

## Notre Dame de Paris: Which dynamics for an exceptional restoration?<sup>1</sup>

In recognition of the work accomplished in the five years following the fire at Notre Dame Cathedral in Paris (April 15, 2019, to December 7, 2024), Icomos International Scientific Committee on Economics of Conservation (ISCEC) considered as important to highlight both its achievements and limitations. The Etablissement Public Rebatir Notre Dame de Paris agrees Two key considerations guided this approach:

1. **Beyond Economic Logic:** Restoration—or even "rebuilding," as referred to in the institution's title—is not solely a matter of economic strategy. Although our committee primarily consists of economists, the restoration process involved numerous dimensions, including cultural, heritage-related, artistic, archaeological, historical, scientific, and social aspects.
2. **Unique Successes and Lessons Learned:** While the successful completion of the project on schedule is commendable, it should not be seen as a universal model for similar events. Instead, it serves as a case study from the perspectives of those who organized, executed, and experienced the project. The lessons learned may inform other restoration initiatives, including different types of monuments.

Then four key dynamics were discussed during the presentation by key restoration leaders, including:

- **Mr. Philippe Villeneuve**, Architect-in-Chief for Historic Monuments, responsible for the cathedral's conservation;
- **Ms. Maryline Guiry**, Managing Director of the Établissement Public Rebâtir Notre-Dame de Paris;
- **Mr. Jonathan Truillet**, Head of Scientific Relations for the same institution.

Their insights were supplemented by perspectives from

**Ms. Marie-Laure Lavenir**, Managing Director of ICOMOS International, and

**Mr. Xavier Greffe**, President of ICOMOS International Scientific Committee "Economics of Conservation" (ISCEC).

Questions relating to these dynamics were introduced by Icomos members: **Marguerite Azevedo** (Portugal), **Ana Lucia Gonzales Ibanez** (Mexico), **Terje Nypan** (Norway), and **Marco Aciri**, Secretary of our Scientific Commission (Italy). A number of other speakers also took part in the debate, including **Éric Pallot**, President of Icomos-France; **Ms. Tuija** (Icomos, Finland); and **Ms. Millane** (President of Icomos, Ireland).

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<sup>1</sup> This text summarizes the international web seminar held in Paris on the premises of *the Établissement Public Rebâtir Notre Dame de Paris* on November 15, 2024. At the initiative of the Icomos International Scientific Committee on Economics of Conservation (ISCEC), the heads of the Établissement Public agreed, almost a month before the cathedral's reopening (December 7 & 8), to answer questions from Icomos International members to help them understand and disseminate the lessons of this exceptional project. We would like to thank them warmly for their availability and kindness at a time when they were being called upon by so many. This report is the sole responsibility of its authors, Xavier Greffe and Marco Aciri, Chairman and Secretary General of the ISCEC Commission. December 1, 2024.

### *An ad hoc Administrative organization*

The first dynamic was that of its administrative organisation, for as soon as the evening of the fire, it had been requested that restoration work be undertaken immediately and completed within five years. While the emotion aroused was pressing, it was still difficult to imagine the damage to be uncovered behind the envelope of flames and the collapse of the famous spire. As a result, the operations to secure and stabilise the site and evacuate it prior to the repair and restoration work soon proved to be of the utmost importance and of the shortest possible duration. Notably, this ambitious project had to align with ongoing works already underway, presenting additional challenges. Not to mention the archaeological, artistic, and scientific debates that began that very night.

In France, cathedrals are the property of the State, and when restoration work is required, it is organised by the Ministry of Culture and its regional departments, the associated councils (including the CRMH), and, in varying degrees, the relevant local authorities. As a result, there are a large number of players involved, with overlapping competencies and responsibilities. Given the dual challenge of the sheer scale of the project and the five-year timeframe set on the very evening of the fire, it was decided to create a single body to take on all the responsibilities while respecting the numerous procedures already in place for the preparation, signature, and execution of contracts by the project owner and contractor; technical and financial controls, and so on. Thus, *the Établissement Public Rebâtir Notre Dame de Paris* was created on December<sup>1</sup>, 2019, following the Law of July 16, 2019, article 8 of which stipulated that it would be “*by derogation from the provisions of the Heritage Code, responsible for ensuring all necessary work: from archaeological excavations to project management, including construction and development work.*” It would be a light structure, and its mission would end as soon as the restoration was completed.

