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CATALOGING CONTRACTORS KNOW-HOW. AN ANALYSIS OF LATE NINETEENTH- AND EARLY TWENTIETH- CENTURY LIBRARY CATALOGUES OF BELGIAN INDUSTRIAL SCHOOLS

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Keywords

The changing role of the professions in construction, The bibliography of construction history, Knowledge transfer, Library catalogues, Sources, Contractors, 19th and 20th century, Belgium

Abstract

The diverse spectrum of actors in the construction industry, has (re-)emerged as a particular point of interest within construction history. Initially, after a strong focus on architects, the historians' interest was directed towards engineers, or via socio-cultural studies towards the crafts and trades. Gradually also (general) contractors received attention in historiography. Hereby focus was put on the importance of building contractors in relation to the introduction of new materials and technologies on site or from an economical point of view on their business organisation, and as such leaving important questions open in relation to their socio-cultural profile.

Henceforth, from a socio-cultural perspective, this paper wants to contribute to the research on the educational background of building contractors and the transfer of knowledge in relation to *l'art de construire*. Specific interest goes to the study of theoretical, technical and practical oriented handbooks and manuals used and/or produced by contractors in the Belgian educational contexts. The end of the nineteenth century and the beginning of the twentieth century provides a suitable backdrop for examining this knowledge transfer as in Europe and specifically in Belgium, the traditional building contractor, with its roots in artisan organization, evolves towards more modern forms of commercial professional associations around the turn of the century. The research adds to previous studies on the variety of educational programs and is based on a critical analysis of various nineteenth-century library catalogues of Belgian technical and industrial schools. These schools were developed since the mid of the nineteenth century and offered appropriate training to building contractors in order to '*propager les perfectionnements apportés dans l'art du constructeur*'.

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INTRODUCTION

During the second half of the nineteenth century, the work of contractors became characterized by increasing complexity. New construction contexts required better coordination of on-site work and enhanced the diversity of tasks. Moreover, the transition of artisan-builders into modern general building contractors, the growing specialization and polarization between architects, engineers and contractors, as well as the introduction of new materials and technologies on site provoked the need for an upgraded and more focused process of contractors' training. Yet contrary to recent developments in *Ancien Régime* studies - whereby the 'cultural turn' is regarded as having stimulated renewed attention within social and urban history towards 'apprenticeship' and corporations (e.g. De Munck 2007) - the training of nineteenth-century craftsmen and contractors in the building industry is only slowly addressed within historiography. Recent research carried out for the nineteenth-century Belgian context shows that many contractors undertook multiple and diverse training regimes. Some contractors were trained formally as architects or engineers. Others continued to be trained on-the-job or received craft-training but completed their training through evening classes at local drawing schools (Bertels 2006 and 2008).

In the delivery of vocational training, the economic and social transformations in nineteenth-century Belgium, as well as in other countries (e.g. Carvais and Nègre 2006), provoked some more radical experiments. A new type of education, namely technical education within the *écoles industrielles* or *nijverheidsscholen*, is a case in point. This term covered a variety of educational programmes to train manual workers in a range of sectors, such as agriculture, domestic trades, and industry including construction industry. The evolution of this technical education in Belgium has been studied by several authors, primarily from a pedagogical, organisational or ideological point of view (D'hoker 1980, Grootaers 1993). Yet, the relevance of these industrial schools for the history of construction has only been pointed out recently (Bertels 2006 and 2008). In this paper, specific interest goes to the study of late-nineteenth- and early twentieth-century library catalogues of these industrial schools, which give an overview of theoretical, technical and practical orientated handbooks, manuals, journals as well as other written/printed documents used and/or produced by contractors in the Belgian educational context. This research adds to previous studies on the variety of educational programs and is based on a critical analysis of various library catalogues of Belgian industrial schools. The catalogues are crucial sources, as over time and due to organisational changes these libraries were assimilated in other collections and as such are not traceable as a collection today.

The analysis of these library catalogues is highly inspired by recent work on architectural and engineering libraries and historiography. Architectural historians already elaborated strongly on the concept of architectural libraries and the ways in which treaties, books and other textual documents played a role in the distribution and exchange of knowledge (e.g. Medvedkova 2009, Brouwer 2011, Mignot 2009, Van de Vijver 2003, Van Impe 2008). In his contribution to *Bibliothèques d'architecture/Architectural libraries* Claude Mignot defines three different 'realities': *les bibliothèques concrètes des architectes* or the actual personal library which architects composed in their proper ateliers; the *bibliothèque idéale d'architecture* or ideal library which represents those treaties and books that 'constitute the cultural skyline or landscape of architects at a

