

THE REBUILDING OF THE CROSSING
OF THE CATHEDRAL OF
ST. JOHN THE DIVINE
NEW YORK CITY, NEW YORK

by

MANFREDI NICOLETTI

Submitted to the Department of Architecture of the Massachusetts
Institute of Technology on September 1, 1955, in partial fulfill-
ment of the requirement for the degree of Master of Architecture.

Signature of the Author _____

Thesis Supervisor: Lawrence B. Anderson
Head, School of Architecture

September 1, 1955

Mr. Pietro Belluschi
Dean
School of Architecture and Planning
Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge, Massachusetts

Dear Dean Belluschi:

In partial fulfillment of the requirement for the degree of Master of Architecture, I herewith respectfully submit a thesis entitled " The Rebuilding of the Crossing of the Cathedral of St. John the Divine, New York City, New York."

Respectfully,

Manfredi Nicoletti

Arch. Mar. 2, 1956

ACNOWLEDGMENTS

Desidero ringraziare tutti coloro che hanno incoraggiato questa mia tesi e l'hanno resa possibile, mediante critiche, collaborazione, e piena amicizia.

Professor Pietro Belluschi, Dean of architecture and Plan.

Professor Lawrence Anderson, Head , school of Architecture

Minoru Yamasaki

Bruce Miller

k. Lee

Jean Stanley

e tutti gli altri miei colleghi della
" Graduate Class"

INDEX

History of St. John the Divine Cathedral New York City, New York	1
Analysis and Criticism of Previous Solutions	8
The Problem	10
The Solutions	11
Group A	11
Group B	12
Group C	13
Group D	14
Design Conclusions	15
Student Teams	22

History of St. John the Divine Cathedral
New York City, New York

In 1892, ground was broken in New York City for what was proposed to be the third largest cathedral in the world, outranked in size only by Spain's Seville Cathedral and St. Peter's in Rome.

As a result of a nationwide architectural competition in 1890, Grant La Farge, in association with his partner, Heins, was engaged by the trustees of St. John the Divine to design and build what was to be the most noble and imposing monument of religion in the United States.

La Farge and Heins were chosen above such architects as Carrere and Hastings, Halsey Woods, Potter and Robertson, and Huss and Buck, not solely because of the plans they submitted to the competition, but because the trustees felt that they needed a consulting architect who would be able to incorporate their ideas into his blueprints.

St. John's was begun in the midst of a full-blown period of architectural eclecticism. The Industrial Revolution, while cutting a telling swath through Europe, had not begun to be felt in the United States, except through the work of a handful of men, notably H. H. Richardson and Louis Sullivan, both now recognized as progenitors of modern American architecture.

It was not surprising, then, that La Farge was the victim of his own culture and heritage and was not destined, through this design, to clear away the architectural debris of the 19th Century.

He, however, like most of his contemporaries, thought that in the welding of sundry styles, a new architecture was in the making. By combining the best of Rome, Paris and Constantinople, La Farge hoped to inject into this project, a magnificent dignity and originality which would reflect the true contemporary spirit. What he failed to see, was that a world in transition demands ancient roots to stabilize its forward course. La Farge succeeded only in reminding New Yorkers and the people of the United States that they were, indeed, in an uncomfortable state of flux.

What La Farge created was a stylized dichotomy: Byzantine within, French Romanesque without, and not of it pure or fundamentally integrated. For the duration of his contract, he designed and constructed the apse, with its ring of chapels; the choir, with its vaulted tiling by Rafael Guastivino; and the Crossing.

The Crossing was designed with four arch-ribs of granite, braced by eight buttresses. The original plan called for both dome and tower completely concealed in fabric. But because of the devel-

opment of foundation trouble - not thoroughly investigated by the architect - the dome and tower were impossible to build. The Crossing foundations rest on quicksand and sub-springs and are not stable enough to support the great weight of monumental towers.

