Modern Wood. De Coene at Expo 58

Rika Devos and Fredie Floré

Abstract (133 words)

To the Belgian wood firm De Coene, the 1958 world's fair (Brussels) or Expo 58 functioned as a multifaceted promotion of its renewed profile: a celebrated furniture producer in the interwar period, the company had reoriented its activities mainly towards the building industries. Especially its glued laminated timber (glulams) proved to be a challenging and competitive construction element. De Coene's involvement with Expo 58 resulted in 23 daring and imaginative constructions, several of which were noticed in the national and international specialists' press. This paper highlights the surprising dominance and architectonic innovations of De Coene at Expo 58 in the context of building in Belgium in the post-war years. By focusing on the impact of the local building industry, it adds a new approach to the architectural and construction history of world's fairs.

Text (6763 + 939 words)

Introduction

At world's fairs, millions of visitors gape in admiration at a new world, not only at the vast collection of objects on show, but also at their settings. The architecture of this environment offers shelter to the exhibits and frames or demonstrates the general message of the objects on show. As was already the case in the enormous cast iron and steel exhibition halls of the nineteenth century (like the 1851 Crystal Palace or the 1889 Galerie des Machines), the demonstrative use of new or perfected construction techniques remains a returning theme in the architecture of world's fairs. Moreover, several pavilions of the nineteenth and twentieth century have been acknowledged as beacons in construction history. The temporary nature of the buildings, their extraordinary public exposure and the need to attract the attention of the masses within the visual clamour of the fair are convincing elements in this tendency.

Expo 58, the first post-war world's fair, was praised as a testing ground for lightweight structures.(1) **(figure 1)** However, the scope of many contemporary critics and of the majority of more recent evaluations on the world's fair's engineering merits was limited mainly to the many audacious hanging roofs on site. Most authors ignored the widespread use of newly developed timber construction techniques of the fair: glued laminated timber (glulams), glued nailed timber (HB procedure),(2) prestressed timber surfaces, folded plates in wood and fully prefabricated buildings in timber. 35 pavilions out of the 150 on site (3) were constructed following these techniques. 27 of these buildings were erected with glulam or HB

procedures. 23 of these structures, glulams all, were produced by the Belgian company Kortrijkse Kunstwerkstede Gebroeders De Coene.

The dominant presence and innovations of De Coene at Expo 58: aims and questions

The present paper focuses on the contributions of the wood firm De Coene at Expo 58, on its extraordinary dominant position and on its architectonic innovations. Research in the archives of the De Coene Foundation and in the archives of the organizers of Expo 58 (4) resulted in a first complete overview of the De Coene activities for Expo 58.(5) Moreover, combining complementary fields of expertise,(6) this paper aims at sketching out a revealing perspective on the implementation of new techniques and construction materials by a single commercial firm: it enables a viewpoint which does not focus explicitly on aspects of engineering audacity, but on the flexible design and marketing strategies of newly developed commercial construction members. Building with De Coene, this paper claims, was a convenient and economical way for commissioners of pavilions to demonstrate the modernity of their nation or firm. Apart from documenting the De Coene presence at Expo 58, this paper forwards two major research questions. Firstly: how did De Coene achieve its apparent dominant position at the world's fair? Secondly: what constituted the innovative character of the De Coene projects at Expo 58?

To explore the research questions in detail, the text is structured in two major parts. After a brief general introduction on the issues of building at Expo 58, the first paragraphs will seek to explain the dominance of De Coene at the world's fair. Therefore, these paragraphs will elaborate not only

on the company's own history and postwar profile, but also on the company's role in the ongoing promotion of timber as a modern construction material in Belgium. Central research questions here deal with the reputation of De Coene at the time Expo 58 was built and with the firm's pioneering position in modern wood construction in Belgium.

The second part of the text assesses the variegated presence of De Coene at Expo 58. The first paragraphs will explore how De Coene was represented in the exhibits of the building sector, following the renewed profile of the firm. Next, the diversity of the De Coene interventions at Expo 58 will be illustrated, focussing on their design-related innovations. Because the standard production procedures of the De Coene products were already perfected in the years before the fair, central research questions here investigate both the broad gamut of De Coene products at Expo 58 and the innovative architectonic applications of the glulam members in various projects, illustrative of their possible spectacular uses.

Building at Expo 58 and the recommendations of the organizers of Expo 58 on the use of steel and wood

To designers and construction firms, Expo 58 was an exquisite occasion to demonstrate their most recent know-how to the public at large. Over 41.5 million attended the exhibition from April 17 to October 19. The world's fair was sited at the Heysel area, large 200 hectares, on the fringes of Brussels. The organizers of the fair – the Commissariat General and the Society of Expo 58 – had themed the exhibition: 'Balance Sheet of the World for a more human World'. Like its predecessors, Expo 58 would showcase the contemporary world in a progressive way. This postwar world on show,

irrespective of the lingering aftermath of the Second World War or the ongoing Cold War, was to be an appeased, prosperous world, aiming confidently for a radiant future and benefiting already from the latest discoveries in science and techniques. Consequently, at Expo 58 the use of new construction techniques not only was widespread, but some of its largest and most eye-catching pavilions were erected with lightweight structures.

