These are drafts for vols. 6 and 7 of *The Ark of God*.

A resource for discussion and information.

30 *The Chartres Royal Portal (1138-1143)*

John James

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The capitals discussed here may be examined in larger format in vols. 3-5 of *The Ark of God*, and when completed and professionally edited these draft studies will be published in volumes 6 and 7.

This is number 30 of an on-going series describing Early Gothic carving masters

The Chartres west portal 1138-1143

The history of the Chartres Royal Portal (1138-1143)

The west portal of Chartres cathedral was carved and erected over five or more years. The six separate building teams involved over that time and the many independent groups of sculptors created enough confusion to leave thirteen anomalies in the masonry and sculpture. These are the keys to its history.

The masonry consists of a base course carved with the threshold and a plinth on which rests an extremely large block with lozenges and torus mouldings. This supports six courses of embrasures with 48 figures, and over them 22 capitals and their imposts. Between them fit the nineteen extant column-statues and the 43 stones that make up the decorated colonnettes. There are five lintels assembled from nine stones and three tympani from eleven stones. Surrounding them are 23 archivolts on the north, 35 in the centre and another 23 on the south. The 58 stones of the drip moulds complete the portal. Nearly all of these with the possible exception of the last were carved before they were needed and stockpiled in a shed, sometimes for years, until they could be erected.

A succinct history and the anomalies

The story of the Royal Portal is so complex it requires that we start with an overview. Without it there is nothing to hold the intricacies of this analysis together, and the details would become confusing, even wearisome. The following ten pages present the most probable construction schedule, and the consequences for our understanding of medieval practices. The details that follow are referenced on page 45 and 76.

For the sake of simplicity I will describe the events as facts, and leave the discussion of doubts to each sub-section.

The portal was carved and erected in step with six building campaigns on the towers. At various times there were versions with plain bases, smaller doorways and round-arched tympani, and over this long time a number of errors occurred that forced major changes to the original design.

The institutionalised divisions between *imagiers*, masons and layers ensured that design proposals prepared at one time could be ignored or

changed by those who came later. In precise carving with small tolerances the use of geometry rather than measure left a trail of small changes leading to errors with consequences. These were compounded by the policy that allowed a master the freedom to mutilate earlier work if not yet placed.

The keys to this history are founded on the following thirteen anomalies. Some have already been noticed and discussed by others. Here I intend to study them in relation to each other to see if they can elucidate the full and complex history of the portal. Thirteen can be observed by the naked eye:

- North threshold and plinth misplaced;
- lower north lintel too wide for the width of the doorway;
- upper north lintel twisted;
- pilaster on the south tower built over when the plinths were laid;
- capitals against both towers misaligned on erection;
- south pier not level with the rest of the portal;
- two southern lintels made to different lengths;
- both of these lintels cut back to a single but incorrect door width;
- twelve colonnettes truncated to fill gaps left under the capitals;
- heights of the side archivolts reduced;
- lateral tympani not the same width as the lintels;
- south lintels and tympanum adjusted as out of level;
- central tympanum altered from round to pointed.

Similar discrepancies are common in other portals, such as Saint-Denis, Provins, Le Mans and Etampes. Chartres is unique only in the number.

The analysis of these anomalies suggests that the major changes to the portal coincided with each of the six building contractors: the first scheme by E was scrapped in favour of one from the time of F; G made the north door smaller and added a second row of lintels; H made the south door wider and raised the door heights; I redesigned the portals for pointed frames. As well, try adding three or four teams of independent sculptors to the mix.

The errors arising from the four erection crews were the north plinths in F, the colonnettes in H and much of the southern sculpture in I. Though they may have been in the employ of the building contractors, most of the anomalies arose because they did not receive accurate placement data from either the sculptors or the builders. Lack of communication was the common factor. Over the years all trades coped with the situation as best they could.

In the end it came down to the delays in building the south tower. This turned a straightforward operation into a difficult and painstaking process in which itinerant *imagiers* and contractors lost control over the placement of what they had carved. If the portal had been built today in a single campaign under firm supervision not one of these anomalies would have happened. The fact that they occurred shows that the result of employing different teams of craftsmen meant little or no continuity of supervision.

I refer to the phases in the construction of the towers as campaigns, and those that link with the portals were E through J, roughly between 1138 and 1143. The carving phases of the jamb figures can be divided into three groups A, B and C, and of the colonnettes into four groups numbered 1 to 4.

Separating the dozen groups has not been too difficult, but determining which group linked with which campaign and how those tied in with the many anomalies has required a more intense investigation. The most important connection has been that the southern embrasure from group B is tied, course by course, into the masonry of the adjacent tower in campaign H, so the advance of one was dependent on the advance of the other.

The chronology in a little more detail *(itemised on page 45)*

1138

Campaign E: The earliest visible evidence for a portal lies in cuts into the side of the north tower [r1]. The vertical edge and the enlargement further up suggest they intended to install a different type of portal altogether, possibly for a recessed arrangement with sculpted side walls. The three disconnected figures that support the northern column-statues could have been carved then. This proposal was discarded in the next campaign.

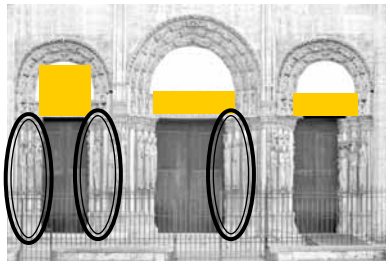
Breaking into north tower for the portal plinths

1139

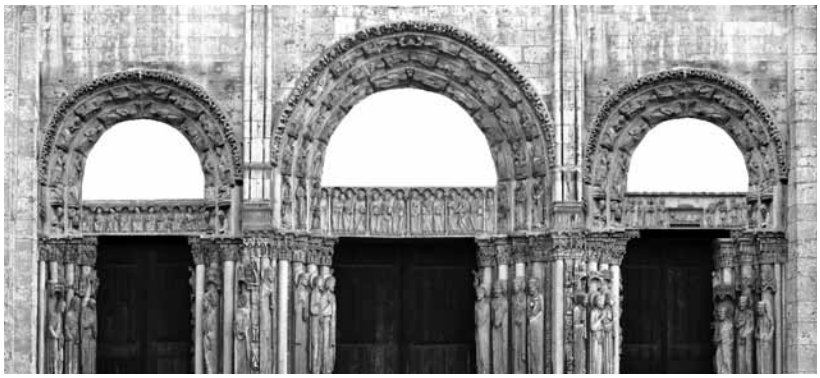
Campaign F: The outline of the design as we know it was determined here. Many elements like plinths and capitals are in the manner of the slightly earlier south portal at Etampes. The first of the richly decorated bases were those for the left pier against the north tower. Sculptors carved the capitals and imposts at the same time, though the six courses of the embrasures were builder's work and came later.

The three lintels were carved in F for wider doorways than the present, and also a shorter Presentation lintel (possibly for the door out of the tower to the south). These sculptors may have carved or blocked in a round-arched and stilted tympanum, probably an Ascension. Shown yellow in [r2].

The sculptural elements of the north doorway may have been assembled on the floor of the shed for clients and benefactors to study. The portal was a conventional layout with three doorways, single lintels and round arches [b].



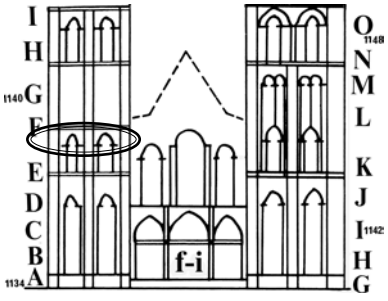
Location of sculpture in campaign F



Proposal for the portal in campaign F in 1139. Round arches over single lintels

Fifteen colonnettes were designed in paired lengths that would neatly fit between plinths and capitals. As none could be installed until the embrasures that supported them had been raised they were stockpiled. If there were location marks they went missing. The ensuing confusion has offered some of the major clues in establishing the chronology. At least four of the column-statues flanking the north door (including the Queen of Sheba) and probably others in the centre were carved at this time, circled [r2].

On the outside of the north tower high above the portal four capitals were carved on the first level, circled [r3]. One has a palm-tree by Palmier himself [b1] and the others were by colleagues from the contemporary campaign at Etampes [#07 and #29].

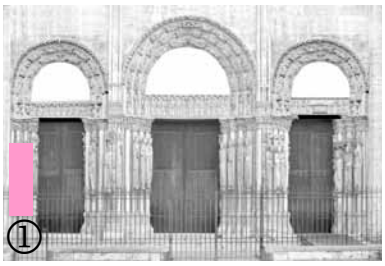


West elevation with location of capitals marked

Capitals on the exterior of the north tower WN-wRsR, WN-nLeR, WN-wRnL and WN-wLsR in Level 1 from campaign F in 1139

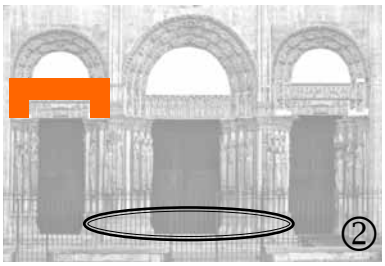
1140

Campaign G: The first problem arose when the plinths were erected. The buttress of the north tower had been hacked off in campaign E and a recess cut alongside to receive a simple plinth [r①]. Today's more complex design was the work of F, but was not installed by them as they would have known what they were doing and made the necessary adjustments to make it fit. It was inserted without adjustment and so misplaced some 50mm toward the inside. This would have happened only if the erection gangs had not received any as-carved information from the earlier team who, one has to presume, had left the site. Therefore installed in G.



Location of builder's work in the north in G

Above these plinths against the tower five jamb and embrasure courses were carved and laid. This was builder's work, marked pink [r1]. At some point they recognised that the misplacement would twist the lintel from the plane of the portal. Not dealing with it would have compelled multiple adjustments on all the archivolts. Their solution was to straighten the portal by adding a second lintel skewed to disguise the error, red in [r2]. As the other piers were not set back to suit the error, at least their footings would have been in place at this time

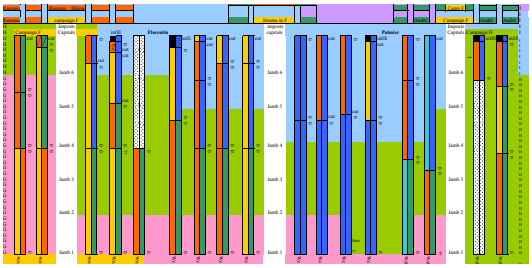


Location of sculpture in campaign G

Having two lintels was a unique device. Where else do we know of them? Besides Moissac where the second row is physically part of the tympanum, and Beaulieu that has two Conques-like registers, there are none elsewhere from this time. Twin lintels do not exist before the mid-thirteenth century save here. It was an exceptional idea required to resolve an exceptional situation.

In consequence the additional lintel raised the height of the lateral portals so they were almost level with the top of the centre, displaying a rather uncomfortable loss of hierarchy [b].

The plinths of the middle two piers may have been carved and placed in campaign G with narrower door widths, circled [r2]. A further twenty-one colonnettes were carved, being nearly all that would be required. They were made from relatively short lengths of stone that were, no doubt, intended to fit between torus and capital. As installation depended on the building of the embrasures, in pink, only three were installed and the rest were left in the shed, again without placement marks. This involved story is detailed in a schematic drawing on pages 46 to 47, with a miniaturized version in [r3].

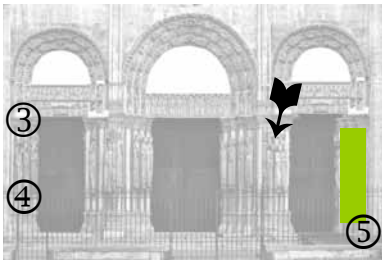

Copy, schematic diagram of carving and erection

The south tower was well behind the north and in campaign G was only a few courses out of the ground. The south embrasure of the portal could not be started until the tower that was to support it had been raised to the level of the threshold. G intended to fit the portal against a small pilaster [r2②]. The nib for the pilaster is still visible under the plinths, and marks the junction in the tower between campaigns G and H.

The *Maiestas Domini* central tympanum was derived from a prototype that had been used in earlier buildings. Some of the stones could have been executed, or at least blocked in, by the G team. By the time the next builders came on site there were a great many sculpted stones waiting in the shed. This was how the portal was intended to appear by 1140 [b].


Proposal for the portal in campaign G in 1140, and continued in H. Round arches over doubled lintels

Between campaigns one has the impression that no one was in charge and no builders remained on site. This may have been during the winter months when there was little for the masons to do. It was during this quiet period that two independent carvers arrived, either separately or together, and carved two shafts to the left of the south door in a manner that was entirely different to any of the others, arrow [r1].



Location of items in campaign H

1141

Campaign H: Eight courses of ashlar were laid in the south tower. As the walls rose the plinths and each of the next five embrasure courses were bonded into it, green [r1].

He made three major decisions that changed the portal's appearance. First, he raised the door openings by some 20cm in the top course of the north door [r③]. This meant none of the already-prepared colonnettes would be long enough, and though he placed only two in the north he began the process that was continued into the next campaign of trimming bits off shafts to fill the gap under the capitals. Ten more shafts would be truncated in the next campaign.

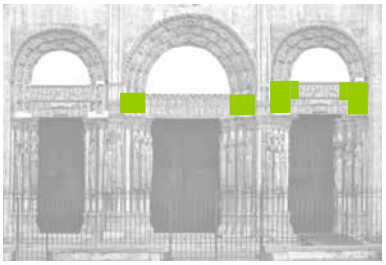
Second, as he laid the uppermost course on the left [r③] he was able to erect the three column-statues and their figured supports, which came from miscellaneous pieces that seem to have no relevance to anything else [r④]. They may have been left over from the earlier scheme in campaign E that was for a very different design. While laying them he realigned the three capitals over the embrasure to adjust for the offset plinths.

Third, the width of the south door was increased 7cm by omitting the little pilaster his predecessor had built. He set the plinths and jambs further to the south [r⑤], a move that created problems in the later assembly of the lintels and was ultimately reflected in the gap on the left of the lintels that is almost exactly the size of the nib.

These minor dimensional changes may have come from the use of a different geometry for calculating the door openings, yet they left a long trail of conflict to be resolved in the following campaigns. Though the changes were small, when dealing with items that had been sculpted with virtually no tolerance the consequences were enormous.

Every prior change and error were accumulated over the years to stymie a perfect assembly, and the more teams of builders and carvers came onto the site the worse the situation became. If the entire portal could have been designed and constructed in the one campaign (as in Saint-Loup-de-Naud) little of this would have happened. But taken over five years errors and changes were inevitable from the lack of continuity between successive masters and their teams, and each master's strong-minded insistence on using his own geometric method to determine sizes.

To match the upper lintel that had been carved in the north a second lintel was prepared for the south by using the short Presentation carved in F and adding figures to each end, green [r2]. They were carved to suit the width of the door-without-nib opening, though this was shorter than the Nativity that was to be placed under it. The adjacent archivolt figures were carved to suit the height of both lintels. The lower archivolts in the central portal may have been carved by the same team.


Location of sculpture in campaign H

These great craftsmen had probably completed the lower archivolts and most of the tympani, and all the archivolts for the southern portal before the H team left for another job, or the client ran out of money or a cold winter set in. In them the lateral tympani and all but one stone in the central tympanum were prepared, or at least blocked in. All three were within round frames. Every piece of sculpture above the level of the capitals, and

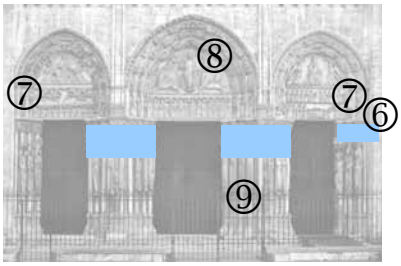
most of the column-statues were still in store in the shed ready for erection.

At some point someone made a huge mistake. He decided to reduce both southern lintels to suit what he thought would be the width of the doorway, but was not. This had to be done after the upper lintel was carved in H and possibly before I altered the tympanum. It was beautifully cut to preserve all the edges and detailing. Remember this happened in a shed full of sculpture.


Proposal with round arches over doubled lintels

1142

Campaign I: One decision made in this campaign totally altered the overall impression of the portal. The arrangement that had evolved over the previous three years for three round-arched tympani that were almost equal in height was scrapped. The two lateral tympani were recarved in their entirety from slightly narrower stones and with pointed arches, and the apex was lowered so they would no longer dominate the middle. To accommodate the altered heights all the lower archivolts in both side portals were cut back [r⑦].



Location of sculpture in campaign I

In earlier campaigns four panels of the central tympanum had already been carved within a round arch, but not the upper right panel with the eagle of Saint-John. It was carved or re-carved in this campaign with the outline of a pointed arch, though it may not have been placed until campaign J [r⑧].

Considerable discussions would have preceded this decision including the masons and sculptors and the clergy and their patrons. The clergy would surely have had the final word, but could the impetus have come from the master mason or the sculptors?

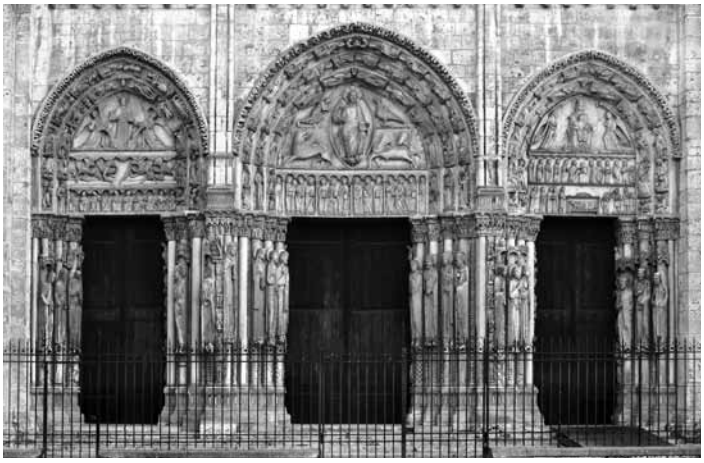
Master I completed the central and southern embrasures with their solid little figures looking down on all who entered, and the last of the historiated capitals, blue in [r]. On the same level the two large capitals were carved on the inside

On the south over the right embrasure the positions of the three capitals that had been carved in campaign H were adjusted to compensate for the changes in the widths of the doorways [r1⑥]. The first archivolts placed after the lintels would have been those on the right as they could be secured against the tower. When the cutting errors in the lintel were discovered the gap ended up on the left.

Because so many colonnettes had been truncated he had to carve another five on very long stones [r⑨]. These designs were not as impressive as the best of the earlier ones. He cut down ten colonnette shafts to make them fit. I doubt if there were any *imagiers* on site, for surely they would have been asked if they knew where the shafts were supposed to go or to carve new ones. This could have been at the end of his campaign when he had finished the embrasures and was laying the lower stones of the south portal.

1143

Campaign J: Any unfinished archivolts and drip moulds were carved, especially over the central portal, and erected at this time, and the portal encased in the ashlar walling that locked the sculpture into both towers.


Portal in campaign I in 1142. Pointed arches over doubled lintels

Carvers and contractors

Conclusions on work practices and attitudes, and earlier studies

What does this tell us about contractual practices?

- Sculptors and erectors could be in separate teams from builders, each with different roles and attitudes;
- masons were only a small proportion of total work force;
- most errors were made by erecting gangs through lack of information;
- master masons had full authority over dimensions and templates, but
- without tape measures these could easily vary between campaigns;
- builders and *imagiers* were itinerant and stayed for only short periods;
- no supervisor or craftsman remained in charge throughout;
- erection gangs made mistakes that could not be altered once in place
- though masters could modify or mutilate any items not already erected;
- contracting was discontinuous, as was communication;
- the Head Master is a myth.

The chaotic placement shows that those who carved did not erect. These were separate operations. The sculptors arrived in small groups or as individuals, did their stint, and then moved on. The building contractors arrived in larger groups and after a while they also moved on. None left instructions for their successors save in the form of the items already carved, and these were based on templates that would inevitably be different in any following campaign. The carving of the capitals at the same time as the plinths shows they were aware of the problems that could be created.

No later masters, be they mason or sculptor, minded mutilating stones prepared by a predecessor if it meant supporting their own scheme. Yet the accuracy in the work and the exquisite care taken in ensuring that framing surfaces were cut for an exact fit to their neighbours, showed they desired an exemplary precision. The cutting back of finished carving may have been in the hands of skilled sculptors, as in the lintels [r], yet the colonnettes were truncated in the roughest way, presumably by the unskilled men in the erection teams.

There are reasons for everything, even when in error. Anything we call a mistake had at some point been a decision by someone, especially in the absence of information. The cutting of the south lintels was perfectly done, but wrong though the site was in front of them. The tool they most lacked was a tape measure. As each master used a different foot unit they could not have worked in our way, which is by dimensions. Heights, for example, were 'extracted' from the plan through modules and proportions. Lacking any common measure they came to rely on geometry, and as each master had been trained in different geometric methods it would be unlikely for two campaigns to produce the same dimensions for any element, even a doorway.

We may ask why did they not use marked rods to ensure that new work matched the old? Maybe they did, but from the evidence in the stones they did it badly or not at all.

There was no skilled tradesman nor layman in charge of the carving or construction teams with any overall understanding of or control over the minutiae of design. There would have been a guiding plan or model agreed to in 1138 or '39, but the misplacement of the northern embrasure towards the interior and of the southern to the side, the alterations to the door heights, the colonnettes and the truncation of the lateral archivolts

The shepherd on the right of the lower south lintel

illustrate the serious shortcomings of short-term discontinuous contracting.

Similarly there was no permanent master carver. The stylistic changes in the jambs, in the heights of the colonnettes, the alterations to the shape and height of the tympani and lack of co-ordination in the junctions between the capitals indicate that the carvers were independent, both as individuals and as teams. Though a few may have returned after an absence there is no evidence for permanence. More importantly, there is nothing to suggest they maintained records that would indicate to an incoming craftsman the decisions and dimensions made by his predecessor.

The sculptors were not necessarily in the same teams, nor even present at the same time. It may have been the same with the erection gangs. They were not necessarily employed by the builders working on the adjacent towers. Some erection gangs may have been completely independent, employed by the client to get things moving between campaigns, and therefore totally disconnected from earlier design decisions. This was more likely as many pieces of sculpture were left in the shed after each team left. As long as items were carved before they were needed and left lying in the shed, there was an ever-present possibility they would be misplaced even with location marks, as with the column-statues at Reims.

The modifications show the adjustments were not made at one time during erection from a single overarching decision, but at different times in response to layout changes that were occurring during the carving and erection process. The general layout was therefore determined before erection began, but the precise sizes and details were not finalized, but left to those individuals who happened to be on site. Thus we may describe medieval building as an ever-changing dynamic processes over time.

The possibility that there were at least twenty men involved in carving the imposts [#29], all capable of accurate decorative workmanship, raises the important question of how many carvers would have been on site at any one time? How many of them could have had a hand in creating the sculpture? How many were powerful enough to impose their own ideas? And what of quality control; was that in the hands of the master, or the responsibility and pride of each individual?

