

# The expansion of the Cathedral of Créteil

## Press release

Paris, 2015

## A CATHEDRAL FOR THE 21<sup>ST</sup> CENTURY

In 2009, on the initiative of Bishop Santier, the diocesan association of Créteil, supported by the Chantiers du Cardinal, opted for an ambitious project to expand the cathedral of Notre-Dame de Créteil. Conceived by Charles-Gustave Stoskopf, holder of the Prix de Rome, this architecture is typical of the 1970s when “the theology of blending-in” prevailed at the time. It is part of the contemporary heritage of the City of Créteil.

The commission was to double the capacity of the cathedral and to enhance its visibility towards the city.

More than a renovation, this project involved a major redevelopment of the cathedral, giving it a new architectural lease on life from a symbolic and pastoral point of view. The new cathedral is anchored in a multicultural city, which includes five Catholic churches, ten synagogues, a mosque, a Protestant church, four Evangelical churches, a Buddhist temple and a Bahai assembly.



Cathedral of Créteil © Y. Mernier

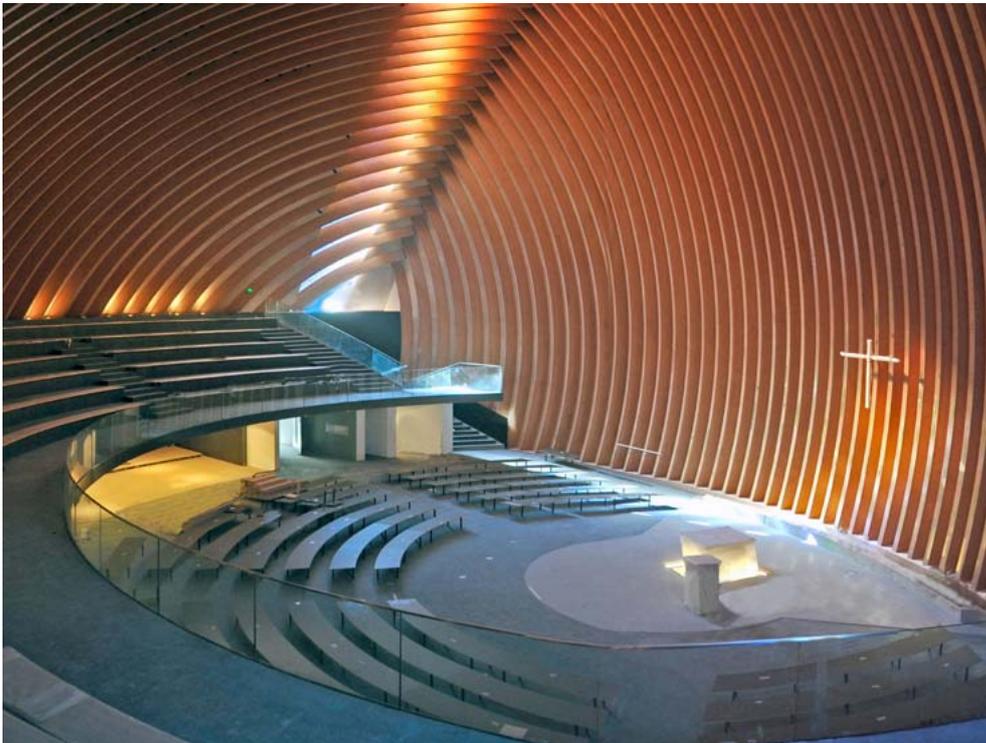
A dialogue between two different architectural styles, yet consistent, is established. The dome pointing skywards is based on the footprint of the original cathedral. The silhouette of the entrance, on a human scale, is now joined with the monumental proportions of the new project, focusing on the nave of the cathedral that extends from two spherical wood-clad hulls, like two hands joined in prayer that meet above the altar.

Large gatherings can be held in this new space. The existing sanctuary has been remodeled and the benches are placed in a broad semicircle. In daylight, the stained-glass window located at the junction of the two hulls shed a colored light onto the sanctuary, while at night, illuminated from inside, they become the symbol of a living Christian community.