Not only those buildings which demonstrated an ostentatious use of new building techniques, but the majority of the pavilions and many auxiliary structures were constructed following recent methods and using new materials. In an attempt to reduce costs and to speed up the onsite construction, most commissioners opted for steel structures, which could be prefabricated and recuperated after demolition. The construction period for pavilions erected by participants was rather short and ran from October 1956 to June 30, 1957, while all interior decorations and exterior fittings had to be completed by the end of March 1958. All pavilions had to be demolished by February 1959, a situation which heightened the demand for demountable and reusable buildings.

Anticipating the widespread use of steel constructions, the Commissariat encouraged the participants to place their orders with the Belgian metallurgy industries before December 31 1956.(8) Moreover, the combination of the extraordinary building activities on the exhibition site and the modernization of the infrastructure in the capital of the nation not only heightened the pressure on steel production in Belgium, but also resulted in an acute shortage of skilled workmen. Already in 1955, the Commissioner General of Expo 58, Georges Moens de Fernig, had warned the Belgian government

that “It seems absolutely impossible to build the exhibition with the reserve of labourers available in the building industries in Belgium.”(9) As a result, during the summer of 1957 the organizers of Expo 58 were faced with a long and general strike in the Belgian building sector.(10) In an attempt to lower the demand for steel the Commissariat General encouraged, albeit informally, the use of timber as a construction material. In a meeting with the architects of the Colonial Section, Marcel Van Goethem, architect-in-chief of the exhibition, “warned the architects for the difficulties of acquiring steel and insisted that preference would be given to timber as a construction material; this would prevent disillusions.”(11) Modern timber construction, glulams especially, offered a valid alternative to steel structures, since glulam constructions also had the advantages of quick onsite construction and possible reuse after demolition. It may be of no surprise then, that many of the Expo 58 glulam frames have been recuperated and sold afterwards. Several still perform satisfactory to date.

The nationally organised promotion of wood in postwar Belgium

The popularity of timber frames at Expo 58 can also be attributed to the ongoing promotion of wood as a modern construction material throughout the 1950s in Belgium. More generally, this era proved to be an important period of modernisation in the wood construction industry in Western Europe. The technical refinement of synthetic adhesives was of crucial importance to this development and led to the introduction, the improvement and the broader application of a series of new wooden building materials, such as glulams and new composite wooden boards.

Timber was on its way to become a fully fledged modern construction material of which the architectural potentials soon were explored.

In Belgium, the timber construction industry was dominated by a few large firms only: the Scieries Anversoises – Antwerpse Zagerijen (or SAZ, Antwerp), the Belgian branch of the Dutch company NEMAHO (Brussels) and De Coene (Courtrai). After the Second World War, these companies invested in the modernisation and the promotion of wooden building materials. In the 1950s, SAZ started to produce frames according to the licensed Swedish technique HB,(12) while NEMAHO and De Coene developed glulams. These firms also experimented with prefabricated wooden houses or building components.

The modernisation of the Belgian wood construction firms was stimulated by several national institutions, including the Bureau National de Documentation sur le Bois (National Wood Documentation Bureau, or BNDB).(13) Between 1954 and 1956, the BNDB, together with the architectural magazine Bouwen en Wonen, organised a promotional campaign entitled 'Het hout op nieuwe wegen' [Wood on a new road]. This campaign consisted of a series of competitions and exhibitions which demonstrated and rewarded the innovative use of (new) wooden building products. Three special issues of Bouwen en Wonen supported and documented the events and published local and foreign technical articles. Meanwhile, they also drew a revealing portrait of the main wood construction companies in Belgium.

The Bouwen en Wonen summer issue of 1954 covered the 'Antwerpse Houtprijs voor Architectuur' [Antwerp Wood Prize for Architecture], an initiative of the Antwerp branch of the BNDB. The first prize went to a free-

standing traditional villa in Brasschaat – a residential district near Antwerp.(14) The brick house contained many constructive elements in old oak and its roof was covered in reed. However, the issue of Bouwen en Wonen did not only celebrate the traditional use of wood. In an article on the Antwerp prize, one of the editors of the magazine explicitly suggested to award, in the future, more contemporary architecture which first and foremost would underline and promote the new possibilities of the construction material.(15) Other contributions in the issue discussed a series of progressive foreign projects, such as the wooden Portland Central Lutheran Church by Pietro Belluschi (1950-1951) or the Royal Pavilion on the 1951 'Festival of Britain'. Additionally, the issue discussed a selection of Belgian glulam projects, mainly sheds like indoor markets and warehouses, built by De Coene and NEMAHO.