There remain over forty colonnette shafts, each carved by a different *imagier*. Admittedly this was spread over many campaigns. Fifteen were carved in campaign F, twenty-one in G and two during the break, and in campaign I another five. Some of these men worked on sculpture as well as colonnettes, and this figure takes no account of any who worked only on the figurative items.

The foliage created by the sculptors on the portal can only rarely be recognised in the capitals of the towers. This is particularly the case in the entries to the south tower. Were they in different crews, engaged by different organisations or at different times? As in the Laon gallery sculptors may not have been present during the whole of a campaign, nor need they have arrived together but as separate teams staying for short periods [#20].

From Wilhelm Vöge onwards it has been common to credit the major sculpture at Chartres to a single man called the 'Head Master' and to relegate most of the other pieces to relatively minor men who followed and copied the manner of this great man. I have come to the same conclusions as Peter Kidson, that the concept was a convenient "fiction, not history. There is no reason to think that the ‘headmaster’ was more than a member of a team - *primus inter pares* at best" [page 56].

It seems that the truth is more interesting. First, that a certain subject matter and an arrangement was adopted and presented on parchment or as a model, and that thereafter every *imagier* and every master mason worked

towards that scheme, but in his own manner. Second that the design and geometric preferences of the builders affected the envelope within which the sculpture was placed, and that included dimensions and form. Third that erection teams (whether part of the building gang or independent) would make mistakes that every successor had to adjust to.

While the control of subject matter and its arrangement may have been the responsibility of the clergy (though not without possible influences from the craftsmen), the manner of execution was in the hands of the masons and the sculptors. It meant that the authority of whichever master was in charge was so highly regarded he could modify or mutilate whatever had been started by his predecessors. This applied only to what had not yet been placed as there is evidence to suggest that once erected the work could not be altered.[CC] This emphasises the enormous and often costly authority given to the master to run the works and handle the detailing to his own discretion.

It certainly argues for many wandering teams of *imagiers* and masons who had a rough idea of the design, carved some stones, laid them out in some storage shed and moved on. Then the rough masons, when they were ready, pulled them out and placed them without the understanding needed to maintain the integrity of the composition.

Maybe these anomalies did not matter at the time.

Errors were inevitable from the nature of the trades

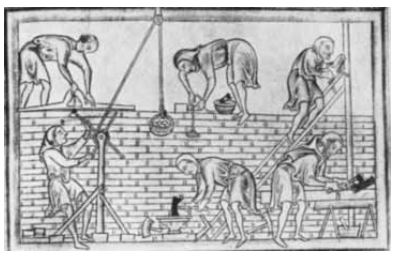
Discrepancies, misfits, broken coursing and changes of plan are the clues to construction history. As it is the anomalies and corrections and alterations that make the history visible we should not put them down to mistakes and errors unless there is no viable alternative. We should expect that carving of this quality was carried out by the best sculptors and that they were capable of being exact, to the millimetre, and that the master in charge had the experience and skill to know that his templates were capable of ensuring accuracy.

Having said that, there are discrepancies that cannot be explained except as errors. They all occurred between campaigns. I cannot credit these errors came from the carvers who were skilled in precision, and the history of the stonework suggests they came because the intentions of one team were not passed on to the leader of the next. Franklin Toker has clearly described this situation in setting the background for a situation two hundred years later.

The story of the portal shows three trades who were essential to each other yet viewed their role and the manner of their craft very differently. Their attitudes and the focus of their attention were determined by function.

In manuscript drawings masons are invariably shown shaping the stones, sometimes under a roof. Occasionally men carrying out the more detailed sculpture are shown alongside the masons. Around them a swarm of men lay stones, raise mortar and other materials into the heights, attend to the cranes and scaffolding and so on. They are usually well in the majority [r].

In these three manuscripts the erection gangs outnumber the masons and carvers at least 3:1



In the study Ken Green and I made of the cost of building Chartres cathedral we realised how few of the men on the site were masons. We felt the old drawings reflected a real situation, and calculated that every mason needed six to eight others to cart the materials, mix and carry the cement, help move the stone blocks and the timbers, work the forges and the cranes, erect scaffolding and a myriad of other tasks. Most of these unskilled men could have been from the locality.

Each trade was working to the same design. No doubt everyone had looked at the drawings or models, but in their daily labour their

greatest attention was occupied with utterly separate modes of thinking and operation. The different trades would not have been pondering their problems nor conceiving their labour in the same manner. In the steel industry we still talk of training men to be fitters and turners so the two parts of what we see today as the one trade are still given different titles in their training. The fitter assembles and the turner makes. The medieval building trade was similar.

Carvers and masons worked to the millimetre, though the former may have tended to aim for a greater precision than the latter. Erectors relied on the stones as they were handed them to determine the dimensions. They did not concern themselves with sizes except when something did not fit.

Masons cut, erectors placed, masters planned. Whether the masons were skilled *imagiers* or less skilled hewers, they still cut, and this set the tone and attitude they took to their work. Masters may once have been masons, so cutting remained in their blood and underpinned the additional skill of being able to plan. Their viewpoint lay in the future.

Erectors lived in the present. Here is a stone, there is its place, pick it up, spread the mortar and settle it in. Masters looked forward, for they had to conceive where a stone was to go before even the scaffolding had provided a shape for it, and visualise the precision of the forms and profiles that would not appear in the built reality for some time.

Masons and hewers create precision, they are given templates and told to reproduce them within agreed tolerances. They shape their blocks and images as exactly as they can to the outlines supplied by the templates. The cutting of every stone implies the other stones adjacent to it. Squared blocks need to fit snugly against the next. But for them no thinking is required, least of all forward thinking. This does not mean that individuals would not look ahead to where their stones would go, but that there was no need to and there was no impetus inherent in the nature of the job to encourage it.

In the portal it is obvious that these trades did not always confer. Two drastic errors were made by the erecting gangs that altered everything that went above them. They misplaced the north plinth in F and were unable to place the colonnettes in the right order in G and H. The *imagiers* coped with these mistakes as best they could. Only one error came from the carvers, and that was when someone incorrectly reduced the width of the south lintels for an earlier door width.

Meantime each master mason altered the design in slight ways in each campaign. They were trained to derive dimensions from proportions and geometry rather than directly as measurements. The techniques were personal coming from what was passed on in a man's training. Each master followed different 'rules' and shared little. For example, see shafts page 38-.

As a result, successive masters altered the width and height of the doorways in F, shifted the south door sideways in G and raised the heights in H without recognising that even a couple of inches would have an adverse impact on stones already cut by the carvers. The sculpture was so precise that even the smallest differences would have an appreciable impact on the assembly. Master G made one major design change that forever altered the original concept when a second row of lintels was added. Master I made the next major change when the side tympani were re-carved and pointed.

The three trades acted as if they lived in different worlds.

Today, like then, building parts are often manufactured with extreme accuracy in factories while the men on site do their best to keep the building level and square as it rises so the prefabricated parts will fit. Our main tools to assure accuracy are measured drawings and tape measures. Our main

tool to fix the errors and creep that accumulate as a building advances is the caulking gun. They had neither.

Thus there was no way in which the details of a project could be transmitted in the manner we use today through working drawings and specifications. From the medieval period we have only general and quite large-scale drawings without dimensions. The simplest explanation for the multitude of discrepancies in the portal, and indeed elsewhere in the cathedral, is that when a phase ended there were no procedures available to pass critical details and, even more remarkably, general intentions from one man to his successor.

We need to remember that these men were little more than a generation away from the far-from-skilled workmanship of the previous century. Considering they were building more than ever and doing so ever more quickly is it any wonder they had not had time or energy to get their communications in order? The quantity of projects was increasing with every year, and even if they had wanted to change the way they were doing things there was no time. Too much money and enthusiasm was chasing too few skilled masters and supervisors.

Hence the confusion that is at the heart of this investigation.

The stages to understand this story

I have approached these complex issues in a slow way over more than 40 years, each time looking for some level of guidance from the stones. I was sure this is where the answer lay, and not in the iconography nor in its historical context.

The earliest was in *The Contractors* where I showed that the south embrasure was built with the adjacent courses of the south tower, and that therefore, the portal was intended for this location and that theories that attributed the anomalies to re-siting were incorrect. It showed that the pace of the tower established the pace for erecting the sculpture.

Ten years later I wrote a complex assessment that was published in *Gesta* on the two adjustments made to the northern lintels and archivolts. Some sculptures were *adjusted twice,* once for the earlier error in the plinths and later to accommodate changes to the architectural layout. Both adjustments occurred *in the course of construction* and implemented ideas that were not present when the work began.

After more investigation I felt able to write an article on the west complex published by the *Société Archéologique d'Eure-et-Loir*, with a reprint in English a few years later. This co-ordinated the portal erection with the campaigns of the two towers, and argued that over many years the detailed measurements and the selection of the sculptural program was altered with each new crew. This was detailed in a chart setting out what was accomplished in each campaign.

I followed Fels' suggestion that a vaulted narthex had been built inside the portal, and added that this had protected the glass of the three western lancets during the fire of 1194.

In that article I noted that the work progressed in step with the south tower, and that the crews who carved the sculpture worked one after the other rather than at the same time.

Since then in various drafts published on the ICMA web site I have focussed on the individual carvers who may have been involved in some of the Chartres sculpture. Happily, they were drafts, for this analysis has brought those earlier studies into a sharper focus.

The towers

Scheme E, the narthex, and bonding the portal into the south tower

The north tower

The relationship between the two towers was explored in earlier articles that showed that the north tower was half-way complete before the lowest courses were laid in the south. Details and masons marks in the undecorated section of the north tower built during campaign G can be matched with those in the lowest level of the south. Similarly with the next level in campaign H. They provide the link between the two towers [r1].

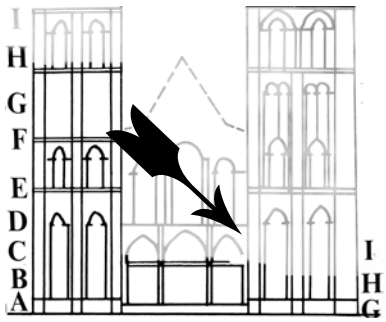
On the ground floor of the north tower the two entries from the south were not designed for external security doors or gates, and therefore show the clergy had been planning for the other tower from the foundations.

At one time the north tower had a buttress on the south face that was cut back to make room for the porch. The upper parts are still visible above the drip mould, circled in [b1]. The buttress was cut back so the courses of the portal could be built into the earlier masonry.

In the lowest level by the plinth the masonry of the tower was cut out on a straight vertical line from threshold to torus, arrow in [r2]. No allowance was made for the profile in the lowest course that projected beyond the upper. Whoever cut into the tower masonry in the north did not allow for the complex profile of this two-stage base. When the plinths were placed they were inserted into the wall against the vertical cut and no attempt was made to remove more of the tower to make room for the projection. Was the incision made vertical for an earlier proposal in campaign E, for simpler plinths with straight sides perhaps like Saint-Loup-de-Naud [b2]?

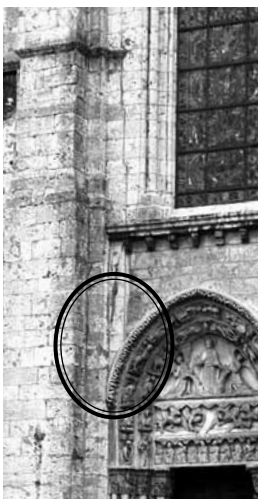
How do we explain that by not trimming a bit more off the tower the bases were misplaced towards the interior by some 50mm? If the error had been picked up at this stage the entire embrasure would not have been shifted inwards and there would have been no twist in the lintels.

In addition, level with the left column-statue, four courses of masonry were removed, and then filled in later with small unmatched blocks [b3]. Part of this juncture is hidden behind the plain shaft. It could have been part of the earlier proposal made during campaign E. The height and projection suggest it was for a large element of sculpture that would have stood out from the frame of the entry and needed to be tied back into the tower for stability.



Connections between north and south towers


Cut into the north tower to insert the plinths in E


Junction north portal and tower


Bases at Saint-Loup-de-Naud


Incision into north tower, filled

Above that the cut into the masonry returned to the vertical line it had against the plinth. Whatever was planned for the middle projection, it stood about halfway up the height of the doorway and would have formed a powerful visual statement next to the portal. It may have been for a proposal similar to the west portal at Vezelay in which large framing shafts carry projecting pieces of sculpture in panels [r]. Completed some fifteen years earlier Vezelay was, like Chartres, one of the major pilgrimage churches, and was so important the site was chosen for the gathering of French nobility seven years later to hear Bernard of Clairvaux start the second crusade.

West porch Vezelay with projecting side statues

Let us imagine the construction process. In campaign E the master proposed a Vezelay-like design with straight plinths as in Saint-Loup, or one with stacked figures in a deeply recessed portico like Moissac or Beaulieu. He may have prepared some sculpture for it, of which only the three figures under the northern statues remain. He ordered his men to cut into the walls of the tower to prepare for this scheme.

Had the E Master and the Etampes Master been present at the same time and had each prepared a scheme? Were these compared *in situ*, as it were, with full-size sculptures put on trial for all to see? A costly but effective way to determine a choice. At this point the clergy preferred a design closer to Etampes, Saint-Denis and Bourges than to any of those further south or east. I doubt whether any of the lintels or tympani would have been carved at that time.

The plinths on the left against the north tower

In the next campaign F the Etampes team proposed a different design and provided some skilled sculptors to illustrate it. A number of *imagiers* came and not being masons they moved off the site after a few weeks and their work was left in the shed.

The plinths consist of three courses: a plain block set in the outline of the embrasure, a base course with a cyma profile, and above that a very large block decorated with vertical lozenges with small drillings around the frame, and torus moulds with continuous toothed decoration in the scotia [r2]. It is an extremely large stone, and is unusual for the amount of detailing concentrated on the one course.

PICTURE INTERIOR TORI OF TOWER

Threshold, bases, plinths and tori

The plinths were installed by people not connected with either the masons from E or the carvers of the plinths in F. They were not told the template had changed and would no longer fit into the recess made for it. The limit of their instructions was something like "take these plinths that were carved last year out of the shed and lay them into the recess in the north tower that has been waiting for quite a while". No suggestion that the dimensions should be checked. Just the assumption they knew what they were doing. In short, there was no continuity of instruction from one team to the next. The G master could have resolved the problem by rebating the lowest course of the plinth before inserting it into the buttress, but then there would have been no misalignment.

Under the plinth, there is a threshold which has upstands at each end to support the bases. The plinth was laid exactly over these upstands showing that the threshold was also misplaced, and may have diverted the men laying the plinths. Once the threshold was installed, the next courses were set out from it, apparently without checking, and the errors were left for those who came later to resolve as best they could.

The 50mm cut-out was filled with a piece of the fine-grained *calcaire* used in the portal, rather than the *berchére* used in the tower.

There are plinths elsewhere that follow this arrangement. The similar templates may have been drawn by the same master as worked at Chartres in campaigns F and I [b]. As one would expect over time the detailing is handled a little differently in each place as the lozenges are framed or narrower and the toothed decoration modified. One team would not have been responsible for the whole of these portals, but only for a slice as at Chartres, and other teams may have completed the upper parts. The plinths on the left of the Mantes central portal that have a second row of panels more in keeping with other post-Crusade portals such as Senlis [b5].

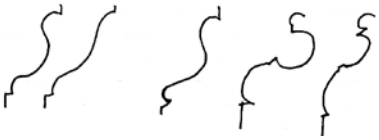
Similar plinths at Chartres; Etampes, Notre-Dame south portal; Saint-Germain-des-Prés porch plinths; Châlons Notre-Dame south porch and Mantes-la-Jolie W.cL

Four campaigns in the south tower

The perimeter walls of the south tower were set out with the tunnel that connects it to the crypt. The floor level within the tower was set three courses below the entry from the portals. At the threshold level on the outside there is a small nib at the base of the embrasure, arrow [r1]. It looks like a projection for a pilaster, and presumably the portal would have been set against it. The nib was carved in campaign G.

Junction south tower and portal with projection

In the twin openings from the interior into the room under the tower the plinths are placed at two levels. Within the tower the upper face of the plinth is level with the threshold, and within the nave it is two courses higher. There are misalignments around these plinths that indicate changes to the templates. Together with the sets of masons marks they locate the junction between campaigns G and H, which lines up with the top of the nib.



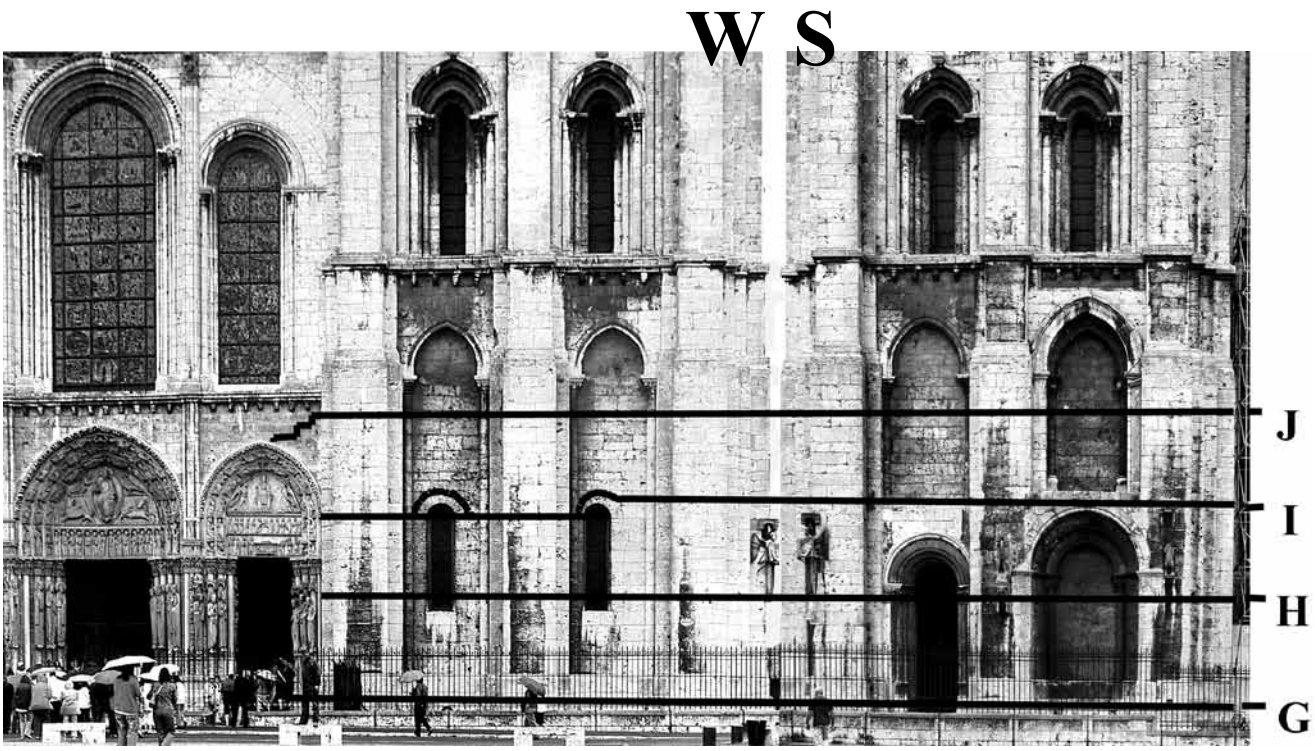
Profiles of plinth moulding in G and H (left)
Torus profiles in portal and tower (right).

The pilaster was scrapped in campaign H and the southern doorway widened. The additional width was not spread evenly across all three doors, but was concentrated in the south as the plinths to the other portals would have been in place at that time.

The H campaign comprised nine courses. In the portal it included the plinths and five courses of the southernmost embrasure with the figures carved in the jambs (page 17 *et seq.*). On the right of the southern door the courses in the plinths match and are bonded into those of the tower. Each course of the hard *berchère* stone of the tower is exactly aligned with the courses of *calcaire* in the embrasure [r3].[cc] The course by course continuity from the underside of the plinths to at least the elbows of the column-statues shows the extent of this campaign. As with G, this is recorded in the masons marks in the walls and the tower stairs. Nine courses was a fairly average rate for building massive masonry walls at that time, see discussion on construction timetables #08.

Bonded junction between south portal and tower

The next campaign I consisted of six courses to the start of the sills to the window-like recesses on the south side of the tower. This is where the clearest template alterations lie, and the extent of this campaign is confirmed in the masons marks [top next page].



South tower hinged out so the west and south sides are placed next to each other, with approximate location of construction campaigns.

Following the approximate location of these campaigns on the inside and outside, the coursing shows that campaign I included the erection of the historiated capitals and their imposts in the middle piers, the capitals on the interior, the tower stonework against the Incarnation portal to the top of the two lintels, and in the tower itself the capitals and arches over the various entries into the room within the tower [b]. These were round-arched where the replaced tympani for the portal carved in the same campaign were pointed. Therefore it would seem that the *imagiers* had more to do with that decision then the master mason (discussed page 54-). The builders left when time was needed for the mortar to set in these arches, this being one of the most common locations for ending a campaign.

The following campaigns J and K erected the last of the archivolts and completed the drip moulds, and encased all three portals in the ashlar walling that finally locked the sculpture into the structure of the tower. From here on later campaigns completed the south tower and the superstructure of the western wall. The extent of campaign I in the tower was less than those before or after by the time needed to manoeuvre the upper stones of the portal into position. For more on the walls and the capitals see page 48-.

South and west interior walls placed next to each other with approximate location of campaigns.

The embrasure figures

The embrasures were builder's work beginning in the north side and were delayed by the tower in the south

North, left jamb bottom figure, group A

The jamb figures may be divided into three groups

There are six courses of masonry in the embrasures. Each course can be followed across the interior to the jamb and then around the front to the outer recesses for the colonnettes and the column-statues. Forty-eight figures have been carved in the jambs and on the outer faces. Over the page they are arranged so those from each course lie alongside one another.

The figures can be divided into three quite distinct groups that are shaded from black to light grey [b]. I will not attempt to separate individual carvers but will concentrate on the more readily discernible team characteristics.

Group A (black) consists of ten stones, being six of the eight bottom courses and an additional four on the left jamb to the north door that almost completed the pier. The figures are ascetic, their postures are frontal and their garments are not deeply etched [r1]. The little canopies have minimal projections. Those with canopies are situated in the lateral doors and those with halos are placed beside the central door.

