

The Users

The Hennebique Archives: Toward a New Corpus for Contemporary Architectural History

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Abstract: The voluminous archives of the Hennebique engineering firm, which was a pioneer in reinforced concrete construction, provides an example of processing procedures and priorities for architectural records. The completeness and heterogeneous nature of architectural records greatly influence processing time. It is necessary to balance the needs of both historians and archivists when processing records, and it is also necessary to preserve the records not just of significant buildings or architects, but of the ordinary architects, and the non-architects who influenced architectural works, in order to develop a fuller picture of the development of the landscapes in which we live.

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The Centre d'Archives d'Architecture du Vingtième Siècle

THE ARCHIVES OF THE Hennebique engineering firm, a pioneer in reinforced concrete construction, was deposited with the Centre d'archives d'architecture du vingtième siècle of the Institut Français d'Architecture (IFA) in 1989, the year the archives center opened. The center, located in Paris, was founded under an agreement signed with the Archives of France, which established the IFA as an intermediary center for handling the archives of twentieth-century French architects.¹ Under the legal and scientific control of the Archives of France, the IFA searches, assembles, inventories, and promotes the archives of architects it receives as gifts. The supervision of the Archives of France implies that all the collections assembled become the property of the French government, thereby ensuring their protection. The designation "intermediary center" means that, on completion of the IFA's task of classification and inventory, these collections are relocated in a repository under the control of the Archives of France.²

Since 1989, the IFA has taken in over two hundred archival collections illustrating every trend in French architectural creation of this century. Some of the best-known names are Auguste Perret, André Lucrat, and Henri Sauvage.³ While the primary role of the IFA is to collect the archives of architects, it also has a few collections of engineers and engineering firms. Among these, the Hennebique archives occupies a central place because of its historical interest and impressive volume.⁴

The Work of François Hennebique

François Hennebique was born in 1842. In the early 1890s, he developed and perfected a new system of iron and concrete construction which was named for him, and which he later expanded from one patent to another to all branches of construction in which reinforced concrete can advantageously replace conventional masonry or metal structures. Endowed with an amazing sense of organization and promotion, he created his own engineering firm, founding branches in France and throughout the world. These agencies researched markets and developed projects and estimates which they sent to the central office in Paris for the final designs. This centralized structure rapidly confirmed Hennebique's international supremacy. In 1898, he founded his own monthly journal, *Le Béton Armé*, which strengthened his network and, through its wide circulation, assured a special renown for the firm's work.⁵

The Universal Exposition of Paris in 1900 brought the Hennebique firm, as well as reinforced concrete, official recognition. At the time the firm had some 30 agencies and

¹This agreement was signed in October 1986 by the Direction des Archives de France, the Direction de l'Architecture et de l'Urbanisme du Ministère de l'Équipement, and the Institut Français d'Architecture.

²The Hennebique archives will eventually be transferred to the Archives du Monde du Travail, devoted to archives of work, in Roubaix, in the north of France, of which Hennebique was a native. Priority was given to the relocation of the photographic archives in late 1994.

³These archives represent more than three linear kilometers of files (written documents, folded drawings, photographs), close to ten thousand rolls of drawings, over fifty cabinets of flat files for drawings, and some two hundred models. The archives are constantly growing, at the rate of about ten new collections a year, focusing mainly on architects active between 1950 and 1980.

⁴Comparable archives held by the IFA include those of engineers René Sarger and Bernard Laffaille, and, in particular, of the research unit of one of Hennebique's main competitors, the Peinard-Considère-Caquot company, the volume of which is equivalent to that of the Hennebique materials.

⁵The review had a circulation of 5,600 to 20,000. It gave considerable attention to the Congrès annuel du Béton armé, which Hennebique launched in 1897 with an exhibition organized for the occasion.

160 franchises throughout the world.⁶ Starting in 1910, it erected works of an impressive audacity such as the Royal Liver Building in Liverpool, described as the tallest skyscraper in Europe, and the Risorgimento Bridge in Rome, a gigantic, monolithic structure with a 100 meter span. In the Paris offices, over one hundred engineers and designers handled some seven thousand contracts a year. While World War I put an end to this expansion, more than sixty thousand projects had already been developed by that time. In 1919, the firm resumed its activity, which had never entirely ceased, but with a reduced staff.