The June 1955 issue of Bouwen en Wonen claimed to document a 'second phase' in the development of timber as a modern construction material. It was entirely devoted to that year's 'Concours National d'Architecture' [National Architecture Competition] organised by the BNDB. This time the first prize went to a 'modern' church designed by architect Jan Windels with a frame in parabolic glulam arches in Norwegian pine, made by De Coene. **(figure 2)** All competition entries were shown on the exhibition 'Hout, vriend van de mens' [Wood, friend of mankind] in the Brussels Palais des Beaux Arts. This exhibition – again an initiative of the BNDB – was designed by one of Belgium's leading modernist architects Renaat Braem, also an important editor of Bouwen en Wonen, who believed modern timber constructions would help to create a new living environment in harmony with nature.(16) The floors, stairs and the façade element in the

exhibition were made by SAZ. The visually more complex, plastic elements – the wooden shell, the curved wall and the sculpture – were products of De Coene. **(figure 3)**

The August 1956 issue of Bouwen en Wonen defined a 'third phase' in the redefinition of timber as a modern construction material. This issue covered the first 'Salon Quinquennal du Bois et des industries connexes' [Five-yearly Exhibition of Wood and related industries] organised as part of the International Fair of Flanders in Ghent. The 'Salon' was announced at the front entrance of the fair by an eye-catching installation by architect André De Poerck involving three vertically placed wooden beams made by De Coene. **(figure 4)** This company was present also in the exhibition itself with a stand explaining the origins, the general characteristics and the long term values of wood. One of the main organisers of the event concluded the issue of Bouwen en Wonen by underlining the 'groundbreaking work' of De Coene and SAZ "who, with their own engineers, had dared to specialize in timber constructions".(17) However, the most prestigious promotion efforts and the majority of the eye-catching projects, especially in the second en third phases, were realized by De Coene.

New investments by De Coene, a firm with a long history and a strong reputation

De Coene not only played an important role in the post-war promotion of wood, the firm also had a long and strongly valued history which dates back to the late nineteenth century. For decades, the company was known mainly for its luxurious art deco interiors. In the 1920s and 1930s, De Coene produced furniture, carpets, stained-glass windows, lamps and textile for a

new class of wealthy citizens. The firm furnished high class villas, apartments, restaurants, bars and office spaces. Even the royal family showed interest in the flourishing company. In 1935, for example, De Coene produced a rosewood desk for King Leopold III, following a design by architect Henry van de Velde. In the post-war period, this old reputation of a 'high quality' firm for the interior applications of wood enabled De Coene to launch its new products with broad and almost immediate success.

During the interwar years De Coene exported considerably to France, Great Britain and the Netherlands. Following the tradition of the Arts and Crafts Movement, Jozef De Coene, painter and founder of the firm, regularly invited renowned artists to take part in the design or production process. Painter Albert Saverys, for example, designed carpets and sculptor Geo Verbanck drew bronze fittings for cupboards and doors. In addition, the company was also known for its advanced technology. Since 1921, De Coene had its own plywood production unit with American machines. Shortly after, the firm also successfully developed its own type of adhesive, based on urea resin.

In the first decade after the Second World War, De Coene went through a difficult phase. The firm was accused of economic collaboration and was sequestered. It was not until 1952 that the original owners of the firm were back in charge. Faced with enormous financial losses, the new De Coene management explicitly changed course. Pol Provost, the new general director of the company, was one of the most important figures in this development. Notwithstanding the upheaval of the sequester and the release from prison

of the wartime De Coene directors, the financial settlements between the firm and the government remained pending until 1958. Meanwhile, the company was in a strenuous position to obtain loans for further development but also, more importantly from 1953 onwards, risked to lose its profits. Hence, from 1953 on, the new director decided to invest considerably in new branches of the wood and furniture industries.

Firstly, both the furniture and interior design departments were reformed. This process was marked by the 1954 acquisition of the production and sale licences of Knoll furniture for the Benelux and the Belgian Congo. In the mid-fifties already, the American design company Knoll was well-known for its collection of modern domestic and office furniture with designs by famous artists as Eero Saarinen, Harry Bertoia and Ludwig Mies van der Rohe. The production of some of the Knoll designs required the introduction of new techniques in the De Coene factory, such as the use of moulds for spot welding in case of the Diamond Chair of Harry Bertoia. Inspired by the Knoll collection, De Coene also developed its own contemporary furniture lines. However, this change did not imply an abandoning of the interwar activities. De Coene continued to produce period furniture. Moreover, irrespective of the new lines of serial produced products, the postwar modern and period furniture of De Coene still played an important role in the representation of high class clients, as has been the case since the 1920s.

Secondly, the management of De Coene in the early fifties also decided to invest in the production of new wooden building materials. In this period, the firm installed a new and up-to-date technical laboratory and bought an advanced press for the production of bakelized wood. In the

course of the fifties, a whole range of new building products was launched: self-supporting panels, new types of plywood, doors, trailers, prefabricated houses or large load bearing elements in wood. However, the showpiece of new timber building products of De Coene were the glulams. In the fifties, the firm produced two types of glued laminated beams. The first type had an I-shaped section, with a web of red-brown bakelized plywood and wooden flanges painted in white. De Coene experimented with this kind of water resistant timber since 1938 and had already used them to construct a series of party halls, stands, industrial sheds and sports halls. The second and soon most applied type of glulams had a rectangular section and consisted of one inch thick glued slats of redwood. The new glulams were cheaper to produce and originated from a logic of scarcity, since they were produced with small, standardized sections of wood.