To cover this architectural inadequacy, La Farge was forced to concede that his Crossing design was eminently impractical, and in 1909, Guastivino was called in to cover the Crossing opening with a dome of terra cotta and stone. This dome was guaranteed for only ten years and has now covered the Crossing of St. John's for over 45 years, without alteration.

La Farge, dreaming of great light and height which would give the Crossing a meaning central to the Episcopal service, had designed a 100-foot space which has been the enigma of each successive architect, and remains the single most complex problem of the cathedral's construction.

Probably due to public protest and ecclesiastical opinion, La Farge was relieved of his commission in 1907, which was, in 1911, bestowed upon Ralph Adams Cram of Cram and Ferguson, who was then appointed consulting architect to St. John's.

Cram represented the ruling group of social architect-arbiters of his time. While he was eager to utilize new methods in structural en -

gineering and materials, he was incapable of real or constructive creation. His work on St. John's, begun before the first World War, was inevitably a mirror of antiquity; his and the world's seal of approval on the beauty, however old, which had stood the opinions and brutalities of time.

He said, with no lack of pride, that parts of his design - adaptations of such cathedrals as those in Rheims, Bruges and Seville - were direct "steals". He justified his theft with apparent modesty, saying that although the best of the noted cathedrals had been copied, all the designs had been adapted to the needs of the American builder, the limitations of his materials, and the sensitivities of the American church-goer.

Cram was engaged by the trustees of the cathedral to recast the building into an acceptable architecture. He chose the French Gothic style, with the full concurrence of the trustees. The church was to be as perfect as the Chartres and Notre Dame Cathedrals, which to Cram represented the full realization of the style.

His commission involved building a new nave, west facade and transepts, and restyling the Romanesque choir so that it would integrate with the whole. In 1918, Cram presented his revisions to the

trustees and three years later the designs were published and announced as "awaiting discussion." The nave and west facade were since completed with the exception of the projected west facade towers.

But the problem which had hastened La Farge's dismissal and death in 1907, stayed on to plague Cram. The Crossing remained the most difficult project. In his initial designs for the Crossing, submitted in 1913, Cram called for twin towers with spires at the proposed north and south transepts, with a massive, low, square tower at the Crossing.

His next plan indicated towers to be built at the Crossing. The following two designs were of polygonal towers of varying heights. In 1920, the fourth solution was similar to the former three, but was topped by a richly panelled, lofty spire.

In 1927, the architect, in order to retain his plan for his latest spire design, engineered on his drawing board a structural device which would reduce the vaulting problem and thus support the weight of the spire. It required four additional masonry arch ribs between the La Farge originals and locked in egg-crate fashion. The design, too, kept the Crossing more open.

The Crossing has remained for almost 20 years on the drawing boards - and for good reason. It has been estimated that the Crossing, complete with tower as designed by Cram and Ferguson would cost subscribers about \$5,000,000. At the time, although this sum of money was considered stupendous, such men as Bishop Potter of New York defended the expense. When asked why he advocated such a grandiose plan, the Bishop answered, " To make it impossible that the timid souls of this generation can reduce the design to something that future generations would hold inadequate and unworthy."

It is still axiomatic that the *raison d'etre* of a cathedral is more important than its cost, but in this generation, the trustees of St. John's, while still desiring to create the most beautiful cathedral in the United States, have their eyes more closely on their budget. They have now come face-to-face with the cold fact that Guastivino's dome, having long since exceeded its guarantee as a temporary roof for the Crossing, is in imminent danger of collapse. It has become necessary to seriously consider whether the Cram plans should be retained and work begun, or whether, in the passing of two decades, the cathedral should be completed in the manner of our time.

