in a significant way informed discussions within the EOS project on aspects of labour,³⁶ as did work by other scholars investigating building processes on the construction site.³⁷ Such a plea resonated strongly with the aim of the project to bring to the fore overlooked actors in building histories, in particular the construction worker of whom we, as architectural historians, often remain “frustratingly ignorant”, as Adrian Forty once put it.³⁸ Within the colonial track we often felt such frustration, for example, when we failed to trace relevant archival source material on the workers who executed the spectacular cantilevered concrete folded roof plate covering the assembly hall of the Ministry of Foreign Affairs building in Kinshasa, despite the large amount of documentation available on other aspects of its design and construction. It similarly took a detour through the vocational school to get a glimpse of a hitherto completely overlooked actor in the particular self-built housing programme in late colonial Lubumbashi, Congo, namely, the *artisans libres* who largely remain invisible in the “colonial archive” (see Igor Bloch’s chapter in this volume).

The notion of the ‘Small’ is, I would argue, again useful when thinking about the “muck from below”. If building often requires large-scale equipment and infrastructures, and necessitates a complex logistic organisation that links the construction site to sites of construction which may be located at great distances, the disciplinary field of construction history has a lot to gain from more considered attention to the small acts, gestures, and tools that are part and parcel of the everyday business of, to invoke Summerson again, the “total process of getting a building up”. As Heine

35 Sérgio Ferro, “Questions of Method [1993],” in: Silke Kapp and Mariana Moura (eds.), *Sérgio Ferro. Architecture from Below: An Anthology* (London: MACK Publishers, 2024), 255-256.

36 Ferro as quoted in the introduction of *Sérgio Ferro. Architecture from below*, 9.

37 Christine Wall’s work proved very inspiring, as did that of María González Pendás who organised the symposium “Labor Un:Imagined” at Cornell University, 7–8 March 2024.

38 Adrian Forty, *Concrete and Culture: A Material History* (London: Reaktion Books, 2012), 230.

and Rauhut put it eloquently, on the construction site “the outstretched arm of the worker and of the crane, the more permanent and the new” coexisted.³⁹ Christine Wall’s oral history of the Barbican Centre in London is revealing in this respect, disclosing how the successful execution of that Brutalist icon was, at least in part, due to the role played by construction workers from London’s Sikh community, using artisanal tools.⁴⁰ A paper I heard recently on the Creole technologies of vernacularised Soviet cranes employed for the realisation of large-scale urbanisation in the early People’s Republic of China proved equally stimulating.⁴¹ The ongoing research on the construction of Brasilia by Silke Kapp and other scholars made me acutely aware of the crucial importance of the small, reproductive labour that is peripheral yet crucial in the “total process of getting a building up”, such as the provision of food on the construction site.⁴²

(Not so) small stories

This attention to the small acts, gestures, and tools brings me to the third and last key reference that informed my choice of focusing this chapter on the notion of the ‘Small’: Swati Chattopadhyay’s book *Small Spaces: Recasting the Architecture of Empire*, published in 2023.⁴³ While this book forms a major contribution to the field of colonial studies and the writing of the history of colonial architecture, it contains several methodological lessons for the writing of construction history. Tellingly, one of her earlier articles on the topic was listed in the bibliography of the aforementioned ETH conference on the theme of *Microhistories of Architecture*.⁴⁴ Chattopadhyay’s approach is refreshing in its consideration of “small spaces that make the empire possible”, such as the *bottlekhana* (a domestic storage room for food commodities and drinks in particular), the veranda, the roof terrace, the garden... and for “small objects” (the book shelf, the pot plant, the medicine box) that clutter these spaces,

39 Eike-Christian Heine and Christoph Rauhut (eds.), *Producing Non-Simultaneity: Construction Sites as Places of Progressiveness and Continuity* (Abingdon: Routledge, 2018); xviii.

40 Christine Wall et al., *Building the Barbican 1962–1982: Taking the Industry out of the Dark Ages* (London: University of Westminster, 2012), 15.