The postwar reorientation of De Coene soon began to be worthwhile. In 1956, when the company received its first building assignments for Expo 58, De Coene again had acquired a strong international reputation. That year, 42 per cent of the production was meant for export.(18) De Coene sold plywood in the United States and produced 253 prefabricated houses for Philips Eindhoven (The Netherlands). One year earlier, De Coene had built 1800 wooden trailers for the American Air Force. Consequently, in the August 1956 issue of Bouwen en Wonen De Coene proudly described itself as the only Belgian firm "which has the complete industrial equipment to carry out the whole cycle of woodworking in every aspect. From the raw trunk, which is sawed up, barked or cut in the best conditions, she [the firm] manages to produce a vast diversity of products".(19)

Ironically, the difficult early post-war situation of De Coene also resulted in the company's strong presence at Expo 58. Not only the investments had armed the firm with an apparatus that made it possible to deal with the high demands of the fair. It might also be assumed that the many negotiations on the sequester conditions of De Coene and the support for the De Coene family in the highest levels of Belgian political circles had also attributed to a higher visibility of the company in this milieu. Hence, the high appreciation of several industrial magnates planning to build a pavilion at the world's fair and of the fair's Commissariat General – an organization dependent of the Ministry of Economic Affairs – for the De Coene products most probably had a triple origin: the firm's interwar high class reputation, its political ties and the new building products which provided an answer to the fair's specific construction demands concerning speed, expenses, availability, flexibility and originality.

The impact of Expo 58 with De Coene: the rise and fall of success through innovation

Expo 58 was a true showcase for De Coene. The company not only realised the glulam frames for 23 pavilions, it also constructed two completely prefabricated buildings, produced Knoll furniture for over 27 pavilions, delivered wood-based sheets for tens of interiors and exteriors, was involved with an experimental wooden folded plate construction and showcased its products in three pavilions. The orders for Expo 58 were placed when De Coene had just perfected its adhesive technologies and SAZ was still testing its new glulam production methods. Although the possibilities of glued laminated timber had already been demonstrated convincingly abroad, Expo

58 illustrated the relative advance of modern wood construction in Belgium at that time. Moreover, the context of the exhibition and the contemporary know-how of designers with respect to the new wood products resulted in daring applications of the De Coene products, leading to new shapes and impressive spaces. As a British timber construction specialist reported after his visit to the fair: "Ten years ago even, such designs would never have achieved three dimensions, not because they were not practicable but because designers would simply not think in such terms. That they do so today is the measure of timber's progress in the structural engineering field – and its hope for tomorrow."(20)

At the 1958 Brussels exhibition, not only the type of the commissions of De Coene, but also the nature of the commissioners varied greatly. As a result, Expo 1958 settled the name of De Coene with the Belgian public at large. After the fair, its production of plywood and related products, as well as the amount of projects in the construction department increased steadily until the end of the sixties, when its volume of trade, including the furniture business, had doubled. Notwithstanding the temporary nature of the large commissions of the second half of the fifties and economic recession, because of its early post-war investments, De Coene had managed to grow continuously. Yet despite its commercial successes, by 1965 the burden of the firm's continuous innovations forced the directors of De Coene to look for new shareholders. In March 1966, the firm was remodelled into the plc Houtindustrie De Coene & co. As the company expanded further in the following years, its different branches got more and more independent and several were relocated. Although the firm booked its largest profits ever in the following years – mainly as the result of commands for prefabricated and

glulam constructions – De Coene suffered from accounting difficulties by 1969. Further reorganizations led to final division of the original company in December 1975. Eventually, by January 1977, the plc De Coene ceased to exist.

De Coene as exhibitor: an explicit and concise demonstration in Belgian building industries show

De Coene was present at Expo 58 in two guises: as an exhibitor and as a contractor for other participants. In both situations, the company's presence was marked by its broad variety of products and its prestigious profile. As a participant in Expo 58, De Coene set out to demonstrate its new post-war profile and was represented most explicitly in the building industries exhibition groups. This was clear in its onsite activities as a building company, in its exhibits and its presence in the committees of the related industries. Most of the leading committee members of the Wood Industry Group were also members of the management of De Coene. In the Pavilion of the Wood Industries, a glulam construction, De Coene gave an explicit and concise demonstration of its new products. Right next to the pavilion, on the site of the Buildings and Dwellings Group, De Coene erected its prefabricated Model House.(21)

The Pavilion of the Wood Industries focussed on the celebration of timber as a construction material for buildings and useful objects. The pavilion was designed by architect Wenceslas de t'Serclaes and consisted of two parts: an exhibition hall in the shape of a segment of a sphere and a rectangular volume containing several exhibition cabinets, a meeting room and a 'De Coene bar'. The dome was constructed with 11 glulam half-arches,

placed radially and, for the first time, glued with urea formaldehyde.(22) While the new glue technology was of interest only to specialists, the overall shape of the building and the open, intriguingly curved interior was an implicit demonstration that glulam members were capable of spatially more complex and more prestigious buildings than industrial sheds or sports halls. Moreover, the dome-shaped building had been realized with the same onsite construction speed as the 'standard' glulam commissions. **(figure 5)** The half-arches, in the shape of low parabolas, were composed of glued redwood and spanned 25.5 meters each, reaching a height of 11.5 meters. At the centre a skylight enlightened the ring of the individual supports of the half-arches, placed obliquely. It was here, in the core of the construction, that the De Coene logo was placed. A less explicit indicator of a strong De Coene presence, was the sculpture Braem had designed for the exhibition 'Wood, friend of mankind' at the entrance of the pavilion. While only one element of the glulam structure was visible at the outside, the half-arches and their oblique supports were prominent elements in the interior of the pavilion. The interior was finished with wooden slats, while the exterior was clad in transparent Plasticlair and blue Glasal. The exhibition demonstrating wooden frames, plate material, furniture, sport items and toys was awarded a Grand Prix, the highest distinction possible for individual participations at Expo 58.