François Hennebique died on March 7, 1921. During the 1930s, the company concentrated on the French market, maintaining only the most firmly established agencies in other countries. This phenomenon became more pronounced after World War II, and the firm finally closed down in 1967. It had developed close to one hundred and fifty thousand project files. These files were widely circulated when current; they were used particularly for writing articles in *Le Béton Armé* and other journals. Approximately eighty thousand of them are preserved in the IFA archives center.⁷

The Hennebique Collection

The Hennebique archives covers all the countries in which the firm was established and a period of activity of nearly fifty years, from file number 113, dated 1892, to the files of 1939, numbered in the 130,000 range. Among the 40 percent that are missing are contracts of lesser importance developed in distant agencies and all files generated after World War II.⁸

Every file was assigned an order number corresponding to that of the central office series. Most files contain general and detail drawings produced in the Hennebique offices on heavy, brittle tracing paper, as blueprints, or in other formats. Some contain plans for concrete formwork and sketches illustrating calculations. Finally, in lesser numbers, there are architects' drawings which were supplied to the firm as a basis for engineering drawings.⁹ The files also contain correspondence, worksheets, and tables of details and reinforcing rods—information that was used to place orders for materials.

In addition to the files, the collection has a number of other types of documents. These consist mainly of brochures and prospectuses, some miscellaneous accounting records, and a few folders of correspondence which shed light on Hennebique's personality and his relationships with his partners. There are also several complete sets of *Le Béton Armé*, which ceased publication in 1939 and is rather rare in any part of the world. The archives also includes the firm's photograph collection, about 6,400 prints in all sizes.¹⁰

⁶Among the North American agents and franchise holders around 1900 were Kampmann of Baltimore, Baffrey of New York, and Faragher of Cleveland. There were also agents in Philadelphia, Mexico City, and, in South America, Caracas, Montevideo, and others.

⁷When the firm closed down, its archives were deposited with the Conservatoire National des Arts et Métiers in Paris. This institution ensured their safekeeping but, lacking funds, had to preserve the collection in its original state of disorder. When the IFA's archives center was founded in 1989, the Hennebique archives, like some forty other prestigious collections pertaining to the early history of reinforced concrete construction, found a more appropriate home at the IFA.

⁸We also know that projects from Commonwealth countries that had not adopted the metric system did not pass through the central office in Paris; in fact, there are very few files of English origin in the archives. Furthermore, after World War I, most of the files are concerned only with France.

⁹These are often prints, more rarely copies or tracings. The original drawings were usually returned to the architects.

¹⁰Generally silver bromide and gelatin silver contact prints produced in printing frames. We did not receive any negatives; they were kept by the firm's offices all over the world.

These photographs, intended mainly to illustrate the journal, promotional brochures, and exhibitions of the firm, illustrate its work in over thirty countries.

In 1920, the company's archives was regarded as the most complete documentation on reinforced concrete in the world.¹¹ Even today, it represents an exceptional source for the history of reinforced concrete and its diffusion as a building technology. The archives also provides a remarkable basis for an economic history, in regard to both cost analysis and the study of business strategies in building and public works.

From a purely documentary point of view, this collection comprises an immense quantity of precise information on the identification and dating of tens of thousands of buildings throughout the world. The architects' drawings preserved in the files often enable us to document both well-known and lesser works, on which there is no other known information. In addition, the photograph collection transcends purely documentary concerns, as is shown by the book *Le Béton en représentation*, published by the IFA in 1993.

The Program for Processing and Use of the Hennebique Archives

With the Hennebique Archives, the IFA archives center found itself in possession of one of the richest collections in France in terms of its information potential. It was received, however, in a disorderly mass, for which there was practically no existing historical study. The sheer volume of the collection created an additional difficulty. The center was, in fact, faced with not one, but three collections of very different but complementary materials (if the eighty thousand files, the journal, and the photographs are considered separately). The center solicited the assistance of the Getty Grant Program to launch a processing and use program over a number of years. The grant awarded enabled the center to bring together a team of documentalists and archivists headed by historian Gwenaél Delhumeau, specialist in the history of reinforced concrete and the Hennebique process in particular.¹² Most of what we know today about this firm and its expansion can be attributed to Delhumeau. In view of the international dimension of the collection, it seemed necessary to form a network of correspondents in France and other countries to allow comparison of working hypotheses with similar experiments outside France. On a number of occasions, groups of specialists in the history of reinforced concrete, active mainly in Italy, Switzerland, Egypt, and the United Kingdom, have met in Paris and Turin.¹³

In 1990, the center's records were not computerized, and we could not manage a collection of such size and unprecedented content using a traditional manual system of records. We therefore gave priority to an inventory of the photograph collection, which, because of its more modest proportions, was more easily mastered. It seemed to us, in the absence of any study about Hennebique, that it offered a particularly relevant glimpse into the firm's technical processes, its production, its international expansion, and its promotional methods. In retrospect this assumption was fully warranted. We now have a primary access key to understanding the specific characteristics of the Hennebique firm and the collection of files.