Group C (faded gray) consists of a dozen pieces on the upper courses of the embrasures [b]. They are in strong contrast to the As, for they are fully present in the space, with solid bodies and firmly delineated postures, They display great vigour and a powerful plasticity [r2]. There is nothing ethereal about them. They are the most realistic of all, holding a stance and presence of their own, with powerful clothing and at times with over-

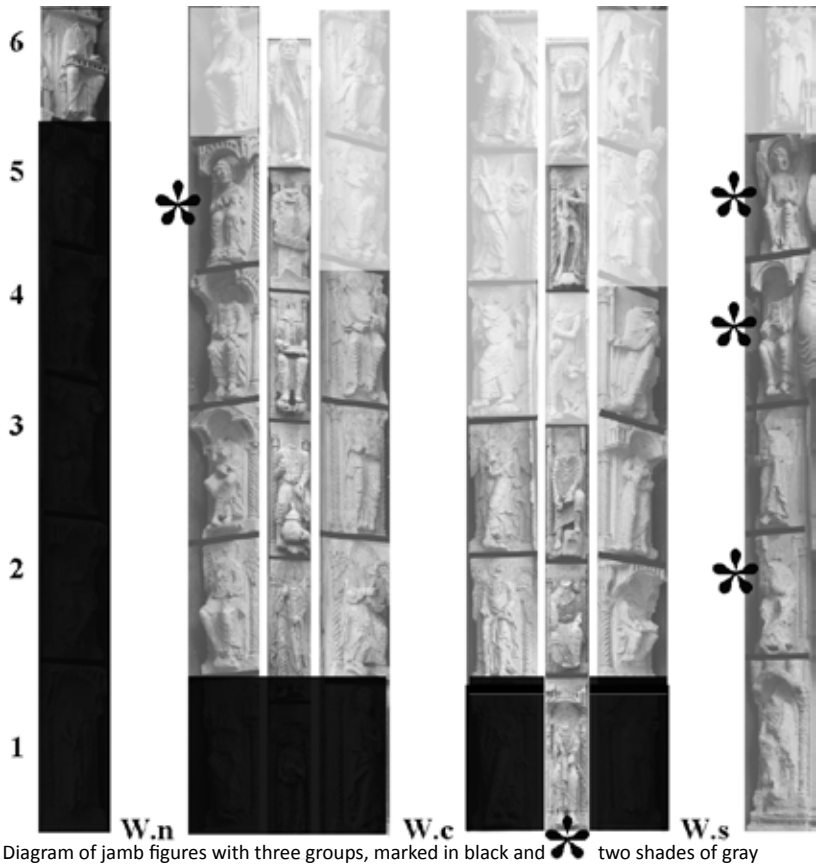


Diagram of jamb figures with three groups, marked in black and two shades of gray

South, left jamb top figure, group C

North Centre South

stated postures. They are exceptional in that in only one case are the little columns that flank them twisted. None have canopies.

The middle group B is a stylistically mixed collection without the same level of consistency of either of the others. The characteristics of the three groups are illustrated in columns with A on the left, B in the centre and C on the right [b]. Group B is more sculpturally creative than A, yet not as corporeal nor as real as those in the uppermost courses from C. The figures are personal statements and very different from one another. Their

North, right jamb bottom figure in A

Outer right panel fourth figure in B

Outer, left panel third figure in B

Centre, right jamb top figure in C

North, left jamb third figure in A

South, left jamb second figure in B

Centre, left jamb left figure in C

canopies are more massive and creatively decorative than the As [b1,2]. Some canopies present a comparative brutality in their elements, more like fortresses than sacred coverings [r1].


South, right jamb bottom canopy in B


North, right jamb fourth figure in B


North, right jamb fourth figure in B

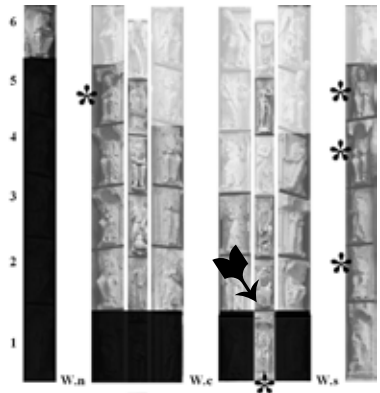


Diagram of jamb figures from page 17

Five have no brackets under the canopies so the weight of the 'city' is cantilevered outwards with only a small attachment at the back [b1]. These five are marked with asterisks [r2]. In four the space at the back of the canopy has been chopped out to allow the light to flood through. It was an extraordinary and risky, even Baroque detail. It could be easily broken, as it was in two stones where only parts remain [b2,3]. One is narrow [b3] and lies in the base of the pier between the central and north portals, arrow [r2].

For the tilt in the program note one with an asterisk high up in the north door and three companions in the later south door [r2]. For delays in erection there is one in the south middle panel from group B that sits above one from C, showing it was not placed immediately it was carved [r3].


Outer, right panel fifth figure in B

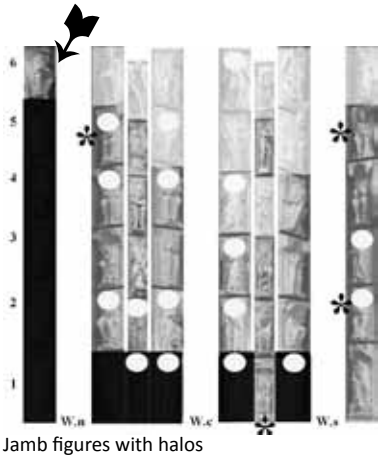

North, right jamb fifth figure in B


South, right jamb second figure in B


Middle right panel, bottom figure in B


South, right jamb fourth figure in B


South, right jamb fifth figure in B


Jamb figures with halos

In group B there is little order in the placement of motifs: one in the north has a halo, two in the centre have none and there are three with halos in the south [r]. As halos are usually the attributes of heavenly spirits and the apostles their locations are whimsical, being mixed either in the carving or the placement, or both. Only one in group C has a halo, though there are sixteen others. Two from group A at the bottom of the central door suggests this master may have intended to reserve the middle door for angels. That intention may have been continued by group B, and was ignored by C.

There is one angel with a halo on the north without a canopy that would have been more at home as one of the angels on the central door [b1]. The three angels on this jamb may have been more appropriately placed where now there are two without halos on the right of the centre door.

The powerful figure on the upper right central door has unusual concertina-like folds that suggest the left arm had just been raised [b2]. This detail is found in only one other figure in the portal, being the swaying angel immediately above in the next course [b3]. As described on page 51, this head links with one in the capitals immediately above. Two other angels in the central door with heavily drilled halos that have crossed legs that rest on creatures could have been carved by the same man in C [b4,5].


North, right jamb second figure in B


Centre, right jamb fifth figure in C


Centre, right jamb sixth figure in C


Centre, right jamb fourth figure in C


Centre, left jamb fifth figure in C

The erection of the three stages

The distribution of the three groups shows, in a general way, and without attempting to follow the particular characteristics of each figure, that the embrasures were raised in three stages with a definite trend from north to south. The shades from black to faded gray illustrate the drift [r]. There are few connections between these figures and those carved by the *imagiers*, suggesting the men engaged in masonry were from separate teams employed by the building contractors. As the south embrasure is tied into the tower, and as the coursing heights match exactly, the B group were carved by men employed in campaign H. Therefore the other two groups were likely to have been constructed by the flanking teams G and I.

There are other indications of this grouping in the distribution of twisted columns flanking the figures, there being ten in the north door and only one at the bottom of the south pier, and only one in group C.

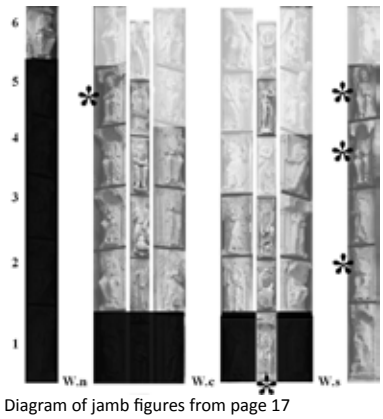


Diagram of jamb figures from page 17

The embrasure piers at each end

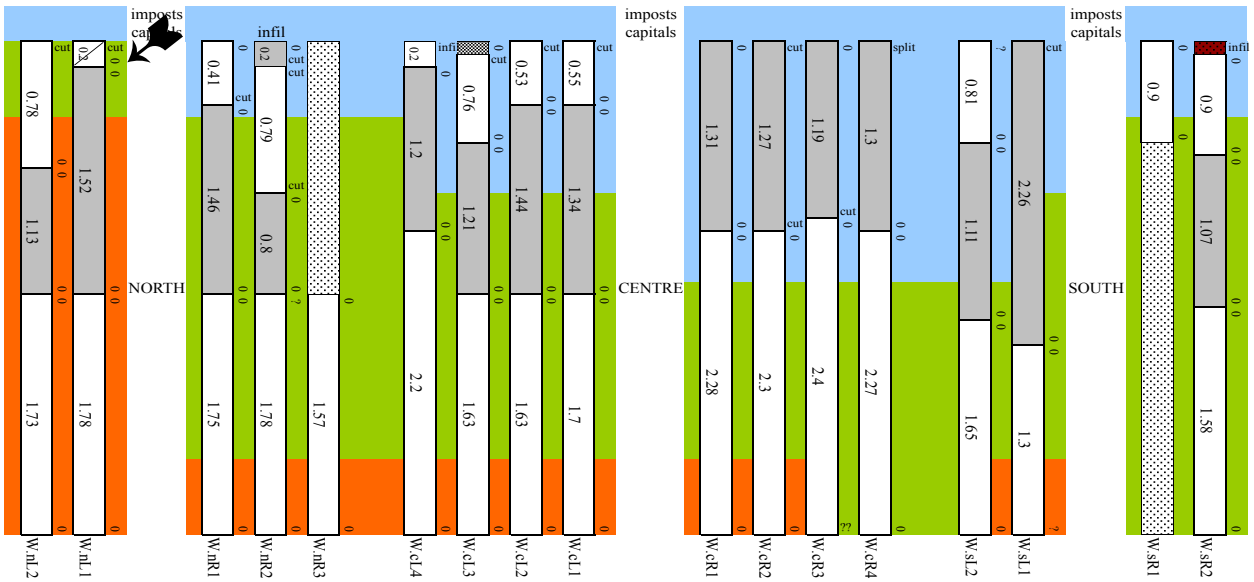
North, left jamb top figure in B

The height of the pier on the left of the north portal was established earlier than the others in campaign H. I suggest this because the uppermost jamb on the northern pier against the tower seems to have been group B [r]. It is marked by the arrow in [b]. The clothing is gentler than the C group, while still being sculpturally present. Though the lack of a canopy and the plain shafts could have been C the logic from the whole study and the changes to the door heights require that it be left with B.

The colonnettes formed the critical path as they would have had to be in place before the statues. The three column-statues, their canopies and the short lengths of shaft above them could not have been installed until the last-to-be erected sixth jamb figure was in place for they extend into the top course. Until it was laid there was nothing to fix any of these stones to. Elsewhere none of the other statues could have been placed until their top courses had been erected, carved by group C and erected in campaign I.

These embrasures were structural masonry intended for the support of the portal. They were not decorative like the colonnettes and statues. Whereas the colonnettes would be stockpiled in the shed until the wall was high enough to receive them, these were the wall itself and had to be placed before anything in the shed could be moved. It is my impression that as they were carved they were shipped to the site and placed, or at least most of them were with the exception of one already mentioned in the right panel. If they had all been prepared and then stockpiled until the erection gangs were ready we would not expect this orderly arrangement by groups, an order that makes sense only if the masonry was produced as needed, whereas the sculpture was carved much earlier in anticipation. Was this because one employed *imagiers* for short times and such expensive men may not have been readily available?

In the south the embrasure next to the tower was carved in group B, for the tone of the sculpture is similar to those in the middle. The south embrasure could not be constructed until the advancing wall of the south tower was high enough to allow it to be bonded into it, green in [b]. This is campaign H. The bonding of these courses provides the major link between the three otherwise separate programs in the jambs and through them ties together three groups of embrasures, four groups of colonnette carvers and the six building contractors in the towers.



The three phases in the jambs in relationship to the colonnettes. Lengths of each are shown.
Method of fixing ensured that no shaft could be installed until the embrasure had been erected above it

Relative chronology

As will become clearer in the sections on the colonnettes and the tympani, in both campaigns H and I the men were misplacing and truncating items carved earlier, summarised in [b]. It would mean that the carvers of the jambs from B in campaign H (green) and those that made the colonnettes groups 1 and 2 from campaigns F and G (yellow and red) could not have been on site at the same time as they were being erected in campaign I (blue). The sculptors were therefore not able to inform the master of the erecting teams where to place the stones they had carved and left in the shed.

With campaign I came the Florentin-Palmier capitals on the inside [see page 52] and the last historiated capitals and foliated imposts on the outside. All remaining column-figures would have been installed by this time, and therefore carved in that campaign or earlier

One small item: there is a marked change in the plan for the piers in the first course of the embrasure just above the torus mould. A scotia was introduced to frame the colonnettes, whereas both the torus and the capitals were set out for a square corner. The discrepancy is especially noticeable as the south was designed for the square. Though a feathered finish to the scotia overcame the change at the bottom, it stands out quite clearly at the top.

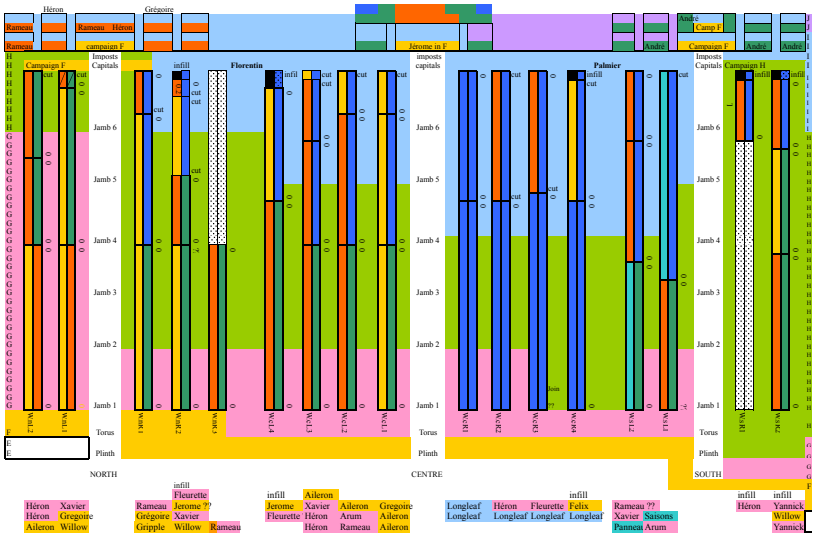
This has all been taken into account in preparing the overall schematic drawing on pages 46-47 [b]. The complexity in placing these stones and the time needed to do so with care was one reason for the long time required to erect the portal.

South, left jamb top figure in C. It sits underneath the capital with the Entombment scene.

Was Rogerus a possible leader in group C?

The top figure on the front of the right embrasure is inscribed with the name 'Rogerus'. One possibility is that Rogerus was a leading hand who was given the topmost stone out of respect. Another is that he was the head of the carving team in the C group, especially as there are other indications that the men from that group carved some of the capitals and some archivolts in the upper courses of the central portal. He may also have been the master mason in charge of campaign I, and by association of campaign F. The first steps in designing the portal for the *Maiestas Domini* arrangement were made then. Was Rogerus the man who created the cartoon that all followed? May we look for him in Bourges and Saint-Loup-de-Naud and the other great portals that carry this design?

Centre, left jamb sixth figure in C



Reduced version of schematic diagram of carving and erection on pages 46-47

The decorated colonnettes

Only four colonnettes fit perfectly between torus and capital. Over a dozen had gaps that were filled with bits cut off longer shafts.

Method of erection

Erecting statues attached to columns is not like arches or walling where stones rest securely on each other. They and their canopies have much of their weight hanging outwards, away from the centre of the attached column that supports them. Like cantilevers they attempt to pull the stones off the wall. Each stone is separately held in place with metal pins that have not rusted over the centuries as medieval furnaces left them high in carbon. One end was flared out and set into a hole in the structure and the other bent down into a hole drilled into the top of the column [r]. Over centuries of wear and weather this technique has stood the test of time.


Top of one of the colonnettes fixed with metal pin

As the column-statues and their canopies are closely packed with little space between them, the shafts had to be installed in all their delicacy into the recesses before the statues. As the work progressed the statues, and over them the heavy projecting canopies, could be slipped in front.

The embrasures courses supporting the shafts had to be in place before the colonnettes could be set up. They could not be left to stick into the air unsupported while the heavy blocks behind them were placed. As the colonnettes were assembled from two or more shafts, the iron hooks for each level had to be separately inserted and secured into the wall.

Installation could have been left until the last moment when the capitals were being placed, but my building sense tells me access would have become more constricted as the work rose, and therefore the erection of the shafts would have followed a natural constructional procedure in which the lower shafts were placed when the coursing of the walls had climbed to a level above it, rather than later. This stage-by stage program is how it is shown on the schematic drawing on pages 30 and 46-47.

This was a far from easy process. The blocks of stone are heavy, and their handling was a delicate and unforgiving business. The site would have been encumbered with scaffolding placed to allow long stones to be hung from above and secured against the wall while still supporting the men and protecting what had already been installed. This would have been one of the most difficult and time-consuming tasks anywhere in the cathedral.

The lowest would have been placed with a more-or less free space in front, and as the wall rose it would have been surrounded by increasing amounts of scaffolding. The timberwork was not only there to support the men, but to protect the sculpture already in place. Ingenious hoisting devices had to be installed immediately above where each piece of sculpture was to be fixed. Timber was attached by rope, sizes were small and were known to break, and safety depended on rain and cold. When one considers the difficulties the men would have faced in lowering the sculpture and attaching it while surrounded by scaffolding and platforms for them to stand on and to support cranes and tools and mortar, one's admiration is unbounded.


The author on the scaffolding in front of the portal

Patrice Calvel kindly allowed me mount the metal scaffolding in front of the portal in 2010 [r]. With posts and struts encumbering the space the experience showed not only how physically hard it was to clamber around without touching the sculpture, but gave a tangible feel for the difficulties of manœuvring large and intricately carved stones into place with the great care such work would have required while at the same time maintaining

one's own balance on the scaffold. Portal erection was full of dangers, especially to the sculpture itself. It was no task for sissies.

Colonnette designs

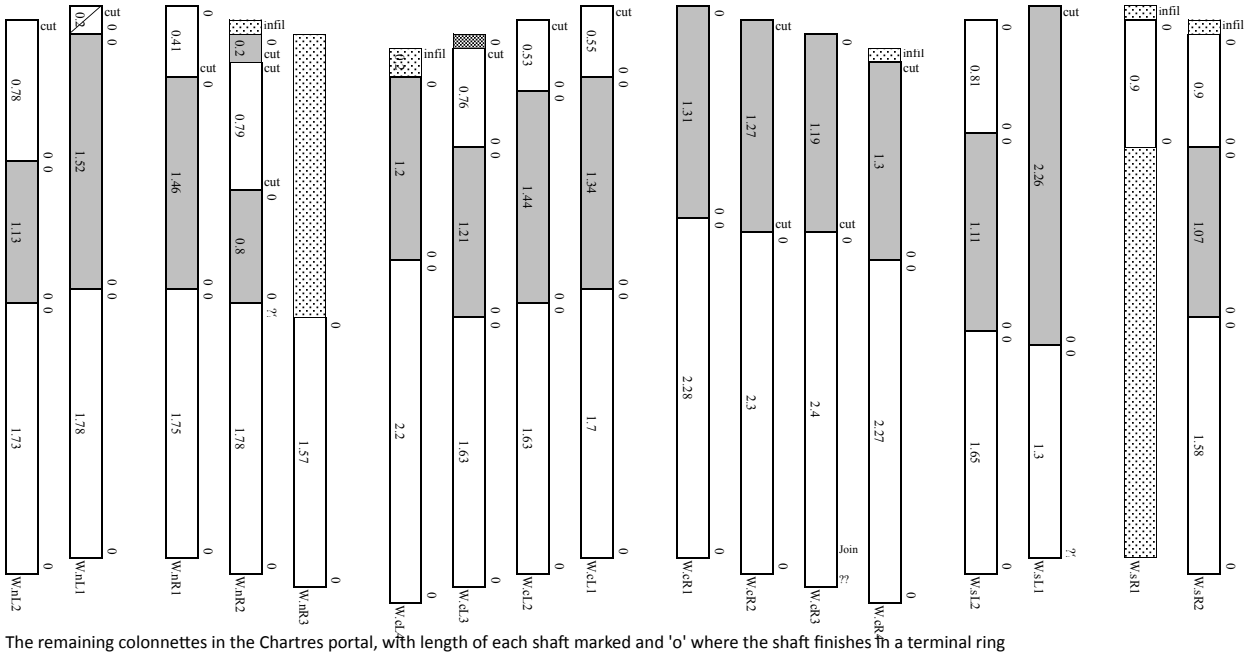
The photographic study by Etienne Houvet shows the same number we know today were still in place in 1920 (except for one replacement). Since then a few have been recarved, but comparison between his photographs and ones we take show that later replacements were carved with considerable care to retain the details and finish of the originals.

When completed the portal had twenty colonnettes, unless the two at each end were meant to be plain. Of these fifteen are still in place plus two short pieces. Most of the colonnettes are made of three separate shafts, though those in the right central embrasure are made from only two, and two others were assembled from four. Altogether forty-three separate lengths of stone still exist, from which we could estimate that some fifty-six stones may have been originally carved. Thirteen are missing. The remaining pieces and my suggested attributions are set out on the next two pages.

The design for all but two were based on rinceau patterns in which vines connect figures and foliage. The patterns can be divided into sixteen distinct arrangements by the design principles or templates that connect them. I have presumed that each pattern was determined by a leading hand and that his associates then handled the detailing individually.

No two are the same. In careful examination I do not think anyone worked on more than one shaft. Therefore, altogether fifty skilled men worked on the portal colonnettes, mostly during two campaigns, plus labourers and apprentices. I recognise many of these templates from the studies on individual carvers that have been presented on the ICMA web site. There are indications in studies on specific masters that as soon as they had carved their colonnettes Grégoire, Héron, Rameau and Willow continued to work on the superior parts.

