

## *The Contractors of Chartres forty-five years later*

It is over forty years since the first part of the French edition of *The Contractors of Chartres* was published by the *Société Archéologique d'Eure-et-Loir*.<sup>1</sup>

I had been lecturing on the history of the cathedral for almost a decade before starting on-site analysis in 1969. By then I knew the literature and wanted to answer some of the questions that had plagued Chartrain scholars for the previous 80 years. As an architect and builder, it was natural for me to let the stones speak for themselves. For five years I lived in the town with the keys in hand and examined the building.

During the 1980s I lectured at over 60 universities on my findings at the cathedral, though none in France outside Chartres. This may explain why the English edition of *The Contractors* has sold more copies than the French.<sup>2</sup>

Put simply, the three major questions concerning scholars were: which end was built first (choir or nave), were the porches built with the transepts or added afterwards and was the Royal Portal moved or not? Many renown scholars have argued these questions: Marcel Aubert, Jean Bony, Yves Delaporte, Etienne Fels, Paul Frankl, Louis Grodecki, Eugène Lefèvre-Pontalis, Albert Mayeux, Jan van der Meulan and Jean Villette, just to mention a few.

In reviews the major criticism of *The Contractors*, to the almost total exclusion of all else, lay in reaction to my opening sentence “The cathedral of Chartres was not designed by three architects, or even five or six. ... etc”. I had argued that Chartres (and by implication, other buildings as well) was constructed by many independent mobile crews of masons. I called them contractors who travelled from one site to another. Each master retained his own foot unit, geometric methods and design criteria, and was prepared to use these in his own manner. In the process the design and the detailing was continuously being changed.

One reason the theory of wandering crews of contractors was not appreciated was that documents from later centuries show that masons could be appointed for long periods. I had suggested an explanation for this anomaly, but in the furore, who has read my conclusions in the last chapter?

Another reason lay in the belief that great architecture could only be created by great men, and that the beauty of Chartres could not have been created in the way I suggested. This belief is firmly held by historians, whereas fellow architects find the idea that many contractors could create such a building, with only the most rudimentary documentation, is no problem for today’s builders.

However, *The Contractors* is more than its opening line. Six hundred pages are filled with observations and measurements based solely on the architectural and technical evidence; a procedure now called “toichology”. All the original measured drawings on which the book is based are available in the local Société archives.

The conclusions drawn from this information have not been addressed by the storm over the mobile teams that eclipsed the real value of the book as a monograph of the cathedral. No historian has re-examined the evidence, for the cathedral records show that not one scholar has asked for the keys so they could check my conclusions, though some of the broader implications have been integrated into other studies.<sup>3</sup>

Since publication none of the following conclusions from *The Contractors* have been refuted: -

**That** the nave and the choir were built at the same time, not one after the other – though at any one time the west was six or so courses higher than the east. This has since been confirmed by dendrochronology.<sup>4</sup>

**That** all six transept doorways and their porches were erected at the same time, and that the porches were not added later. This showed that the sculpture for most of the doorways was completed before 1208, for the south porch by 1205 and for the north by 1218. Therefore, the apogee of Gothic sculpture had to be from the time of Philippe Auguste, and not Saint Louis.

**That** the sculpture of the Royal Portal was carved and erected at the same time as the south tower. There was nothing to show that the portal had been moved from some other location, and the many modifications to the sculpture could be explained by changes to the design while it was being built, and thus in all likelihood to changes in the master mason in charge.<sup>5</sup>

**That** a special technique was required to analyse ashlar stonework. Archaeologists remove evidence as they dig into a lower layer, but in existing buildings the evidence cannot be tampered with and has to be

interrogated in other ways to reveal its secrets. I later coined the term Toichology for the *science of analysing standing stone structures*.<sup>6</sup>

These techniques showed that the cathedral was constructed in horizontal layers that stretched from the western towers to the choir. Each campaign of construction was illustrated in 32 isometric drawings prepared by hand. These were so complex that each took weeks to draw.

**That** by carefully measuring every profile and element and analysing the geometry used to set out the templates I attempted to determine the geometric methods of each master and their personal foot unit.

**That** the consistency of design, method, foot unit and geometric preferences was evidence that each layer was the work of one master.<sup>7</sup> Together, these items forced me to seek some explanation beyond the most common one of fixed workshops under genius-like masters. The theory of travelling masons was the inevitable result.