¹¹Paul Augros, *Béton Armé, possibilités techniques et architecturales* (Paris: Ch. Massin et Cie, 1926), 10.

¹²See Gwenaél Delhumeau, "Hennebique et la construction en béton armé, 1892-1914. De brevets au matériau" (doctoral thesis, Sorbonne, University of Paris IV, 1995).

¹³We have had particularly productive relationships with Ricardo Nelva and Bruno Signorelli of Turin, where the archives of Porcheddu, Hennebique's main agent in Italy, are kept.

Our processing of these files was therefore limited at first to reclassifying the eighty thousand units we had received which were in the greatest disorder. This lengthy sorting process enabled us to assess their wealth and has since been the basis for a partial appraisal, especially for the 1898-1914 period—the pioneer era—during which the firm published a numbered list of built projects in *Le Béton Armé*.

The second stage consisted of a detailed, item-by-item inventory of the photograph collection. We developed a record format that anticipated the needs of future computerization. The data entered go beyond the framework of a simple archival inventory. They also incorporate elements useful to the researcher and therefore to an improved understanding of the files. The information was broken down into four main categories: identification of the subject, identification of the various protagonists,¹⁴ circulation of the image, and all the data regarding the photograph itself. Concurrently, the prints received an initial superficial cleaning before being transferred to non-acidic storage. They will be micro-filmed in the near future.

The third phase, recently completed, called for computerization of the archives center as a prerequisite. In May 1993, we equipped the center with Hypathie, a database specially designed to handle architectural archives.¹⁵ Although this software was not adapted to the specifics of a technical firm like Hennebique, the original breakdown of the information allowed us to enter all the data previously recorded. Today we can query the database, and we have the first statistical results on the contents of the collection. This will also help us devise the tools essential to processing the eighty thousand files.

The completion in 1993 of this phase, which was basic to a knowledge of the Hennebique firm, also made possible our publication of *Le Béton en représentation*.¹⁶ This book presents the most significant photographs of the collection and analyzes the promotional strategy of the Hennebique firm. Moreover, the publication fulfills the utilization aspect of the mission entrusted to the IFA by the Archives of France. We can now disseminate some of the results obtained over the past two years and sustain interest in pursuing our project, the next phase of which (the systematic processing of the eighty thousand files), is currently under way.

Concurrently with our work on the photographs, we sampled specific files in the collection to pinpoint the content and interest of this unevenly constituted mass of documents¹⁷ and develop a new data entry format suited to the Hypathie database. The data recorded for each file was more succinct than that recorded for the photographs, and this time met inventory needs exclusively. Research designed to foster knowledge of the collection is now clearly disassociated from the inventory work proper to the role of an archives center. The data deal solely with identification of the object and present a summary of its contents in which the possible presence of related visual architectural documents is noted, enabling us to appreciate the architectural dimensions of the object. We can by no means envisage an item-by-item examination of the contents of eighty thousand

¹⁴Architects, engineers, agents, and franchise holders of Hennebique patents.

¹⁵Hypathie is a relational database developed from Macintosh Fourth Dimension software by historian Pierre Frey of the École Polytechnique of Lausanne and computer scientist Pierre Vuillemin of Geneva.

¹⁶*Le Béton en représentation. La mémoire photographique de l'entreprise Hennebique 1890-1930* (Paris: Institut Français d'Architecture/Éditions Hazan, 1993). Texts by Gwenaël Delhumeau, Réjean Legault, Cyrille Simmonel, and Jacques Gubler. Preface by Claude Parent. Scientific coordination, Gwenaël Delhumeau.

¹⁷This work was undertaken in part by Canadian historian Réjean Legault, who is currently completing his doctorate at the Massachusetts Institute of Technology.

files, which can be estimated at about five million documents. Each file, however, is entered and indexed.