In between the Pavilion of the Wood Industries and the Pavilion of Buildings and Dwellings, De Coene had constructed its prefabricated Model House, composed of its new sandwich panels, Decoba. This house offered a synthesis of the many products and production aspects of De Coene. **(figure 6)** Designed by Frans Vuye and Gustave Creupelandt, members of the

prefab department of De Coene, the dwelling was equipped with De Coene furniture and with the modern classics of the Knoll-gamma. Belgian critic Marc Callewaert referred to the house as an "exemplary house …. an accessible example of the modern art-of-living, in which the latest concepts of style and new techniques are implemented in a direct, practical manner." (23) Although the house itself would remain a prototype, the prefab branch of De Coene would boom in the years after the fair with the construction of school pavilions in Belgium and in Germany and, in the late sixties, youth clubs in France. Yet the most successful element of the Model House was the Decoba panel. Shortly after the fair, De Coene established itself as Belgium's largest plywood producer.

De Coene as contractor: prestigious applications of its gamut of new products

What marked the pavilions in the glulam production of De Coene, was, first of all, their popular exhibition programme. Also, by building a great variety of pavilions over a short period of time, De Coene demonstrated not only the construction speed, but above all the flexibility of its construction members. Moreover, by following the tendency of erecting "exo-skeletal" buildings, De Coene not only illustrated the weather-resistant potential of glulams, but also placed its products prominently present in the streetscape of the fair. In several projects, De Coene had the opportunity to demonstrate its broad gamut of products and its advanced know-how in the design with and technical application of wood and its derived products. The two most prestigious projects of this nature were the enormous Governmental palace of Congo, Ruanda and Urundi (Georges Ricquier, arch.) and the setting for

the exhibition 'Fifty Years of Modern Art', located in one of the permanent buildings on site built for the 1935 world's fair, Heysel Palace II.

With the construction and decoration of the Governmental palace of Congo, Ruanda and Urundi, De Coene demonstrated both the economic possibilities of the glulam frames and the rich decorative use of tropical wood the firm was capable of. For the load bearing members of the Governmental palace, one of the largest structures on site – 150 meters long and 19 meters high at its highest point – and located along the main axis on site, De Coene produced 26 glulam frames spanning 45.60 meters. **(figure 7)** Each frame was composed of four elements: two tapered beams for the top and two strait columns with a curved head. Cost efficiency was an important factor in Ricquier's enormous project. This is why the plans to use a steel or concrete structure were abandoned in favour of a glulam construction.(24) The glulam frames were not only cheaper, but because of the lower weight of this structure, also the foundations could be executed in a more economical way. Additionally, because of the size and amount of the frames,(25) De Coene decided to produce glulams with an I-shaped profile, which resulted in even lighter frames. De Coene used its multiplex panels with mahoney veneer and bakelized multiplex panels in the long façades of the palace. The company also realized the six extra glulam columns in the glazed head façades, decorated with sculpted paduak, as well as the 36 meters high fetish pole, clad following a geometrical pattern with slats of tropical wood – yellow limba, red paduak and dark wenge – which functioned as a landmark to the whole Colonial Section. The contrast between the economy of the main structure and the rich tropical wood cladding was equally strong in the interior of the pavilion. Its honorary hall, for instance, was dominated

by a large mural (300 m²) on limba panels by the painter Floris Jespers. **(figure 8)**The floor was covered in parquet with an undulating pattern in limba and wenge. Here also, De Coene was responsible for the production of the exclusive finishings. In demonstrating both the richness of tropical wood next to the economical and efficient production of glulams, the governmental palace prominently presented both the continuation and update of De Coene's decorative woodwork and the company's new ability to act as a low-cost contractor for large span constructions.

Like the governmental palace, also the international art show 'Fifty Years of Modern Art' was located at a prominent place, near the ceremonial heart of the fair, the Belgium Square. The exhibition was a prestige project promoted by the organizers of Expo 58. Belgian architect Peter Callebout, known for his contemporary projects exploring the possibilities of wood construction, and painter Marc Mendelsohn were awarded first prize in the competition for the architectural setting of the show. Callebout completely redressed the hall's floor, ceiling and walls. Callebout collaborated with De Coene for the realization of several of these elements and also ordered Knoll furniture with the firm. Hence, at this 'Fifty Years of Modern Art' exhibition, De Coene was able to demonstrate the 'contemporary cultural chic' of its new post-war products in all areas of the show: the entrance zone, the café and the exhibition area. **(figure 9)** The café was equipped with Knoll furniture, produced by De Coene: tables with white formica tops and Bertoia's Diamond chairs with bright green, orange and yellow canvas cushions. De Coene also produced the floor panels: large bakelized multiplex panels, of which the typical shiny, red-brownish colour was left visible. Furthermore the firm was responsible for the Knoll chairs for the personnel,

as well as for the Mies Van der Rohe's Barcelona chairs and the exclusive bar in wood in the VIP reception area. This bar was located on the first floor of a glulam post and beam structure, which Callebout had designed to arrange the entrance facilities of the exhibition on the ground floor. The glulam structure was left explicitly visible and functioned as a strong rhythmic element in the wide, 'neutral' hall. The floor and the light walls in the glulam structure were clad in multiplex with teak veneer. With the 'Fifty Years of Modern Art' show, Callebout had offered De Coene the possibility to demonstrate the refined use of the company's standard materials and products.