The primary question is still fresh after 40 years. A cathedral, to be noble and meaningful, must present a combination of forms in

an integrated fashion. The Gothic, Byzantine and Romanesque, unalterable without fantastic cost, must be made to live peaceably with the contemporary, if St. John's is to be finished in the contemporary expression. Hence, the contemporary design must not be at odds with any of the current structure. It must be designed to meld and add meaning - the definition of this generation - to the present building. If it is too different it may become no more than an eyesore and a question mark.

The problems of completion are manifold. The Crossing is the most pressing. But with the lessons learned from previous plans; knowledge gained of new methods and uses of materials, the solution may be attained - and in the tradition of all great cathedrals - in the successful marriage of each generations architecture including our own.

Analysis and Criticism of Previous Solutions

The completion of St. John the Divine has spawned a series of verbal battles in the past twenty years, since the completion of Cram's Gothic nave. The arguments storm-center on the question of whether or not to finish the cathedral in the way of our time, or in its present style.

We have reached the conclusion that we have the prerogative, based on historical examples, to incorporate with dignity, the old and the new architecture. We feel that it is our responsibility to attempt to solve the problem in this manner.

However, when we totally reject the idea of completing the church in one or more of its existing styles, there is born a challenge to consider the problem basically: to solve it in our own language, avoiding imitations of the past. Concurrently, we must achieve a consolidation of plans, which, will in effect, be an integration of forms based on the best of the past, but expressed in the new syntax which has derived from our previous architectural experiences.

This is a new way to approach the concept of tradition and its application to present day architecture. Tradition is culture upon

which we were nurtured and which has become part of our thinking. It does, then, have a direct bearing on our current thought because it is an integral and contributing part of it. We cannot divorce ourselves from our heritage, but we can add, alter, and give direction to that heritage, in new rhythms and original patterns.

It is questionable whether or not it is correct to consider St. John's as if it were one of the older, medieval monuments and treat it as such. Indeed, its architects were intent on creating a perfect imitation of the historical cathedrals of Europe, but St. John's, of course, has become a hybrid, like much of the architecture of the 19th and early 20th centuries. This is a result of the differentiation of ages and experiences which came between the designs. But it does not constitute an adequate reason to consider following the pattern of high Gothic, if in reality, the style is only quasi-Gothic; or Romanesque, if the building is just quasi-Romanesque; or not applicable to present day needs and/or materials.

The Cathedral of St. John the Divine, as it exists at present, consists of a monumental nave conceived in Gothic style by Ralph Adams Cram; an apse designed and built in late Romanesque by Grant

La Farge; and a dome of terra cotta and stone, which serves as a temporary roof for the Crossing, by Rafael Guastivino.

Surrounding the apse, like a crown, are a series of chapels in as many styles. A roof, which is much lower than that of the nave, covers the apse in an undistinguished fashion. The transepts, originally planned by La Farge and Cram, were never begun.

The Problem

The current problem is defined as the substitution of the temporary dome of the Crossing with a permanent structure. The first constructive proposition that faces us is the connection of the Gothic nave with the Romanesque apse at the Crossing: the two parts representing two very different architectural sentences.

The solution of the first problem, adopting a clearly defined method, will uncover, as a consequence, numerous other difficulties which are based on the limitations of the present structure.

The Solutions

The Graduate Class of Massachusetts Institute of Technology began work on the solution of the St. John's project with four teams of students. The understanding of the problem which we have achieved as a result of these solutions, coupled with our practical experience in preliminary model construction, constitutes a study of high value for the future development of the church.

By a critical review of this work, which was presented to the jury composed of Mr. Belluschi, Mr. Anderson, Mr. Yamasaki, Mr. Rudolph, Mr. Hansen and Mr. Weiderholt, we can examine the resultant designs, and which of these, in whole or in part, contributed to the proposed present solution.

Group A

Group A proposed the erection of a "unicum" that would be a new phrase inserted between the two former architectural sentences. But, in this solution, there was no homogeneity between the structure, interior space and exterior shell. In addition, the four interior columns of this design counterpoint too strongly the older structures.