41 Jie Shen, “Crane-Built Socialist Cities: Industrialization, Mechanization, and Lifting Construction in the Early PRC’s Urbanization,” paper presented at the Global Urban History Project conference, Berlin, July 2025.

42 I first became acquainted with this work through a paper presented on the topic by Silke Kapp at the “Labor Un:Imagined” conference, Cornell University, 7–8 March 2024.

43 Chattopadhyay, *Small Spaces*.

44 Swati Chattopadhyay, “Architectural History or a Geography of Small Spaces?” [Field Note], *JSAH* 81, no. 1 (2022), 5–20. On the ETH conference, see footnote 5. The bibliography is available online via the event’s website.

as well as in its interest in the “untold stories” of the marginalised people who also occupied and used them (servants, women, children, subalterns, and racialised minorities). Similar to Robert Jan Van Pelt’s attention to minute details in written documents as well as architectural drawings (plans, sections...), Chattopadhyay’s focus on the “small spaces” provides us with compelling new evidence from which to develop an alternative, yet profound narrative on how the empire worked and on the infrastructure and labour it required, but which was, often deliberately, made invisible. Her argument that we need to take these elements into consideration to counter the hegemonic histories focusing exclusively on the Architecture of empire (such as public buildings, grand villas...) can easily be extended to a plea for writing a more inclusive construction history with attention for more mundane buildings and small infrastructures.

Two further, and perhaps more important, considerations informed my choice to integrate Chattopadhyay’s book in this chapter. First, she makes a very convincing argument that we should not define the ‘Small’ in terms of scale and size. Her interest in “small spaces” is tied to her aim of engaging with both “the scale in which the microdynamics of sensorial space and power may become perceptible”, and that which simultaneously “responds to the fullness of the materiality of the artifact or space – in their connectedness and disconnectedness”.⁴⁵ Throughout the book we encounter examples of how an analysis of “small spaces” in particular places and times opens up the discussion to the wider “lumpy geographies” of empire as is expressed in a most tangible way in the section of the book devoted to the portable artifact of the “potted plant” (often housed in its specific, protective container). I argue that bringing the approach of what Chattopadhyay terms “Scalar Alterity” to the field of construction history can be productive, in particular when following her invitation to “rethink connections” through an act of “[strategic] delinking” that draws on “a refusal to be preoccupied by imperial formations.” Hannah le Roux’s investigation of the global circulation of asbestos, mentioned above, is already starting to show what such a “[strategic] delinking” might look like for the field of construction history, as is the ongoing research on South-South solidarities by respondents Peter Scriver and Amit Srivastava, while the work that Robby Fivez conducted within the EOS project can also be mentioned here.

45 Chattopadhyay, *Small Spaces*, 23.

Second, “noticing small spaces in the archive and in our everyday lives”, Chattopadhyay writes, “is difficult” and writing about these “long-neglected spaces presents methodological difficulties”.⁴⁶ Despite the very wide-ranging set of source material she was able to compile when writing this book, she nevertheless observed that all of it is, by default, “decidedly one-sided”, as it is “predominantly a product of the British and Indian educated class’s effort at documentation, recollection and reform”.⁴⁷ Writing on “small spaces” thus requires not only other source material, but also other genres of history writing in order to start to make visible what has remained hidden for such a long time, while doing so without falling into the trap of wanting to speak for those whose voices have been silenced in the past.

The considerations I take from Chattopadhyay’s book – as well as several insights inspired by reading the work of the other scholars mentioned in this position paper and the many engaged discussions within the EOS research team – are of course also a reminder that “S” not only stands for paying attention to the Small, but, first and foremost, should be read as a plea for Slow Science.

