Wiracocha

Writing of a technical report on the fires of the Notre Dame de Chartres (1836) and Notre Dame de Paris cathedrals (2019).

In a press release issued on June 26,
the prosecutorRémy Heitzannounced that he had "closed the preliminary investigation" opened the evening of the fire. In this investigation of "1,125 sheets", if "there is nothing to support the hypothesis of a criminal origin**"**
the investigators established, "without determining the causes of the fire", the trail "of a electrical system malfunction or that of a fire caused by a badly extinguished cigarette ".
These hypotheses require"more in-depth investigations"to be"carried out within the framework of a judicial investigation opened today, against X, on the grounds of involuntary damage by fire by manifestly deliberate violation of an obligation of prudence or safety imposed by the law or regulation ". Three investigating magistrates are appointed to lead this new proceduralframework investigation[124].
http://www.lefigaro.fr/flash-actu/incendie-de-notre-dame-une-cigarette-mal-eteinte-parmi-les-pistes-envisagees-20190626

2 cathedrals, 2 buildings very similar in architectural terms, but 2 very different fires. Why?

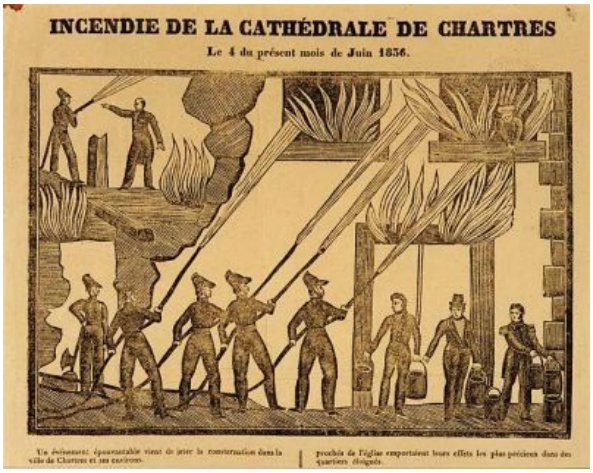
First, study of the fire at the Cathedral of Notre Dame de Chartres in 1836.
Secondly, study the fire at Notre de Paris
Thirdly, make a comparison of the two fires in
order to propose causes to explain the fire and the speed of propagation in Paris.

1) The fire at Chartres Cathedral

On June 4, 1836, a huge fire caused by the negligence of two plumber workers destroyed the roof and the "forest" (the chestnut wood frame). The report of this accident is made by Lejeune in 1839, then taken up by Merlet and Sablon in 1860[1] (page 42)

[1] https://gallica.bnf.fr/ark:/12148/bpt6k65273821/f5.image

Lejeune, Honoré-Félix-André. History of Chartres cathedral, first appendix, including its claims up to that of June 4, 1836 inclusive, by M. Lejeune, ... 1839[2]



Le marché pour les draps, étoffes et tissus de toute espèce aura lieu spécial, le vendredi 10 juin. Le déballage se fera la veille.
Le marché aux moutons sur le boulevard du Nord, les samedi 11, mercredi 15, samedi 18 et mercredi 22 juin.

INCENDIE DE LA CATHÉDRALE DE CHARTRES.

On nous écrit de Chartres, le 5 juin :
« L'un de nos plus beaux monumens d'architecture gothique la magnifique cathédrale de Chartres a été la proie des flammes dans la nuit de samedi à dimanche.
» Voici la cause assignée à ce désastre : des plombiers étaient occupés à faire des soudures dans les galeries du comble ; ils laissèrent leurs réchauds pendant quelque temps sans surveillance ; le vent ou toute autre cause jeta une étincelle de ce foyer au milieu de l'immense charpente appelée la forêt, qui soutenait avec tant d'art le comble, le feu prit, ils voulurent l'éteindre sans appeler de secours, ils luttèrent pendant quelque temps ; mais, à six heures, le feu se déclara avec une telle violence, que le mal était désormais sans remède, car on n'avait ni eau, ni pompe à proximité dans le premier moment ; bref, le comble construit tout en châtaigner, la couverture en plomb, les charpentes des clochers, les cloches, excepté le bourdon, tout a péri ; le plomb et le bronze coulaient dans les rues comme l'eau par un temps de pluie ; ainsi qu'on le pense bien, les constructions de la nef, encore bien qu'elles soient en pierres extrêmement dures, ainsi que celles des clochers, ont éprouvé les plus grandes dégradations ; les magnifiques vitraux peints qui décorent les bas-côtés de la nef, du chœur, et les rosaces, sont presque tous brisés.
» La perte est évaluée à plus de 3 millions non compris la valeur des ouvrages d'art, tels que les vitraux, qui étaient d'un prix inestimable.
» C'est la quatrième fois que cette cathédrale devient la proie des flammes ; elle fut brûlée en 858 par les Normands, aux 10e et 11e siècles par la foudre, et enfin aujourd'hui, par un accident auquel nous voudrions pouvoir dire que la négligence n'est pas étrangère. »
Dans une lettre que publie ce soir *la Gazette de France*, M. de Barochejaquelein signale le courage que M. Gabriel Delessert, préfet d'Eure-et-Loir, a déployé en cette occasion, et le dévoûment des populations accourues de plusieurs lieues à la ronde.