This had three major effects.

- **Streamlined Decision-Making:** With a single point of contact, the project benefited from unified leadership overseeing approximately 30 worksites and mobilizing 350 companies and 3,000 workers. This demanded flawless logistical and technical planning and undoubtedly contributed to the creation of a “Notre Dame state of mind,” based on the mobilisation of top-quality human and material resources, totally dedicated to a mission that enveloped them all.
- **Operational Flexibility:** Co-location of project owners and contractors on-site facilitated rapid and effective responses to challenges. Its best illustration is the fact that the two major functions of project owner and work contractor were brought together on the same site and in permanent cooperation, enabling a fluid flow of financial, logistical, and material operations. This also meant that the companies and operators working on the site had no questions or doubts about the decisions taken and the possible progress of the work. Cathedrals are large-scale worksites, ranging from massive sections to one-off operations (such as the restoration of a pinnacle), and that smaller operations can sometimes require substantial changes to the worksite schedule and be carried out without loss of time, even though they may clash with other specific worksites. Another example can be found here in the implementation of the archaeological dimension of the worksite: normally in France, any archaeological issue must give rise to the intervention of INRAP National Institute for Archaeological Research), which logically extends deadlines. Thanks to this unique organisation, focused solely on its mission, INRAP's skills and qualifications procedures were integrated without delaying the worksite and with case-by-case solutions.
- **Transparency and Trust:** The existence of a single operator whose decisions are traceable gives confidence to outside operators, especially donors. Donors were reassured by clear financial management, as evidenced by the 98% realization of pledged donations. Their funds would be used and that they could not be used for any purpose other than the one fixed at the

outset. The fact that 98% of the commitments made by donors at the outset were subsequently honoured owes a great deal to the existence of this original operator.

The inevitable debate that initially led some to regret the elimination of the traditional procedures soon faded away. In fact, the spirit and objectives of all these procedures were well respected, but the interest of this institutional set-up was to shorten the traditionally long circuit.

### ***Financial dynamics***

The financing of the project remains exceptional, even if it does raise questions as to whether such a scheme could easily be reproduced for other restoration projects.

The fire immediately triggered a wave of donations and sponsorship from individuals, companies, and even other institutions, and *the Établissement Public Bâtir Notre Dame de Paris*. By November 2024, approximately €700 million had been utilized, leaving a surplus for additional restorations. In addition, and as already underlined, the rate of realisation of promised commitments has reached 98%. No doubt the symbolic value of Notre Dame played a large part in this, but it should be added that the fact of giving this money to an ad hoc organisation whose sole purpose was to carry out the project provided a clear guarantee that the funds would be put to good use. In addition, this financial arrangement was the subject of numerous audit reports by the Cour des Comptes.

Three debates accompanied this financing, albeit to a limited extent.

- **The role of the State in funding the project, given its ownership of the cathedral** . Then it should have have financed the project, as it has done for other cathedrals (Reims, Chartres, Nantes), but here he had don tto support. did not have to do so, except for the cost of providing a few small premises, which in this case was worth a drop in the ocean. Some observers have been quick to point out that these donations and sponsorships give rise to substantial tax deductions, as these “tax expenditures” represent a significant contribution from the State. This reasoning is questionable for two reasons: the main donors immediately declared that they would not make use of their right to tax deduction; the work thus created was, with rare exceptions, subject to value-added tax at the rate of 20%, which guaranteed the state a revenue well in excess of a hundred million...
- **The use of the remaining balance of nearly 143 million at the beginning of November 2024.** It should be used for certain remaining restoration operations that are absolutely necessary or operations that had been envisaged as necessary before the fire. This applies in particular to certain exterior parts of the cathedral, especially the apse and sacristy, whose fragility could lead to it being described as a “lump of butter.” In addition, the discovery of numerous archaeological resources should lead to their transfer, restoration, and even exhibition.
- **Theoretical concerns about the hypothesis of opportunistic behavior by contractors.** In order to gain access to contracts and benefit from the 'Notre Dame' image, some of them may have underestimated their costs in order to win a contract, which would have both loosened the EPND's financial constraints and cast doubt on the quality of the services rendered. These doubts were mitigated by stringent evaluation and quality assurance measures. The progress of the project does not reflect this risk: calls for tender were organised on a best-bid rather than lowest-bid basis (by way of illustration, the calls for tender attributed 60% of the score to technical excellence alone and only 40% to price); the worksite showed that the work was carried out with the utmost seriousness and quality; the financial possibilities open from the outset in no way required taking such risks; finally, the so-called “Notre-Dame spirit” always aimed for the highest possible quality.