certain moment or for a given generation' and the *bibliothèque active* which supported and contributed to the active formation of architects (Mignot 2009). Till now no personal libraries of nineteenth-century Belgian building contractors could be traced back, but recently besides the already studied catalogues of Antwerp (Bertels 2008) a series of catalogues of the libraries of the industrial schools of Brussels and Ghent were discovered. The analysis of these library catalogues gives us insight in the *bibliothèque active* of these industrial schools and as such adds to the recent studies on the evolution of these industrial schools, their interest in the construction business and their educational programs. Additionally a comparison of these library catalogues also provides a first glimpse on how the late-nineteenth-century ideal library of contractors could have been composed and which differences or similarities with other professional libraries exist. Henceforth, from a socio-cultural perspective, this paper wants to add to the research on the educational and intellectual background of building contractors and the transfer of knowledge in relation to *l'art de construire*.

LIBRARY CATALOGUES

In the search for library catalogues special attention was given to those of industrial schools whose program had a strong emphasis on the construction industry. These programs were indeed influenced by regional specificities such as the mining industry in Liège or Mons, the textile industry in Ghent or, among others, the construction industry in Brussels (°1826), Ghent (°1838) and Antwerp (°1862) (Rapport 1897). An intensive search led to the discovery of nine library catalogues. Three catalogues of the Antwerp industrial school date from 1895, 1903 and 1915 (Nijverheidsschool Antwerpen. 1895/1903/1915: *Bibliotheek. Lijst der boekwerken*). On an older catalogue of 1866, which could not be located, Henri Van Daele mentioned that it included already 175 publications, only four years after the establishment of the library (Van Daele, 1969, p.176). For the Brussels *école industrielle*, two complete library catalogues and one supplement catalogue were traced: the catalogues of 1878 and 1895 (Musée Royal de L'Industrie. 1878/1895. *Bibliothèque technologique. Catalogue*) and the supplement catalogue of 1907 (Ecole industrielle de Bruxelles. 1907. *Bibliothèque technologique. Premier Supplément au catalogue*). The oldest traced library catalogues were those of the Ghent industrial school, namely the catalogues of 1862 and 1870 (Ecole industrielle de Gand. 1862/1870. *Catalogue général des ouvrages composant la bibliothèque. Dressé par ordre alphabétique des noms d'auteurs*). For Ghent also a late nineteenth-century catalogue, dating from 1894, is available (Ecole industrielle de Gand. 1894. *Catalogue de la bibliothèque suivi de la table alphabétique des noms d'auteurs*). These catalogues reflect the state of the art of the school libraries and thus give an interesting insight in the actual collection. This is not always the case for other historical sources as sales catalogues (related to legacies of individuals) which also may include volumes added by the booksellers (Van de Vijver 2009).

Usually the industrial school published the catalogue(s) of its library. The 1878 Brussels catalogue however was edited by the *Musée Royal de L'Industrie*, the museum connected to the *Ecole industrielle de Bruxelles*. Many industrial schools (and their libraries) were indeed linked to such an industrial museum to secure the dissemination of know-how via both education and exhibitions. This aspect of knowledge exchange is also present in the library regulations, which are stipulating that not only students and teachers of the industrial schools but also industrialists could consult the library (Ecole industrielle de Gand, 1862). However, library circulation records

which may confirm this actual interaction and exchange are not preserved.

The oldest library catalogues, such as the 1862 Ghent catalogue, were listed alphabetically by name of author. Later on, thematic subdivisions were introduced in order to enable the students (Musée Royal de L'Industrie, 1878, p.6). This thematic classification became increasingly detailed over time. Publications on the construction industry for instance were first listed in the category 'Constructions. Matériaux et Travaux divers' (Musée Royal de L'Industrie, 1878). Later on, this category was split down into 'Ouvrages traitant des constructions', 'Ouvrages traitant des professions se rapportant à la construction' and 'Travaux publics. Rapports officiels. Distributions d'eau, ports, routes, etc.' (Ecole industrielle de Bruxelles, 1895 and 1907). In addition to this thematic index, an alphabetic table of author names was provided.

