

*The Notre-Dame
Translation Project*

I. Fires

Edited by Lindsay S. Cook and Kathleen Hart

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Canterbury 1174 / Paris 2019

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The Notre-Dame fire of April 15, 2019, had many precedents in the medieval period, often reported by chroniclers. One of the most famous was the Canterbury Cathedral fire, which occurred on September 5, 1174, a year and a half after the canonization (February 21, 1173) and four years after the martyrdom of Archbishop Thomas Becket, assassinated on the orders of King Henry II while he was celebrating vespers in the cathedral (December 29, 1170).

The fire and subsequent reconstruction were recorded by an eyewitness, the monk Gervase of Canterbury, who described in detail the previous state of the monument, the fire itself and its consequences, the discussions among experts about what choices to make in the reconstruction, the selection of an architect (the Frenchman William of Sens, hired *propter vivacitem ingenii et bonam famam*, “for his boldness of spirit and excellent reputation”), and finally the stages of construction on the cathedral’s new east end, which, completed in 1184, came to be one of the starting points of the “Gothic” enterprise in England.

Beyond questions of style, the account by Gervase of Canterbury abounds with lessons. First, it allows the reader to follow, step-by-step, pier-by-pier, vault-by-vault, the progression of the works, in a text that teaches us a great deal about the way men of the Middle Ages perceived and described architecture—in particular, we get the word “triforium” from him. He also emphasized the logistical organization (the procurement of building materials, the construction of machines for loading and unloading the vessels transporting stone, the preparation of templates for the stonemasons) of a building site that was apparently highly structured by the end of the 12th century. The call for “French and English” experts, brought in to determine whether to restore the previous cathedral or to reconstruct a new edifice, is also of great interest. Finally, Gervase of Canterbury underscored the role of the vaults, intended to protect the building from a fire in its roof. Historians of medieval architecture have long wondered whether there were other, more symbolic reasons for the proliferation of the use of vaults in religious architecture beginning in the 11th century. The fire of April 15, 2019, revealed to our generation the extent to which vaults, even those as thin as the ones at Notre-Dame, can protect the interior of a cathedral from falling beams of a roof that is engulfed in flames.

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The 1218 Fire at Notre-Dame of Paris

Written by Olivier de Châlus ([source](#))

Translated by Samuel O'Keefe | Edited by Kathleen Hart



Before April 15, 2019, the historiography of the cathedral only retained two fires of importance: the fire of 1871 allegedly set by Communards, which turned out to be unfounded propaganda, and the fire of 1218. That year, on the night prior to the Feast of the Assumption, a thief penetrated the attic of the cathedral to steal, by means of ropes and hooks, the candelabras prepared for the occasion. By the clumsiness of the dangerous undertaking, he set fire to the silk wall hangings lining the choir, and it is because of these consequences that this event was recorded in medieval chronicles.

This fire is crucial for the historiography of the cathedral, as Viollet-le-Duc saw in it the cause of ravages that gave rise to irremediable degradations to the cathedral of Bishop Maurice de Sully, from its wooden roof framework to its stained glass, flying buttresses, etc. Thus was the cathedral heavily restored beginning in the 1220s: the raising of the level of the roof to install a system for collecting rain water, the reworking of the structure of the flying buttresses, the modification of the clerestory windows, the reworking of the vaults and the windows of the tribunes, etc. At the beginning of the 20th-century, the architectural historian Marcel Aubert cast doubt on the veracity of the explanation by Viollet-le-Duc, who “believed he had seen traces [of the fire] in

situ.” Aubert then proposed his own justification for the changes, like all the historians who subsequently became interested in the cathedral’s construction.

The analysis of the edifice in its new state will permit us to return to this historiographic question. It will allow historians, on the one hand, to assess the relevance of the consequences [of the fire] Viollet-le-Duc envisioned and, on the other hand, to respond to Aubert’s objection: could or could not a fire of this type go unnoticed eight centuries after the fact?

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Containing the Spread of a Fire: The Example of the Spire of Amiens Cathedral in 1528

Written by Nicolas Asseray ([source](#))
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The city of Amiens is home to one of the few wood-frame crossing spires that survives from the Gothic period. It replaced the original spire, whose 1528 fire—long dated to 1527 according to the old dating system—is, based on the account that has come down to us, rich with lessons about the capacity of our forebears to confront a catastrophe of this kind. The history of the original crossing spire remains conjectural. According to tradition, a stone tower surmounted by a wooden spire was constructed above the crossing around 1240, the estimated date of the completion of the transept. Yet this assertion, qualified beginning in the early 20th century, no longer holds true in the face of dendrochronological evidence. Today, scholars generally agree that the spire was realized after the completion of the wooden roof of the nave, in 1305, essential for the equilibrium of a tall wooden structure placed at the crossing.