Because they propose a continuity of support from the old structures, there is a competition in ideas between the new design and the old, rather than an integration of the two methods of support.

From the point of view of architectural expression, the interior elements of the design intrude too forcefully into the existing space. They minimize the emphasis of the Crossing, which becomes the focal point of the cathedral when the altar is moved to the Crossing. In addition, the four column supports which are built in the vertices of the quadrangle of the Crossing, suggest lateral expansion into transepts, more than a unit of space.

Group B

The observations made for the Group A project remain the most important comment for the Group B solution. Because of the discrepancy between structure and walls architecturally, it divides the visual experience between interior and exterior into conflicting sensations and qualities. This statement is based on the premise that when an ultimate is presented too graphically, the observer's imagination is not given room in which to expand

his visual experience. With the creation of the creation of the central support, the observer's personal vision is limited. In addition, the support creates a brute struggle with the existing building.

Group C

Taking credence of the pitfalls of the two previous solutions, Group C attempted to unify the two architectural statements - the apse and the nave - by continuing each until they converged in the center of the Crossing. If we accept the physiognomic differences between the styles of apse and nave, it is evident that this growth, which had hopes of being a natural one, became forced and artificial.

The physical continuation of the old parts with new materials and their structural limitations, brings us, as a consequence, to accept a formalism which represents new words in an old syntax.

It is useless to reiterate the mistakes made in interpretation of the solution of St. John's Crossing, but it should be sufficient, to serve as illustration, to cite the misuse of reinforced concrete in the proposed spire. The spire, traditionally constructed, like the "stone-on-stone" of the Gothic style, was repeated with a new

material - reinforced concrete. This material's physical characteristics dictate the form it should take - one of continuous elements, instead of one ending in a statement of finality. It is evident, that columnar, or spire-like structures, can only be classified as embellishment and are not defined as characteristic use of the material.

Group D

As a criticism of this final solution, we can repeat our comments for the Group C solution in respect to the misuse of material and the error in the basic problem of connection of the nave and apse. But, in addition, this solution proposes the creation of a transept which becomes superfluous when it is realized that the ritual of the Episcopal religion precludes the design of the transept in this way. The ritual demands that services be conducted from a centralized altar, without simultaneous services in various chapels or transepts.

Design Conclusions

The conclusions drawn from these four studies imply a new solution.

functional limitations
imposed by worship

We accepted the proposition to bring the altar into the central part of the church because it was an evident improvement functionally and esthetically. As a consequence, we eliminated the need for transepts.

movement of interior space

From this point of view, the visual linear flow of the interior space made it necessary to avoid any barrier to motion in the Crossing. It will continue and find conclusion in the choir, determining a U-shape with an elongated arm. There will be, in the design of the triple spires as seen from the interior floor, an emphasis

on movement from nave to apse, and also a suggestion of limitless height. The emphasis of the focal point, therefore, is contained in its dramatic height, as well as in the larger number of supports of the new structure which also determine the rhythm of flow from nave to apse. This movement is concluded in the curve of the apse.

connections and new
architectural statement

We will not attempt any artificial connection between these two existing parts of the building because of their evident differences. But we will emphasize the idea of this "unicum" of which we spoke, and illustrate its necessity in the construction of the Crossing. The connection will be mainly a physical one, because it would be im-

possible to make a structural one. The single structural addition will be the construction of two new buttresses, at the end of the present nave and apse, following the old shape, but using a different kind and texture of stone in a new treatment. They will facilitate the physical connection of the two elements, which will be made sympathetic to the existing structure and its architectural traditions.

structure

In the search for this architectural link of past and present, it is natural to design a structure which will require minimum effort in its growth from ground to cover and also to define space as effectively as it is done in the Gothic architectural tradition.