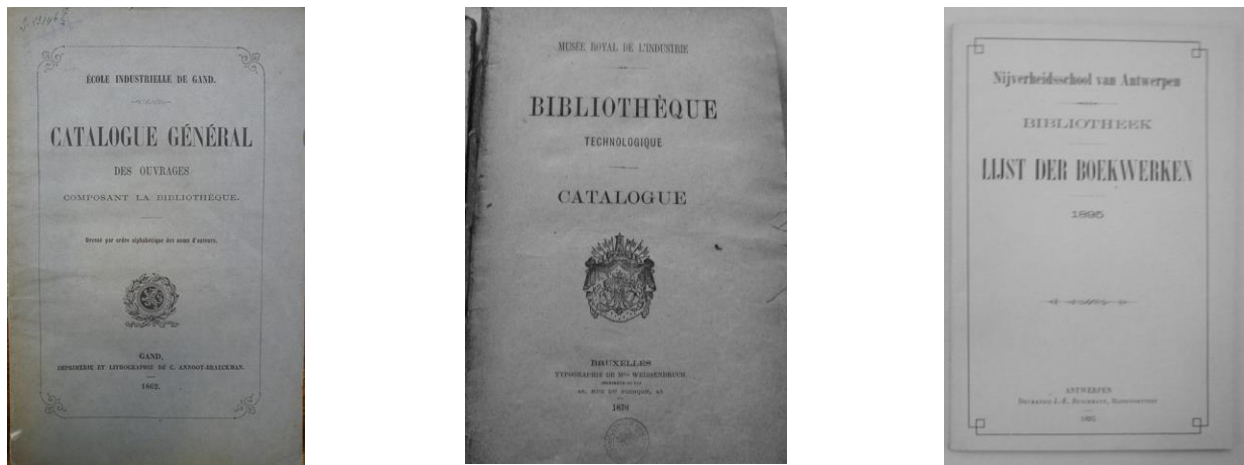


Figure 1: Frontispieces of the library catalogues of Ghent (1862), Brussels (1878) and Antwerp (1895)

COMPARATIVE ANALYSIS

An analysis of these library catalogues sheds light on the size and composition of the industrial schools libraries. Both the Antwerp, Brussels and Ghent library were characterized by an exponential expansion of publications (Table 1). This library extension runs parallel with the increasing success of the industrial schools in the course of the nineteenth and the beginning of the twentieth century and is therefore an ideal indicator of the expansion and development of these *écoles industrielles*.

	Total number of publications	Number of publications on Construction	Percentage of publications on Construction
Antwerp 1866	175	/	/
Antwerp 1895	925	93	10,1 %
Antwerp 1903	1487	152	10,2 %
Antwerp 1915	2983	271	9,1 %
Brussels 1878	1492	116	7,8 %
Brussels 1895	2906	251	8,6 %
Brussels 1907	3413	287	8,4 %
Ghent 1862	1224	53	4,3 %
Ghent 1870	1459	62	4,2 %
Ghent 1894	2700	66	2,4 %

Table 1 Number of publications (on construction) per catalogue

Moreover these catalogues offer insight in the evolution and programs of the different areas of the industrial schools, such as the construction industry. An analysis of the number of publications on construction, set against the total number of publications, shows its presence and relative proportion within the different libraries. Although it was assumed there was a strong emphasis on construction industry in the programs of all three industrial schools, the share of construction publications is particularly striking for the Antwerp (9,08 % up to 10,22 %) and Brussels (7,77% up to 8,64%) library and is much smaller for their Ghent counterpart where the program emphasis on the textile industry is mirrored in the library catalogue.

In order to gain insight in these publications on construction, the latest and most complete library catalogues - Antwerp (1915), Brussels (1907) and Ghent (1895) - were scrutinized. A thorough and comparative examination of these *bibliothèques actives* shows that the publications on construction can be subdivided into eight subcategories (see Table 2). Although the volume of publications on construction differed between the three libraries (Table 1), there are some remarkable similarities concerning the content and the relative share of the different types of publications, especially regarding the general handbooks and manuals on construction (Table 2).

Subcategories	Antwerp catalogue 1915	Brussels catalogue 1907	Ghent catalogue 1894
General construction handbook or manual	35,8 %	24,4 %	31,8 %
Thematic publication on (one) material(s)	17,0 %	15,3 %	12,1 %
Thematic publication on different construction typologies	14,0 %	11,9 %	10,6 %
Theoretic publication on architectural theory and history	11,8 %	2,4 %	12,1 %
(Illustrated) lexicon or dictionary	6,3 %	3,1 %	3 %
Official publication ordered or written by the (national/local/etc.) government	2,9 %	17,8 %	0 %
Publication aimed at a particular profession	10,3 %	13,9 %	16,7 %
Periodical	1,9 %	11,2 %	13,7 %