**That** the principal masters all came from the bishoprics to the north-east of Paris, from the Soissonais, Laonnais and Rémois.<sup>8</sup>

As the number of layers coincided almost exactly with the construction time noted in the documents, I followed the most convenient path by giving each campaign a precise date. Since then the Deramble study would modify the completion date without affecting the building sequence nor the location of the joints between campaigns.<sup>9</sup>

In addition to the seven items above, there were many minor findings on questions raised by other scholars:

**That** there is no evidence for adding the outer bays of the transepts after the nave and choir as all the masonry is ashlar and the coursing is continuous at every level.

**That** there is no construction break at any level of the fifth bay of the nave that could justify van der Meulen's theory that the western towers and the Royal Portal were to be demolished just 30 years after they had been completed.<sup>10</sup> I suggested that the explanation for the smaller bays lay in geometry.

**That** Bony was incorrect, for *en délit* shafts were used under the high vaults.<sup>11</sup>

**That** there was an explanation for the upper 'suicide' doors from the apsidal stairs, which was to allow the builders access to scaffolding while religious services were being held under a temporary roof, and not for the clergy to get to the stalls.

**That** the first plan was for a single ambulatory with seven deep chapels flanked by two rectangular ones at the ends of the aisles, not unlike Reims, and that this was changed in 1200 to the present Saint-Denis-like arrangement.

**That** the bent axis was deliberately planned from the beginning.

It may be worth describing how I came to be a medievalist, having been a successful architect in Sydney for the previous thirteen years. My father would

I began work at Chartres in 1969, and when I presented my findings to members of the Société in Chartres in 1972, and led the members on a guided tour of the cathedral, everyone could see in front of their eyes each piece of evidence that is set out in the book. There could be no argument about the basic evidence, for the stones spoke the story. The members were sufficiently convinced to authorise the president Marcel Couturier and my architect friend Dominique Manoury to spend years over the translation of *Les Constructeurs*, and authorised the Société to carry the publication costs.

Just before Yves Delaporte died, Dominique Manoury arranged for us to meet so he could see the isometrics. We studied them together, virtually in silence for almost an hour, while the aged Canon examined the drawings and photos. He, who knew the building better than anyone else and had published such penetrating analyses of it, was convinced that the arguments in *The Contractors* were essentially correct.

I met Robert Branner before he died tragically in 1972, and shared a Basque lunch with him in Paris. He was in fundamental agreement with what I was finding, and was so excited by it that he wrote that my methods offered an entirely new and fruitful approach.<sup>12</sup>

I also met Jan van der Meulen in Chartres and showed him and his students the first drafts of the isometrics, and then together discussed his belief that there was a vertical break in the fourth bay of the nave. Looking at the nave ashlar together he agreed there were no joints in the walling, no changes in profiles, neither in the

lower courses nor throughout the height of the cathedral. He generously turned to his students and said “there is a good example of the historical method”.

Yet he later continued to argue that the western towers were to be demolished and wrote that my book ‘failed to provide dimensions or other systematic, verifiable architectural information to facilitate future research.’<sup>13</sup> Anyone who has taken even a cursory look at the thousands of scale drawings in *The Contractors* would have to question such a comment.

I also discussed my conclusions with Louis Grodecki, showing him drawings and photos. He just sat there, would not discuss any item with me, and after a while simply walked out, saying over his shoulder, “je ne suis d’accord”. No discussion was possible.

It was after this that the gap seemed to widen between the people of Chartres who knew their building first-hand and understood what I was unearthing, and some of the major historians of academia. A cloak of exclusion and silence descended over the questions I had raised, which persists to today.

Indeed, the nub of the problem is that without being able to discuss the issues on site, with the building’s evidence in front of us, it is very hard to simplify the issues so they may be readily understood by people who hold other views.

This is a strange situation for an academic discipline – to not subject major conclusions to on-site verification, but to disregard the evidence and rely on prior assumptions for their conclusions.

The visual evidence from the stones speak an unequivocal language

In 1981 Lon Shelby suggested a number of alternative interpretations for the wandering masons.<sup>14</sup> Much was reasonable, but instead of igniting further discussion it was enough to ‘close the case’. I would think that finding the right answer would be so important for our understanding of the middle ages that scholars would want to unravel the truth through in-depth and on-site examinations, and of other buildings as well. Though I have proposed this a number of times, it has not happened – yet.