This new element must contrast strongly with the old, showing the use of new materials, and it must be able to make

possible to make a structural one. The single structural addition will be the construction of two new buttresses, at the end of the present nave and apse, following the old shape, but using a different kind and texture of stone in a new treatment. They will facilitate the physical connection of the two elements, which will be made sympathetic to the existing structure and its architectural traditions.

structure

In the search for this architectural link of past and present, it is natural to design a structure which will require minimum effort in its growth from ground to cover and also to define space as effectively as it is done in the Gothic architectural tradition.

This new element must contrast strongly with the old, showing the use of new materials, and it must be able to make

a new architectural statement. For this reason, steel is preferred to concrete because of its linear qualities and its physical and expressive lightness. The aim is to erect a structure which springs upwards from the earth, creating the impression of continued growth to the sky. Suspended elements, which in this solution have been discarded, tend to "anchor" the structure, destroying the illusion of continuity and, in fact, waste energy: the barrier of structures interrupting the movement before its natural conclusion. The complication of elements also multiplies construction problems needlessly.

There will be a visual contrast in the exterior, but also an intimate affinity, due to the fact that the steel structure, airy and compressed, makes as much of its inherent characteristics as does the

Gothic stone with its equal attention to compression and lightness of its units.

In the interior space, the contrast between old and new will also be sharp, because of the open-light aspects of the Crossing in relation to the darkness of the nave. Exterior light will bathe the Crossing with rich color, creating a kind of enormous baldachino - a new emphasis on the altar. We introduce in the interior, light, as a structural complement to the stone of the nave. In the middle of the Crossing, on a platform, will stand the altar, and its simplicity will be in sympathy with the purpose of the Mother Church. A cross of some magnitude will be suspended over the central altar, which will be designed as a dramatic and unifying expression of the purpose of the altar. The throne of the Archbishop will also be placed on the plat-

form and the performance of the Mass will be conducted in the old tradition of circular service. The choir will be moved to face the nave from the rear of the apse, instead of in its present position on either side of the apse.

A screen of decorative sculpture will be erected in a frieze along the top of the primary facade. No additional towers will be installed as the bells will be mounted in the spires above the new Crossing.

In the solution adopted by the M.I.T. Graduate Class, the church was surrounded by a plaza especially designed to emphasize the side facade of the building, making the entrance in the new Crossing similar to the principal entrance. The new solution does not accept this proposal, as it is obvious that the main facade of this building will always remain the principal entrance.

The plaza is conceived as a large platform in stone and mosaic, which will be dominated by the cathedral. It is suggested, that for this reason, we eliminate the neo-Greek building situated on the South side. As in the Italian tradition there will be no landscaping of the plaza. In contrast, a free landscaping will be designed for the area connecting the church school and the Cathedral. In addition, an open air pulpit will be erected on the South side of the plaza.

The cathedral was executed on the central approach plan. As this approach is subjected to heavy traffic, the church plans to purchase the land directly in front of the principal entrance, to extend the approach forward by the construction of an underpass. The resulting bridge is underscored in this solution to create a quiet, serene, open space in front of the cathedral.

STUDENT TEAMS

Group A

Busso von Busso

Fritz Kubiz

Group B

Bruce Miller

Astra Haner

Manfredi Nicoletti

Group C

Dan Stewart

V. Sundareswaran

Douglas Gilmore

Group D

Benjamin Biderman

Robert Coles

John Weaver

BIBLIOGRAPHY

A study of the Designs for
the Cathedral of St. John
the Divine in New York, N.Y.

by
Alfred D.F. Hamlin

March 1924

Started in Gothic, should be
finished in Modern?