Table 2 Analysis and subdivision of publications on construction

Both in the Antwerp, Brussels and Ghent libraries, these general handbooks were the most represented category. Manuals like Demanet's *Cours de Construction* and Sganzi's *Programme ou résumé des leçons d'un cours de construction*, were present in all three libraries. Other examples are the *Werktuigkundig- en Bouwkundig handboek* (JC Arp), *Allgemeine Bau Constructions Lehre mit besonderer Beziehung auf das Hochbauwesen* (GA Breyman) and William Rankine's *A manual of civil engineering*. The second most important category for the Antwerp library are the thematic publications on materials, which got ranked in the third place in the Brussels library and the (shared) fourth place in the Ghent library. These publications focussed on theoretical and/or practical aspects of different building materials, with a strong focus on new materials and techniques. Which in itself is not surprising, since most pupils were worked daily within the construction practice where they already had gained knowledge on more traditional materials and techniques. Moreover with this focus, the industrial schools strongly tried to position themselves within the existing educational landscape dominated by the academies. Another important part of the publications focussed on different architectural and infrastructure typologies like *Les hôtels modernes* or *Der Brückenbau. Handbuch der Ingenieurwissenschaften* are examples. Other publications were written from a different angle, namely with a focus on a particular professional such as general contractors, as *Des droits et des obligations des entrepreneurs de travaux publics* indicates.

The share of the other categories differs heavily depending on the library. The publications on architectural theory and history for instance were practically equally present in the Antwerp and Ghent library but were almost absent in their Brussels counterpart. It included classics such as Vitruve's *L'architecture* or Leliman's *De bouwstijlen en hunne ontwikkeling*. The same applies to publications ordered or written by the government. This category is completely absent for Ghent, is rather small for Antwerp but is clearly present in the Brussels catalogue. It involves multiple reports on the Brussels water management (*Canal maritime et port de Bruxelles, Distribution d'eau en agglomération de Bruxelles*) as well as publications written by the national government (*Cahier de charges, clauses et conditions généraux applicables aux entreprises de travaux publics (Ministre de Travaux Publics)*). The Antwerp catalogue lists for instance building specifications by the city architect Pieter Dens on *Lastvoorwaarden en prijsbordereel der stad*. These documents and publications were used within the educational program to inform about the ongoing local practical and formal organisation (Bertels 2008). Periodicals were equally present in the Brussels and Ghent library in contrast to their Antwerp counterpart. Examples of periodicals are *The engineer (a weekly journal)*, *The contract journal*, *Annales de l'association des ingénieurs sortis des écoles spéciales de Gand*, *La Chronique des Travaux Publics* but also *Associação dos Engenheiros civis Portuguezes*. The smallest category in the three libraries contained lexicons and dictionaries such as the *Dictionnaire général d'architecture en français, allemande, anglais et italien*, *Illustriertes Bau Lexicon* and the *Vak- en Kunstwoorden: Ambacht van den metselaar, ambacht van den timmerman*.

Language	Total overview	Antwerp 1915	Brussels 1907	Ghent 1894
Dutch	22 %	41 %	2 %	14 %
English	2 %	0,4 %	4 %	1 %
French	56 %	36 %	75 %	65 %
German	19 %	22 %	16 %	18 %
Others	1 %	0,6 %	3 %	2 %

Table 3 Language of publications on construction listed in library catalogues

Finally, the language of the publications listed in the catalogues was analysed (Table 3). Previous research on architectural and engineering education and knowledge transfer strongly pointed out that for the eighteenth and early nineteenth century French was the dominating language for professional publications, followed by Dutch and Italian (Van de Vijver 2009). The analysis of the catalogues of the industrial schools' libraries indicates that by the beginning of the twentieth century, French was still dominating but in all German and Dutch strongly gained position. But if the specific cultural and political context is taken into account, one can see that the position of Dutch is strongly related to the teaching language used within the proper schools (Dutch in Antwerp and Ghent and French in Brussels). As for this vocational training the use of the mother tongue was seen as the most appropriate communication language (Bertels 2006), which is clearly reflected in the selection of manuals and literature. Publications in other languages than French, German or Dutch were limited and were almost exclusively present due to the subscription to Italian, Spanish or Portuguese professional engineering journals.

CONCLUSIONS

This paper studied the catalogues of late nineteenth-century and early twentieth-century Belgian industrial schools and gives a first insight in the actual book collection of these vocational programs which in Antwerp and Brussels - and to a lesser extent in Ghent as well - focused on the training of craftsmen and contractors in the building industry. The catalogues underline the

pragmatic and cultural-political profile of the schools as they reflect the priority given to practical and material aspects of construction as well as the preference of publications written (or translated) in the pupils' mother tongue. Yet, simultaneously, with the growing presence of German publications and a growing amount of international journals over time, the catalogues also suggest a strong influence of German technical engineering science and skills as well as a strong interest in the international state of the art knowledge in relation to the art of building. However, until today no library circulation records were traced and contemporary educational programs or course descriptions mention the link between the library and the actual courses only in a limited way. This makes our analysis rather an indicative than a representative reflection about the contemporary knowledge circulation related to the vocational training of craftsmen and building contractors. Moreover, this analysis would gain strength in comparison to (not yet existing analyses of) contemporary architectural, engineering or architectural-engineering libraries.

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