The steeple, detached from the building on the corner of the forecourt, marks the cathedral entrance with its slender silhouette, punctuated by three bells from the old campanile. It restores the building urban scale and become a sign in the city beside the large residential buildings of the neighborhood. The view onto the cathedral forecourt is freed by opening the curtain of trees. The new square, built by the city on the opposite side, is an amenity for local residents, and an extension of parish life.



Cathedral of Créteil © Luc Boegly



Cathedral of Créteil © Y. Mernier

### **A space structured by the liturgy**

Having thus determined the architectural element of the project, we still had to determine the specifics. The new spatial organisation of the cathedral provided us with the framework we needed.

The two cylindrical concrete walls that support a horizontal terrace situated about 5 metres high from the ground, become two tridimensional wooden hulls that converge at 20 metres above the altar.

The liturgical axis was born from the creation of a chapel facing the sanctuary, in place of the former garden. It is marked by the presence of the baptistry. We decided that this axis, which would be the route of solemn processions in the cathedral, would become the standard for arranging all the structures: thus the supporting arches of the shells are all drawn in parallel to this liturgical axis.

This unique and particular architectural expansion is defined by the liturgical axis. The geometric complexity of the design – each arch is unique, mirrored on either side of the axis – creates a space under tension, at once static and dynamic. Each movement becomes a particular experience, especially through the “accelerations” of transparencies and opacities created by the progress of the arches on the spherical curve of the hulls.

This architecture in motion is illustrated by the steady arch of the hanged platform at the centre of the cathedral, thus creating a long travelling.



Cathedral of Créteil © Luc Boegly

### **The warmth of wood**

The white architecture of Stoskopf serves as the setting for the new cathedral, clad all in wood, inside and out.

This unity of material refers back to the ancient cathedrals, where the mass of these stone vessels was cut and chiseled by the light. This allows a straightforward reading of the two layers of the building, but most importantly, stands for unity and simplicity.

The repetition of spruce arches gives rhythm to the interior decorative style of the hulls. The intention here is not to offer an optimal structure, calculated to the finest degree, nor to display any technical prowess, but to characterise the density of a sacramental space. There are as many arches as intertwining possibilities at the top of the dome.

The boat of Peter, fisher of souls, is also suggested here.

Outside, the cladding of the hull and the steeple are also handled in wood, following the same parallel geometry of the arches. The wooden strips of Douglas fir are pre-shaded to ensure an aesthetically uniform ageing.

Wood is a natural, living material, at once humble and noble. It lends itself perfectly to the design of the building's curves. Its warmth also serves as a pattern of a fraternal community, united in the celebration of the sacraments of the Church.

### And by the light

Another movement, another axis, perpendicular to the previous one, crosses the space of the cathedral. This axis is the one of the stained glass, whose colored light encircles the space from its zenith. There is also an ascending path that rises to the source of this light: a movement from the altar to the two access steps to the gallery, which is extended by the curve of the stained glass. A path of light hangs vertically from the altar, climax of the composition of the Udo Zembok's magnificent stained glass. The cross thus signs this space in three Dimensions, a space that vibrates to the rhythm of day and seasons, the orientation of the cathedral on the points of the compass — give or take a few degrees — and the positioning of the stained glass at the head of the southern hull, allowing the building to receive sunlight throughout the day.



Cathedral of Créteil

The architectural concept of two intersecting shellshaped spatial forms celebrate a space which unfolds like a border along the interface of the two volumes.

This space, designed as a glass arch, is the field of play for this commission. Spatially, the semi-circular arc opens up from east to west. As the only source of natural light the arc culminates at the zenith, vertically centred over the altar. At regular intervals, crosssection wooden ribs interrupt the continuous ribbon of glass.

Our artistic response to the given architectural shape is based on the idea that the incident sunlight artistically metamorphoses and thus should enter equally „sublimated“ into the sacred space. Paradoxically, however, light itself is invisible, because it is only perceptible to our senses when it reflects on material or flows through filters.

The simplicity of the concept and composition opens up a range of different levels of understanding for the observant visitor. The spectrum ranges from our delight in chromatic filtered colours and their effects on the interior architecture of the cathedral, to the concept of the three primary colours of light, their spatial positions and the symbolism of the Holy Trinity.