De Coene as contractor: new architectonic possibilities for glulams

At Expo 58, De Coene also delivered proof of the formal and structural possibilities of glulam constructions, often in eye-catching constructions that differed from the standard (and more economical) applications of glulams and based on the know-how of De Coene's own design office. This was the case in several commissions for the organizers of Expo 58, as well as in a selection of pavilions, of which the sphere of the pavilion of the Comptoir Tuillier de Courtrai probably was the most compelling.

Late 1956, the Society of the fair was planning a bridge to connect the Belgian Section with Merry Belgium, located at the other side of the lower tram line. The monumental proposal of the Society's architect, Fernand De Rijck, resembled the large concrete 'Grande Passerelle' of the Foreign Section, but was to be executed in wood. The organizers wanted to keep the costs of this construction as low as possible and intended to finance the bridge by selling its façades as billboards. When consulted on the feasibility

of the project, De Coene director Provost replied that the plans "were designed for a realisation in concrete .... we see a possibility to create an original structure in wood, for which some changes in the design are really necessary."(26) The proposal by De Coene was a radically different, frivolous bridge with a glulam structure, designed by a young architect who was occasionally engaged by the company, Fabrizio Carola. **(figure 10)** The bridge, composed of redwood glulam beams, arches and half-arches and a deck in iroko, demonstrated the weather proof nature of the construction and the formal possibilities of the members. Carola had designed a bridge deck carried by two two-hinge glulam arches, which turned the bridge in a kind of symbolic entrance gate for the trams arriving at the fair site. At the side of the Belgian Section, the actual bridge was introduced by a gentle double slope, of which the two 'legs' had a parabola shaped plan. The supports of the slope were composed of two pairs of half-arches. These playful elements were bolted together not at their tops, but at the beginning of the curves. This design decision resulted in a series of small, visually dominant and attractive cantilever elements, providing the bridge deck with the necessary supports at its edges. De Coene functioned as entrepreneur for the whole project. In exchange for a reduction of the costs, De Coene was granted the monopoly to place its publicity on the bridge.

Apart from a handful of rather conventional applications of glulams – used as supports for a chapel, a post office, a pergola, an indoor exhibition, a shelter for taximen and a series of shops – commissioned by the organizers of Expo 58, De Coene also constructed one of the vertical signals marking the entrance gates to the fair. This De Coene tower also was the last prestige project executed for the organizers of Expo 58. The tower's construction,

transportation and erection had an unmistakably spectacular character. In July 1957, the architects responsible for the enlargement and rearrangement of the Heysel Palaces Robert Puttemans, Charles Malcause and Prudent Laenen, ordered a large pylon with De Coene to mark the Gate of the Grand Palaces. The pylon was designed as a single piece, 33 meters high and resting on a single steel ball and socket joint with a diameter of 20 cm. The Brussels engineer André Paduart, who was already engaged in the most spectacular structures commissioned by the Commissariat, was also responsible for the calculation of this cable-stayed tower. De Coene prefabricated the pylon in its Courtrai workshop. **(figure 11)** The pylon had a diameter of 1.5 meters. Its façades were composed of longitudinal glulam beams, mounted on steel wheels and clad in Decoba panels. The tower's core was hollow and housed a spiralling stair which gave onto a crow's nest near the top, enabling maintenance for the motor of a rotating expo star, the logo of the fair. The crow's nest, the only piece that was mounted onto the pylon on site, was designed to provide tension to the cables that would secure the tower's stability. The pylon, weighing 25 tons, was transported to Brussels in one piece. This trip took several days and even the façade of the De Coene montage hall was partially torn down to enable the transport of the mast. **(figure 12)** On site, the pylon was mounted on March 18, a wind still day. With this action, one month before the opening of the fair, the last structural intervention of De Coene at the building site of Expo 58 was finished. After the fair, the tower was transported to Namur, to be re-erected next to the bridge over the Meuse. However, due to careless montage, the tower broke in half and never was restored.

The small pavilion of the Comptoir Tuillier de Courtrai (Geo Bontinck, arch.) showcased the spatial possibilities and consequences of curved glulams and De Coene's crafty detailing solutions. **(figure 13)** The pavilion is one of the few Expo 58 structures which is still standing on site. The edifice was designed as a fragment of a semi-sphere, 8.75 meters high with a diameter of 17.5 meters, placed on a stone pedestal. The pavilion did not impress through its size or construction bravura, but through the refinement of its details and through the smart application of the De Coene arches. Two arches run parallel with the front and back edges of the sphere fragment. Two other arches, starting at the same point as the edge glulams, meet in the top of the sphere, where they are joined by a special connector – hardly visible – in steel. De Coene also produced the secondary column and beam glulam structure for the construction of the upper storey, together with the torsioned springboards of the open staircase. The complex three dimensional volumetric composition necessitated a refined detailing in the cladding of ceilings and upper floor, which was executed in wooden slats by De Coene workmen. Although the collaboration of De Coene with Bontinck was due largely to the architect's previous successful experiences with the firm, the earliest dating from the interwar period, in this pavilion De Coene demonstrated its mastering of detailing its standard construction members, ranging from the connections between the glulams, to the realization of the curved ceiling of the sphere.