46 Ibidem, 24.

47 Ibidem, 25.

From the Scaffolding of Empire to Understanding the Uninteresting

To examine ‘Small’ things attentively in construction history, as Johan Lagae has posited above, is far from a simple reduction of dimension or scope of inquiry. On the contrary, it invites expansion, both conceptual and methodological, in our understanding of and approaches to the object in question. Invoking John Summerson’s conception of construction history as a discipline concerned with the “total process” of architectural production, Lagae points to Van Leeuwen’s multi-scalar approach: “first stripping down the architectural object to its smallest possible particle and then fanning out to the widest possible ramifications”.¹ Reflecting, in this short rejoinder to Lagae’s invocation, on our own work over the last three decades on the building cultures of colonial and modern India, we observe how our questions and methods have evolved along largely similar lines. In addition to the early work on the everyday buildings and infrastructure of the British Indian Empire to which Lagae has alluded, we also discuss our increasing engagement with materiality and building components, as well as deliberations on the wider implications of this methodological shift on the role of the architectural historian and the growing imperative to understand the ‘uninteresting’.

The rhetorical uses of construction language can be revealing in this regard. As one veteran of Indian colonial service proposed to a British parliamentary committee in 1873, the apparatus of colonial administration “was but a provisional temporary arrangement ... a sort of *scaffolding* which [has] been erected until the edifice of our Indian Empire is completed.”² Taking this construction metaphor seriously pointed the way to a fundamental reconsideration in our work on the historiography of colonial architecture in India, which had previously focused almost exclusively on the architectural “splendours” of the British Raj.³ Reframing the scope of investigation to examine colonial public works more broadly, our gaze was redirected towards the prosaic construction history of ordinary buildings and infrastructure that, arguably, had a much more sustained material and cultural impact on the colonial-modern

1 Van Leeuwen, *The Thinking Foot: A Pedestrian Study of Paving*.

2 Evidence of Sir Charles Trevelyan to Fawcett’s Parliamentary Committee on Indian Finance of 1873, in *Parliamentary Papers*, 1873, vol. 12, 96, 99–100, as quoted in Eric Stokes, *The English Utilitarians and India* (Delhi: Oxford University Press, 1992 [1959]) 287.

3 See, for example: Philip Davies, *Splendours of The Raj: British Architecture in India, 1660 to 1947* (London: John Murray, 1985); Robert Grant Irving, *Indian Summer: Lutyens, Baker, and Imperial Delhi* (New Haven and London: Yale University Press, 1981).

built environment despite their ostensibly temporary utilitarianism.⁴ We focused on the ‘barrack’ – the paragon, perhaps, of such “scaffolding” of Empire – which in British India was scarcely less provisional than a tent in its most elementary variants. These mundane structures constituted the physical backbone and principal spatial ordering device of the cantonments (permanent military camps) of colonial India, in which the marshal power of the regime was arrayed. Yet the power of the humble barrack from the perspectives of architecture and construction history resided in the clarity, utility, and versatility of this basic building typology and associated construction details – a generic building system that would be applied ubiquitously throughout the subcontinent and beyond, in colonial Southeast Asia, Africa, and the Middle East – far transcending military needs alone.⁵

The typical ‘barrack section’ in British India consisted, in its most basic form, of a simple gable capping a high internal space, with eaves extending to lower service spaces or open verandas on either side. Extruded to any length or expanded in girth to include additional intermediary rooms, this standard section could be adapted to many different purposes: from large regimental barracks accommodating hundreds of soldiers under a single roof to magistrates’ courts and civil hospital wards, and from bungalows for single officers or civilian officials to ‘lines’ of minimal family quarters for lowly railway workers. Variations of the section replaced the timber gable with a stepped profile of jack-arched roof terraces, incorporating high wall louvres or clerestory windows for passive ventilation, alongside stone awnings (*chajjas*) to shield these from glare. These characteristic components, evolved to meet the varied climatic demands of India and its local building materials and practices, subsequently became markers of cultural and social distinction.