ORIGIN OF THE FIRE of Notre Dame de Chartres (page 42) In the morning from this bad day, plumbers busy repairing the damage caused by the violent wind on the cathedral roof, had made some welds to the valley N 0 of the transept, or arm of the window joining the apse to the roof of the nave. **This operation required the presence of a cagnard filled with lighted coal and placed on the stone slabs of the upper gallery** (one meter wide) at the foot of this valley. It is necessary to observe here that the plies of lead which covered the framework externally, protrude a few inches from the base two feet above the gallery. The void that this gaping lip formed by the extension of the pellets in the perimeter of the cover offered, gave below, a continual passage to the wind which, penetrating into the interior by this exit, was by its activity always large at such an elevation, capable of causing in its passage sparks unnoticed by men whose work exclusively and continuously fixed the eyes at twenty, thirty and forty feet above the flagstones. **At two o'clock**, **these workers who had not noticed or even suspected anything extraordinary in the vicinity of their dodger, and who, moreover, according to the layout of the premises, found themselves unable to recognize the existence of a plot of fire, unwittingly dragged under the renovation,** and deposited on **a layer of dust extremely combustible, a kind of tinder formed by time at the foot of this parched framework**, withered by the weather, and altered by the centuries: these two workers , we say, had come down safely to have their meal. **Back at the gallery, around half past three**, they

[2] https://gallica.bnf.fr/ark:/12148/bpt6k65273821/f5.image

make the preparations there to continue their work, relight their coal, heat their corridors. **At around half past four**, one of the plumbers, hanging from his rope knotted at 55 or 40 feet in elevation, threw the line intended to mount the hot iron to his maneuver; he realizes that his rope was short in length to reach the gallery; then he gives the latter the order to go, inside the frame, to detach another cord hung on one of the needles which supported the ridge. It was on returning from the point where he had gone, that the maneuver, crossing this multitude of pieces of the frame and passing under the valley, that he suddenly found himself stopped by a luminous point fixed in a cavity of the paving of the walls of the large roof, and which existed at the very foot of this valley: he approaches, he examines attentively and recognizes that fire attacks on this point the base of the inclined room. It is in fact incontestable, according to the arrangement of the places and the seat of the origin of the fire, that the flame which produced it could not have been brought and fixed on this interior point, veiled elsewhere. by the frame itself, and hidden from the eyes of the plumbers who worked outside, could not, we say, be driven only by the violence of the wind, below the gaping edges of the roof, as we have already observed it. Then the maneuver, seized with the keenest emotion, arrives at the gallery, crying: fire !. fire!. The plumber does not understand it at first, imagines that it is about a fire in the countryside, and plunges around him the glances in the distance which does not offer anything remarkable to him; to this mistake, the trembling maneuver redoubles his cries by adding: it is in the frame. Immediately the plumber descends quickly, enters the roof to judge the evil for himself, runs to grab the vase intended to contain the water necessary for their needs, he finds it empty and flies to the bell ringer André, at the foot of the building (1). In these meanwhile, the child, left alone in the gallery, falls unconscious, and while André is rushing to the top, the plumber calls for help a mason who was on the ground floor; then, each armed with two buckets of water, they climb the stairs; but, by a very fatal fatality, the door at which they present having closed on the bell ringer which had preceded them, they were constrained to resort to another practiced on a distant point, and it was only after long detours, painfully traveled, they finally approach the valley foot, already inflamed in a desperate way. **The fire activated by a continuous and violent wind which blew from bottom to top through numerous openings, rose more than twenty feet above their heads. It was then past half past five.** Let us judge the anxiety of this small number of workers! Their help is helpless, their strength is exhausted. In vain do they fight against the scourge which dominates them! before their eyes the progress of the fire is marching by leaps and bounds, and time is passing in unnecessary effort. **It is in this cruel extremity that a bell ringer finally goes to the belfry, where he arrives at six twenty minutes.** (i) It was in this fatal moment that the absence of the basin established at a short distance and of the easiest access, but destroyed by a supreme order of the council of buildings, was felt in a very cruel manner.
SECOND PERIOD. From six twenty in the evening to midnight. Barely that heart-rending cry: fire is at the cathedral! is it launched by the megaphone, that Mr. Gabriel Dessert, following his honorable habit, appears first on the high gallery to the point that the fire had just attacked. Beside him are the plumber Favret and the firefighter Brazon. In a few minutes, a number of generous citizens gathered around this worthy magistrate, among whom we noticed MM. Cliabannieret lemari, who hasten to assist him with their lights, the help of their arms and to take his orders. Already Mr. Duchesne-Mirey,