Udo Zembok

### **A sense of community**

The semicircular shape, as well as the use or non-use of the galleries, gives a feeling of fullness to the community regardless the number of faithful present at the celebrations. The tiered spaces of the conference room and the auditorium continue this modularity, with their movable partitions opening out into the cathedral. The extended cathedral can accommodate up to 1000 people.

The Masses in the chapel conveys both a sense of intimacy and belonging to the cathedral, through the view of the sanctuary and the cathedra.

The organ area, located at the top of the galleries, can also accommodate a choir for major celebrations.

### **The two narthexes**

Access to the expanded cathedral is still effected by the two entrances of the original construction, refurbished and christened “small” and “large narthex” for the occasion.

The large narthex has been stripped of the fire escape, which occupied part of its façade, to open fully onto the forecourt. In keeping with the original intention of Charles Gustave Stoskopf, access to the cathedral from the public space is thus made even more fluid.

Inside the two narthexes, a glass wall affords a view of the southern hull plunging to the ground to form two entry portals bathed in light. The threshold between sacred space and profane space is clearly marked.

The double door leading to the entrance, located under the terraces of the galleries, is deliberately dark, with low ceilings, which makes the entrance even more spectacular.

### **The cultural centre**

The extension of the cathedral included the creation of a cultural centre intended to offer cultural and artistic events to the Val-de-Marne’s inhabitants.

A conference room and a small auditorium occupy the space originally dedicated to two multipurpose rooms. These spaces are accessible through an exhibition gallery that connects the two entrance narthexes. At its centre, a skylight allows a glimpse of the cross on the steeple. The sunlight goes trough a skylight and illuminates the entrance to each room. Near the large narthex, a bookstore café creates a friendly space at the entrance of the cathedral.



Cathedral of Créteil © Luc Boegly



Architecture-Studio's partners

M.Robain • R.Tisnado • J-F.Bonne • A.Bretagnolle • R-H.Arnaud • L-M.Fischer • M.Lehmann • R.Ayache • G.Joly • M.Plot • M.Efrón • A.Sabeh El Leil

## ARCHITECTURE-STUDIO

Founded in Paris in 1973, Architecture-Studio brings together about two hundred people, around 12 partners of all generations. This team of 25 different nationalities is composed of architects, urban planners, designers and interior designers. Architecture Studio has built itself upon the will of a will for broad-mindedness and group philosophy. Its foundations lie on work group and shared knowledge, with the will to go beyond individuality for the benefit of dialogue and confrontation. Thus, the addition of individual knowledge turns into wide creative potential.

Based in Paris, Shanghai, Beijing, Saint-Petersburg and Venice the studio believes in the virtues of exchange, crossing ideas, common effort and shared knowledge. The European Parliament in Strasbourg, the 2010 World Expo master plan in Shanghai, the Arab World Institute in Paris and the Notre-Dame de l'Arche d'Alliance Church stand among the practice's completions, which also count the restructuring of Jussieu campus, the Grand Auditorium of the Maison de la Radio, Novancia business school in Paris as well as Saint-Malo Cultural Hub.

Architecture-Studio activity is particularly sustained abroad, especially in China and in the Middle East. Among the latest international projects appear the Onassis Cultural Centre in Athens, the Jinan Cultural Centre, the Art Gallery and Chen Xie Zhiliu Peiqu in Shanghai, the Rotana Hotel in Amman, Jordan, Muscat Cultural Centre in Oman or the National Theatre of Bahrain. The agency also completes the waterfront development in Lusail, Qatar.

## APPENDICES

This project is derived from a close collaboration between Architecture-Studio and T/E/S/S, engineering consultants in charge of all the technical parts of the structure and wooden hulls. The complexity was settled by Architecture-Studio's architects and the engineers. Thanks to an in-depth work on 3D model, both the general layout of all the architectural elements and all the critical details, such as bows and structures of the hulls, interior trim, stained glass, frames and prefabricated frames of the over-roof were extracted.

### The wooden hulls

The skeleton of glulam are arranged to sustain the two hulls composed of glue-laminated beams.

An exterior over-roof made of wooden strips follows the same parallel geometry as the interior beams.

In the nave, a metallic beam sustains the gallery which is made of prefabricated stone.

Roofs terraces at the bottom of the southern hull are made of metal, as well as the 40 metres high steeple.