It is precisely here that the methodological importance of attending to the ‘small’ becomes evident. For instance, the Public Works Department (PWD) designed quarters for ‘Eurasian’ employees, as distinguished from ‘native’ railway workers, could be differentiated in their otherwise proportionately identical sections by

4 Peter Scriver, *Rationalization, Standardization, and Control in Design: A Cognitive Historical Study of Architectural Design & Planning in the Public Works Department of British India, 1855–1901* (Delft: Publicatieburo Bouwkunde, TU Delft, 1994); Peter Scriver, “Empire-building and Thinking in the Public Works Department of British India,” in: Peter Scriver and Vikramaditya Prakash (eds.), *Colonial Modernities: Building, Dwelling and Architecture in British India and Ceylon* (London and New York: Routledge/Architext, 2007), 69–92; Peter Scriver, “Scaffolding, Empire and After,” in: Scriver, *The Scaffolding of Empire*, 7–13.

5 Van Pelt’s more recent work on the barrack, mentioned by Lagae, further underscores the profound instrumentality of such a universally deployable typology, in particular how Van Pelt frames the barrack, that “alien interloper in conventionally built-up areas” that “played a decisive role in shaping the political space of modernity”: Van Pelt, *The Barrack 1572–1914* (from the blurb text on the book’s back cover).

the singular substitution of polished *chunum* (a local lime plaster variant from southern India) for bare dirt floors. This seemingly minute specification encoded fundamental distinctions of race, status, and belonging within the colonial order. The building detail emerges here not as a site of engineering innovation or technical precision but as the mechanism through which social hierarchies could be materially reproduced.

Moreover, this systematic building culture reflected an effectively anonymous mode of design production. The British Indian PWD favoured ‘type designs’ and standards that enabled only limited improvisation within narrow parameters, if not actively discouraging innovation. Such normative patterns could be relatively easily reproduced by semi-skilled ‘tracers’ without qualified designers capable of drafting original plans. The barrack section thus demonstrates how small acts, gestures, and tools embedded in the everyday business of building reveal larger systems, in this case an entire apparatus of colonial governance materialised through standardised construction.

If the generic typology of the barrack section demonstrates the power of attending to standardised construction details at scale, the individual brick might reveal the methodological possibilities of understanding how even the most singular building component is embedded within entangled networks of production.

Our investigations into the construction history of the IIM campus in Ahmedabad, India (c. 1961-1974), attributed to architect Louis Kahn, crystallised around the most banal of building components: a brick.⁶ The deeper historical investigation was guided by an observation of altered bonding patterns in the bottom layers of two of the 18 dormitory buildings, leading to the discovery of the exact event and motivations that initiated this change. Once again, this study was not an investigation of joints and assemblages as examples of engineering innovation, but what Lagae recognises as the building detail that is “less articulate” and simply “does the job”.

Tracing the cultural history of the local brick backwards through the narrative of anonymous labourers and craftsmen, we uncovered local building practices, variations in kilns used for the project, and misconceptions about local geology and

6 Amit Srivastava, “Encountering Materials in Architectural Production: The Case of Kahn and Brick at IIM” (PhD dissertation, University of Adelaide, 2009). Also see, Peter Scriver and Amit Srivastava, *India: Modern Architectures in History* (London: Reaktion Books, 2015).

clay deposits that led to structural challenges. Turning forward from the event, we discovered how scalar modifications in design detailing used the basic parameters of 3" and 1/2" as templates for all architectural features, and how brick bonding patterns were altered to reflect this emerging structural expression. Tracing these "entangled histories across scales", the investigation also revealed the previously hidden collaborative design processes embodied in the creation of the Experimental Arch, a surviving artefact of the original construction site, where these various narratives of material and cultural histories intersected. Materiality, we thus argued, was not simply about material choice but constituted a node in networks spanning geological time, socioeconomic hierarchies, local construction knowledge systems, modern architectural ambitions, and even non-human agency.⁷