When lightning struck Amiens Cathedral on the evening of July, 15, 1528, the residents of Amiens watched in shock as the flames engulfed the spire. as they watched the spire become engulfed by flames, yet they were not passive onlookers. According to an eyewitness account in the form of a poem written in verse shortly after the fire, residents of the town mobilized immediately to save the cathedral. In fact, as soon as the roofer of the cathedral—charged with surveilling the edifice during violent storms—sounded the alarm, the building workers, burghers, and even canons fought the fire that was devouring the spire. Their priority was to prevent the fire from spreading to the roof. To that end, the carpenters had the bold idea to remove the slates of the roof, rip out the battens, and cut down the heavy timber of the four roofs (north transept arm, south transept arm, nave, and choir) within five meters of the spire to isolate the steeple, which had caught fire, from the rest of the roof and to help extinguish the fire. The undertaking succeeded, and, assisted by the rain, the fire was contained after five hours of effort.

The tearing down of the roof trusses located near the source of the fire was an impressive feat, which allowed the medieval roof to be saved. The operation, undertaken under extremely difficult conditions, (work at a great height, bad weather, extreme heat, falling debris), limited the damage to the bell tower and

the six bells it contained, whereas the crossing vault suffered only minor damages. The bishop and canons were thus able to begin rapidly, and complete within three years, the construction of the new spire that still today, despite the fact that it leans to one side, towers above the roof of Amiens Cathedral.

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Repair and Prevention: The Need for Adequate Modeling of the Fire

Written by Alejandra Albuerne, Augustin Guibaud, Guillaume Legros, Jose Torero, and Michael Woodrow ([source](#))
Translated & Edited by Lindsay S. Cook

“It is too early to say whether Notre-Dame has been saved.” On January 5, 2020, with these words, General Georgelin emphasized that the consequences of the fire were still poorly understood. While the flames that claimed the Notre-Dame roof were brought under control in time to prevent the instantaneous collapse of the edifice, the fact remains that a year after the accident of April 15, 2019, the stability of the structure that survived the fire has yet to be determined. Yet a meticulous analysis of the state of the vaults and supports will be necessary to enable the architects to determine how to stabilize and eventually restore the cathedral then restore the cathedral in lasting way.

The observation of the state of the stones after the fire allows us to establish, to a certain extent, which parts of the edifice were spared by the flames, but for the stones and mortar of the vaults at the heart of the blaze, it is necessary to model the conditions to which they were exposed during the fire to understand their level of degradation. The violent release of heat that occurred as the rafters caught fire and collapsed likely imposed temperature conditions such that the materials may have deteriorated, both on the surface and inside. Other changes may have also occurred in the form of surface chemical reactions, microcracks in the rock, or the breakdown of certain fragments. In order to reproduce the conditions in a laboratory and perform tests on material samples, it would first be necessary to answer several questions: How much heat was released during the fire? How was the heat transferred to the stone and mortar? Were temperatures high enough to degrade significantly the mechanical properties of the stone?

Up to this point, multiple hypotheses have been proposed in an effort to answer these questions, but none of them has presented a model that is in keeping with our current understanding of combustion and buttressed by empirical observations made in the field. To bridge this gap, a group of researchers based in Paris and London is currently engaged in modeling the complete chronology of the fire, taking into account the detailed plans of the vaults and rafters, their composition, as well as video evidence of the progression of the fire. By using

cutting-edge combustion research models in the context of the specific geometry of Notre-Dame, a coherent scenario of the thermal stresses may emerge. Combined with the other analytical methods deployed in the field, this one will offer researchers and architects alike a snapshot of the likely state of preservation of the building fabric, which will enable them to take the best available approach to the reconstruction. In addition to assessing the damage at Notre-Dame, this model will also contribute to improving the fire protection of other cultural sites by simulating the consequences of potential accidents. According to the various results obtained, preventative measures could be implemented, not only to protect human beings, but also to preserve the unique monuments at the heart of our cultural heritage.

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