The cover is composed of two elements : a moisture barrier directly placed on the roof board, and rock wool isolating pannels supporting a damp roof membrane.

The over roof placed above the membrane consists in a metallic frame, perforated black sheets and wooden squares made of Douglas fir.



Site of the Cathedral of Créteil © Devisubox

### Structure and support

The main structure of the timber framing is composed of approximately 130 glue-laminated arches (16x75cm) ; the longest extrados arch is 26.5 metres and the smallest bending radius is 6 metres.

The arches are arranged in a system of parallel beams placed 56cm from one another.

The arches are jointed on the bottom by fittings, bolts and a metal axis. The coupling on the top of the two hulls is achieved by assembling alternately the northern and southern arches resting on a connecting laminated glued beam with fittings, bolts and nails.

The roof deck batten is then attached directly to the main structure; the cross-laying of battens allows them to bending on the glued laminated arches.



Structure and cladding © T/E/S/S

### T/E/S/S ENGINEERING

T/E/S/S comprises some 30 engineers and architects, headed by Tom GRAY, Matt KING and Bernard VAUDEVILLE.

As engineering consultants, T/E/S/S works on the design and production of structure, facades and building envelope. This work applies to edifices of all kinds, including civil engineering and more unusual projects such as art installations or experimental structures. Its work is founded on a solid experience of structural calculations, on an in-depth knowledge of materials – steel, aluminium, timber, glass, concretes, textiles and composites – and on an expert understanding of complex geometry.

T/E/S/S was awarded the 2012 Grand Prix National de l'Ingénierie for the Fondation Louis Vuitton project.

## SPECIFICATIONS

Contracting authority	Diocesan Association of Créteil and Association "Chemin des arts" in Val-de-Marne
Delegated contracting authority	Les Chantiers du Cardinal
Assisting contracting authority	TEWAKO
Project management:	
Architect	Architecture-Studio
Structure and wrap	T/E/S/S
Fluids	Louis Choulet
Acoustics	AVA
Light designer	8'18"
Economy	Éco-Cités
Wood specialist	Sylva Conseil
Total cost	9 million euros before tax
Cost of work	5,75 million euros before tax
Competition	2009
Completion	2015
© synthesized images	Architecture-Studio / T/E/S/S
© photographs	Luc Boegly / Yves Mernier / Udo Zembok

## STAINED GLASS

Stained-glass window conception	Pascale and Udo Zembok
Stained-glass window art direction	Udo Zembok
BET glass	Hoffmann GTD
Window's production	Glasmalerei Peters Studio