I have always known I would attempt to unravel the story of the Chartres portal, and to that end have selected carvers for earlier studies who seemed to have connections with the colonnettes. It seems logical to use the names I have already chosen to represent the lead hand in each group. Though an assumption of convenience it has made it easier to understand

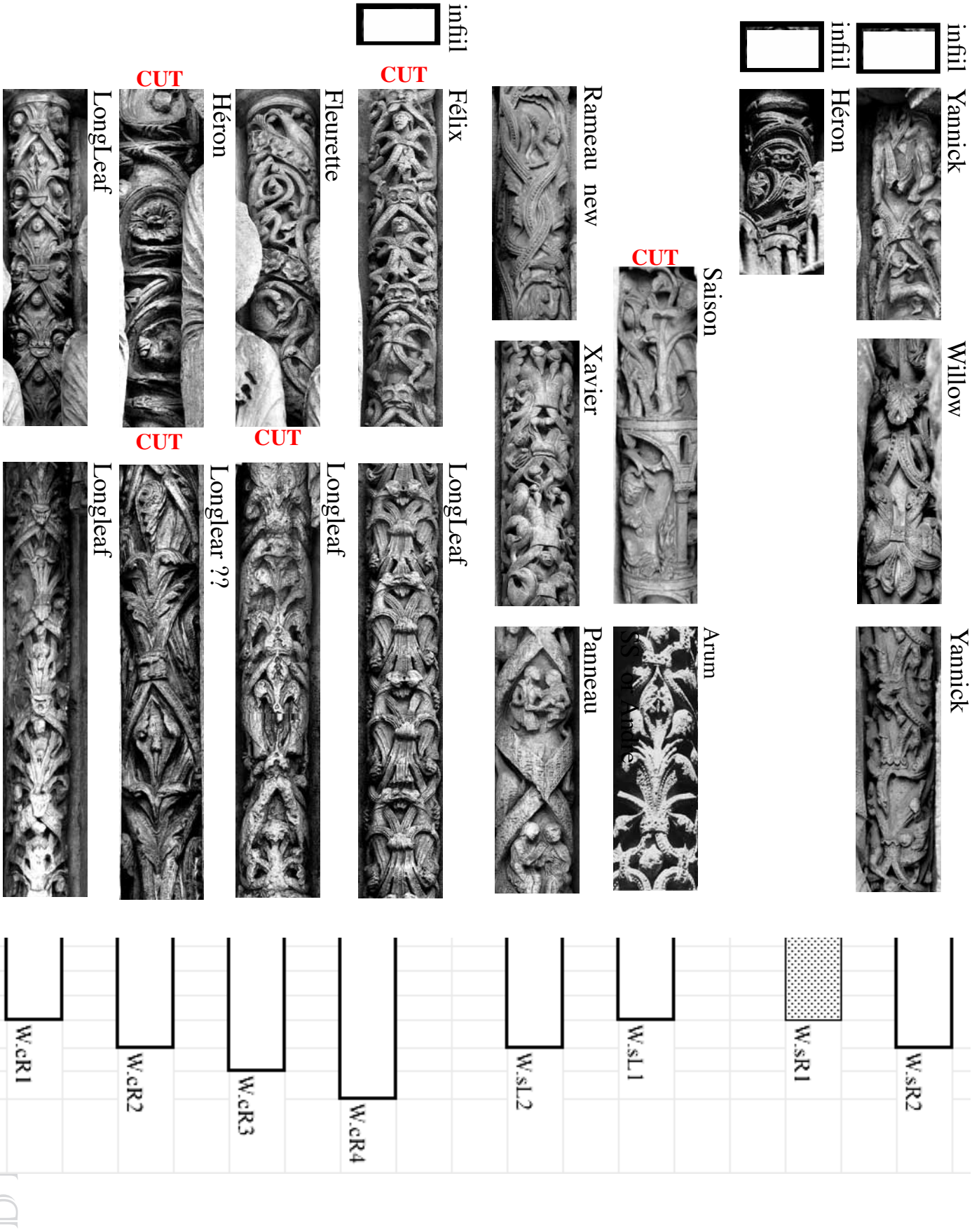


The remaining colonnettes in the Chartres portal, with length of each shaft marked and 'o' where the shaft finishes in a terminal ring

The decorated colonnettes on the left half of the portal.

The decorated colonnettes on the right half of the portal

Infills and cut stones are noted.



and describe the carving process over time and to integrate it with every other part of the portal.

Among the rinceau patterns there are just two ways to structure the design. One has with vines that connect motifs such as rosettes and creatures, and the other has a tightly-wound spiral ribbon with the vines and motifs placed in the spaces in between [r1,2]. There are two templates without rinceaux but with folded straps and horizontal partitions [r3].

Issues of identification

The colonnettes have brought into relief the limits to our ability to identify individuals. Though scholars seem agreed that more than one man was involved in their carving, the questions remains: to what extent can we identify them? Are there inherent limits to our investigations?

There are clear stages in the carving of any piece, known throughout the trade and discussed by many. The stages are found everywhere, even in Bali, for that is the nature of the craft and the material [#19]. Block in, detail and finish. Blocking in sculptural work was often done at the quarry to reduce the amount that had to be transported. This lent itself to the production of standardised forms. Detailing was highly skilled and artistic, and required the attention of the best men. Finishing and polishing often involved repetitive edging and patterns, such as along vines and the hems of clothing. This may have been done by the master *imagier*, but if modern practice is any guide would have been passed on to more junior men as part of their training, helping them to develop skills, hone their use of tools and to develop patience with the unruly personality of the stone.

Who, therefore are we looking for? The quarrymen who created standardised pieces, the *imagiers* who did what they could with what they were given (unless they had visited the quarry themselves and commanded their own blocking in), or the decorators who applied whatever took their fancy in the minor detailing? In the studies of capitals in the *Master Carvers Series* I found the template-maker more discernible than the individuals who executed the template, and though some men could be identified from their personal manner there were limits to our understanding.

Among the colonnettes I have identified sixteen designs [page 26-]. On average three shafts were made from each design, at the most six. It so happens that one shaft from each design fitted the dossier of one of the carvers I had already been studying. These men I honoured as the team leaders, though often more from convenience than conviction.

The dossiers had been assembled from preferred details and ways of handling details, all in the Morellian manner. Vibeke Olson has also used this method to identify a smaller number of carving groups among the shafts. The inherent problem with this method is that (as I have said) the larger pieces and the more decorative sculpture could have been carved by a number of men. Each time I have been presented with this difficulty I have found myself returning to the template. No matter how many carved each piece, the individual's contribution had to be constrained within the template. This being the first element in any design process it seems logical to consider the template a more certain identifier than anything else.

I have tried to come to grips with this in four studies. In one four men created the jambs of the south portal at Bourges, where the rinceau pattern was included on the template and personal idiosyncrasies permitted only in the detailing [#17]. In another I followed the team-leader Grégoire and his assistants in three of the colonnettes at Chartres [#11]. Of the sixty men found among the capitals of the Laon cathedral gallery, twenty came

Colonnettes with rinceau nL1m

Colonnettes with spiral bands and tendrils cL2t, and [below] divided into sections sL2b

in teams, the rest as individuals [#20-27]. In this case the template was minimal, being no more than the dimensions of the block within which each team or individual was to determine his own design. In the recent impost study compliance varied from strict to loose, and I suppose that sums up the situation [#29]. The forming of teams and the flexibility in adhering to a template varied from place to place and we would be wise to select the method that fits the occasion.

Nomenclature: Leaving out the 'W' for reasons of simplicity, the portals are noted lower case 'n','c' and 's' with elements noted and numbered as left or right from the doorway outwards.

Colonnette attributions

Usually there are three variations of each template, at the most six, each the work of different individuals. To illustrate the visual reasoning that assigned the carving of the colonnettes to particular template-makers examine the six shafts by the Héron team [b]. The details within the form of the template such as choice of elements and the way they were handled

The Héron team: cL6b is the most characteristic, cR2t is stiffe and more detailed, and nL2t was similar. All three have little strap-like turns in the vine, like a buckle.

sR11 a short dubious. sL2m and cR2t

and finished were left to each assistant as long as the elements were held together within this arrangement of vines.

Continuing the analysis among the other shafts I discerned a dozen ways to arrange the rinceau patterns, and as well the two that were based on different principles. Nowhere do I find that anyone carved more than one shaft, and therefore 43 men were involved.

As in Laon the teams may not have arrived at the one time, but at irregular intervals. Some may have been independent of any builder and could have come on their own during the winter break when there were no freemasons present. Being highly paid, the sculptors would have stayed for only as long as they were needed.

To arrange the teams chronologically I determined the earliest moment each stone could have been erected. That depended on the time needed for the embrasures from the previous analysis and mutilation to a dozen that occurred during erection, and will be examined shortly.

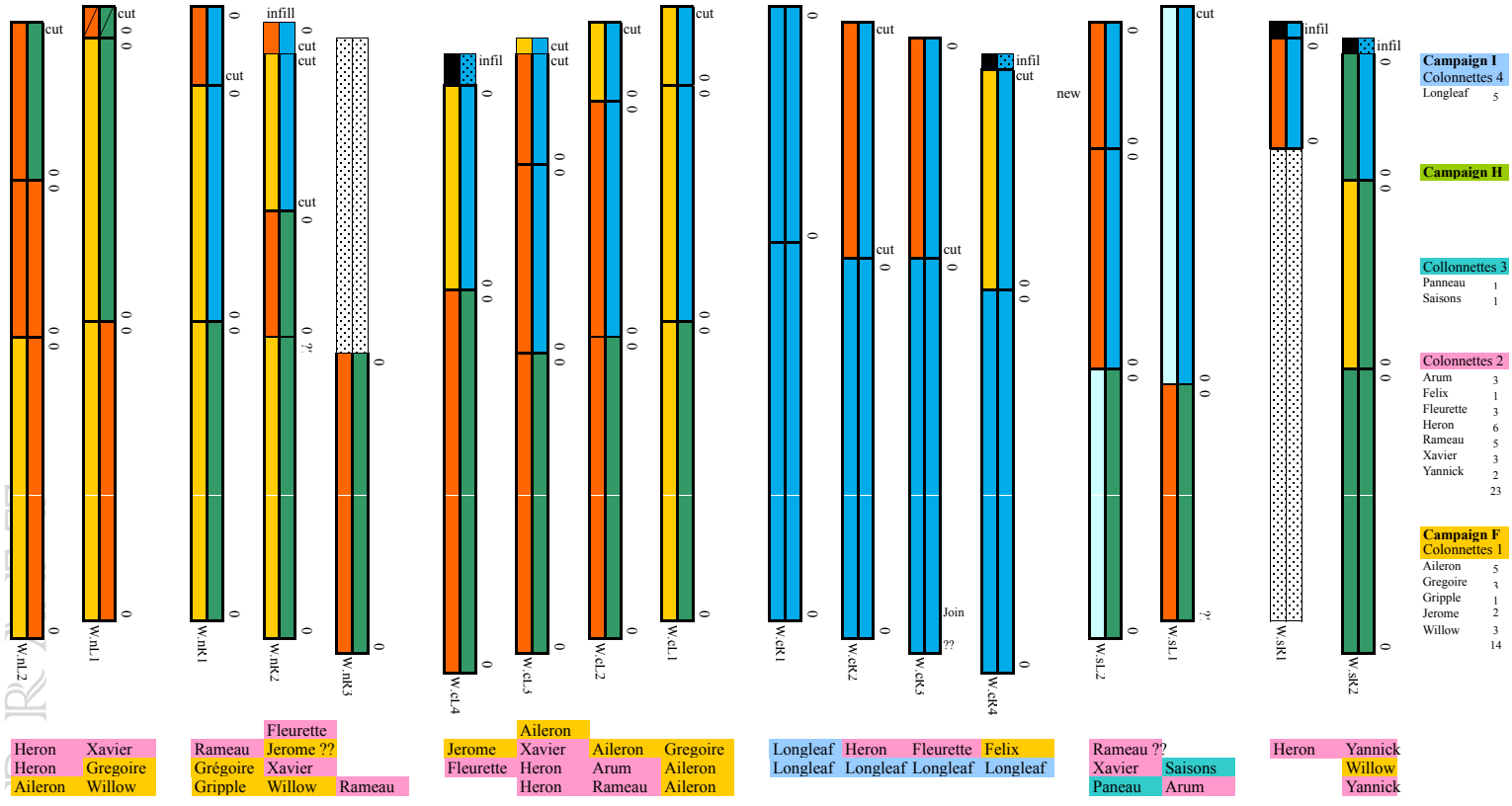
The earliest were rinceau designs on fifteen shafts that were designed by six senior men and carved during campaign F when work was being concentrated on the Ascension doorway. They are coloured yellow in the left column, the colour of the right refers to when they were erected [b].

It is reasonable to expect that the first team would have arranged their lengths to fit neatly into the expected height of the doorway. Using the lengths determined by Whitney Stoddard and illustrated on page 25, the four lower shafts are about the same 1.755±25 metres. Only two remain of what could have been used in the second row. They measure 1.52 and 1.46 metres. None of these six shafts have been reduced or altered.

If we place Grégoire's 1.52 metres above Aileron's 1.73 we gain a door height of 3.25 metres. If we add Grégoire's mate's shaft of 1.46 to 1.78 by Willow we get virtually the same height. Each shaft has a base and cap and the patterns fit neatly between them. The stones would have been ordered from the quarry in pairs to suit the projected height of the doorways.

The colonnette template-makers
with the number of men in each team

Group 4	Longleaf	5
Group 3	Panneau	1
	Saisons	1
Group 2	Arum	2
	Fleurette	3
	Héron	6
	Rameau	5
	Xavier	3
	Yannick	2
Group 1	Aileron	5
	Félix	1
	Grégoire	3
	Gripple	1
	Jérôme	2
	Willow	3



Schematic drawing of colonnettes. In each column the colours on the left refer to carving groups 1 to 4, and on the right to erection campaigns F to I

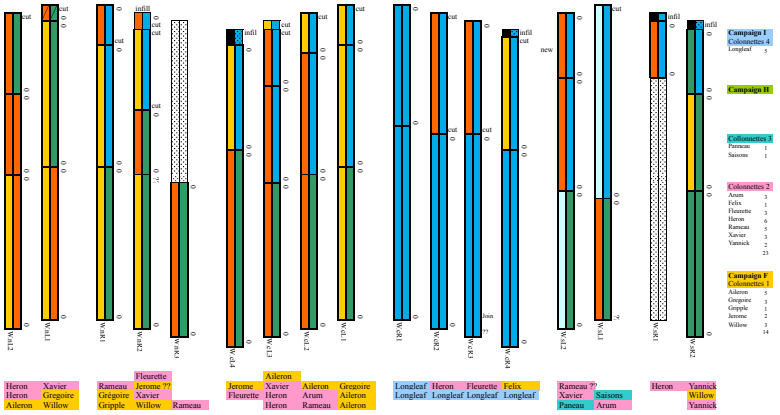
The second rinceau group (red) were carved onto shorter stones of irregular lengths, and so required at least three per place. Being the best stone from the Parisian quarries it was probably ordered to fit into specific places so they would fit perfectly into the different height required by G.

However, when they were placed in campaigns H and I the order was lost. The correct locations were inscrutable. To rectify the erecting gangs just chopped a dozen shafts into short lengths and created the chaos we see today. They were placed at the top where they would be least noticed.

The reduced shafts are noted as 'cut' [r]. The cutting was made after the embrasures that were to support the top shafts had been laid, in campaigns H and I (green and blue). Therefore I have allocated those teams with anything among the truncated shafts to one of the earlier groups, on the assumption that no master would carve a shaft and then remain on site to see it butchered.

There are feedbacks from connections between the carvers of the red shafts and some of the archivolts support these identifications, discussed at the end.

Two shafts form a third group. They do not fit into any category, but are of significant design and execution. Both are by the south door. I have called them Panneau and Saison for analogous reasons. They are coloured light blue in the schematics. Here are two individuals who were allowed to carve as they wished in a manner completely foreign to any of the other shafts. Can one presume that during the many weeks of their stay they lacked supervision? For this reason I have suggested they arrived during a break between the building campaigns when no master masons would have been present and perhaps only the cathedral clerk of works was available to direct them.



Copy of colonnette assignments in schematic from page 30

In the fourth group only two stones combine for an exact fit under the capitals (blue). This is a unique arrangement, and is placed in the last phase on the embrasures, in campaign I. I called the template-maker LongLeaf as it has stretched symmetrical tendrils that enclose heads and animals in pairs, all rather repetitive and with little depth in the cutting. He had four assistants. None of these five shafts were mutilated and they are all on the right embrasure of the central doorway. The lower ones are a little more than 2 metres in length, and the upper one by the door is somewhat more that a metre. Together they were designed for the 3.5 metre door height determine in campaign H.

Integrating the four groups of shafts into the three groups of jamb figures was a little complex and remains open to interpretation. I have in each case chosen the relationships that made most constructional sense. In this manner I decided that all the truncated shafts came from groups 1 and 2 (yellow and red) as they had to be carved before those who did the cutting, being H and I (green and blue). Further, that using the same template would be placed in the same time frame, so if the one carver had to have his shaft erected in, say, campaign H, then the erection of any others who used the same template were placed in the same campaign.

Working backwards from the northern jamb course by H that determined the door height I allocated the earliest to campaigns F and G. They were divided into two groups only because the lengths of the first group of shafts would have correctly fitted a consistent door height whereas the lengths of the second group did not conform to any pattern. Assigning the last group

4 into campaign I was appropriate for where they were placed. Group 3 could have fitted almost anywhere between 1 and 4.

As the layout of the portal was devised in campaign F, and though he carved only a couple of plinths and capitals, and some colonnettes and statues, his design set the pattern for what was to follow. With what his men carved he could have arranged a mock-up of what the portal was to look like on the floor of the shed.

His successor G carved some of the lower courses in the embrasures and their jamb figures, the colonnettes from group 2 and probably some column-statues. In campaign H most of the southern embrasure was carved and a great many of the figures, but no more colonnettes as all of them had already been set aside in the shed. When masters H and I put all this material into place they could not work out where the colonnettes were to go, cut a dozen down to fill gaps, and then I set his men about the larger job of redesigning the tympani.

Every master would have had clear intentions for the height of the doorways, but having neither tape measures nor a common foot unit did not arrive at precisely the same dimension. Each master would have presumed he would finish the work to the measurements that came from his geometry, as is demonstrated in the colonnette lengths. Though each would have known that the contractual methods of their times ensured that completion under one master in a single campaign was extremely unlikely, they nevertheless continued to plan as if it was not. A frustration that was not resolved until the economic collapse over three generations later [#31].


Centre left cL1b Aileron

The design layouts of the sixteen teams

The team is defined as a group of men working to the same design. Some I will not grace with the term template, for these layouts are too simple to have come from anything so precise. The process was more in the nature of a sketch that indicated the layout of the tendrils and the placement of the elements set between them. It was probably applied straight onto the cylindrical stone itself as the structure that visually held the design together.

In most cases the design and details in one shaft in each team may be connected with one of the carvers already explored in the earlier studies on the ICMA website. The following teams are in alphabetical order. The analysis may appear simple, but has taken a tremendous amount of time with many false starts and missed cues and confused locations.

Aileron, 5 stones, group 1. A wide ribbon runs clockwise around the shaft [r1]. The slope was twice the diameter of the shaft, so it was set out to a double square. A vine snakes up and down between ribbons so that fronds and figures are set between them. This double structure holds the design together, for the ribbons contain the vines and the vines locate the details. Three full-length stones follow this pattern, and two more were truncated in campaign I. He was a member of the first carving group in campaign F and was the first to be erected in the left embrasure of the north doorway in campaign G. Both lower stones in this group are about the same length, at 1.7 metres.

Arum, 2 stones, group 2. Vertically symmetrical with tendrils ending in bouquets in the manner of a *fleur-de-lis* [r2]. They are tied with collars where they meet, and finish with paired undercut fronds and strongly vertical tips. In cL2m the fronds enclose a berry on a stalk. The Arum team may have carved in the first group, though the short lengths suggest the second. None were cut though one is considerably worn, sL1b.


South left sL1b Arum

Félix, one stone, group 1. The paired vines undulate along the whole

length of the shaft and was reduced in campaign I [b1]. The great heads and snaking vines also fit the manner of The Duke, but the figures holding onto the vines are in the manner of Félix. I am not totally comfortable with this attribution as Félix was a more skilled carver than indicated in these figures, yet the clinging men are a trademark. Maybe it was carved by The Duke to a Félix template, but his original has been lost. I have already attributed the Nativity lintel in the south door to him from campaign F.

Fleurette, 3 stones, group 2. The design consists of an anti-clockwise spiral filled with rosettes and thick tendrils inhabited by lively figures [b2]. It is in the manner of the Master of the Montron portal. Both of his shafts have been truncated, and the short section in nR2t may have come from the bottom of the longer shaft cR3t. The cL4b shaft is a most intricately carved version, but as it is structured in the same way I credited it to this team. In being restored it seems to have lost a little of its original panache.

Grégoire, 3 stones, group 1. Team of three men thoroughly described in #11, and so I wont described them in detail here [b3]. The major tendril is an elongated meander rather than being wrapped as a spiral around the column. He was, I believe, one of the finest carvers from this era who delighted in exquisitely observed nudes entangled in the vines. One shaft from this team was cut and used to fill over the cL1. He may also have carved some of the upper archivolts in the north portal. All in campaign F.

Gripple, one stone, group 1. Flowing spiral vines ending in five heron-fronds, three lightly passing over the vine and two under in an alternating pattern [b4]. He added little curled buds to each side of the fronds and a berry at the top. Two details are found in all his works: each spiral emerges from the previous one with a socket that does not cut across the originating vine and the vine was chamfered using a curved chisel.

Héron, 6 stones, group 2. The largest team. Strictly symmetrical paired vines undulate up the shaft with the junctions where they meet covered by bouquets of tiny fronds with pointed tips, a vertical version of Gripple [r, next page b1]. The fronds are sculpted three-dimensionally so they pass under the vine and turn back at the top to grip it. They hang off a tendril


South right sR1t Héron, infill at top


Centre right cR4t Félix


Centre left cR3t Fleurette


North left nL1m Grégoire


North right nR1b Gripple

that floats off to the side of the main spiral vine. Figures and animals are exactly paired. At each end of the shaft the vines do not terminate, but return back to close the structure within the frame of the shaft. I have reluctantly associated the devil in sR1t with Héron because it follows his template [b1]. I also postulate that he carved the right stone in the upper lintel on the north side, and some of the archivolts.

Jérôme, 2 stones, group 1. This very subtle design in cL4t is based on one very elongated spiral framing the paired undulating tendrils onto which is overlaid bouquets with acorns and collars. They are set at right angles to the spiral's axis and cleverly alternate in placement and direction [r]. It has one of the most complex and satisfying arrangements in the portal, and is worth considerable study. A roughly carved stone nR2t seems a poor attempt to copy this design, perhaps a very young pupil. I suggest Félix had a lot to do with carving the central lintel in the same campaign F, and for the items that connect his foliage to the heads in the lintel see [#04].

Longleaf, 5 stones, group 4. Stretched vines in pairs that weave, and are tied with a collar where they meet [b2]. The design is rigidly symmetrical along the axis of the shaft yet with fluid foliage. The fronds are tall. Small paired figures and birds are woven through the vines. Refined detailing. These stones have all weathered badly, and were probably extracted from a poorer face in the quarry than the others. They are long stones. Where the LongLeaf team carved two in the cR1 colonnette there was no need to reduce the size as they were measured to exactly fit this place, though the top is damaged. They were therefore carved after the height of the doorways had been determined in H. In the confusion of setting up the shafts without clear directions these five were carved to complete the portal.

Panneau, one stone, group 3. Ribbons fold and touch down the vertical axis [b3]. Scenes with figures inhabit the spaces. A different style altogether from any of the others and so not under the same direction as the earlier work. Perhaps an itinerant passing through.

Rameau, 5 stones, group 2. The vines are long and woven [b4], looping


Centre left cL4t Jérôme


Centre left cL3b Héron


Centre right cR1t Longleaf


South left sL2b Panneau


North right nR3b Rameau

vertically and crowded with little people or hanging and crouching animals and with few subsidiary tendrils. Fronds are small, and the figures robust but simplified. Houvet shows the upper stone sL2t missing, and therefore this is a replacement. He may also have carved the left panel of the upper lintel in the north door, and the adjacent archivolts on the left in campaign G. The reasons are detailed in #18.

Saisons, one stone, group 3. Could have been originally divided into a dozen panels depicting the Labours of the months with January at the bottom. Were we to add the lost months the full length would have been some 20 cm less than the present door height, and so was probably carved before the height was raised in campaign H. Olson points out that the uppermost section was left unfinished. Like Panneau he was probably from a separate team as the design is out of character with the other shafts. He may have come between campaigns.