Architectural Forum

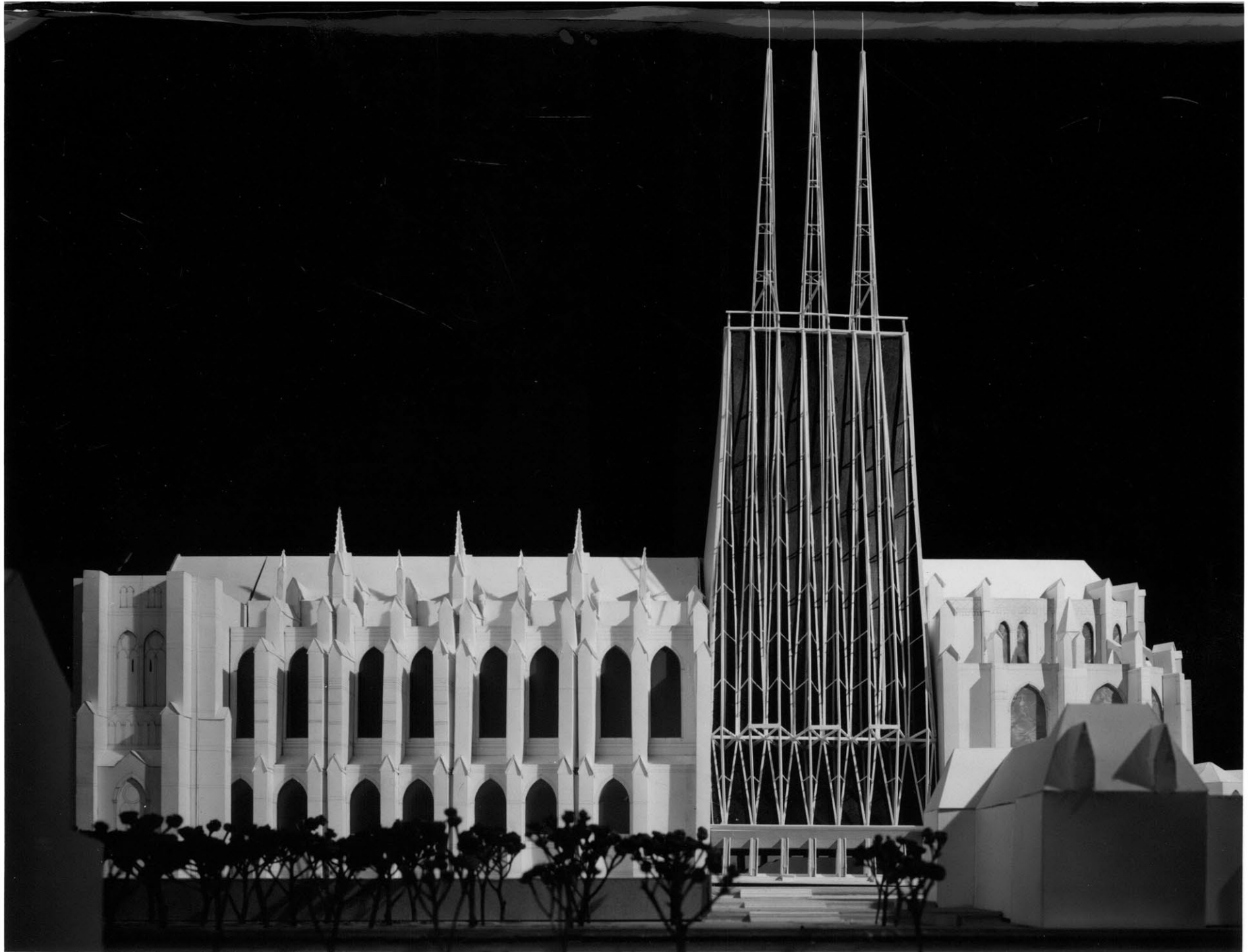
December 1954