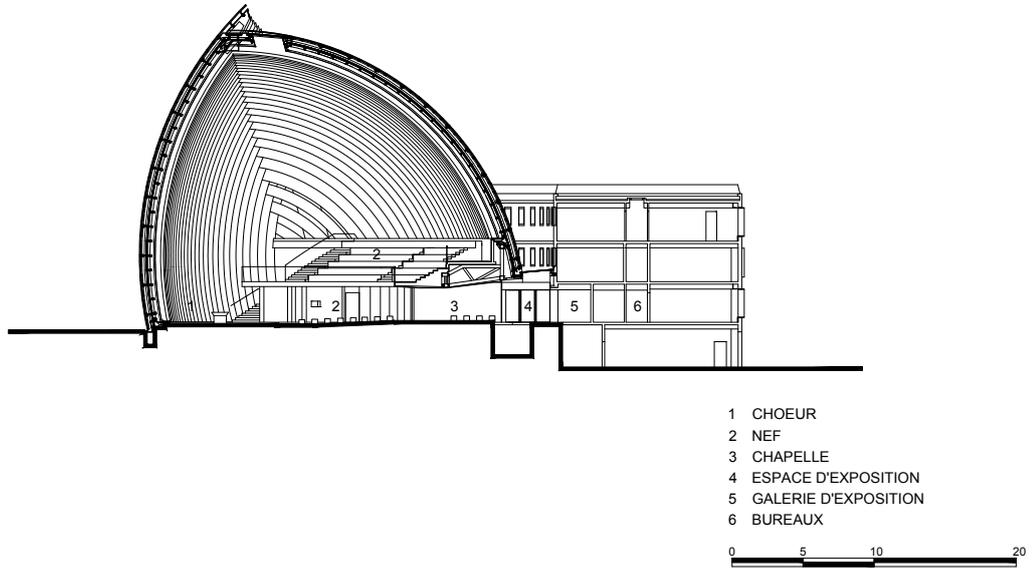


## CORPORTATIONS

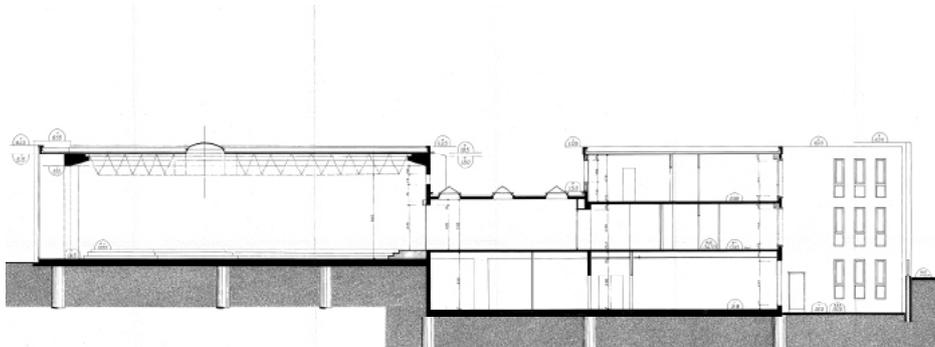
<b>First group</b>	LEON GROSSE <i>Any building trades off budget</i>
<b>Second group</b> Mandatory	Envelopes FARGEOT LAMELLE COLLE (ARBONIS) <i>Wood, opaque envelope carpenters and cover, on-roof wood and internal dressings of shells</i>
Subcontractors	CABROL <i>Glazed banner, steel structure of forums, bell tower and roofs terraces</i>

## DIMENSIONS

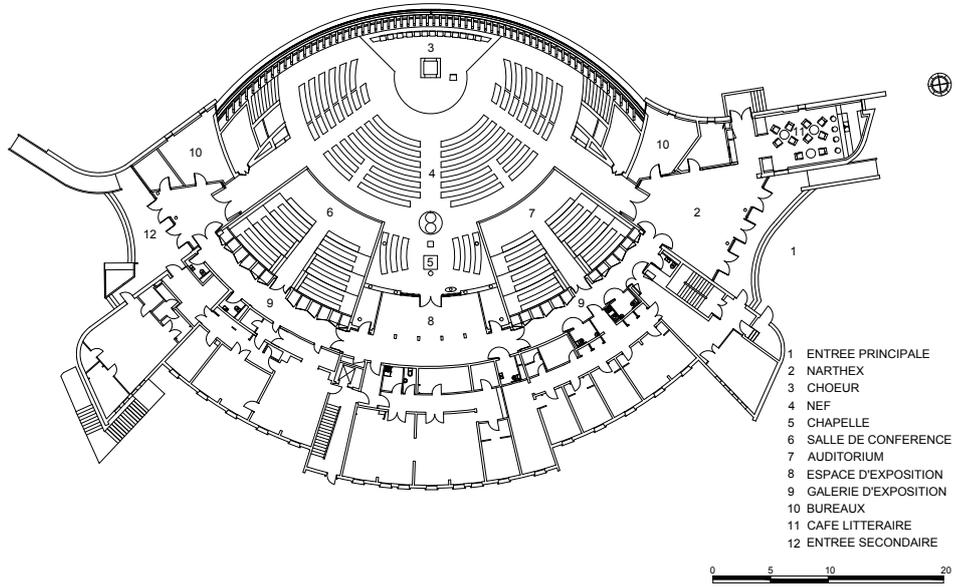
Surface of the deployment	1 400 sqm
Height of the cathedral	22,40 m
Height of the bell tower-signal	44,50 m
Beam south shell in the axis	19,57 m for 63 bows
Beam north shell in the axis	19,95 m for 64 bows
Section of stuck-laminated bows	160 x 750 mm
Axis between the bows	560 mm
Surface of the shells	1 600 m <sup>2</sup>
Laminated wood stuck bows in spruce	350 m <sup>3</sup>
Metallic frame	40 tons
Wooden strips of douglas	linear 25 000 metres