Could such a mobilisation be repeated to solve the problem of the chronic shortage of resources needed for heritage conservation? It's a difficult question to answer, but in light of this experience, it is fair to

say that heritage restoration will attract all the more voluntary contributions if it is able to mobilise attention from a wide range of backgrounds, both heritage-related and cultural, and if it appears as transparent and responsible as possible.

### *A dynamic supported by an ecosystem of relevant companies and skills*

There existed some doubt about the feasibility of carrying out such a restoration in the fixed timeline, but France benefitted from an ecosystem of companies and skills that made it possible. This tradition has been present since the nineteenth century, and while history has often remembered the name of Mérimée, Viollet-le-Duc was a significant pioneer in planting a new conservation philosophy, notably on the occasion of the first major restoration of Notre Dame. His aim was to replace the practice of repairing a monument according to the language of those who carried out the current work, rather than those who designed it in the past (as was the case with the Château de Chambord in 1820), using an archaeological approach and providing architects with appropriate training. This doctrine led to the highest possible standards of training and qualification for both architects and craftsmen and also helped maintain the long-standing tradition of Compagnonage, which was compromised by events such as the lethal First World War but quickly reconstituted thanks to its principles of solidarity and quality.

- **Company Participation:** Approximately 250 companies contributed, with many benefiting from Compagnonage, a system emphasizing craftsmanship and solidarity. Of the 150 invitations to tender issued up to the end of 2022 for highly complex projects, all received satisfactory responses, and the only failure was due to the death of the head of the corresponding company. Over the course of the project, some 250 companies of very different sizes were involved. On average, each company worked for 18 months, and this activity represented around two-thirds of their business over the corresponding period. The fact that the vast majority of these companies were French is due above all to their immediate responsiveness to the announcement of tender projects and their desire to match their quality to the prestige of the monument. This has not, of course, prevented further cooperation with companies from other countries.
- **Skilled Workforce:** Over 400 craftsmen worked on-site, showcasing expertise in carpentry, stone-cutting, lead-laying, stained glass restoration, and more. A pool of skilled craftsmen and journeymen was immediately enabled to meet the needs that had suddenly arisen. In the aftermath of April 17, 2019, some had feared “a *shortage of stonemasons, carpenters, and roofers,*” but this elite group was there, reminding us that the Compagnonage movement was largely born on the building sites of mediaeval cathedrals.
- **Revived Techniques:** The project revitalized traditional methods and integrated necessary innovations, such as the use of green wood. This major need was underpinned by the desire to base the restoration on the most traditional approach to craftsmanship, without seeking to innovate any further than necessary. However, where necessary, new skills were integrated into the practice of such trade. The sheer scale of the project has led to a resurrection of certain skills that had existed but often in the shadows, and there's no reason why they can't now be put to good use on other sites. In fact, the French Minister of Culture would like to crystallise the value of such an experience by awarding a specific diploma to those who took part.
- **France's existing heritage ecosystem**—a law, a historic monuments department, a specialised body of architects, recognised companies, and a large pool of historically-served craftsmen—has therefore made a major contribution to this restoration. This ecosystem has undoubtedly had its ups and downs in the past, particularly in connection with the amount of money the State spends each year on the conservation of public and private monuments. But its strength enabled to provide the necessary soil for the restoration of Notre Dame and to overcome the conflicts that accompanied the aftermath of the fire as quickly as possible. As one eminent representative of the EPNDP put it, if the fire had taken place in the last century, we wouldn't necessarily have

benefitted from the same resources, and perhaps even the roofs would be made of concrete and the spire of aluminium today.