2) The fire of the Cathedral of Paris

The technical report of Ineris on the modeling of the toxic smoke cloud
https://www.ineris.fr/fr/ineris/actualites/incendie- dame-rapport-ineris-est-paru

provides some interesting information on the different phases of the fire (page 10) although the timing indicated in this simulation report is wrong.

"3.1.2 Application to ND
In order to fully understand the emission phenomena relating to fire, it is important to describe the different phases of the fire:
- A slow development phase of the fire which follows on from the 'ignition (0), this rise in temperature during this phase is very limited, this corresponds to the heating and the start of pyrolysis of the materials located near the ignition source. - A confined fire phase (1), corresponding to the period of fire development within the frame before the opening of the roof which occurs during the melting of the first lead tiles, estimated at approximately 5 minutes .
- A fire development phase (2), after opening the roof with ventilation of the fireplace provided by the different openings. During this phase, the first structural elements fall. Its duration is estimated at around 30 minutes. -

A fully developed fire phase (3), phase during which the fire has spread to the entire roof and is at its maximum. During this phase, many structural elements collapse. Its duration is estimated at several hours (from 7 p.m. to 10 p.m.) and it is assumed that almost all of the lead emissions in the plume occurred during this phase. - An end-of-fire phase (4), corresponding to the gradual decrease in the power of the fire until extinguished under the combined action of the emergency services and the gradual decrease in the quantities of fuel in areas with more high intensity.

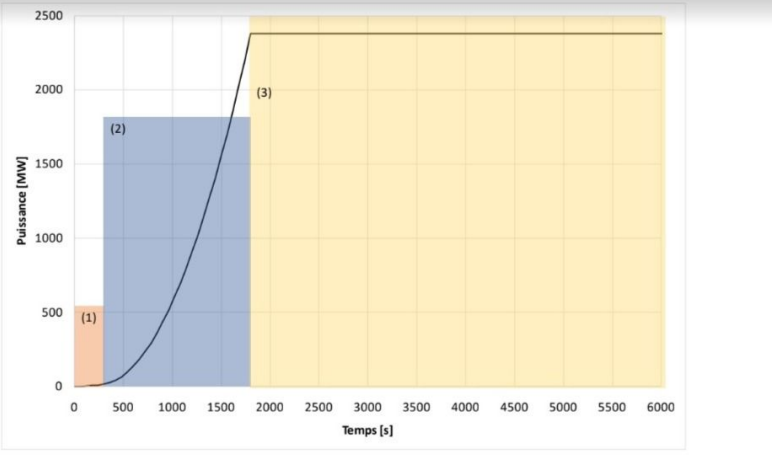


Figure 2. : Evolution de la puissance de l'incendie au cours du temps. (1): Phase pré-flashover, (2): Phase post-flashover – (3) : Incendie pleinement développé.

L'évolution de la puissance de l'incendie permet de définir toutes les valeurs caractéristiques du terme source « incendie » synthétisées dans le Tableau 1. Ces quantités ont été estimées pour différents instants afin de prendre en compte les émissions des différents constituants de la toiture.

the estimated duration for phases (2) and (3) does not correspond to the reality of the Notre-Dame fire.

phase (0): slow fire development (the estimated time is missing)
phase (1): confined fire: 5 minutes
Phase (2): fire development phase: 30 minutes
Phase (3): fully developed fire: 3 hours .
Phase (4): end of fire (the estimated time is missing)

the time from phase (0) to (1) to 5 minutes. ie the development of fire and melting of the first lead tiles.

the estimated duration between phase (1) and phase (3) is 3 hours 35 minutes. Depending on the reality of the fire: the duration is 1 hour 6 minutes (see photos below).

the duration of fire development is estimated at 3 hours while it is understood in reality to be 70 minutes maximum.