This project clearly shows the methodological possibilities of Van Leeuwen's suggestion to focus on the "smallest possible particle" and extract the "wider ramifications", but it also demonstrates that a multi-scalar approach extends beyond material and social dimensions to historiographical time scales of the 'event' and the 'long term'. Our original work drew on Emmanuel Le Roy Ladurie, a champion of microhistory, whose process of "structure-event-structure" provided a similar approach to Van Leeuwen, proposing we undertake a "journey from present-day ideology to the [...] event which gave it its origins; then from this event to the pre-existing conditions which, if they did not altogether determine it, certainly coloured and informed it [and return] to the event in order to make a better estimate of its significance through our increased knowledge."⁸ Applied here, the 'event' of the changing of the brick bonding patterns in the two dormitory buildings allowed us to investigate the cultural history of the material and local building culture, and then return to reframe the 'event' and recognise the collaborative nature of the Experimental Arch.⁹ As a result, the IIM campus project, with the brick as its singular building component, emerges not as the outcome of an authorial genius imposing form over passive matter, but as the crystallisation of negotiations between countless actants, events, and processes, which constitute the interconnected process of architectural production.

7 The concept of 'non-human' agency here relates to the works of Bruno Latour. See, Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford: OUP, 2005).

8 Emmanuel Le Roy Ladurie, "The 'Event' and the 'Long Term' in Social History: The Case of the Chouan Uprising," in: Emmanuel Le Roy Ladurie, *The Territory of the Historian* (Brighton: Harvester Press, 1979), 128.

9 Srivastava, "Encountering Materials in Architectural Production".

Such insights also emerge in the research of Sarah Melsens which looks at “tools of building practice” in the context of colonial and post-colonial India. Her original work examined building specifications and permission drawings as elusive bureaucratic ‘tools’ that post-colonial architects in the Indian city of Pune used to enact professional identity and manage relations with clients and state authorities.¹⁰ Her more recent work, exploring colonial PWD archives with graduate students, has focused on everyday ‘tools’ at the construction site which were used to ensure workers’ compliance and enact “control from a distance”. The case of ‘Beale’s tell-tale’ – a gauge screw mounted on lime mortar grinding mills where a nut’s vertical movement with each rotation allowed overseers to verify whether bullockmen had completed their prescribed revolutions – is a telling example of the value of tracing such small acts, gestures, and tools.¹¹

These considerations of scale, not only across space but also time, raise another important methodological question. As historical knowledge accumulates and technology allows us to parse ever-expanding connections to understand the interconnected nature of architectural becoming, how does this redefine the role of the historian of the built environment? A conversation at the EAHN Conference in 2016 considered this same challenge through the lens of what literary historian and theorist Franco Moretti has described as “distant reading”.¹² We recognised that the traditional architectural historian, who is trained to discern innovation and distinguish canonical works through ‘close reading’ of details and design intentions, lacks the methodological tools to readily address this scale and type of inquiry. Our proposition involved a methodological reversal by inverting our disciplinary training and beginning not with the supposedly ‘interesting’ exemplar but with the systematically overlooked, the ubiquitous, the ‘uninteresting’.

Distant reading, in this context, requires treating building details not as ‘evidence’ supporting predetermined narratives of innovation and authorial genius, but as ‘clues’ that are contextually embedded with a “signifying linkage to some historical

10 Sarah Melsens, *Architect, engineer or builder? A history of professional demarcation through practice and discourse, Pune (India) 1930–1992*, unpublished PhD Dissertation, University of Antwerp, 2020. Also see, Sarah Melsens, Inge Bertels, and Amit Srivastava, “Intermingled Interests: Social Housing, Speculative Building, and Architectural Practice in 1970s and 1980s Pune (India),” *ABE Journal* (Architecture beyond Europe) 20 (2022).

11 Sarah Melsens, “En quête de contrôle: enregistrement, modèles, échantillons et marquages sur les chantiers de travaux publics de l’Inde britannique,” in *À Pied d’œuvre, Cinquième Congrès Francophone d’histoire de la construction* (Toulouse: Université Toulouse Jean Jaurès et ENSA Toulouse, 18–20 June 2025).