Willow, 3 stones, group 1. Undulating vines held with collars where they meet. No vines cross over. A clearly defined structure holding very large paired birds with long curled tails [r]. One adjacent to the south tower in sR2m was carved in the first group and left in the shed to be erected during campaign H.

Xavier, 3 stones, group 2. A densely packed arrangement that alternates between woven and tied tendrils that leave little room for fronds or any inserted creatures [b2]. Detailing more mechanical than organic.

Yannick, 2 stones, group 2. Two sets of spread-out vines that overlap where they intersect on each side, and butt to each other in the centre where just passing [b3]. The latter are tied with a collar. An open arrangement that leaves space for the delicate figures that have rather chunky proportions.

The twelve truncated remnants

A dozen beautifully carved shafts were wantonly cut into lengths that varied from 20 to 120cm just to fill gaps under the capitals. Useful as this has been in understanding the construction history of the portal, it reflects an appalling lack of respect for fine craftsmanship or their sacred purpose.


South left sL1t Saison


Centre left cL3t Xavier


South right sR2t Yannick


North left nL1b Willow

The workers on these building sites would have been a pretty rough lot.

In the schematic of these shortened colonnettes those with properly formed terminals are marked "0" and those that have been shortened are circled and referenced by number [b]. I could not imagine that a sculptor would spend a month or more creating the most exquisitely detailed shaft and then comfortably chop most of it off so it filled a space that could have been planned for when the stone was first blocked in. It is an uncharacteristic profligacy where most medieval stonework was economical in labour and materials.

The practice would be understandable only if they were carved and erected in different batches, by different groups of men under separate direction and without meaningful contact with each other. If they had been working at the same time we would expect some agreement on the lengths before allocating work that could take a month or more.

Shaft lengths were seldom the same, and to fit comfortably between the plinth and the capital each would have been carved for a specific location and a specifically calculated length. Any piece not erected when carved would have been stored. If their intended positions were recorded the information was mislaid or misread by the next crew. Being unable to work out where they were intended everything went higgledy-piggledy. Shafts were erected in any order and as they could not fit without knowing where they were to have gone the differences were made up by butchering those still lying in the shed. Twelve shafts were reduced to fill the spaces and in five instances there were still gaps at the top that had to be filled with mortar. Nearly all lie in the north half of the portal, emphasising the north to south trend in the work. The remains of almost a year's sculpting was thrown out as unusable. A cavalier approach to fine craftsmanship.

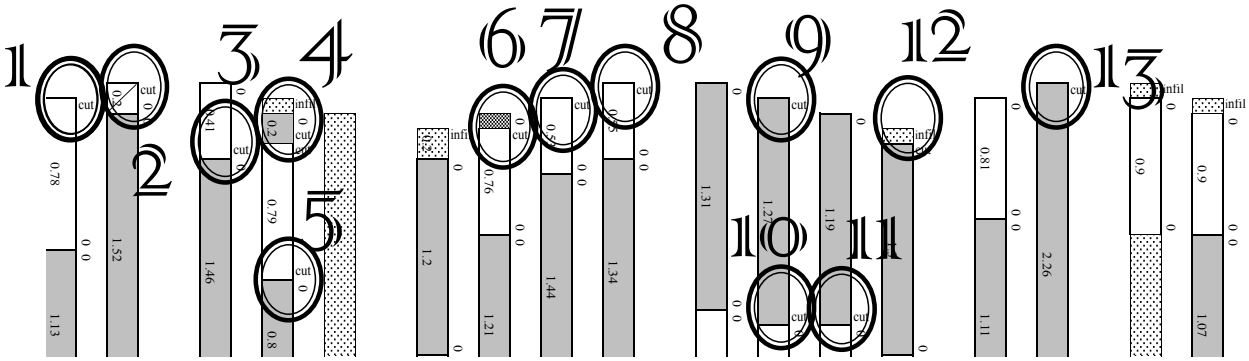
These twelve truncated shafts would have been enough to complete all the colonnettes if they had been correctly arranged - as long as we assume the shafts that flank the portal were not to have been decorated. After all, their diameters and the tori under them are a bit smaller than the others. This would then explain why it was necessary for members of the I team to carve another five shafts in order to finish the central opening. Was this the easy way out?

Therefore I assigned all remnants to phases that were earlier than when they were installed. Each had used a template that connected to a particular team, and from that I assigned the whole team. I worked back from the last group 4 in campaign I and ignored group 3 because their templates were not like the others.

The master of campaign H raised the height of the doorways some 20cm, and himself may have cut down two shafts. The others were reduced in campaign I. Groups 1 and 2 were therefore carved earlier than either during campaigns F and G. To read the details concerning each one connect the numbered shafts in [b] with the illustrations in this and the next two pages.

Capped shaft ends by Willow and Grégoire nL1b,m

1 - nL2t by Héron carved in group 2. It is 0,78cm high. Truncated by slicing through one of the bouquets at the top and placed by G when he finalised the door height and placed the capitals over the left jamb.



Upper portion of colonnettes with all reduced shafts circled. The numbers link their locations with the photos and descriptions that follow.

2 - nL1t probably from a Xavier shaft carved in group 2, and like '1' placed by G. Looks like it was placed upside-down with the end-ring at the base. It is split where the metal anchor was drilled. It is 20cm high, which is the extra added to the door heights in that campaign.

3 - nR1t by Rameau is 41cm high carved in group 2. Apart from the damage to the upper tendrils, the half triangular collar under the upper frame would have been an acceptable way to complete the pattern, but the removal of half the fronds and berry at the bottom section shows where it was cut. The ring at the bottom was part of the shaft underneath.

4 - nR2t+ by Fleurette is 20cm long from group 2. It lies above another shaft by a pupil of Jérôme that is 79cm long from group 1 and was shortened at the bottom, in '5'.

5 - nR2m by a pupil of Jérôme in group 2. The lower undercut tendrils have been damaged, but as the buds at the base are truncated and there is no base moulding it was cut to a height to suit G's door height, but then the height was further raised in H. Hence the additional block '4' from Fleurette was added over it.

These discrepancies were the essential key to organising the construction of the portal between the six campaigns E to J. Without the connections they provided some of the clarity in an extremely complex construction sequence would have been missed.

I have the impression that, as in the Laon gallery in #20, the carvers came singly or in small teams, worked for as long as their specialist skills were needed, and then left. Their labour was expensive, so there would

6 - cL3t by Aileron is 20cm long from group 2 and placed by H. The pointed berries and wide spiral ribbon match the top of the adjacent shaft, cL2t, marked '7' on the left. It sits over one by Xavier that had been reduced to 0.76cm by G for a different door height, and therefore carved in the first group 1.

7 - cL2t by Aileron carved in group 1. The shaft is 0.56cm long. The top that was cut off would probably exactly meld into the short piece in the adjacent bay, cL3t marked '6' on the left.

8 - cL1 by one of the Grégoire team carved in group 1. Unlike the other two in the team his details have a rather metallic feel. The upper end was truncated and placed in campaign I. It is 55cm long and has a framing ring at the bottom.

9 - cR2t by Héron was carved in group 2. It was cut short at both ends in campaign I that left it 127cm long. It looks like the cutting was crudely executed. This is one of the longest of the shortened shafts.

10 - bottom of '9' cR2t by Héron over Longleaf, carved in group 2 and cut back at both ends in campaign I. Though hard to see in a narrow space between the figures, the different stones and the incomplete forms in the upper shaft highlight the junction.

11 - cR3t by Fleurette was cut down at the base to 119cm. The space between the figures is too tight to see clearly, but one can make out the upper frame to Longleaf underneath and the rough finish at the base of the Fleurette capital above it.

12 - top of cR4t by Félix carved in group 2 and inaccurately reduced to 130cm in campaign I. The upper figure has been cut in half, the end was broken and the small gap over that has been filled with mortar.

13 - top of sL1t by Saison chopped off. In the length of 2.26 metres there are nine months on view. With the lost three months it would have been about 3.2 metres, probably perfect for the door height in G but not enough after the door height was raised by H, and was therefore carved earlier.

have been little encouragement to keep them on. The time needed by a gang of men to carve these stones would have been a lot less than the time needed to build the embrasures and erect the delicate sculpture it supported, which was a specially time-consuming process.

Interpreting professional vandalism

There is no sign of any organisational genius among the truncated colonnettes. It is a sorry situation. The clever men, the sculptors and the master masons, had left the site, and the erection gangs who remained or arrived later could not work out the combinations needed from what was stockpiled in the shed. There was absolutely no continuity of direction, not even an individual who could remember where each was to be placed. It is not just a matter of notation, but something more important that lay in the nature of their trades [see pages 10-12].

The decoration around nearly every shaft was arranged to terminate in a small ring-like moulding; a capped end to frame the designs [r]. The templates were therefore prepared with the precision the *imagiers* showed in all their work to fit the height they were intended to occupy. Accurate planning was possible, but the fact that it did not happen before campaign H locates the source of the chaos in the door heights, which was not the case with the last shafts carved by LongLeaf in group 4.

Few were placed in their intended locations. It was as if the location marks had been lost. We should ask how such confusion was possible. We already know that carving and erection were different tasks. Every 'error' in the portal demonstrates that the communication between contracts was discontinuous. Clearly, those who would have cared and would have kept a sharp eye on the management of precious and expensive stones were not in continuous residence. Supervisors therefore came and went (probably with the builders) and at no time were there permanent craftsmen in charge of or living near the *chantier*.

Capped shaft ends by Willow and Grégoire nL1b,m

Let us imagine you come on to the site and find a group of colonnettes, superbly carved, but with no locations marked on them. How do you sort them out? You don't dare move them around from place to place to see how they might fit as they could be damaged in the process, and perhaps the shed (already crowded with the upper sculpture) is too small. You cannot measure them with any accuracy as there are no agreed units of length and you don't have tape measures. You could cut lengths of wood for each shaft and move them around the site looking for where they might fit, but if you do not have a mind for this sort of analysis it would have quickly become too hard, and you would be sorely tempted to force them to fit by making up the difference at the top where it would not be noticed. The lack of continuity between the leaders combined with inadequate instructions for placement led to the vexatious chopping and infilling that mars the portal.

The confusion was compounded because after the first colonnettes were carved in F each of the later masters G and H modified the door heights. Not by much, though 20cm was enough to create problems.

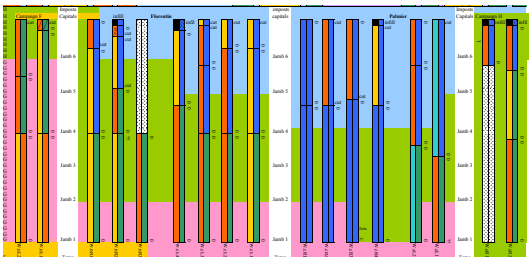
Sculptors planned for the height in the mind of the current master, and were gazumped when the next master changed it. The confusion occurred as the carvers in the early groups were not present on site when their work was being erected under a master who was not to be hired until long after their shafts were prepared and the men had left.

The order of carving and erection was derived from the above study of the dozen truncated columns and the teams they connect with. Two groups of colonnettes, the yellow and the red from groups 1 and 2, would have been carved with or after the plinths that provided the size of the recesses they were to stand in, and before the uppermost course of jambs that determined the door height [r]. I have to presume that men of skill would have designed their shafts to suit a specific door height, and therefore that the cutbacks and infills can be explained only through changes to the door height after they had been carved.

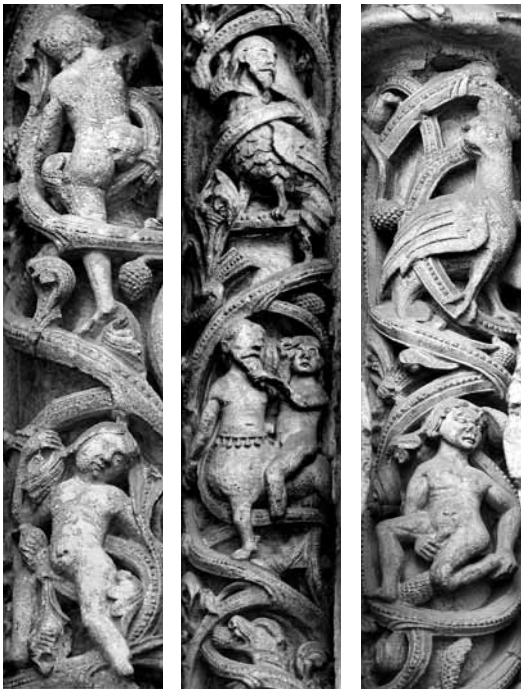
The stages in erection depend on the rate of erection of the embrasures. Most of the shafts were carved well beforehand and erection was delayed until the jambs were high enough to fix them in place. The order among the 48 jamb figures formed the basis for dividing the carving of the colonnettes among four groups of sculptors [pages 22, 30 and 42-45].

As an example, the upper cut shaft by one of the Grégoire team on the left side of the central doorway was reduced in length, cL1t [far r2]. It had been carved in F (yellow) and placed in I (blue). The other two lengths by that team are to the left on either side of the north doorway [r]. Though carved during campaign F, they could not be erected until the embrasures had been raised above them (green or blue). For some years they would have been stored on racks or on the floor of the shed where lay all the finished art work that was waiting to be erected, mixed together and apparently unlabeled. Whatever was carved on the rest of that stone has been lost. It was not used elsewhere, which is itself a commentary on the ruthlessness of the erecting gangs.

Most of those from the first two groups, marked yellow and red, are around the north door. It seems to argue for teams of wandering freemasons who had a rough idea of what the space to fill would be like, carved a number of stones, stuffed them into a storage shed and moved on. Then a rougher band of masons, when they were ready, pulled them out and settled them into any space that could take them. During this crucial stage there was little consideration for maintaining the integrity of the composition.



Reduced schematic diagram from pages 46-47



The Grégoire team, nLm, nRm and cLt

Colonnettes carved with capitals and statues

This is one easy example, and not unique, of where a team working on the colonnettes may also have carved some of the column-statues. In this instance two men engaged on each side of the north door may have carved one of the statues immediately next to their own shafts, and as well the capitals overhead. If this spatial consanguinity reflected policy, then we might expect similar connections elsewhere.

I cannot accede to the sweeping assertions that one master carved a whole swathe of statues. This is too simplistic and does not represent the reality of medieval workshop practices as we understand it today. Even where designed by one master there was team work and assignments were flexible. The carving of the heads or hands may have been reserved for certain people, though there is no uniformity to suggest the same people were chosen each time. Doubtless there was a master designer for each one, but I would guess that the sculptor was selected as much by the leader of the sculpting teams as by the any master in charge of the whole site.

Two pieces in the north stand out from similarities between the heads on the statues and heads in the nearby shafts. Continuing with Grégoire who carved the first colonnette on the left of the north door and his team-mate Greg-A opposite [#11]. The adjacent statues are the Queen of Sheba to the left and Moses to the right [r]. Between the carving of Sheba and the raising of the embrasures sufficiently to hold them in place there were two changes in masters. I have suggested from the logic of the nearby embrasures that they were carved with the portal plinths in campaign F [yellow] and were not placed until campaigns H or I [green or blue].

I will pose the possibility that she was the work of Grégoire from the aesthetic link between queen's head and the woman in the shaft just behind [b1,2]. The little head on the colonnette is only a couple of centimetres high, nevertheless there are strong similarities in the unusual realism of the rounded and subtle forms, the heavy jowls, the thick lips, large nostrils, gently formed eyes and the hair parted in the middle. It is an intriguing possibility as both pieces could have been carved in the same campaign. Elsewhere I have found Grégoire one of the most remarkable sculptors in the period. Sheba was therefore carved at the same time as the first group of colonnettes. During his travels some years before Chartres he had carved a small head in a drip mould in the south door of the entry to the Abbaye-aux-Dames in Saintes with very similar characteristics [b3].

The support under Sheba is decorated with symmetrically placed acanthus-like foliage that covers the whole surface. The fronds are serrated, the veins gently indented and the stalks that support the centre of



Queen of Sheba and Moses, nL1 and nR1




Head of Queen of Sheba in W.nL1; head of woman in W.nL1 colonnette and in Saintes, Abbaye-aux-Dames the outer W.s drip mould

the leaves are wide and made of two indented and one raised section [b1]. On the interior the very large capital that I credited to Florentin has similar foliage, page 53 [b2]. The latter has been very difficult to photograph as the interior is so dark and the details smeared with plaster. Nevertheless the question is intriguing. Were they the same carver? Grégoire in campaign F and again (like Palmier) three years later in campaign I?

Foliate base under Queen of Sheba nL1

North interior narthex capital Xn1(a-) by Florentin

I have suggested that the capitals over the statues were carved at the same time as the plinths in campaign F [page 47], partly to create a full-size mock-up for the inspection of the clergy. The capital immediately over Sheba has a highly-charged emotive scene, being the Slaughter of the Innocents [b]. The mother's face is full of sorrow and is in proportion to the body, her posture protective. The baby clings and looks up in terror. And as for King Herod, what a magnificent figure!

The rounded faces, exquisite body postures and the sense of spatial control suggest the work of Grégoire. Here are three carved elements - the capital, the colonnette and the adjacent column-statue - all by the one carver.

Herod in capital left north door possibly Grégoire

Head of soldier and mother in Slaughter of the Innocents.

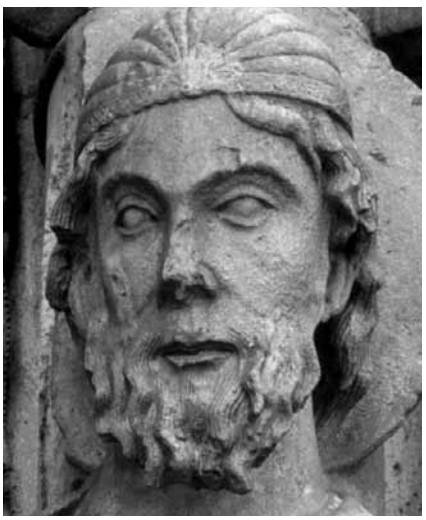
I would also canvas the possibility that Grégoire's assistant in the colonnettes, Greg-A, carved three items on the opposite side: Moses, the colonnette and the capital. The heads are proportionately large compared to the bodies and note the pinched-in nose, the lines from the nostrils and the hair parted in the middle. The ears are clearly delineated. The bone over the eye is set back so the brow is emphasised [b]. The heads have a common squatness and certainty, and there are similar spaces around the eyes and mouth. There is a common feeling to them that suggests they came from the same man, though there are many elements in the ears, locks of hair and the nose that do suggest more than one cutter.

In the capital over Moses the Magi has a similar beard to the shaft, a long nose, crossed legs like the statue and so on [r]. As on the left, it is possible that all three stones were by the one man or group of men.

We can see in these carvings that Greg-A was being his own man in the statue, for the form of his figure is starkly different to Grégoire's. Was Greg-A under Grégoire on the colonnette, but not elsewhere? The shafts use the same template across the doorway, but the statues do not. Assuming that Moses was by Greg-A, there was some change in relationship at some point during their time on the job.

Magi in capital right north door possibly by Greg-A

Centaur and child in n.R1m colonnette by Greg-A



Head of Moses right side north doorway

Bearded man in n.R1m by Greg-A

Within the assumptions made above, how do we explain the similarities between the two colonnette shafts and the differences between the two statues? I can imagine a scenario in which Grégoire had already been on the job for a while and had been instructed in what to do and had a good understanding of the work. Then Greg-A arrived a little later. The master, instead of spending time with him when he may have been busy on other things and unable to go through all the details again, simply said "Go over to that chap over there and he will tell you what to do." A quick and effective way to transmit information in relatively repetitive work.

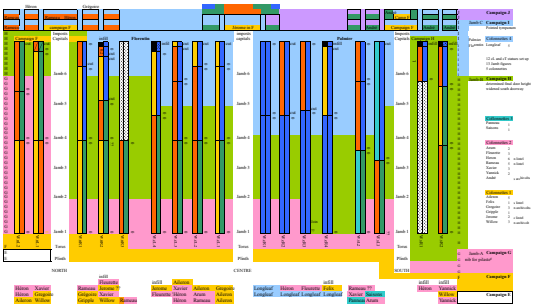
Grégoire gave him a blank cylinder, drew his pattern onto it and told him to get on with it. By the time Greg-A had completed the shaft he knew what was happening on the job and no longer needed a mentor and could carve whatever he was given next in his own manner. Thus Moses. If this makes sense it emphasises the notion that sculptors arrived as individuals and were temporarily attached to whoever had arrived earlier.

Bringing order to this discussion

The amount of information can be overwhelming if not sorted clearly

Schematic diagram of construction

The carving and erection sequence of the lower parts of the portal has been laid out on the pages 46-47. To clarify the relationship between the piers and the sculpture they support, each colour represents one campaign, with darker shades for the colonnettes and lighter for the embrasures. The rectangle for each shaft has been divided down the middle. The left refers to the campaign in which it was carved, and the right to when it was erected. Shafts that have caps at each end and were therefore not truncated are marked '0'.The shafts that were reduced in height are noted as 'cut' and any that were still too short to reach the capital are noted 'infill'. This diagram has been my "control" through awkward times [r1].



Copy of schematic diagram on pages 46-47

Most of the carving below the capitals occurred during the three earlier campaigns. Differences in style divide the embrasure courses behind the shafts into three phases, pink, green and blue for the three groups A, B and C that coincided with campaigns F, G and H. The colonnettes was spread among four groups numbered 1 to 4.

The raising of the masonry and the ties between the jambs and the masonry of the south tower provide the major clues to the chronology as you cannot install a colonnette nor any sculpture until the embrasure has been raised above the upper fixing for that piece. Thus any shaft by the red or green groups that extend into the blue courses of the embrasure cannot be placed until the blue courses have been placed.

Colonnette shafts have been assigned to the template-maker of a team, not to individual carvers. Some items could have been earlier than the phase allocated, none could have been later, so the colours refer to the latest possible time for either carving or erection. In many cases the template coincides with that of a sculptor I have identified elsewhere, and I have followed the convenient assumption that these identified men were also leaders of the team. Their names are noted along the bottom under the shafts that used their templates.

The separation into phases is based on the not unreasonable assumption that someone as expert as Fleurette, for example, would not have carved a colonnette such as this [r2], and stood by and watched while it was chopped into a short stub to fill an empty space. If a stone of a specific length had been needed he would have made it to suit, and not a millimetre longer. It might be reasonable to expect one such 'mistake' or perhaps two, but not thirteen. Thus all the shafts that had been mistreated would have been carved at the latest in the red campaign G, and subsequently truncated during the erection phase by the green or blue teams in campaigns H and I.

As the colours show, the work progressed from north to south. As the north tower was already in place it was natural to start at that end, and therefore the natural place to carve the first items so they would be ready for erection. In the meantime they may have been placed on the floor of the shed for people to examine. As the south tower was well behind the north much of the carving in the rest of the portal had to wait until the south rose above the footings and the stones of the embrasure bonded into it.

Centre left cR3t Fleurette

Summary by campaigns

The first three campaigns are more difficult to comprehend than the later ones. The large schematic on the schematic on pages 46-47 requires some elucidation. These three summaries are designed to ease that process.