Consider what it would mean if it were demonstrated that the concept for multiple contracting were applied throughout Europe for this period, the first 250 years of the millennium. Then, every building would have to be studied in its layers as well as in its entirety; the masters in charge would be looked for in parts of many buildings scattered across the countryside rather than in one; geometric studies would have to be restricted to the work of a single contractor rather than the building as a whole; future theories on the evolution of gothic architecture could no longer be limited to the major sites; no grand workshops would dominate the scene; and the travels of these men would begin to tell us more of the chronology of the buildings and the evolution of the gothic style than what we have had before. In short, considerable life could have been injected into the discipline of gothic studies.

All of these issues remain of the greatest importance to our understanding of gothic architecture.

On a personal note, I admit that in the 1970s I did not fully understand the art historical issues and was much more single-minded than I should have been. I now recognize that a master need not have been as consistent as I first made out. However, none of this detracts from the substance of the original toichological analysis.

Since then I have extended my studies to include all the Early Gothic churches of the Paris Basin. In 1980 only some 450 had been noted in publications, but in the three-year Survey I made at that time I have enlarged this list with over a thousand additional churches by spending three years driving around the French countryside.<sup>15</sup> This established a boundary for Early Gothic creativity and a collection of data that is now available online in [www.creationofgothic.org](http://www.creationofgothic.org).

This large factual database led me to write a series of articles on flying buttresses,<sup>16</sup> evidence for different contractors at Senlis,<sup>17</sup> Saint-Denis<sup>18</sup> and on the Royal Portal,<sup>19</sup> and my doctoral dissertation on basic construction techniques.<sup>20</sup> I also used this data to estimate the flow of funds into construction.<sup>21</sup> I studied the English situation and found the same evidence for wandering masons after studying the White Tower, Southwell Minster and Durham cathedral.<sup>22</sup> I became so interested in the origin of rib vaults that I examined every building in Europe that could have employed ribs before 1140.<sup>23</sup> This has yet to be added to COGA.

The major issue for the Early Gothic period is dating. For over twenty years I have been searching for a reasonable method for achieving a first bite at a comprehensive chronology. I first thought I could do this by identifying masters and following the changes in their templates, but this proved fruitless. I then examined the more spontaneous production of foliage on capitals, and struck oil.

The result is the 5-volume thesaurus *The Creation of Gothic Architecture an Illustrated Thesaurus: The Ark of God*. It contains over 30,000 photos of foliate capitals. The first part illustrates two arguments: that the change from *généralisée* or formal foliage to naturalistic can be dated precisely to the decade of the 1170s, and that for the next eighty years the style of design followed what we would today call fashion, by with changes in style decade by decade. These changes can be used to date work in over 400 monuments to within a few years. One consequence was to show that both the abbey of Braine and the cathedral choir of Soissons pre-date Chartres by a decade or more.<sup>24</sup>

The next three volume contain most of the formal pre-1170 capitals. Together they are foundational for any study of creative sculpture.

It seems that my work over the past three decades is beginning to come together – and Chartres lies at its foundation. The cathedral still provides some of the most pertinent information for all three parts of *The Ark* and the forthcoming study of the Royal Portal is shaping up to offer a fresh insight in construction methods,

Throughout these years I have remained assured of the following:

**That** the masters in charge of the works came and went in nearly every Early Gothic building in the Paris Basin, including works under royal patronage like Saint-Denis and La Sainte-Chapelle. I have discussed this further in *The Template-Makers*.

**That** each master used his own geometric strategies and foot measure to lay out the templates. These strategies usually included a system of verification that matched the procedures of Scholastic philosophy and, as I found in the Tower of London. Geometric scholasticism may even pre-date the philosophers.<sup>25</sup>

**That** a newly appointed master in making templates out of his own geometric methods inevitably altered the building, and that it was normal for him to make design changes that modified, or even cancelled, proposals begun by his predecessors.

**That** these design decisions, the geometry utilised and, most importantly, the technical ways of building, can be used to identify the master in charge. Since the masters worked on many sites in a lifetime, they would have left a recognizable dossier in many places.<sup>26</sup> To locate and identify their individual contributions is a profoundly moving experience. I have already published on three Chartrain masters: Olive who created tracery at Essômes and Reims,<sup>27</sup> Bronze who worked on Soissons and Laon cathedrals,<sup>28</sup> and Scarlet who set out the abbey of Longpont and designed the roses at Mantes and Laon.<sup>29</sup> Again, none of these ideas, which have been built on those derived from Chartres, have been analysed by historians.