### *A dynamic approach to sustainable development*

The exceptional nature of this restoration project has not exempted it from the concerns of sustainable development. The operations carried out show great sensitivity to its objectives. The use of original materials - mainly stone, wood and lead - was a primary concern. While it was accepted that the nature of these materials should not be changed, despite the difficulties presented by certain reconstructions or repairs - such as the framework - it was also accepted that they should prevent the risks associated with their use. A remarkable example is that of lead coatings, particularly on both roof structure and spire. The risk of lead dust from metal roofing being washed away by rainwater and running into the sewers and the Seine was well recognised, leading both to quantitative measurements to assess the danger (carried out in cooperation with the École Nationale des Ponts et Chaussées) and to the organisation of a filtering system to collect it before the water was actually discharged. Far from appearing as a risk, lead cladding can now boast ecological qualities that are not always recognized: its durability and the possibility of recovering it.

- **Material Use:** Original materials (stone, wood, and lead) were prioritized, with careful measures to mitigate environmental risks. Considering wood, the challenge was different, since this material is recognised as being environmentally friendly. The real problem here was not so much to find and work on wood with the required qualities—rather old oaks, but not systematically so—as to help them grow back where they had been cut (around 1300), which was generally achieved. It should also be pointed out that large donations were received from all over France, from communes, private owners, and the Office National des Forêts. As for the stone, here too the problem was less one of disputing the nature of the material than of combining stones from different quarries, which required the creation of suitable mortars. It's worth pointing out here that a parallel “scientific” project took place alongside the actual work. This “scientific worksite” brought together 175 researchers, curators, engineers, and technicians from France (universities, CNRS and private laboratories) and other countries, working at the request of the ENDP on various levels: research into the initial characteristics of the building and traceability of materials; evaluation of materials, testing, and fine-tuning of technical solutions; preventive excavations, etc. So the restoration also added new knowledge to our understanding of the building. With regard to materials, it showed that the Cathedral was one of the very first to use iron, which contributed to its height, exceptional at the time of its construction.
- **Circular Economy:** Resources were sourced locally wherever possible, based on archival evidence of original material origins. Here, archives and other sources of documentation revealed that many of the resources used, particularly stone, could have come from the Paris basin, and that certain sites could still be identified there. In the case of wood, the areas of origin appeared to be a little further away. In any case, it seems that this principle of the circular economy did not give rise to much controversy, if not underscore the importance of ongoing up-to-date documentation.
- **Archaeological Discoveries:** The project revealed significant archaeological findings remnants of earlier churches and river quays, balancing restoration timelines with heritage preservation. To organise the site, it was necessary to carry out extensive drilling and, in some cases, to consolidate the land and create towers for cranes and scaffolding, all activities that were to reveal again significant archaeological resources. 801 years after the Cathedral's creation, it remembered that it had been preceded by an earlier cathedral, churches from the Carolingian period, and probably ancient temples. Remains and artefacts appeared, even those of a quay on the Seine, probably built to allow the arrival of ships bringing stones and wood. But unlike previous restorations (the Galerie des Rois), many archaeological objects were

carefully

set

aside.

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Once again, as has been pointed out from the outset, the success of the objectives set in April 2019, and the resulting mobilisation cannot be taken as a recipe for success. All people involved recognise that they have experienced something exceptional. What we need to remember, therefore, are some cautious observations that may inspire other restorations, but without taking the form of a guide:

- **Heritage restoration requires broad mobilization, collaboration and coalitions.**
- **Transparency and accountability are essential throughout the process.**
- **Restoration should balance tradition with necessary innovation, avoiding extremes of rigidity or radical change.**