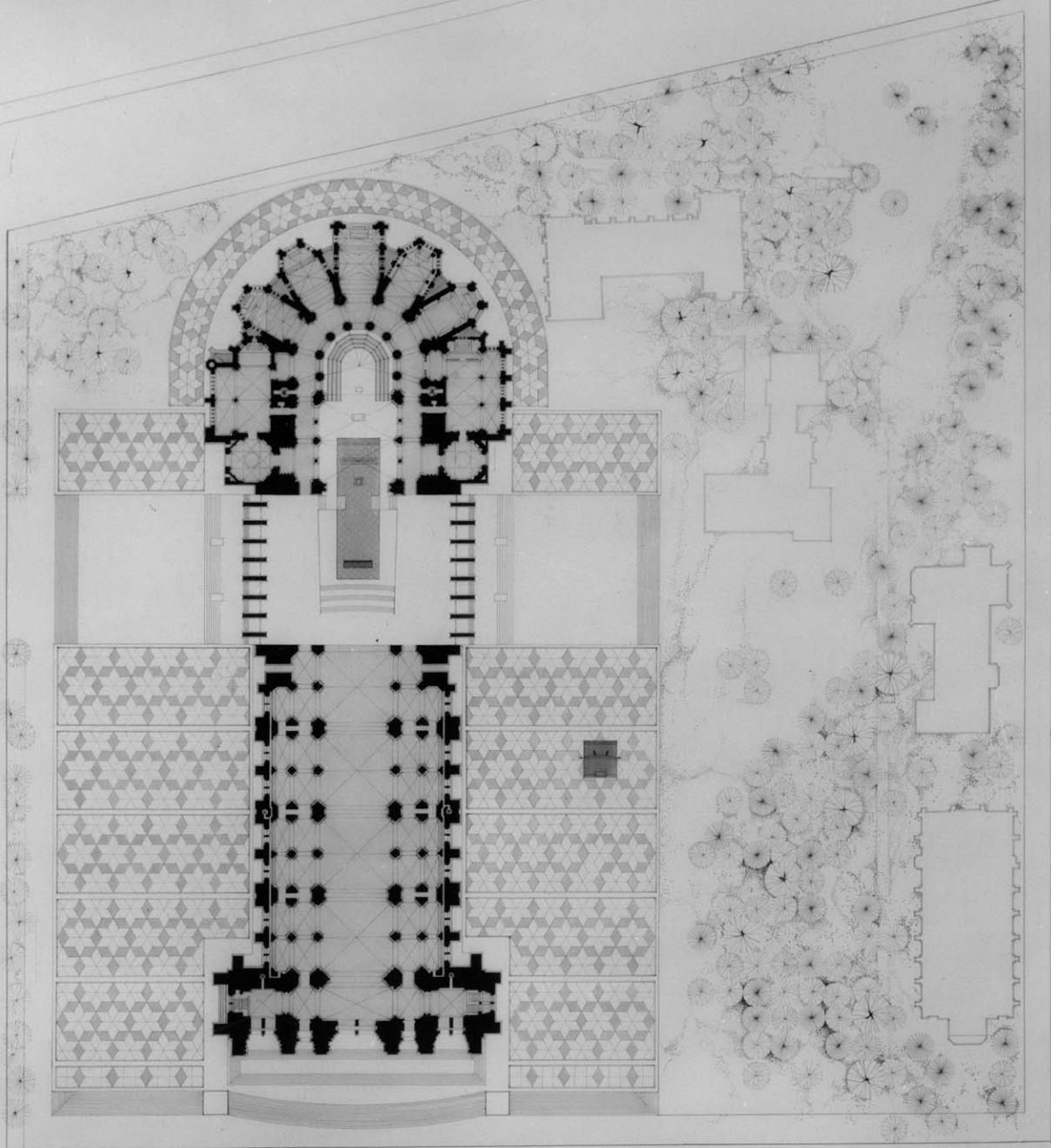
The challenge of
St. John the Divine Cathedral