Even if these conclusions were only partly correct, historians have the choice of either subjecting them to detailed analysis or modifying their view of the period. One reason that the toichological method of *The Contractors* has few practitioners may be that architectural historians are universally trained in documents and photographs, not in the practical skill of building. They spend more time in libraries than on sites. I can understand this, for the sheer size and complexity of a building under construction can be unnerving.

This is compounded by one essential but missing skill: the ability to draw. Without drawing, and especially without being able to prepare isometrics to show how a building progressed in both space and time, their ability to conceive of the issues is remarkably impaired. The amount of detail in *The Contractors* and the use of drawings instead of text may have compounded the problem. I concur, that it is a big matter to ask people to learn new skills when their current methods are well-entrenched. Nevertheless, it should be attempted.

One consequence may be that for many years little has been written about Gothic architecture whereas before *The Contractors* we would see a scholarly article almost every few months.<sup>30</sup> I do not include the sculpture, of course, which is still drawing some research.

Another may be the decline in sessions devoted to architecture at the great international conferences on medieval history. In the 80s twelve or so sessions at Kalamazoo and Leeds would deal with building, now it is seldom more than two. Is this because in order to discuss any major art-historical question we have to face the implications contained in *The Contractors*?

Lastly, any analysis of templates must be based on geometry. There are over 250 such studies in *The Contractors*, which led to the publication of a little guide book called *The Ratio Hunter*.<sup>31</sup> The extraction of geometry from a building is a tedious and exacting process. It cannot be done by simply laying lines across a plan. Yet in the many publications on geometry since then I have not once noticed a reference to these studies, nor to an architect's procedures for testing a proposed geometry against building tolerances.<sup>32</sup>

In short, there are enormous discoveries waiting for eager and open minds to explore and be exhilarated. I will shortly publish my study of the western portal at Chartres that illustrates most of the conclusions found in *The Contractors* and in the Laon gallery, and I look forward to whatever controversy may emerge.

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  - 4 Anne Prache, "Remarques sur la construction de la cathédrale de Chartres à la lumière de la dendrochronologie", *Monde médiéval et société chartraine*, Paris, 1997, 75-80.
  - 5 John James, "Etude des anomalies dans les portails de l'ascension et de l'incarnation à la cathédrale de Chartres", *Bulletin de la société archéologique d'Eure-et-Loir*, xxvii 1990, 110-123.
  - 6 John James, *The Template-makers of the Paris Basin*, Leura, 1989.
  - 7 After *The Contractors* see "Chartres cathedral and the rule of geometry", *Proceedings of the sixth New Norcia Humanities symposium*, Perth, 1990, 109-121; "Medieval Units of Measure: the feet of the master", *Avista Forum*, ix 1995, 12-14; "The tools of Hues Libergier, Master Mason of the Thirteenth Century", *Architectural Theory Review*, ii 1997, 142-149; "An Architect's approach to Medieval Geometry", *Avista Forum*, Nov??? 1997.
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  - 10 Jan van der Meulen, "Histoire de la construction de la cathédrale Notre-Dame de Chartres après 1194", *Bulletin de la Société Archéologique d'Eure-et-Loir*, xxiii 1965, 5-126.
  - 11 Jean Bony, "The resistance to Chartres in early thirteenth century architecture", *British Archaeological Journal*, xx-xxi 1957-58, 35-52.
  - 12 Robert Branner, "Books – Gothic Architecture", *JSAH*, xxxii 1973, 327-33.
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  - 15 John James, "An investigation into the uneven distribution of churches in the Paris Basin, 1140-1240", *Art Bulletin*, lxvi 1984, 13-46.
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  - 24 John James, "A chronology for French High Gothic: Consequences of *The Ark*," pending publication.
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  - 27 *Template-makers*, chapters 8 and 9.
  - 28 John James, *Les maîtres constructeurs de Chartres*, Chartres, 1990.
  - 29 John James, "The canopy of paradise", *Studies in Cistercian art and architecture*, lxix 1984, 115-129
  - 30 I except Prache on dendrochronology (see n.4), and Deramble on documents (see n.9).
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  - 32 Nancy Wu, ed. *Ad Quadratum; the practical application of geometry in medieval architecture*, 2002, Aldershot.