At the conclusion of this phase of the work, it will be possible to query the database statistically in order to establish an accurate list of the purely architectural works recorded in the archives. These files, which are more central to the mission entrusted to the IFA than the other materials in the archives, may, in a subsequent phase, be processed in greater detail. In particular, we are considering the entry of descriptive records pertaining to exceptional graphic documents, and photographic and microform coverage of these documents.¹⁸

In close cooperation with the network of researchers who have been associated with this project since 1989, especially Gwenaël Delhumeau, we will also use this database for a statistical analysis of Hennebique's operations and thus isolate a systematic sample of files representing all the transactions of the firm, from the most modest to the most significant. With the results of the qualitative and quantitative analysis provided by the database, we can then undertake the appropriate sorting, thereby substantially reducing the volume of the archives without compromising the many opportunities offered by the collection for research in various disciplines. The demands of preservation will thus be met with due respect for the needs of research.

The Issue of Major Collections

The Hennebique archives poses the problem of processing voluminous collections. In addition to the space these items occupy (330 linear meters), the number of files encumbers the procedure considerably. The IFA archives center in fact houses several other collections of equal volume, most notably the archives of architect Guillaume Gillet, who is not well known outside France but whose career attracted some attention in his native country.¹⁹ However, even though Gillet was very active between 1945 and 1980, his total output does not exceed 150 projects and built works. Likewise, the production of better-known architects such as Auguste Perret and Le Corbusier, amounting to several hundred studies, has nothing in common with that of Hennebique.

The difficulty is in proportion not to the volume, but to the vast number of transactions. It also depends on the prior knowledge we may have of the work, as well as the heterogeneous or homogeneous character of the collection. The more complete and heterogeneous a collection is—drawings, writings, photographs, printed material, models, etc.—the more rapidly we can understand each transaction. For instance, the archives of Art Nouveau architect Henri Sauvage (1873-1932), which contains fewer than 1,200 items, required the same time to inventory as the archives of Louis Miquel (1913-1946), a disciple of Le Corbusier, which includes a wealth of 15,500 documents. The Sauvage archives, which will soon be published by Garland Publishing, consists mainly of photographs and drawings, the latter undated and without title blocks or any inscriptions that would enable us to identify and interpret them. On the other hand, the Miquel archives is complete and heterogeneous; the inventory work therefore posed no major difficulty.

¹⁸This step is pending possible storage in digital form linked to the database.

¹⁹Guillaume Gillet (1912-1987) designed the Cathedral of Royan (1954-1959), the French Pavilion at the Brussels International Exposition (1958), the Porte Maillot complex in Paris (1970-1975), and the main French penitentiary centers of the 1970s.

While the volume of the collection and number of transactions play a paramount role, as we have seen, in determining the time required for inventorying, knowledge of the subject is indispensable for small collections as well as large ones. Throughout the Hennebique program, we attempted to bring together researchers and archivists. It did not seem desirable to entrust the inventory itself to a specialized historian, who would certainly not have the time required. But it is always important, in selecting and entering data, to strive for balance between the needs of researchers, on the one hand, and those of the institution responsible for the inventory and preservation of the archives, on the other.

A Corpus for the History of Architecture?

In conclusion (or rather as a prerequisite to such work), the question posed by the Hennebique archives is that of the usefulness of acquiring and processing such a collection, a large part of which relates to works which are minor if not absolutely insignificant. My own recent research into the definition of the Modern Movement in France between 1920 and 1940 shows that the history of this pivotal period in architecture has been presented for the past half-century with reference to fewer than 250 buildings of all types for all of France. However, during this time, more than twelve thousand building permits were granted for the city of Paris alone! This corpus of 250 buildings is not the result of a systematic selection that would confer legitimacy and relevance, but reflects the cliquishness and Parisian mind-set of the journals of the period, chance discovery, and selective research into the work of architects championed by the media. Would we venture today to assess automobile design and markets in the 1990s solely on the basis of Formula I racing cars? This is approximately the method that has been adopted for decades by architectural historians. Our field of investigation must be renewed in depth and broadened to take in various players (corporations, research institutions, etc.), a study of which would enable us to view an architect's work outside his or her own practice. We must advocate the preservation of archival collections of ordinary architects, those who create the landscape in which we live. We must develop original methods for processing the largest collections. The work undertaken since 1990 on the Hennebique archives constitutes an initial approach.

The effort must be shared, and those who consult such archives must learn to handle and understand the complex, heterogeneous nature of these non-manufactured products. Instructors in architecture schools and art history programs must further integrate archives into the methodological approach of the research procedures they teach. But whatever the performance of the databases and the quality of the catalogs, and whatever the competence of the curators and documentalists, researchers, as well as archivists, must know how to waste time. As the French psychiatrist and man of letters Jean Delay was fond of saying, a researcher who is determined not to waste time is lost to research.