12 Franco Moretti, *Distant Reading* (London: Verso, 2013).

genealogy” and to some larger system.¹³ As Moretti suggests, instead of using the sample as a truly representative set we should try to understand the reason we find them interesting in the first place, by seeing them in the context of everything else. This angle shifts our approach from what Susan Hockey identifies as “somewhat serendipitous noting of interesting features” towards extending research into the mass of possibly ‘uninteresting’ examples that constitute the whole.¹⁴ Both the barrack section and the brick are those kinds of objects, their ubiquity rendering them invisible to conventional historical methods. As Julia Flanders argues, “their absence from our field of view, their non-existence as facts for us, is precisely because they are so much there, so ubiquitous that they seem to make no difference.”¹⁵ Yet it is precisely this ubiquity that makes them undeniable markers of hidden patterns; hidden from our biased gaze seeking the specialist case of innovation.

The projects discussed here demonstrate the value of focusing on a prosaic construction history that reveals a more substantive understanding of material and cultural transformations than the narratives of exceptional architecture might suggest. By attending to the smallest details – components and tools reproduced hundreds or thousands of times across the production process – the interconnected and entangled nature of the overall architectural production process becomes visible. These investigations could thus be described as ‘whole-oriented’ – a gestalt-like conception of Summerson’s “total process”. Where conventional historiography privileges linear narratives and isolated innovations, this approach demands attention to the simultaneous relationships and connections that constitute the ‘whole’ process of architectural production.

The concept of the ‘Small’, when approached through this combination of careful observation and sustained engagement with the mass of ‘uninteresting’ examples, reveals not a diminished object of study but rather the intricate whole that should be the true focus of the construction historian. Through such a reconceptualisation of the historian’s role – one that focuses on the ‘uninteresting’ – and equipped with methodological tools capable of revealing patterns rather than exemplars, we can

13 Julia Flanders, “Detailism, Digital Texts, and the Problem of Pedantry,” *TEXT Technology* 2 (2005), 43. For a further exploration on this notion of ‘clues’ see, Carlo Ginzburg, *Clues, Myths, and the Historical Method*, trans. John Tedeschi and Anne Tedeschi (Baltimore: Johns Hopkins University Press, 1989), 101.

14 Susan Hockey, *Electronic Texts in the Humanities: Principles and Practice* (Oxford: OUP, 2000). Also see, Matthew L. Jockers, *Macroanalysis: Digital Methods and Literary History* (St Champaign: University of Illinois Press, 2013).

15 Flanders, “Detailism, Digital Texts, and the Problem of Pedantry,” 56–57.

begin to write these entangled histories across scales – from the *chunum* floor to the cantonment network, from the single brick to the modernist project, from the smallest possible particle to the widest possible ramifications.

Jean Souviron

The Weight of Smallness

Sealing gaskets and the metabolism of architecture

Introduction

The history of construction is filled with small components. They are indispensable to the construction of buildings and to the habitability of interior environments. Bolts and nuts, rivets and staples, wedges and spacers, sealing resins, joints, mastics, membranes, and strips all form a discreet network without which no structure would stand and no envelope would protect. Often relegated to the status of technical details, they nevertheless determine the performance of buildings, their durability, and their patterns of use. They absorb expansion, compensate for tolerances, filter air and water, dampen vibrations, and distribute forces. They also age, fatigue, decay, and fail. At their millimetric scale, they record the rhythms and temporalities of a building's life, reflecting technological choices, regulatory regimes, economic calculations, and construction cultures.