In campaign F enough carving was produced to create a mock-up at least the left embrasure, complete with some colonnettes, capitals and various items above that, yellow in [r1]. It is unlikely any of it would have been stood in place, but the pieces could have been arranged on the floor of the shed to give a fine idea of how the whole portal was to appear. The fifteen colonnettes would have been enough to demonstrate both sides of the doorway, the right as well as the left. As many as six column statues may have been carved at this time, six or seven capitals and possibly three lintels and in the north the round-arched tympanum and some archivolts. The embrasure sculpture would not have been carved, being builder's work. The other tympani may have been blocked-in.

In campaign G the carving of the first group of embrasures would have made it possible to erect two of the colonnettes waiting in the shed [red in r2] and one carved by Héron in this campaign, arrow. Twenty-one shafts were carved, possibly some statues, ten of the jamb figures and the plinths for the middle piers.

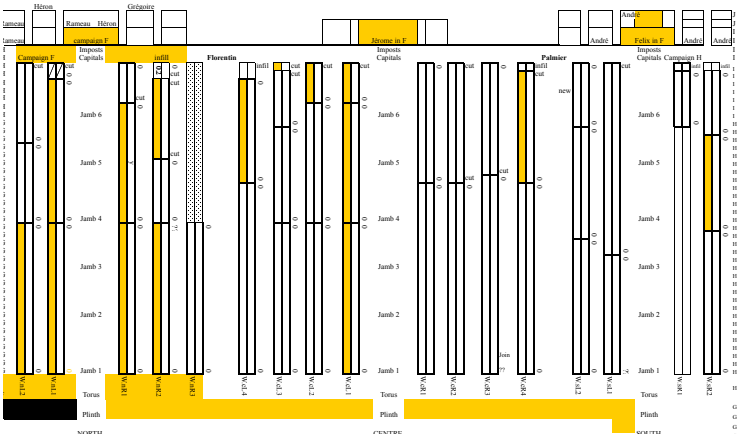
This was the last moment to have recognised the misplacement in the northern plinths. The upper lintel and nearby archivolts were carved here with the necessary adjustments to bring the portal into square. Nearly all the stones in the north could have been finished or blocked in. Possibly part of the centre too.

In campaign H [green in r3] they completed the top course of the left embrasure and fixed the height of the doorways. He built most of courses on the right embrasure bonded into and in step with the walls of the south tower. Most of the jamb figures across the portal and possibly the column-statues around the south door could have been carved at this time.

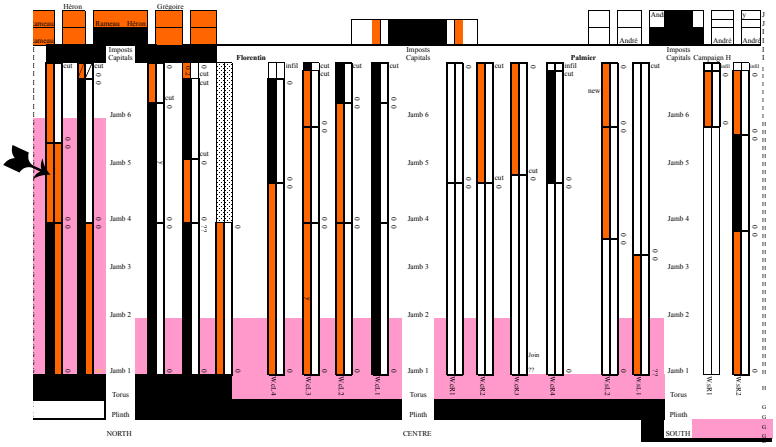
A second lintel and its archivolts were carved for the south, and some archivolts in the centre. None of the superior parts had been erected at this stage.

In campaign I [blue] the remaining stonework in the embrasures was completed, including statues, colonnettes and capitals. The tympani were redesigned as pointed arches and the lower archivolt figures in the north and south reduced in height. Most of the upper archivolts in the central portal could have been carved. Erection was completed in campaign J.

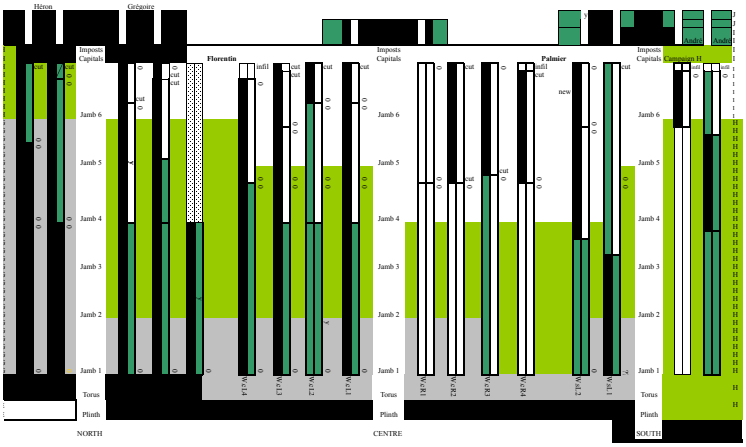
The sculpture of the superior parts above the capitals will be considered in the following order: the supports for the statues, the capitals, the tympani, the variations in the lintels and the many anomalies in the lateral portals that reflected the many years and many teams involved in its making.



Schematic of embrasures with elements carved in campaign F



Schematic of embrasures with elements carved and erected in campaign G



Schematic of embrasures with elements carved and erected in campaign H

Carving and placement with probable dates

Campaign J (1143)

Campaign I (1142)

Campaign H (1141)

Campaign G (1140)

Campaign F (1139)

Campaign E (1138)

Errors and changes

The thirteen anomalies are marked with asterisks.

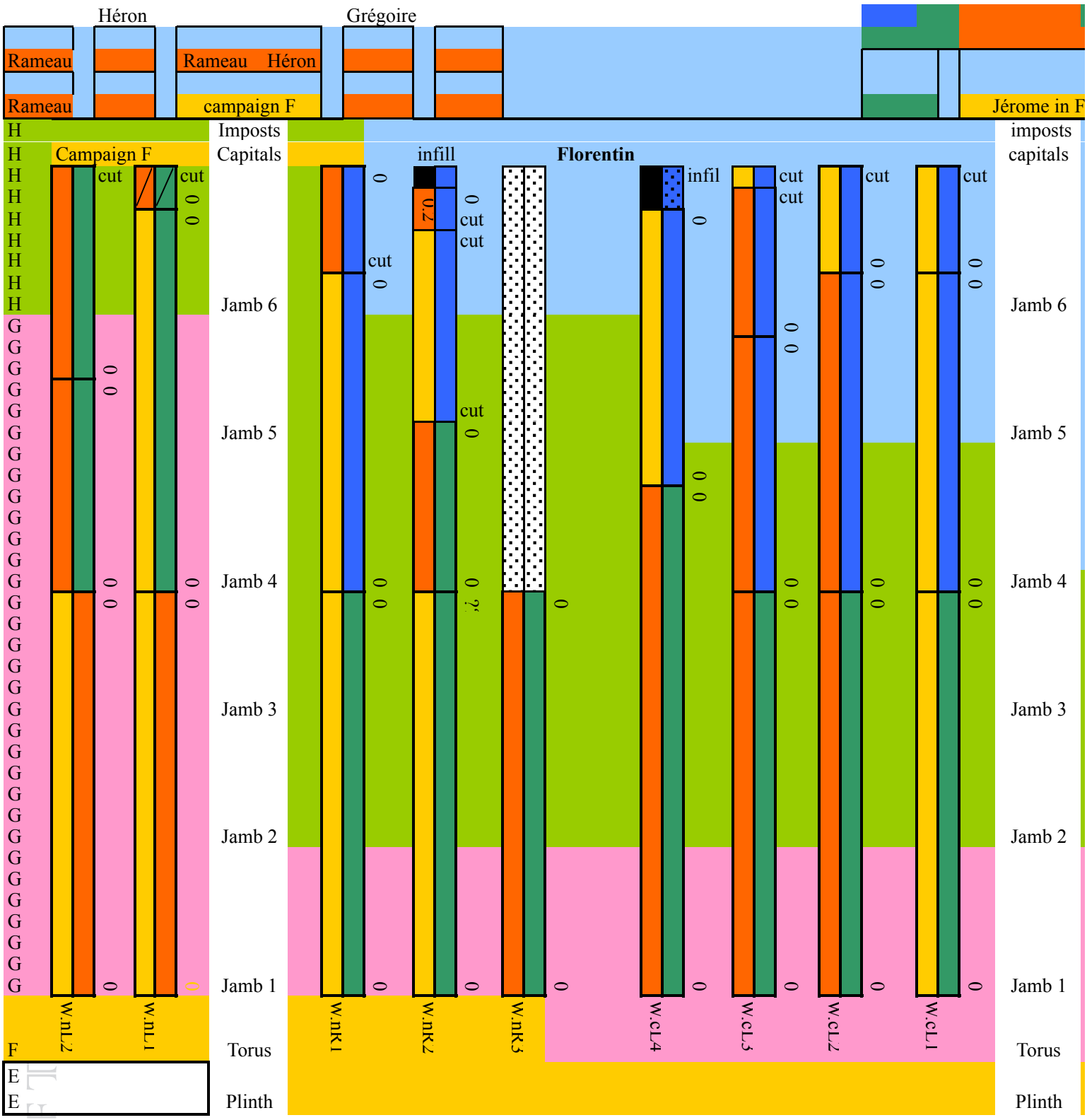
Campaign I

Campaign H

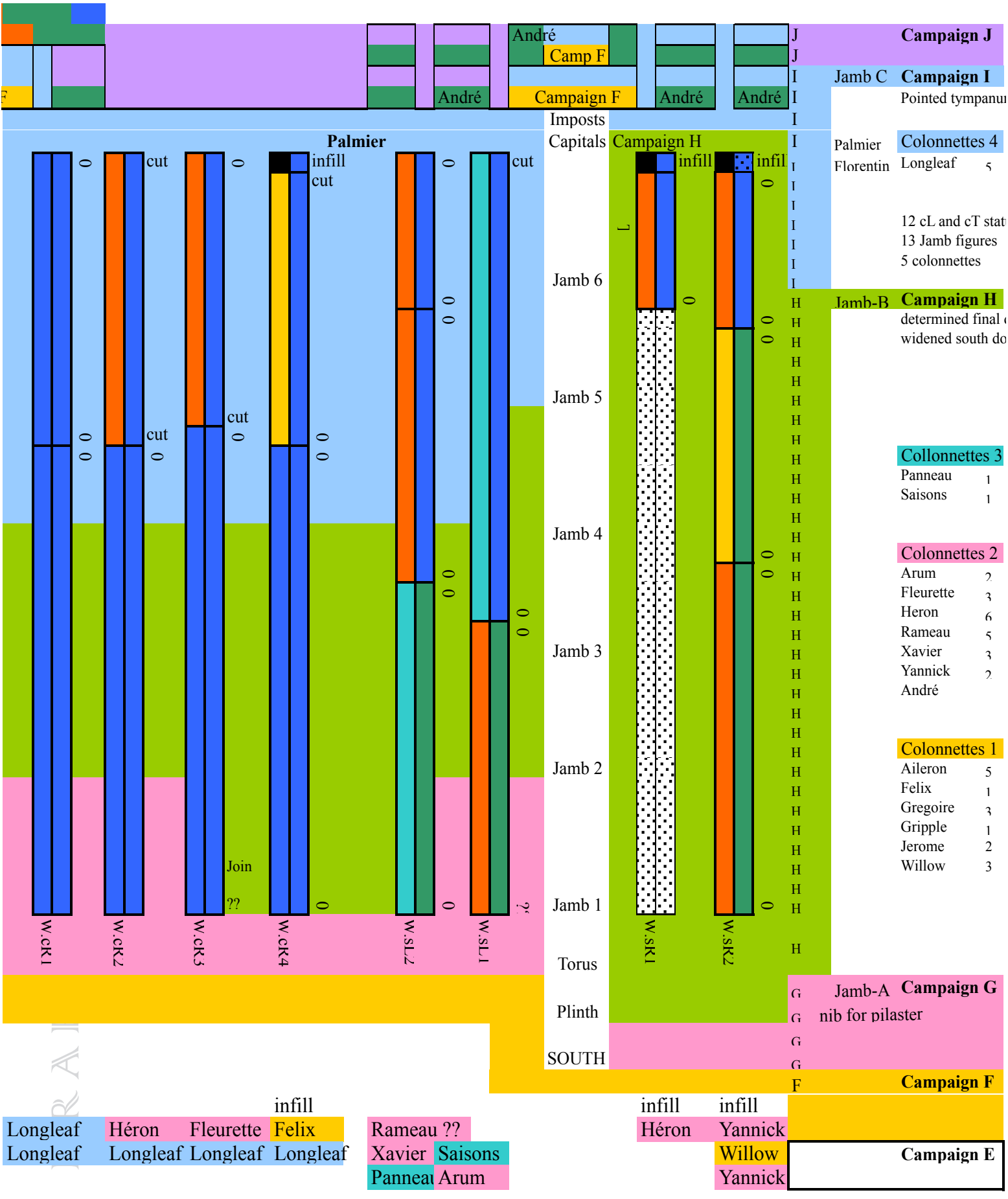
Campaign G

Campaign F

Schematic diagram of the carving and erection of the colonnettes and embrasures.



				infill	Fleurette			infill	Aileron						
Héron	Xavier			Rameau	Jerome ??			Jerome	Xavier	Aileron	Gregoire				
Héron	Gregoire			Grégoire	Xavier			Fleurette	Héron	Arum	Aileron				
Aileron	Willow			Gripple	Willow	Rameau			Héron	Rameau	Aileron				



Supports, capitals and imposts

Errors in placement had a powerful impact on the portal sculpture

Support shafts under the statues

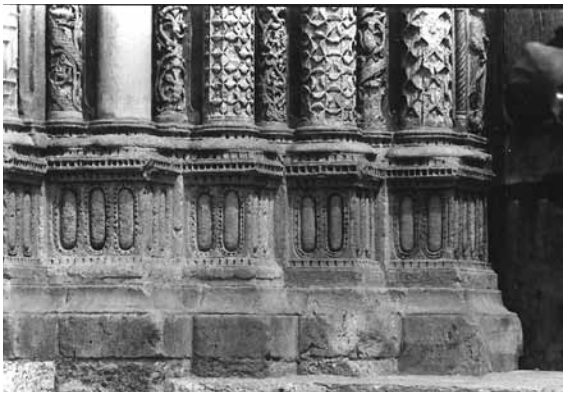
To the left of the north door pieces of sculptural *spolia* were used to the support the column-statues. They had not been designed for this task, being irrelevant in subject and inconvenient in height. As they did not fit easily into the embrasure both figures and statues had to be adjusted. They were composed from sculpture intended for some other position, and it is hard to believe they were prepared while the column-statues were being carved. We could not call it a hurried decision as the adaptation and the fixing into the wall would have taken some time. They display an unfortunate confusion of meanings in the first embrasure to be erected. The diameters of their backing shafts are the same as the statues above, the first two at 204mm and the outer one at 226mm.

On the right embrasure of the north doorway there is an anomaly where a plain support under the fourth statue on the right has a diameter of 198mm while that behind the statue itself is 202mm [b]. The difference is not great, but I remember (and have yet to find the reference) that this statue had been replaced in recent years. The discrepancy, though small, is unique and indicative of the precision shown elsewhere.

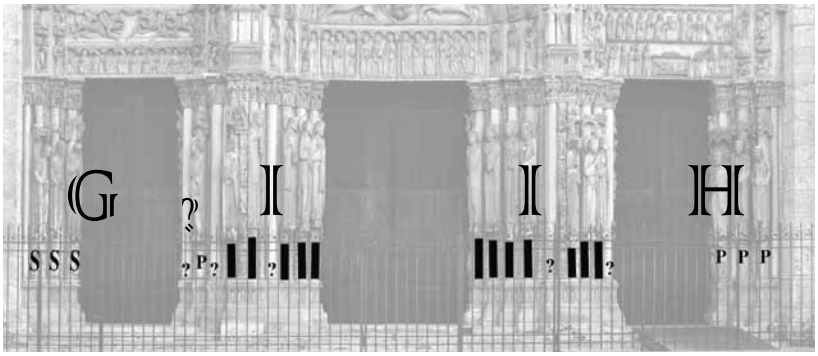
Figures used to support statues, left north door

Diameters of the supporting shafts under statues

In the south doorway the shafts under the statues on the right are plain, marked P in [b]. These supports and the statues over them could most readily have been carved with the embrasure in H. In between, most of the supporting shafts are highly decorated, as in Le Mans and Bourges [r2]. The length of each stone was divided into whatever whole number of sections was required to ensure that the pattern would neatly fit into the available space. As the heads of most of the statues are more or less at the same level but the statues themselves are not equal in height, the supports would have to have been tailor-made for each one. They were therefore most probably carved when they were being placed in campaign I.



Plinths and supporting shafts, left central door



Support shafts under the column-statues. The 'S' are pieces of sculpture, 'P' stands for plain unadorned supports, and the thick lines mark the decorated shafts.

If the installation of the figure-supports in the north were by a different crew it would be logical to suspect the men in previous campaign G. As the top course of the embrasure that supports the statues had not been erected until the next campaign I would think that G had prepared both figures and statues for this arrangement and left them to H to erect.


Portal capital, two individuals

The historiated capitals

The frieze has a long and precious history from ancient times in which related events are placed in some sort of sequence, as *bas-reliefs*. Where adapted for capitals they tell their stories across separate frames. Those at Chartres are unusual (if not unique) as they continue the narrative across the space between the capitals, thus turning them into a continuous frieze. Continuity meant that the capitals had to be carved onto a larger stones so they would include the space between them. It was altogether a more complex operation than restricting the story to the capital itself. The idea had earlier been employed at Etampes [#20:11-12].

Grozet and Heimann have both suggested that two masters were involved in their execution. Stoddard more reasonably suggested they were the work of five men. He allowed 4-5 weeks for each,which gives some idea of the complexity of the carving.[Stod, 158] This is particularly illustrated in figures that have been protected from weathering in the small cave-like recess where one capital meets another. They show the extraordinary individuality and detail that was possible at this scale [r1,2].


Portal capitals, woman in recess

However, it is the canopies that crown each capital that are most perplexing. They represent very different styles of architecture, with single stories and two, with tall thin arcades and squat, with gables and flat roofs. Some have turrets and staircases and some are only lightly incised.

The junctions between the canopies in adjacent capitals show a disturbing ignorance. Single storey designs meet those with two levels, tall lancets meet short and in most cases the corners touch uncomfortably [r3]. It is as if the carvers did not talk to one another, as if nowhere did one man look over the shoulder of another and suggest some way to integrate their canopies so they melded comfortably. Even in those that Stoddard assigns to the same carver there are enormous and unsightly discrepancies [r4].


Portal capitals with ill-matched canopies

From the errors it seems that many more than five men were involved, and that if they were in the same *chantier* they seldom cooperated. Also, they were carved over many campaigns. The northern with the plinths in F, the southern in G and the rest in H and I. The lack of communication evident throughout the portal and the separation of the trades created the conditions under which such malpractices would flourish.

When the capitals were carved they would have been put in store and protected. To prevent damage carvers would not have been encouraged to fuss around comparing designs for canopies. It would seem that the template did little more than provide the overall measurements and the subject matter.

The next course has twenty-two imposts in which the details are varied enough to identify twenty or more individuals in their production [#29:3-5]. As will be seen, they too were carved between campaigns F to I. Would we be surprised if a similar number were not involved with the capitals?

The conclusion follows that capitals and imposts were carved by many men who did not integrate their detailing with each other, whether they were in the same team or not.


Portal capitals with ill-matched canopies

Misalignments in placing the capitals

Various errors accumulated between the capitals at each end of the portal and the *berchère* stonework of the towers. In the first capital on the north there is a gap between the wall of the tower and the capital, now filled with mortar [b1]. It looks as if the capital had been moved towards the interior. There is also a return on the left of the capital itself that was meant to be flush with the wall, but projects a little to the south. When installed it was shifted in both directions.

This is the identical situation to the plinths discussed earlier where a recess had been carved into the wall of the tower to receive the plinth, but when erected it was moved backwards and sideways [b2]. The width of the infill stone next to the plinth is the same as the mortar-filled space next to the capital.

This suggests that the capital was carved at the same time as the plinth. Extraordinary as this may at first appear, there is a logic to carving the two terminal stones of the embrasure together. The stability of the portal and the visual verticality of the statues rests entirely on the perfect fit between

Misfit capitals nL3, moved both out and back

North plinth against the tower

the two levels. Though almost three metres apart and, in this case, three or more years between carving and erection, they may have felt that absolute verticality and fit could not have been guaranteed without ensuring that both plinth and capital were carved from exactly the same template.

Under working methods on jobs that were to take years no master could guarantee that the capital would be carved to the same template as the base because the master of the plinths need not have been present. At that time over a gap of three campaigns the template for the base would no longer be available. The shape of the plinth could not have been copied for the capital because by then the plinth would have been covered by six courses of the embrasures, the colonnettes and the statues as well as scaffolding. Every master would have been aware of this intractable problem, just as they understood that their tenure as master mason would not be permanent.

I also favour the possibility that at the beginning it was decided to create a mock-up complete with statues, bases and capitals to demonstrate the way the whole scheme would appear. The clergy may have asked for something tangible to show how this original and very expensive proposal was going to look before they gave approval for the whole.

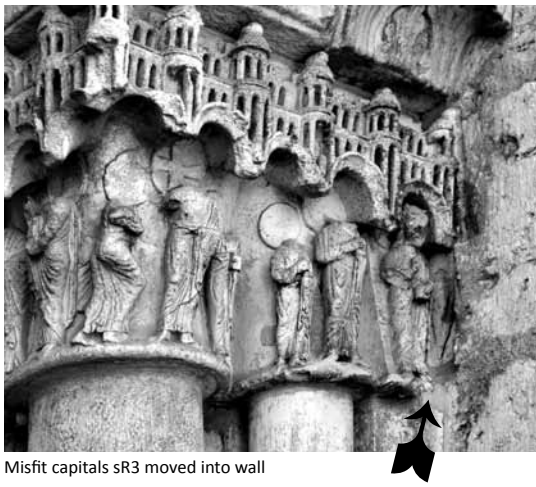
It would have been easy enough to lay out a display portal on the floor of the shed. There was no need to carve every stone, nor to think of permanently erecting the elements, for timber could have been used as

Capital north right, cR2

infills as well as props. Creating a display doorway offers one explanation for the consistent Etampes-like design of plinths, capitals and their imposts, the lintel and tympanum and the two statues on the far left.

I have argued that the master of the south portal at Etampes may have been Palmier whose defining palm-tree motif sits on its left face, and suggested that as so many items at Etampes were repeated at Chartres (though richer in decorative niceties), we could credit this master with the elements under his control [#07]. These were the plinths and the spaces allowed for the column-statues, and the decision to have historiated capitals and decorated imposts. This would have been in campaign F around 1139 when he was also involved in carving capitals higher up in the north tower, illustrated on page 4. It would seem, at the least, that Palmier had a hand in the initial design for all that lay below the imposts, but was not necessarily involved with what lay above, though it may be no accident that the tympani in both the north portal at Chartres and the south at Etampes depict the Ascension.