by
Pietro Belluschi

Architectural Forum

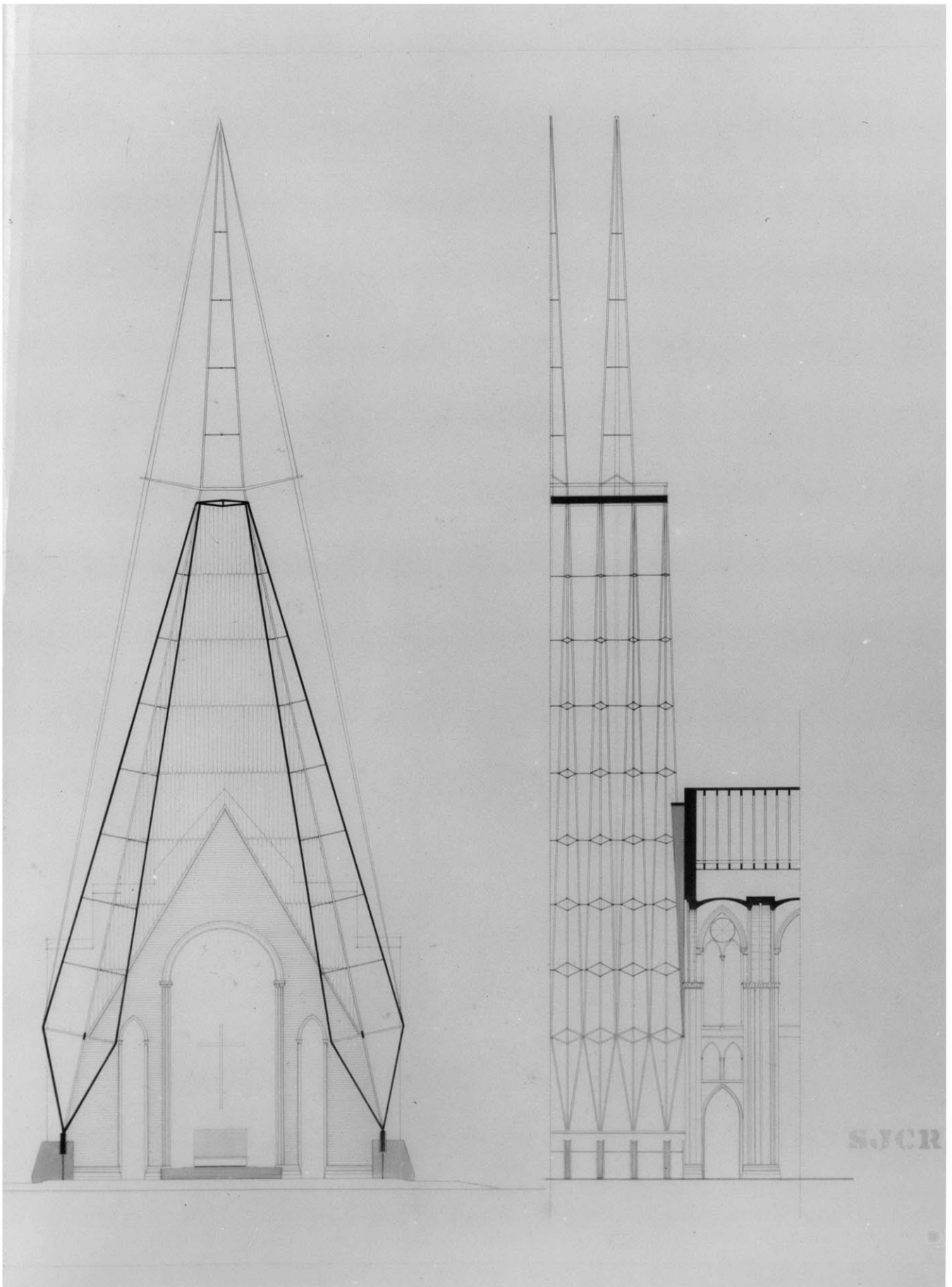
May 1955





THE CATHEDRAL OF ST. JOHN THE DIVINE NEW YORK CITY
REBUILDING OF THE CROSSING





SJCR