Conclusion

The prominent presence of De Coene at Expo 58 was as a key moment in the difficult postwar history of the company, but may also be interpreted as a

'fourth phase' in the promotion of timber as a modern construction material in Belgium, but also. This new phase then is marked by the large scale and creative application of wood, in which the glulams no longer were used in standard repetitive structures only, but also in one-of, daring and complex edifices. Without doubt, this widespread application and appreciation of timber as a modern construction material with the commissioners and designers of the Expo 58 structures had its roots in the ongoing promotion of the BNDB. Yet the success of the glulams can also be partially explained by the contemporary shortage of skilled labour and steel in de Belgian building industries. Because glulam structures provided a valid and economical alternative to steel and required only few skilled workmen onsite, commissioners eagerly considered the possibility of a glulam structure. Moreover, building with glulams was a way to build explicitly modern and hence, to deliver proof of the modernity of its commissioner.

Yet Expo 58 also differed strongly from the ongoing wood promotion. This difference was marked by the strong dominance of the Kortrijkse Kunstwerkstede Gebroeders De Coene, which embarked on a more autonomous, commercial course. At the exhibition, the independent BNDB no longer played a coordinating role. Tellingly, and in strong contrast to the wide range of projects and the high visibility of De Coene on the fair ground, the BNDB only had a small, modest glulam pavilion, realised by SAZ and located, on the remote site of the Pavilion of Forestry, Shooting and Trapping and Fishing, clearly separated from the building industries. (27)

At the time of Expo 58, the main technical innovations in glulams were already perfected by De Coene. Hence, the firm set out to demonstrate the

spatial and more frivolous possibilities of their products. That the company was able to realise this on such a wide scale, was largely due to the specific context of building at the fair, to the ongoing promotion of wood, but also, more importantly, to De Coene's interwar reputation as high quality producer, its advanced position in de field of wood constructions in the fifties and to its important political contacts. To fully employ the often far-reaching impact of their products in both the shape and design process of buildings, De Coene had developed a manifold profile at Expo 58, functioning as supplier of material in one project, as entrepreneur in other or even as designer in more complex commissions. As a result, De Coene was able to answer the questions of most commissioners, including the organizers of Expo 58. Hence, De Coene played a decisive role in the creation of the overall imagery of Expo 58, most probably more than any independent designer or even a state organism. Expo 58 not only functioned as a showcase to De Coene. De Coene also served as an implicit source for the postwar, modern imagery of Expo 58.

Notes

(1) On the structures of Expo 58, see: B. Espion, R. Devos and M. Provost, 'Entre ingénierie et architecture. Innovations structurales à l'Expo 58,' in R. Devos and M. De Kooning, eds. L'Architecture moderne à l'Expo 58. "Pour un monde plus humain" (Brussels, 2006), pp. 100-127.

(2) The HB procedure is named after the initials of its inventor, the Swedish professor Hilding Brosenius.

(3) At the site of Expo 58, 121 pavilions were built, next to over 30 utility buildings.

(4) The company archives of De Coene were largely destroyed. The archives of the organizers of Expo 58 are kept in the Belgian State Archives (Brussels), Fund Expo 58, with preliminary (uncompleted) catalogue.

(5) Preliminary results were published as M. De Kooning, R. De Meyer and F. Floré, Van Moderne Makelij 1952-1977. De Kortrijkse Kunstwerkstede De Coene in Antwerpen (Antwerp, 2002); R. Devos and M. De Kooning, De Coene op Expo 58 (Courtrai/Ghent: 2003) and R. Devos and F. Floré, 'La modernité avec De Coene. La production après 1952', in F. Herman and T. Van Dijk, eds. Les ateliers d'art de Courtrai De Coene frères (Courtrai, 2006), pp. 182-208.

(6) The research is framed by the Ph.D. research of both authors, focusing on the postwar promotion of 'modern living' (F. Floré, 'Lessen in modern wonen. Een architectuurhistorisch onderzoek naar de communicatie van modellen voor 'goed wonen' in België 1945-1958' (Ph.D. thesis, Ghent University, 2006) and the modern architecture of Expo 58 (R. Devos, 'Modern at Expo 58. Discussions on postwar architectural representation' (Ph.D. thesis, Ghent University, 2008).

(7) These sections are: the Belgian, Colonial, Commercial, Mundial and Foreign Sections.

(8) Their agreement with the Belgian metallurgy to give priority to the demands for the construction of the pavilions dates June 22 1956, see: State Archives, Fund Expo 58, file 4.08.08S, Charles Everaerts de Velp, letter addressed to the presidents of the groups and the commissioners general of the foreign pavilions, 6 Dec. 1956.