On the opposite side of the portal the southern capital also has a return where it meets the tower, though it has been set back into the thickness of the wall about 3cm, arrow [r1]. It shows that the capital had been carved for a wider embrasure. We have seen that the plinth had been shifted to the south when the pilaster nib was eliminated by H, which increased the width of the doorway. The inaccuracies in the junction of the capital with the tower does make sense if the capital and its plinth had been carved when the nib was already in place, which would have been in campaign G.


Misfit capitals sR3 moved into wall

Affect on the imposts

On the next level with the imposts the adjustments to both flanking capitals led to complications, one through a twist and the other possibly through a miscalculation. This is most readily observed in the Slaughter of the Innocents, being the left capital closest to the north door.

The junction with the adjacent capital is offset some 3cm leaving a plain face that should have been covered by the adjacent canopy, arrow in [r2]. This could have happened if it had been carved some time before so the misplacement of the plinths disturbed the exact match that could have been possible.


Misfit capitals nL1 moved to the right of impost

It is usual for the impost to overhang the canopy of the capital, but on the right the impost is set back so the capital projects past it. Unlike the capitals the design of the imposts left little room for adjustment, for where it was possible to slide the capital to the south the impost was restrained by the way it meets its neighbour. They have a short return at the inner corner to meet the next one, and if it had also been slipped would have left a gap. The capital would have fitted neatly under the impost if it had not been eased sideways. The lack of overhang suggests these Etampes-like imposts had also been carved before the error in the plinth was discovered.

Capitals in the south out of level

The lower two lintels rest on one another, and the tympanum rests on them. In the south the tympanum would have been out of level if they had not tilted the stones in the portal, white and black lines in [r]. If not adjusted the archivolts would not have fitted properly and the misalignment would have become even more pronounced.

The white lines show where a block was inserted on the right between the impost and the lintel. It is little more than 2cm thick, arrow [next page]. As this only partially resolved the problem the tympanum was also twisted a little anti-clockwise compared to the lintels, black lines in [r]. There


Gaps between lintels and tympanum adjusted

are no gaps in the vertical joints between the three panels that constitute the tympanum. The straight moulding along the bottom shows that the tympanum is without distortion [b]. The gap between the tympanum and the lintel is wider on the right showing a second adjustment.

This was not caused by settlement in the south tower as there would otherwise be signs of movement in the masonry above the portal where the coursing is continuous between the two, Therefore it reflects a difference in the heights of the capitals.

I need to examine the actual dimensions and levels on site to be more forthcoming on this discrepancy, and to see whether it was a difference in the heights of the doorway or a misplacement by the erecting gang.

I hope to have a more exact idea of what these adjustments mean when I measure them on site in June. I also want to check whether a lateral shift to Sheba could have caused the shift in the Slaughter capital.

Right side south portal with block under lintel

Widening gap between underside of tympanum and the top of the upper lintel that raised the right side of the tympanum

Is this a portrait of the bishop?

There are two heads that display the most individual characterization. One is from the capital above the right door of the entry and the other is one of the jamb figures immediately underneath. The capital and the jamb were both carved in group C at the time of campaign I, coloured blue on the schematic.

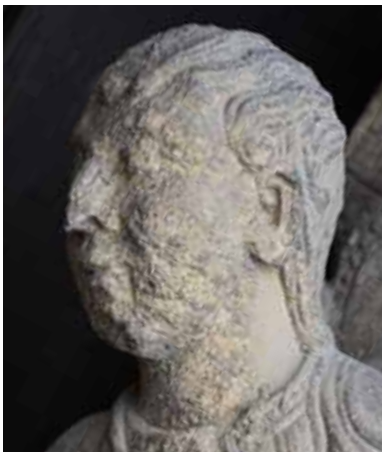
The heads are extremely individual, cultured, intelligent and autocratic in a rather benign way [b]. The details, almond-shaped eyes and so on are handled in much the same way and could have been by the same carver. In which case (and logically) the upper jambs and the capitals immediately overhead would have been completed at the same time in campaign I.

I wonder if this was a portrait of the bishop of Chartres at that time? It would have been Geoffroi II de Lèves who was bishop for over thirty years

Capital of the Baptism, right of central door

Capital The Baptism right of central door

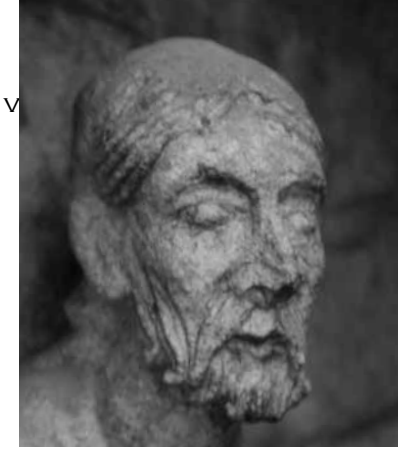
Central portal right jamb course 6



Central portal right jamb course 6

between 1116 and 1149. Lindy Grant describes him as "the leader of the moderate reformers in the French church, and the most politically adept, and thus politically prominent of his many colourful contemporaries ... he was the great conciliator of his time. Where there was discord, Geoffrey brought peace." This may well be the man, particularly when you consider that he welcomes all into the cathedral on the south side of the main door and in the capital he performs a cleric's role in The Baptism of Jesus.

If so, I wonder about the thin man standing next to him in the capital, who is quite different to the general range of figures in the other capitals. He is a stooped older man, well-groomed, long-nosed and big-eared. Could he have been the bishop's right-hand man, or some other key dignitary in the cathedral? He is so full of character it would be a pleasure were we able to identify him [r1].

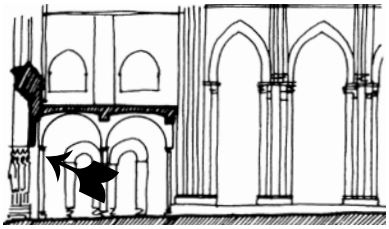

Capital, The Baptism right of central door

Two capitals on the interior

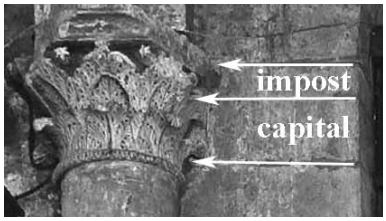
The interior wall behind the portals is integral with the sculpture on the outside. The wall was constructed of large stones and the coursing is continuous around the embrasures and across the wall. There are two engaged columns on the middle piers begun in campaign G [r2]. They were probably intended to support the vault over a narthex, arrow [r3]. If this narthex had not been vaulted the fire could have destroyed the stained glass in the three great lancets at the next level. I would surmise that the narthex vault was demolished in the 1700s when there was talk of placing a new organ against these lancets.

Interior of portal with campaigns marked

To support this vault over the narthex two massive capitals were carved over these shafts in campaign I [b]. They are tied into the wall on the same courses as the historiated capitals and their imposts on the outside. The way they coincide is noted in [r4].

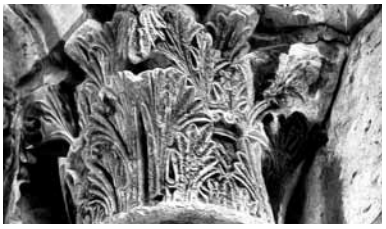

Possible form of narthex inside the portal

These capitals are like those in the middle level of the north tower discussed on page 4. The two carvers were identified as Palmier and Florentin in #07 and #29. They had been members of the F team four years earlier when the cartoon for the *Maiestas Domini* portal could have been created and now joined the *chantier* for a second time. The size of these capitals and the important position they occupy may celebrate their initial (and perhaps ongoing) involvement in the design. There are connections and implications here that need further investigation.



Narthex capital on same level as those in portal

This campaign included the last of the jamb figures and much of the masonry on the middle piers, the north and south having been largely completed by G and H. One could understand there being no shaft or capital


Exterior capital north tower level 1

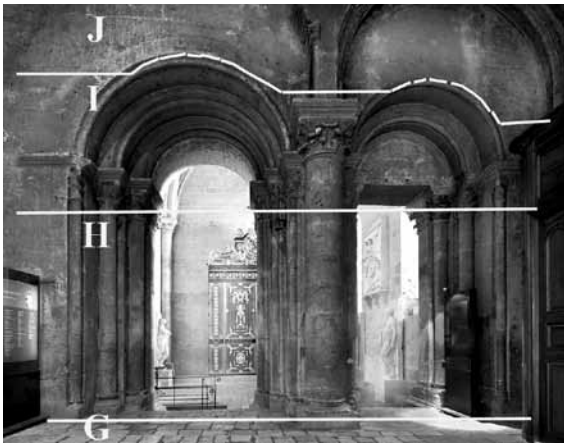

South interior narthex capital Xs1(a-) by Palmier


North interior narthex capital Xn1(a-) by Florentin

in the north corner if the thought of a vault over the narthex had not been part of the plan in campaign F. Then G installed the two bases discussed here, so why is there not one in the south corner where he was building the nib for a pilaster? Was it because of some other factor? *I will have to see if I can work this out in June.*

The nearby capitals over the entries into the south tower were carved in the same campaign I [r,b], but from their style they were by different teams of sculptors. Nothing in the foliage or terminals seem to match anything in the colonnettes. Was this because capitals in the tower were carved by the builder's men, and those in the portal by the teams of *imagiers*.

There is a different feel to these works that suggests a different lineage. The former seem to have come mainly from the southern and western regions (such as Le Mans) whereas the portal carvers came mainly from the Paris Basin.



Entries into south tower with campaigns marked


Capitals interior door into south tower WS-nRe(a-)


Capitals interior door into south tower WS-nC(a-)

On the external wall of the south tower there are recesses on the southern face, and the one on the left may have been for a door [r]. The middle panel of the Presentation lintel may have been carved for it. I would say they were begun in F and the door closed off in H when he purloined the panel to make a second lintel over the south portal. The blocked door was arched in campaign I or the arches may have been started in the previous campaign H. The underside of the capitals lies two courses below the historiated capitals in the portal with styles of decoration similar to the entry capitals in the north side of the tower, and not like any of the men I can recognise in the portal [b]. H could have used *spolia* to add the three curious figures on the south wall.


Exterior entries into south tower, south side


Capitals exterior door into south tower WS-sLe(a-)


Capitals exterior door into south tower WS-sRe(a-)

The tympani

The angel was carved for a round silhouette, the eagle for a pointed

Changes to the central tympanum

There is an intriguing anomaly at the top of the central tympanum. At the apex the curves over the edges of the upper two Evangelists are not the same [b]. The level of contrast in the two photos has been emphasised to make the differences clearer.

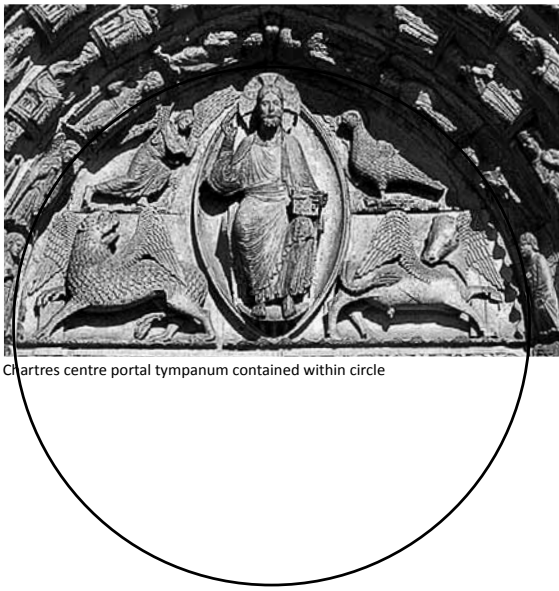
On the left the cloud frame has a flatter outline than on the right, which is steeper and rises well above the halo. The difference would have produced a round-arched frame on the left and a pointed one on the right. In the other three stones the arcs of three of the Evangelists were carved for the same fully rounded outline [r1]. Most of the right upper stone has the same outline, except that the apex was steepened with a straight section.

The geometry of the pointed form was literally tagged onto the earlier round arch in the simplest way. The master added a shallow tangent to raise the curved top into a sharp apex [r2]. The pointing is not particularly marked in the tympanum, but in the archivolts above the pointedness becomes more and more obvious so the entire assembly appears more pointed than the tympanum. There is a slight possibility that the outline of the left stone may have been a mistake, though that is hard to credit in the major element on such an important site.

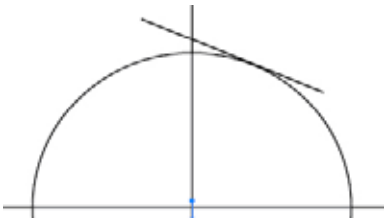
Above the angel the thin perimeter of clouds that frame the sculpture was quite savagely broken off at the apex, arrow [b2]. If still there the change in curvature would have stood out, emphasised by the shadow. By knocking it off no-one has noticed the discrepancy in many centuries. From the roughness of the cleavage it was the action of one of the erecting gangs.

The decision to introduce a pointed apex was made between carving the angel and the eagle. They were large and heavy, and required considerable care in transport and in sculpting. If the other four were carved somewhat earlier the one with the eagle may have been broken or mistakes made forcing the men to wait until it could be replaced. Alternatively, the process of carving may itself have taken a long time.

Logically, the decision would have been made at the same time in the lateral portals. This would have been in campaign I. The three round-framed stones of the tympanum were therefore carved in or before campaign H.

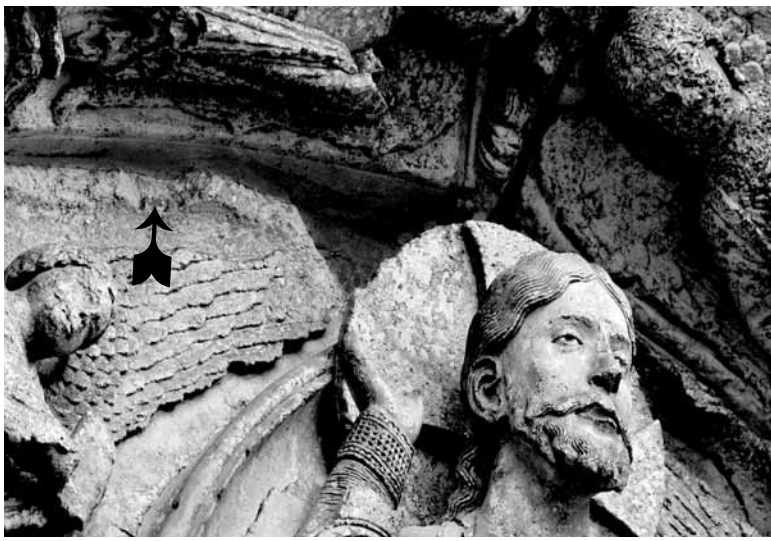


Chartres centre portal tympanum contained within circle



How the round arch was made pointed on right side

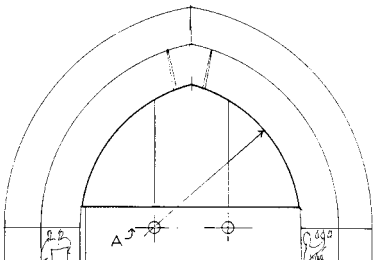
Apex of tympanum with different curves on each side of the mandorla

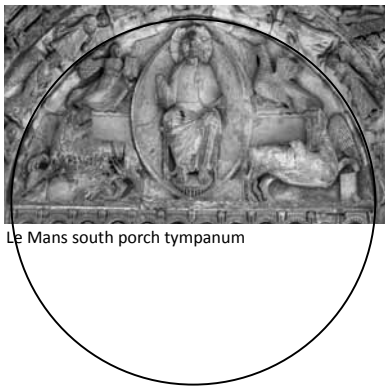


Detail of apex on the left and empty space above mandorla

The lateral tympani were set out for true pointed arches in which the entire arc of each curve was struck from separate points [r1]. In the central tympanum the arcs were set out from one point, and turned into a pointed form only at the last moment.

In earlier tympani with round arches, such as Bourges and Dijon, the tip of the mandorla meets the frame. In the south portal at Le Mans there is a small space above it so the wings on each side may stretch over [r2]. As the relationship of the mandorla to the round frame at Chartres looks similar to these, I would place the figure of Christ in the same campaign. It would also have been logical to carve the middle stone first.


Lateral portal tympanum with depressed centres


Le Mans south porch tympanum

Many hands and the myth of the Head Master

In major pieces such as the *Maiestas Domini* tympani, many men would have been involved in the carving, either under the direction of a master or to an approved design. The major examples are similar and represent a single simplified uncluttered arrangement that I believe was designed by one person but executed by many.

In the north of France there are still ten *Maiestas Domini* tympani, and a record of one lost. Two were severely mutilated during the Revolution. The arrangements are all the same: Christ sits enthroned inside a mandorla holding the Book, with the right hand raised in benediction and surrounded by the four Evangelists [page 58]. I am coming to believe that all ten were carved before the Second Crusade, and of these Chartres is the most famous.

Recent investigations are showing that large sculptural pieces were the product of more than one man each contributing what they were best at. The forms and features may be the same, but not the handwork. I suggest this holds the key to understanding why it is that most *Maiestas* sculptures conform to the same design while every face and many details are subtly different [b].

Check the square-cut solidity of Saint-Loup and Le Mans, the low


Chartres west portal central tympanum


Bourges south portal tympanum


Angers west portal tympanum


Saint-Loup-de-Naud west porch tympanum


Dijon Saint-Benigne tympanum


Le Mans south porch tympanum

forehead of Bourges and the high temple at Chartres, the wavy hair with or without a central parting, the moustaches that hang, or sweep beyond the ears at Le Mans. All the finely wrought details are individual.

The ears are different, the beards are longer or shorter, the lower lip undercut or incised, and the eyes! Every one is a personal statement. The subtle variety in the heads is reflected in the details of hands and clothing. Many carvers, one image.

Looking over the enormous literature on large sculptural commissions, be they column-statues or tympani, the search for the 'Head Master' has been frustrated by this multiplicity of hands. Identifying individual carvers is far from easy. We do not know whether one person executed the entire figure or whether many were involved. We do not know whether it was policy that a single carver complete an entire piece, though we suspect otherwise. And we have no idea how that person or persons was chosen. Was he the leader of the team or the best carver or the most spiritual? Did it depend on who was available, did they compete or draw lots or ask the donor or the priest?

In the central tympanum where carving may have been spread over some three campaigns it is almost impossible to identify the actual *imagiers*. As for the issue of the 'Head Master' in the central portal, an issue so loved by an impressive line of art historians from Wilhelm Vöge onwards, Peter Kidson rightly called it "nothing but the creation of a sustained effort of wishful thinking". Continued from page 9.

He went on to clearly express almost the same conclusions as I have come to: "Because his superiority was transparently obvious to anyone trained to appreciate the expressive power of great art, as that was understood in the first half of the twentieth century, it was inconceivable that his contemporaries should have thought otherwise; and because Chartres stood at the hinge between romanesque and gothic he was, *ipso facto*, the key figure in deflecting the course of western sculpture into new channels. This was one of those great and splendid simplifications that everyone could understand; but it was a fiction, not history. .... There is no reason to think that at Chartres the 'Head Master' was more than a member of a team - *primus inter pares* at best; and if he contributed anything to the formation of a gothic style of sculpture a lot of hindsight is needed to spot it. The man emerged out of a romanesque milieu which can be pinpointed with precision. There was no dramatic epoch, just a sensitive artist responding to a different cultural atmosphere with an appropriate adjustment of style. The implications are far reaching, not to say daunting."

I would go further to add that we are not talking about a man except in so far as someone designed, perhaps in committee, the basic tympanum arrangement. This was probably a sculptor, but could equally have been a painter or an illuminator, and prior to that the inspiration may have come from a cleric. Finding that person is going to be troublesome, to say the least. It is clear there was a design that most of the carvers followed, with their own interpretations sprinkled in, and so in the end it is more meaningful in large-scale works like the tympani to separate the template-maker from the carver.

The many *Maiestas Domini* portals show that years before Chartres one individual had made the original maquette or cartoon that everyone followed. We would like to know who that was, for sure. A key fellow, if he could be found. Even there we are lost, for we would certainly like to think that he would have been involved in carving the most important parts, and we gravitate naturally to the head of Christ, where there is no uniformity.


Bourges south portal tympanum


Saint-Loup-de-Naud west porch tympanum


Le Mans south porch tympanum


Angers cathedral west portal tympanum

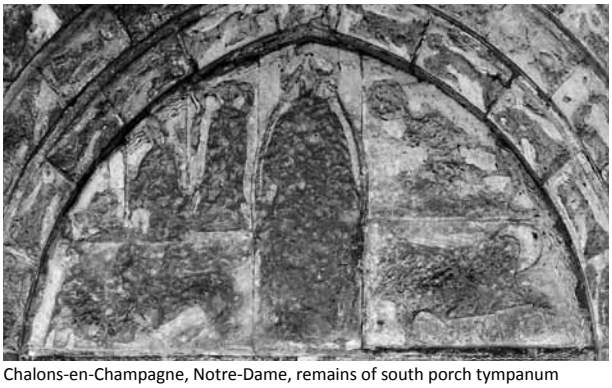

Chartres west portal, central tympanum


Dijon Saint-Benigne tympanum


Vermenton, drawing 1739 of south portal tympanum.


Chasenard south


Compiegne Saint-Pierre remains of west portal tympanum


Chalons-en-Champagne, Notre-Dame, remains of south porch tympanum

Replacing the lateral tympani

In the two lateral portals the lower archivolts were reduced after they had been carved. More than 20cm was chiselled off the bottom of eight exquisitely caved stones [r]. For this to have happened there must have been something about the height that was of overwhelming importance. Something that overrode all aesthetic or financial considerations. How can one explain such an extraordinary event? What was so important about knocking off a few inches when it only affected the appearance? Indeed, how could they have justified the mutilation of such lovely archivolts for such an apparently paultry disturbance?

They were not reduced while on the scaffolding nor while being erected, for the chiselling is too neat. Since masons did not have tape measures and may still have been using Roman numerals the amount to be cut would most likely have been determined by moving the blocks themselves around on the floor of the shed, piece by piece as they were adjusting them, until each of the cuts were organised as perfectly as they could.

The whole superior part had to be set out on the workshop floor, each piece moved into place and decisions made about which should be affected and how to preserve the best in each of them. This was not a one-day exercise, but could have taken weeks as it was done with great care. Altogether some twenty archivolt pieces were affected.

From the beginning, most probably in campaign F, the templates for the first round-arched tympani were prepared to provide the curved outline for the archivolts. It is hard to imagine they would have carved the surrounding stones without having a clear idea of the shape of the massive blocks of the tympani that were to support them. Placed on the workshop floor, the act of setting one curved block against another and ensuring that the curves are perfect is so satisfying I think it likely that the two earlier tympani had been carved before the archivolts, and that they have been lost.

Though it was possible for the outline of the tympanum to have been drawn on the deck, that would not have been as secure for the archivolts as having the actual stones on which the encircling arches would be placed. In any case, the logical carving sequence is the lintel, the tympanum over it, then the lower archivolts against them both and finally the upper.