Unlike the spectacular quantities that have become emblematic of the Anthropocene, such as the 80 million tonnes of concrete poured each day,¹ these small elements remain largely invisible. Yet it is within these small interstices that a decisive part of the environmental history of architecture unfolds. Analysing their material composition and life cycle reveals the dependencies of our built environment and its fragilities. It also sharpens our understanding of contemporary regimes of performance and comfort, and of their often concealed environmental costs. As Kiel Moe has suggested, “Gaia is in the details.”²

Sealing climates

As Johan Lagae points out above, in reference to my earlier research,³ the sealing gaskets of insulating glazing provide a particularly striking example. The principle of insulating glazing dates to the late nineteenth century when the first patents were filed.⁴ However, it was not until the 1940s that double glazing entered the American market under the trade name *Thermopane*, thanks to Charles D. Haven's research and patents on sealing techniques in the 1930s (fig. 29). Western European markets

1 “Concrete needs to lose its colossal carbon footprint,” *Nature* 597, no. 7878 (2021), 593–594.

2 Kiel Moe, *Unless: The Seagram Building Construction Ecology* (New York: Actar, 2021), 276.

3 Jean Souviron, *Glazing Beyond Energy Efficiency: An Environmental Analysis of the Socio-Technical Trajectory of Architectural Glass*, unpublished PhD Dissertation, Université Libre de Bruxelles, 2022.

4 Thomas D. Stetson, “Improvement in Window-Glass,” patent no. US49167A, published 1 August 1865.

followed in the 1950s. The technical challenge was considerable: to maintain a gap of a few millimetres between two sheets of glass while ensuring that the resulting dry air cavity would remain airtight for decades, despite being exposed to thermal variation, differential deformation, vibration, wind pressure, and weather.

Early systems relied on metallic seals, notably copper alloy strips joined with lead. In the postwar decades, the rapid expansion of the petrochemical industry opened up new materialities. Synthetic polymers – such as polysulphides, silicones, and butyls – offered unprecedented elasticity and adhesion. They absorbed movement while maintaining airtightness. This quality made them extremely popular in the construction industry, and their rapid adoption by the glass industry resulted in an extension of the service life of insulating glazing units, offering a longer guarantee and a stronger marketing argument. The oil crises of the 1970s and 1980s and the resulting acceleration in the implementation of energy efficiency policies made this product a key component in the design of buildings in cold and temperate climates.

However, this technical success came with a material drawback. By permanently and strongly bonding heterogeneous materials such as glass, metal spacers, polymers, and desiccants, sealing gaskets made disassembly and recycling extremely difficult. As a result, although glass is a durable and easily recyclable material, insulating glass units have massively been landfilled or crushed for use as road construction aggregate at the end of their service life. This situation has been further complicated by the limited lifespan of the sealing gasket. Even if it has become long-lasting, it inevitably deteriorates over time. After approximately 20-40 years, airtightness declines, condensation forms within the cavity, transparency diminishes and thermal performance drops. The glazing unit then becomes functionally obsolete. Through the use of this small sealing detail, insulating glass units have therefore inevitably become waste, accelerating façade obsolescence – a phenomenon reinforced by the continuous commercialisation of ever-more-efficient glazing systems that regularly redefine performance standards and shorten replacement cycles.

Accumulation, dissemination

This seemingly minor construction detail has therefore produced a major transformation in building metabolism and profoundly altered the life cycle of architectural glass. In this sense, its significance changes scale when considered in the context of global urbanisation.

From the 1960s to 2020, the construction of the North Quarter in Brussels, with its landscape of glass-clad office towers, required over 1,000 km of sealing gaskets.⁵ During the same period, the construction of the Paris business district of La Défense demanded close to 3,000 km – roughly the distance between Stockholm and the Strait of Gibraltar. What appears as a negligible strip of synthetic material on a façade accumulates through repetition to form a continental-scale line embedded within the technosphere. The magnitude becomes even more striking when considered at the national scale. In France, between 1950 and 2000, annual consumption of insulating glass units increased from a few hundred square metres to over 16 million square metres.⁶ This sum equates to around 45,000 km of polymer sealing gaskets being incorporated into the technosphere each year – a length exceeding the Earth's circumference.