(9) State Archives, Fund Expo 58, file 2.03.03, Georges Moens de Fernig, 'Problèmes à résoudre sur le plan gouvernemental en vue de la réalisation de

l'exposition 1958', 20 Jan. 1955. Original quotation: "Il paraît absolument impossible de construire l'exposition avec la réserve de main-d'oeuvre dont dispose l'industrie des bâtiments en Belgique."

(10) Belgische economische statistieken 1950-196. Deel II. Tabellen en Grafieken (Brussels, s.d.), p. 49 and also: E. Deslé, 'Bouwen en Wonen te Brussel (1945-1958). De moeizame uitbouw van de keynesiaanse welvaartstaat en de rol van de mediterrane gastarbeiders', BRNG-RCHB, 11 no. 3-4 (1990), p. 431.

(11) State Archives, Fund Expo 58, file 3.57.00, 'Réunion des architectes de la section du Congo tenue le 12 octobre 1956 à 14h.30'. Original quotation: "Mr. Van Goethem, Architecte en Chef de l'Exposition, met les architectes en garde contre la difficulté qu'il y aura de se procurer des aciers et insiste pour que la préférence soit donnée au bois comme matériau de construction; ceci évitera des déboires."

(12) SAZ was late in developing its own glulam type, around 1956-7.

(13) The Bureau National de Documentation sur le Bois or Nationaal Houtvoorlichtingsbureau was established in 1952.

(14) '1e Prijs Arch. C. Van Grimbergen', Bouwen en Wonen, 8/9 (July-Aug. 1954), pp. 272-273.

(15) W. Bresseleers, 'Over de houtprijs', Bouwen en Wonen, 8/9 (July-Aug. 1954), p. 277.

(16) R. Braem, 'Naklank van een tentoonstelling', Bouwen en Wonen, 7 (July 1955), pp. 250-253.

(17) L. Smits, 'Slotbeschouwingen', Bouwen en Wonen, 8 (Aug. 1956), p. T51. Original quotation: "die het aangedurfd hebben, met eigen ingenieurs, zich op houtconstructies toe te leggen".

(18) See R. Mayeur, L. Douchy and M. Goethals, 'Industrie du bois De Coene. Succès et déclin d'un groupe industriel', in F. Herman and T. Van Dijk, eds. Les ateliers d'art de Courtrai De Coene frères (Courtrai, 2006), pp. 140-165.

(19) '1ste Internationaal Houtsalon te Gent – gehouden in de Jaarbeurs der Vlaanderen van 8-23 sept. 1956. De Coene stelt voor', Bouwen en Wonen, 8 (Aug. 1956), s.p. Original quotation: "die een volledige industriële uitrusting bezit om de ganse cyclus van de houtbewerking onder alle aspecten uit te voeren. Vertrekkende aldus van de ruwe stam, die in de beste voorwaarden verzaagd, geschild of gesneden wordt, komt zij ertoe een overgrote verscheidenheid van afgewerkte producten voort te brengen".

(20) 'Timber at Brussels', Wood (Oct. 1958), p. 403.

(21) On the Model House, see: F. Floré and M. De Kooning, 'The Representation of Modern Domesticity in the Belgian Section of the Brussels World's Fair of 1958', Journal of Design History 4 (2003), pp. 319-340.

(22) State Archives, Fund Expo 58, file 3.57.xx, letter of E.J. Van de Ven to Moens de Fernig (14 Feb. 1958). In all other Expo 58 glulams, resorcinol formaldehyde resin was used.

(23) M. Callewaert, 'Leert Expo 58 ons weer bouwen?', De Zondagsvriend, 22 (29 May 1958), p. 869. Original quotation: "een voorbeeldig huis …. voor velen bereikbaar voorbeeld van de moderne kunst-van-het wonen, waarin uit de nieuwe stijlconcepties en de nieuwe technieken direkte, praktische konklusies worden getrokken."

(24) 'Timber structures at the Brussels Exhibition', Wood (Oct. 1958), p. 406 or W. De Laere in F. Lecluyse, 'Van 3 naar 33 paviljoenen', De Weekbode (1 May 1998), s.p.

(25) The cost of the extra labour was less than the cost of the material saved.

(26) State Archives, fund Expo 58, unnumbered file, letter of Pol Provost to Marcel Van Goethem, 11 Dec. 1956. Original quotation: "avaient été conçus pour une réalisation en béton …. nous voyons la possibilité d'une réalisation originale en bois qui nécessitera vraisemblablement quelques modifications dans les dessins."

(27) The BNDB published a booklet on the many modern wood constructions at Expo 58: Het hout op de tentoonstelling (Brussels, 1958).

Acknowledgements

The authors which to thank Philippe De Craene of the De Coene Foundation and Wendy Scheerlinck for their support and lasting enthusiasm in this project. For their time and willingness, the authors also are grateful to the many interviewees, former collaborators of the firm: Achilles Daelman, Willy De Laere, Jerôme Dervichan, Philippe Neerman, Jan Saverys and Frans Vuye.

Address for Correspondence

Rika Devos (Ghent University)

rika.devos@ugent.be

Fredie Floré (Ghent University and Sint-Lucas School of Architecture)

fredie.flore@ugent.be or fredie.flore@architectuur.sintlucas.wenk.be