The Report must explain, in particular:

- In French and in English, about ten pages, understandable by anyone who does not have significant scientific background but common sense.
- a one page summary.
- For the study of the Chartres fire: Cause, weather conditions, timing, lead melting
- a figure (figure 2 page 12 of the Ineris report) illustrates the different phases of the fire. make a figure with the different temperatures during the 4 phases, the time of each phase.
- Paris: explain how a badly extinguished cigarette butt or a short circuit could, within the time allowed and in the configuration of ND, be the cause of the fire.
- Make a figure illustrating the different phases of the fire.
  explain the time of phases 0 and 1 so short
- mention the inconsistencies in timing / location of the goalkeeper.
- explain why the lead did not melt as in Chartres?
- explain why the steel scaffolding in Paris was welded?
- mention the treatment of the frame by the company Aubriat
- make a calculation hypothesis if a chemical accelerator had been sprayed on the beams during the treatment of the frame by the company Aubriat without his knowledge, a combustion of 70 minutes, a temperature of 2000 ° fusion with the scaffolding steel and processing of lead particles, not liquid would be scientifically and physically quite possible

Knowing that:

- *The melting temperature of lead is 230 °, of steel is 1450 °, Combustion of wood (oak and dry) of 1000 °*
- *Thermite is a mixture of metallic aluminum and oxide of a other metal, usually iron oxide. Its so-called aluminothermic reaction in which the aluminum is oxidized and the metal oxide*

*reduced,.**This chemical reaction generates intense heat, making it possible to reach a temperature of 2,204.4 ° C. Thermite is most often used to weld steel.***

- *Knowing that the Aubriat company carried out a treatment the previous year, a similar material could have been added without its knowledge.https://www.youtube.com/watch?v=clvtZx4lyl8 read the statement by Mr Aubriat in the article by Vosges Matin*[3] *.https://www.vosgesmatin.fr/edition-d-epinal/2019/01/01/29/la-societe-aubriat-d-epinal-au-chevet-de-notre-dame-de-paris*

An agreement will be drawn up between Wiracocha and …… .. to set the framework for writing this technical report.

Annex n ° 1:**Details of the dimensions of Notre Dame de Paris**

The Cathedral is an exceptional building by its size for a religious monument but remains by these dimensions [4] of modest size compared to commercial or public buildings (airport, shopping centers). :

Total length 128 meters - Length of Western facade 43 meters
Height under roof 43 meters - Height of aisles 10 meters
- Height of towers 69 meters - Steps to access it 380 - Height of spire 96 meters - Length of nave 60 meters Width of the choir 12 meters - Total width 40 meters - Western facade width 40 meters - Area 4800 m² .
Theframewoodenis made up of 1300 oak trees representing more than 21 hectares of forest.

Comparing the dimensions of the building with the chronology of the fire and the action of the person in charge of security, we can discern certain inconsistencies which require explanation.

time	Events

6:20 pm : detection of the alarm with a fire starting at the bottom of the arrow.
6.30 pm : 10 minutes are necessary to cover the 100 meters of the security PC at the bottom of the arrow (according to the comment of Benjamin Mouton) "Doubtbecause false alarm" removal6:43 pm: after a first removal of doubt, the fire is finally signaled

[3] https://www.vosgesmatin.fr/edition-d-epinal/2019/01/29/la-societe-aubriat-d-epinal-au-chevet-de-notre-dame-de-paris

4 https://www.notredamedeparis.fr/la-cathedrale/les-informations-insolites/la-cathedrale-en-chiffres/

6:50 pm : call to firefighters.
7:30 p.m .: complete blaze of the arrow and the cover
So from 6:43 p.m. to 7:30 p.m. (47 minutes), we note the following events:

1. A fire starts (whatever its butt, sparks, short circuit this is not not the subject studied in these lines)
2. The start of fire ignites the first m3 of frame which to burn must pass from a normal temperature to a combustion temperature.
3. The fire spreads to the entire solid oak frame with 60 cm sections.

Questions:

- Alarm detection: why does the guardian take 10 minutes to cover 100 m?
- After the removal of the doubt 13 minutes later, the fire started. Flames ? smell? smoke is not visible? a maximum distance of 100 meters separates the guard from the start of the fire.
- The fire brigade alert at 6:50 p.m .: 7 minutes are still required to give the alert.

Conclusion:

In other words and said in a different way, the frame of Notre Dame was called 'the forest' in relation to the 1300 chains that make up its structure.
Can we imagine a forest of 1300 oak trees (more than 450 tonnes of hardwood like stone, and 450 tonnes of lead (the cover)) burn in 50 minutes 'involuntarily' by a badly extinguished cigarette butt ?