However, our understanding would remain incomplete if based solely on such numbers. This history is not only one of accumulation, but also one of pollution. Silicone, EPDM, and other petrochemical sealing materials illustrate the increasing dependence of architecture on fossil fuels in the Western world after 1945. Designed to accompany the expansion of glazed envelopes, their chemical properties have reinforced indoor climate control. This control is conditional, however. Exposed to ultraviolet radiation, thermal cycling, mechanical stress, and atmospheric pollution, these polymers gradually harden, crack, and lose adhesion. The very stability that once ensured resistance to weathering becomes a form of unsettling environmental persistence.

The lifespan of sealants and gaskets is shorter than that of the buildings they serve. In most cases, they endure no more than 20-30 years. As they deteriorate, fragments detach, micro-particles disperse, and waste accumulates. During dismantling, residues remain on site; the rest enters landfills or is incinerated. These materials thus

5 Souviron, *Glazing Beyond Energy Efficiency*, 480.

6 Ibidem, 456.

contribute to the expanding mass of synthetic particles circulating through soils, waterways, and the atmosphere. Their environmental footprint is rarely visible, as their small scale has long diverted attention from their cumulative effects. Yet it is deeply inscribed in the biosphere, contributing to the “contamination of the Earth.”⁷ The trajectory of sealing materials thus appears far from marginal to the history of our built environment; it forms a small yet consequential part of its broader narrative.

Quantitative analyses that trace material and energy flows prove essential for grasping the environmental dimensions of architectural and construction history. They make it possible to measure the material and ecological transformations induced by the act of building and to reveal the hidden scales at which even the smallest architectural elements operate, situating them within a metabolism structured by sociopolitical regimes of extraction, production, maintenance, and pollution. Several scholars and theorists have advanced this position, arguing that such a perspective constitutes a necessary component of the writing of any history of the built environment.⁸ Drawing on these contributions, Paul Bouet and I have recently advocated for metabolic histories of architecture.⁹ Such an approach would confront the massive flows of resources extracted and transformed by the building industry, while addressing the less visible and more insidious accumulation of materials within the technosphere and biosphere, which also occurs through the slow disintegration of architecture itself. From this perspective, what appears as a gasket at the millimetre scale in a façade becomes part of an anthropogenic planetary sedimentation.

7 François Jarrige and Thomas Le Roux, *The Contamination of the Earth: A History of Pollutions in the Industrial Age* (Cambridge (Mass.): MIT Press, 2020).

8 Kiel Moe, *Unless*; Florian Urban and Barnabas Calder, *Form Follows Fuel: 14 Buildings from Antiquity to the Oil Age* (New York: Routledge, 2025).

9 Paul Bouet and Jean Souviron, “Prendre le tournant matériel: pour des histoires métaboliques de l’architecture,” paper presented at the International Conference *Making Architectural History through the Prism of Environmental and Decolonial Issues*, Paris, 9–10 April, 2025. Forthcoming in the conference proceedings.



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Sites of Construction: Connected Histories reconceptualises construction as a dispersed, multi-sited, and interdisciplinary field of practice. Challenging the traditional centrality of the building site, this volume traces the legal, logistical, educational, colonial, political, and social forces that shape the production of the historic built environment.

Drawing on the EOS research project *Above and Beyond Construction History*, the contributors illuminate how expertise, labour, regulation, and material flows are formed across a range of unexpected sites, from vocational schools and chambers of the investigating judge to distribution centres, business lunches, protest-filled streets, warehouses that temporarily housed colonial labourers, and depots storing surplus brick. Combining empirically grounded historical case studies with methodological reflection, this book reveals how construction was, and remains, constituted through networks of actors, institutions, and knowledge practices that operate far beyond the fence line.

Sites of Construction thus offers an urgent interdisciplinary perspective on how buildings truly come into being, foregrounding the heterogeneity of construction processes and their entanglement with broader societal transformations.

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