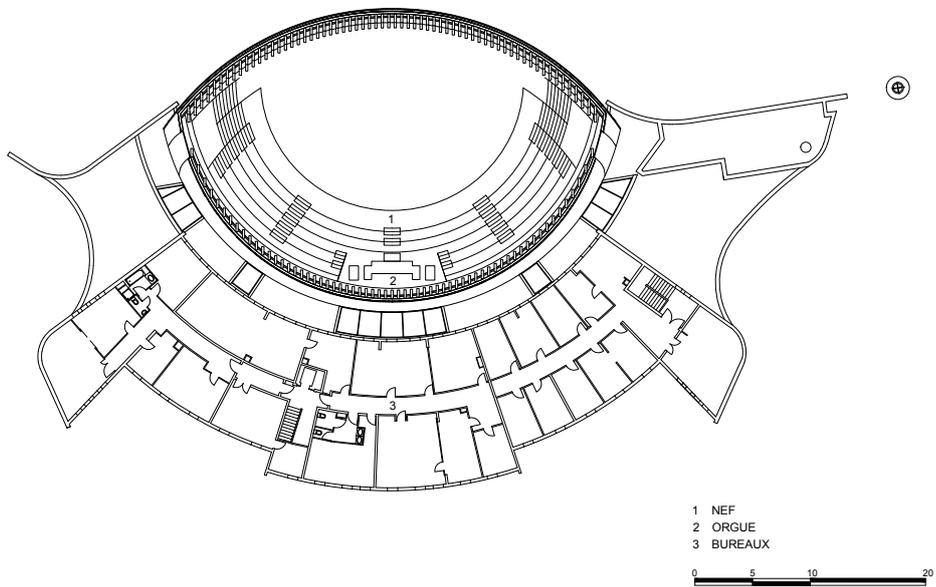
Transversal section © Architecture-Studio



Section of old Cathedral of Créteil © Architecture-Studio



Ground floor's plan © Architecture-Studio



1st floor's plan © Architecture-Studio



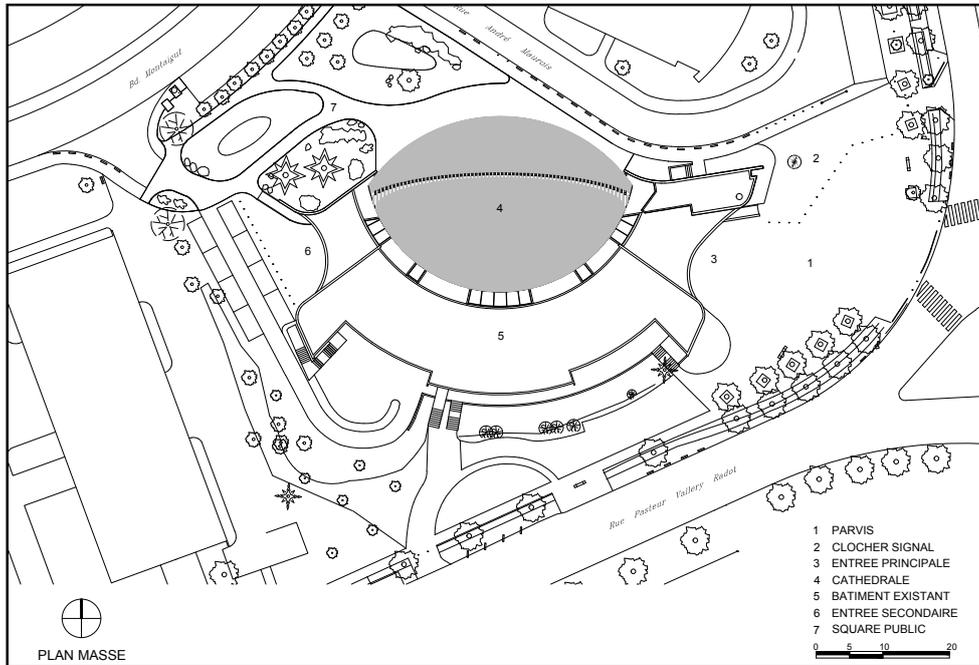
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Masterplan © Architecture-Studio

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