Annex n ° 2: **Details of the fire at Notre Dame de Chartres**

On June 4, 1836, a large fire caused by the negligence of two plumber workers destroyed the roof and the "forest" (the chestnut wood frame). The report of this accident is made by Lejeune in 1839, then taken up by Merlet and Sablon in 1860[5] (page 42)

The Fire here is due to braziers [6] *83 years before the fire which ravaged Notre-Dame de Paris, another jewel of the national heritage almost disappeared by fire in 1836: the Notre-Dame de Chartres cathedral. Like its Parisian sister, the Chartres cathedral was, at the time, under renovation. Poorly extinguished stoves are believed to be the source of the fire.*

In a 'traditional' fire, the wood combustion temperature is 1000 °, the lead is molten (liquid) around 230 °.

[5] https://gallica.bnf.fr/ark:/12148/bpt6k65273821/f5.image
[6] https://www.lechorepublicain.fr/chartres-28000/actualites/le-jour-ou-un-incendie-a-failli-detruire-la-cathedrale-notre-dame-de-chartres_13541337/#refresh

According to the press of the time. [7]

In Chartres: "lead and copper flowed in the streets like water" "Fire attacks the northern bell tower, a volcano which projects fragments of burning wood. The bells fall and melt. Lead trickles from the roof. "

*At Notre Dame: with a temperature of 2000 °, the lead did not melt as in Chartres, but vaporized into particles.**The steel scaffolding did not deform but was welded.*** [8] *This so-called aluminothermic reaction in which the aluminum is oxidized and the metal oxide reduced,.**This chemical reaction generates heat. Thermite is most often used to weld or melt steel.***

See the details of the Chartes fire: departure of the fire early in the afternoon.

https://www.chartres.fr/no-cache/outils-et-services/actualites/detail-de-levenement/actualites/1836-incendie-de-la-cathedrale-de-chartres-episode-13/

The main ones similarities / differences between the two fires:

***Similarities**:*

- *Same wooden frame (oak in Paris, chestnut in Chartres), same lead in the roof*

***Differences** :*

- *Cause of the fire: identified in Chartres (braséro), unknown in Paris. butt badly extinguished?)*
- *Materials used for the development of fire phase (0): identified in Chartres, unknown in Paris.*
- *Burning time around ten hours in Chartres (the fire starts in the early afternoon, ends in the early hours, very short in Paris (70 minutes).*
- *Fire well identified by witnesses, start of fire, spread, fight to extinguish it in Chartres, nobody in Paris.*
- *Lead melts in Chartres as well as the metal of the bells. The traditional metal for these bells is an alloy:brass (aalloy bronze), generally comprising in France 22% oftin and 78% copper.on 5 August 1856, the municipal council of the town of Chartres, wanting to pay his debt of public gratitude to Mr. Gabriel Delessert, voted in his honor and perpetuate the memory of his beautiful noble conduct during the course of this great misfortune, **a large bronze medal, made up of a mixture of the metal of the bells melted**. It carries in the face, for exergue, this legend: Chartres Cathedral, fire of June 4-5 1830. In the center in relief: The church e Notre-Dame Below:**Metal bells melted by the fire.***
- *Lead not in Paris - it turns into particles*

7 https://www.retronews.fr/catastrophes/echo-de-presse/2019/04/17/en-1836-lincendie-de-notre-dame-de-chartres

8 https://www.lemonde.fr/societe/article/2019/09/13/l-echafaudage-de-notre-dame-complexe-a-demonter-peut-encore-s-ecrouler_5510089_3224.html

Annex n ° 3:**Details of the dimensions of Notre Dame de Chartres** [9]

The shape of the building, oriented to the northeast, is that of a Latin cross with basilica nave.

The Gothic cathedral takes over the western massif of the old building.

With the following dimensions, the building is one of the largest cathedrals in France:

- *height under vault: 37.50 m*
- *height from the ground to the roof ridge: 51 m*
- *height of the Romanesque bell tower: 105 m*
- *height of the Bell tower Gothic: 115 m*
- *interior length: 130 m (against 133 m for Amiens) of*
    - *which length of the fore-nave: 17 m*
    - *length of the nave: 44 m*
    - *cross of the transept: 14 m*
    - *length of the choir: 37 m*
    - *ambulatory and axial chapel : 18 m*
- *width of the central vessel of the nave: 16.4 m (compared to 12 m for Notre-Dame de Paris)*
- *width of the nave with the aisles: 33 m*
- *interior width of the transept from pier to pier: 63.4 m*
- *width of the choir with aisles: 47 m*
- *width of the west facade: 48 m*
    - *including the Royal Portal: 15 m*
- *width of each of the north or south facades: 40 m*

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9 https://fr.wikipedia.org/wiki/Cath%C3%A9drale_Notre-Dame_de_Chartres#Plan,_composition_et_dimensions_principales