It is hard to believe that the central tympanum would have been carved for round frames while the lateral were made pointed. If one was round, than all three would have been round. There was a noble and still current acceptance of round-arched tympani in contemporary portals such as Saint-Denis, Bourges and most of those to the south. Some were stilted to allow more space for the side figures, as in Autun, Avalon, Châteaudun and so on.

At Chartres the lower lintel in the south portal depicts the Nativity [r2]. There is a similar design in the north transept at La Charité-sur-Loire [r3]. The tympanum over that is round-arched with Christ within a mandorla flanked by seven surrounding figures. Similarly, the Presentation in the upper lintel at Chartres is similar to another in La Charité above which the tympanum carries the Transfiguration of Christ, also round-arched [r4].

If Chartres had been originally designed, as was Etampes, for a round-arched tympanum, the two at La Charité could reflect something of the earlier design. And of course, the question arises, what did they do with the originals? Were they thrown away, or perhaps transported to another church, perhaps to La Charité? Are these the originals from Chartres? I doubt if anyone would want to simply toss them into a pit, though goodness knows, we have ample examples of great works being used as filling. If these were the originals, then what was designed for the middle?


South portal, bottom right archivolts


Two south lintels before being reduced in width


La Charité-sur-Loire, north transept portal


La Charité-sur-Loire, south transept, ex nR portal

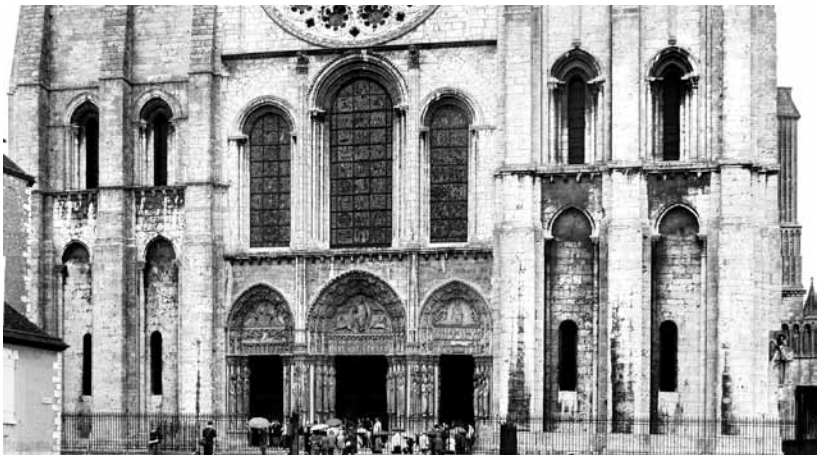
Can we make any intelligent surmises about what the original portal may have looked like? I have recreated the design using the northern lintels and archivolts as a guide. I replaced the lower parts on the vertical stones on the assumption that the top of the upper figures of Cancer and Aries would be level with the top of the upper lintels. I tweaked the curved archivolts so they followed the round arch from La Charité rather than the pointed one we know so well, and found a comfortable fit were we to add a little stilting [b]. Also in the third level of archivolts the lower sections have a suggestion of verticality, at least on the inside faces [r].

Vertical shaft in north archivolts, right third row

Proposed original round-arched design for the north portal with a hypothetical La Charité tympanum

Most of the other arches in the westworks at Chartres from before 1145 are round, be they in the entries into the towers, both internal and external, the window heads, and doorways on the south side or elsewhere [b]. The portals are exceptional in having the only pointed arches at this level, except for the decorative arcades and the openings in the second level on the north from campaign F.

Changing the tympani from round to pointed would have required the most compelling rationale. Only a radical view of great moment would have forced such a drastic decision, one in which both clergy and designers agreed to mutilate the beautiful carvings that had been made earlier by some of the best men in the region.



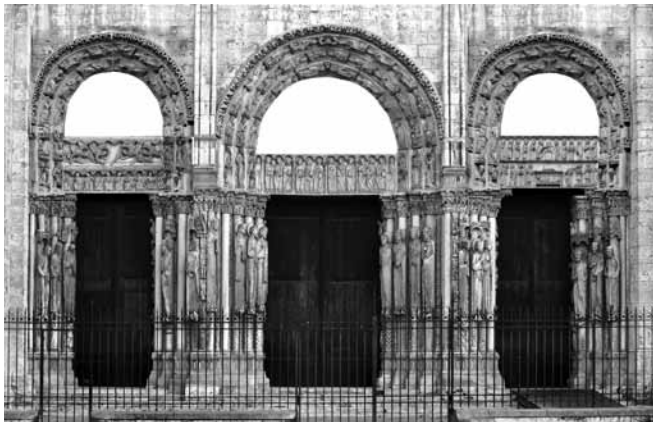
Round arches in the Chartres west front

In itself the *Maiestas Domini* design for a central portal would not have necessarily required a pointed arch. Bourges south is round, as is Dijon, Vermenton and Chassenard, and the modified version in Rochester [r1]. The rest have pointed tympani, but some points are so slight as to be hardly noticeable. There is no clear chronology.


Rochester cathedral west tympanum

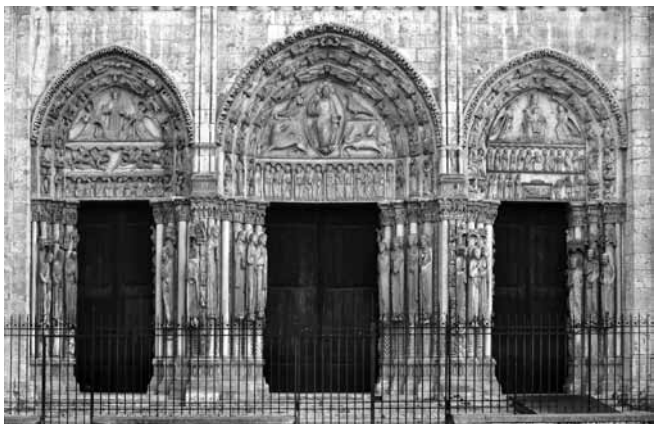
The continuous frame of clouds around the pointed lateral tympani may be broken in a couple of places, the most noticeable being over the panel with the Virgin in the south. But there is nothing to suggest either of these carefully sculpted frames have been recarved or modified in any way. Consequently they were not assembled from older stones with round arches that had been adapted to make them pointed, but from new. The transformation was enormous, from three almost equal-height portals with round arches and double lintels to the unequal but graduated scheme we know today [r2,3].

The explanation may be that by making them almost the same height the earlier portal displayed an ambiguous hierarchy in which the temporal stories ranked almost as high as the eternal.


Possible scheme for double lintels and round arches, campaign G

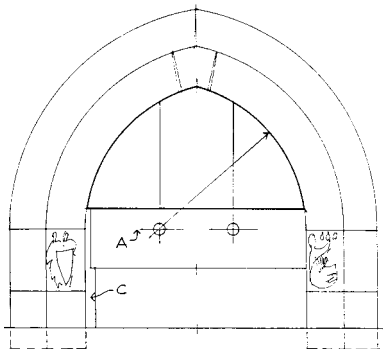
We can imagine the discussions and heart-searching that preceded this decision, as much among the masons and sculptors on the site as with the clergy and their patrons. It was an expensive and time-wasting decision that would have delayed completion. Who would have made such a ruthless decision? The clergy would surely have had the final word, but could the impetus have come from the master mason or the sculptors? One could argue that whereas pointed arches were an aesthetic choice most probably determined by the masters, the decision to lower the heights would most likely have been a moral or theological issue, and a matter for the clergy.

The other arches from campaign I are round, being the entries into the tower from inside the church and from the south side. Round would seem to have been his personal preference. Thus the suggestion could as easily have come from the *imagiers* as from the masons. Slightly pointed forms were used in three of the other major *Maiestas Domini* tympani, in Saint-Loup, Le Mans and Angers. This would be an interesting investigation, though I am personally persuaded there would have been considerable discussion in which many men took part and that the outcome may have been more collective than individual.


Portal in campaign I in 1142. Pointed arches over doubled lintels

Geometry may have played a part, as it extolled the principles behind the Divine Purpose and was essential to control the templates on which effective site control rested. Geometry was ingrained into the training of each man. To investigate this we would need very precise measurements and enough clarity on the order of work to separately examine each campaign.

The arc of the slightly pointed arch of the middle tympanum was set out from a centre at its base on the top of the lintel. The two curves of the side tympani were placed well below their bases, almost in the middle of the lintel [r4]. The depressed centres of the pointed arch meant a shorter circumference. In altering the design the upper archivolts were pushed down into the space of the lower two, which makes sense geometrically only if the arch of the earlier tympanum had been struck from above the top of the lintel and the curved archivolts set out from there. Therefore the upper curved archivolts were carved before the changes to the tympani, and only the pointed key stones were carved in campaigns I or J. [Also page 72].



South portal tympanum with depressed centres

The lintels and surrounding archivolts

Single lintels were doubled and tall tympani squeezed and shortened

The central lintel

On the left of the central lintel the support under the canopy extends behind the angel in the archivolt, whereas on the right it sits slightly forward [b]. On both sides the character of the stone is different to the rest of the lintel. They are grainier in texture and slightly yellower in colour. The joint is clearly marked. The end stones were therefore inserted.

The omission of flanking shafts is unusual. At Saint-Loup-de-Naud and Le Mans, both *Maiestas Domini* portals, all the lintel figures are framed between shafts that support every arch in an arcade of canopies [r].

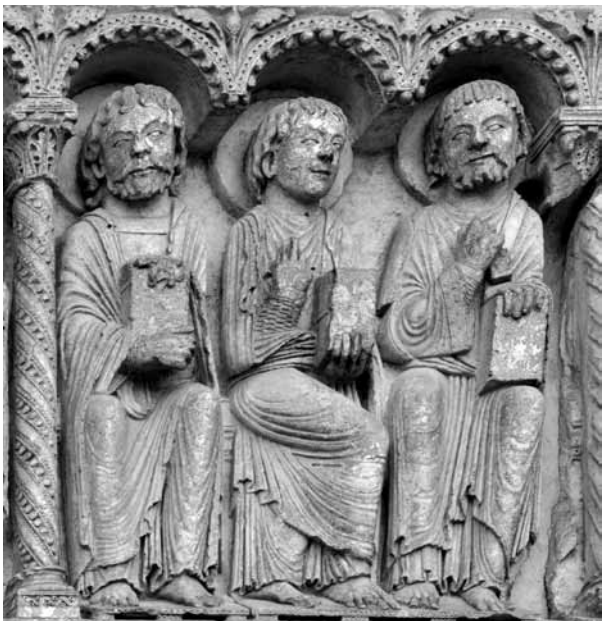
This examination shows that the Chartres lintel would have been significantly longer when first carved. The situations in the two lower lintels of the side portals are similar. I would guess the three would have been carved at the same time for larger doorways, in campaign F. *This would therefore have been before the plinths under the central piers were carved.*

Lintels in Saint-Loup-de-Naud

Lintels in Le Mans

Centre portal, left and right ends of lintel showing replaced frames

I suggested in #04 that one half of the stone on the left may have been carved by Jérôme [b1]. Consider the fluid clothing and the hems, the sharp line above the feet and the swirl of the cloth. Above all, the head with its waxed moustache and dreamy stillness [b2]. The lips are complex, the

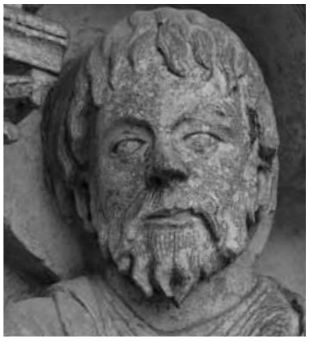


Chartres west portal, part of central lintel

Chartres, an apostle in the central lintel, Jérôme

nostrils drilled and the bone over the eyes slopes back. There is little or no emphasis on the tear duct and the roundness of the eye has been emphasised by the deep cutting on each side. The firm upward curve of the eyebrows lies over a deeply overhang that shades the eye, and these eyes have been further emphasised by a framing line around both the upper and lower lids.

Compare this with the head of one of the column-statues, that of Saint Peter closest to the central door on the right side [b]. A stalwart quality, a broad emphatic sense of permanence and endurance illuminates all these heads. Similar ones are to be found at Saint-Loup-de-Naud and Dijon.


Chartres central lintel


The head of Saint Peter on the right of the central door


Dijon Saint-Benigne, head of Christ


Figures right embrasure central door


Saint-Loup-de-Naud lintel


Saint-Loup-de-Naud King Herod

If Jérôme did carve the head of this statue at the same time as the lintel, other column figures flanking the central door may have been carved in campaign F at the same time as the statues in the north [page 40].

Central archivolts

There are no details in the superior parts of the north portal to match the utterly exquisite tools and implements found in the lower archivolts of the south door and those of the lower kings in the centre. The detailing in the hems of the clothing, the sharply-edged patterns in the seats and frames bespeak not only the finest stone, but also one skilled and disciplined team of craftsmen. They display the same precision, degree of accuracy, sharp edges and careful observation. All were executed on the same hard unwearing choice of stone.

The lower archivolts with hymning kings in the centre have similar precision, clothing, heads and instruments to those of the lower level on the south [r]. I suggest they were carved by the same team as the additions to the Presentation lintel (pages 69-71). As their heights were for double lintels these precision-tooled archivolts could not have been carved before G, and most probably in H when the south embrasure was being set up.

All were carved in readiness and stockpiled in the shed until the builders were ready for them. I illustrate some details of this group over the page.


Centre portal, right archivolt, confrontation


South portal, left archivolt, dragon

Centre portal, left archivolts

Centre portal,right archivolts

Musical instruments, South portal right archivolt "Music"; centre portal left archivolt two kings; South portal right archivolt "Music"

Chartres south left archivolt

Chartres central left archivolt

Changes in the north

The five major changes to the sculpture of the northern portal were detailed in my 1986 article in *Gesta* and will be only summarised here. The design of the plinths and their misplacement in campaign G have already been discussed, along with the impact it had on the placement of the capitals. The carving and erection above that and the consequences of replacing the tympanum in campaign I can be followed over these five stages:

1. In campaign F carve the lower lintel and possibly the round-arched tympanum;
2. in G discover that the embrasures were out of square and
3. decide to add the upper lintel. This raised the height of the portal;
4. in F and G carve most of the archivolts;
5. in campaign I carve a new tympanum and reduce the archivolts.

1 The lower lintel contains ten figures under canopies. The canopy on the left has been broken, and the frame from a separate block, as in the lintel over the central door [r1]. On the right about 3cm of the lintel disappears behind the figure of Janus, arrow [r2]. These discrepancies show that the lintel was like the other two in being originally carved for a wider arrangement. Either the door would have been wider or more space would have been left over the imposts. From observation the lintel would have been virtually the same length as the lower lintel in the south portal.

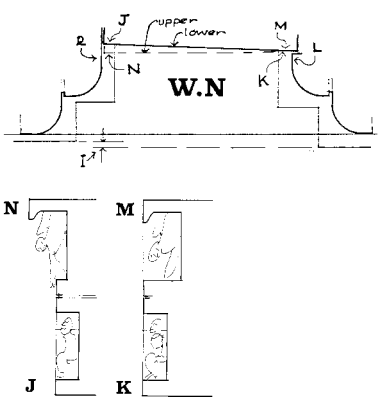
The reason for ten figures has been questioned and discussed without finality. In the Etampes south portal ten figures were carved in the lintel, and Palmier was involved with both, #29. If they were meant to represent apostles two additional stones were needed at each end in the adjoining archivolts. Alternatively, in the previous campaign E they may have opted for a much wider doorway with room for a dozen figures, in which case they were lopped off for the present scheme.

2,3 The misalignment of the plinth was discoverable as the jambs were being erected in G. They did not have to place the lintel to see the error. The master decided to compensate by carving a second lintel from two blocks of different widths that would be cleverly twisted to bring the upper edge back to square and disguise the problem. Its lower frame follows the line of the twisted lower lintel, and the upper is parallel to the wall above. Thus the angels' wings and hands hang over the edge as the lower moved back [next page]. This subtle workmanship involved considerable skill.

The adjustments were summarised in these two drawings [b]. The upper edge of the lintel lies parallel to the tympanum M and N, while the lower edge is twisted parallel to the bottom lintel J and K. The capitals and imposts had already been shifted, R.

Left end lower lintel north door

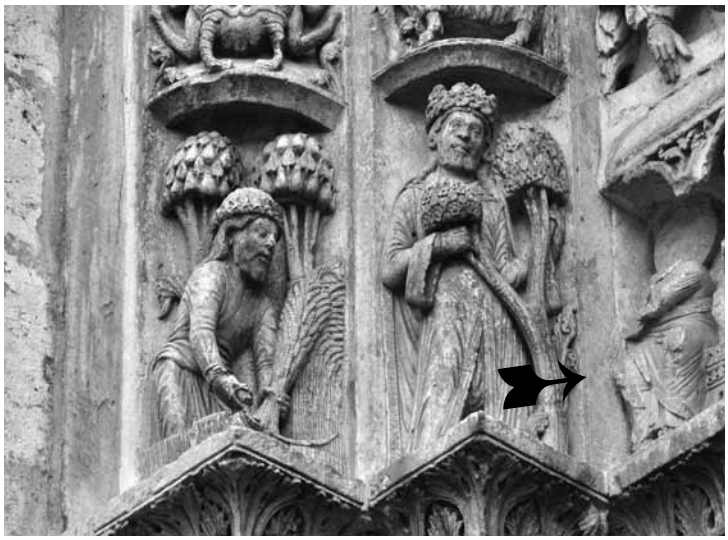
Right end lower lintel north door



Plan of misalignment in upper lintel and sections.

The two lintels over the north door

4,5 On the left where the lintel was shifted inwards from the true face of the portal the back of the archivolt was extended into that space to fill the gap, arrow [r]. It is a two-level sculpture and was designed to fit the upper lintel and was therefore carved after the discovery of the error, which would have been at the same time as the upper lintel in campaign G.



Left archivolt extended inwards to fill gap to lintel

Timing was a factor. The sculptors would have placed their finished pieces on shelves or the floor of the shed, hopefully set out in the way they were intended to be installed, and some time later, perhaps long after the *imagiers* had left, the builders collected these pieces and put them up. The gap is understandable as the sculptors preparing elements for later erection were able to be on site with some flexibility, whereas builders were constrained by the timing of their tasks in relation to the building as a whole.

One would expect the master in charge to have avoided making alterations if he had known the original scheme or had not wanted to impose his own. But if the masters had been changed, it seems there was neither mechanism nor reason to have a procedure for informing a later man on the intentions of his predecessor. The presence of these changes is *prima facie* evidence for the discontinuities that arose from unsupervised short-term contracting.

Nevertheless, during campaigns F and possibly G a great deal of the upper sculpture of the north portal may have been arranged as a display. The lintels for all three doors were carved, and possibly the round-arched tympani either carved or blocked in.

These sculptures were stored in the shed while the other two portals caught up. They remained in store until campaign I, because if they had been set up earlier they would have had to be taken down to be reduced in height. As the evidence suggests that masonry was in a sense 'consecrated' by being installed, it would have been against policy to pull out stones once in place. Therefore they had been lying in the shed when it was decided to shorten them, and that was in campaign I.

Changes in the south

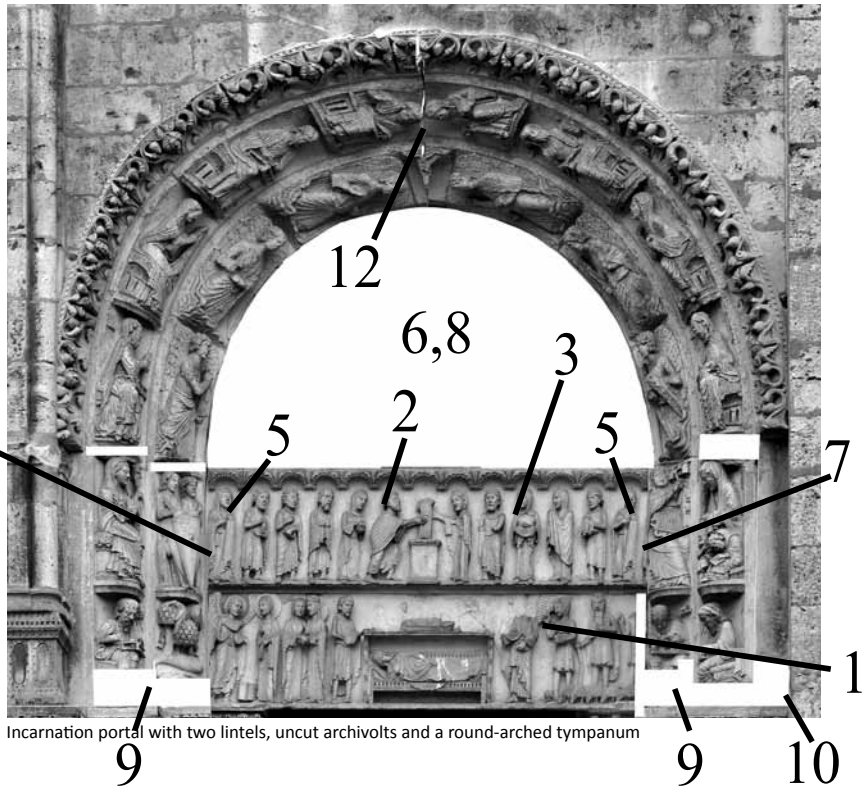
The complexities in the south present the most mangled story of all, and they are the most pertinent for understanding the history of the portal. The short version is that as in the north the lower lintel was carved in campaign F for a wider door. The plinths of the right embrasure were misplaced between G and H. The middle block of what is now the upper lintel was intended for another place, and was extended in H to match the extra lintel in the north. This is when the archivolts were carved. Both lintels were reduced between these campaigns through an error, so that when placed in campaign I there was a gap between them and the archivolts on the left. When the round-arched tympanum was scrapped in campaign I and a new one carved the height of the four lowest archivolts was lowered by cutting off the bases and settling heads into the stones above. The move included some fine adjustments, such as the acute angle at the bottom of

the new tympanum to a shorter width, and the placement of Pythagoras too far to the south. The additions, reductions and shifts in the stones create the order for this story.

The details have been set out in the following sections that will be discussed in more detail. The numbers are illustrated in [b]:

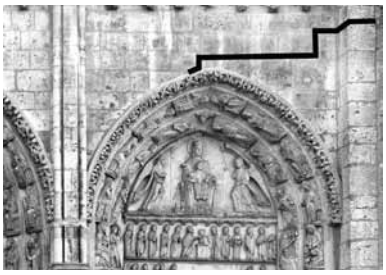
1. Carve the lower lintel for a wider opening in E or F;
2. possibly at the same time carve the central panel of the upper lintel that could have been meant for the south external door into the tower;
3. set the width of the doorway by adding the pilaster built into the base of the tower, in G;
4. increase the width of the doorway by ignoring the pilaster when the embrasures were bonded into the tower in H;
5. when the second lintel was needed, add two figures to the central panel in item 2 so it would comfortably fit the width of the doorway in H;
6. latest moment to carve the round-arched tympanum, though probably F;
7. mistakenly reduce both lintels to suit the smaller doorway. This has to be after H who carved the figures and I who erected them;
8. re-carve the tympanum for a pointed-arch and lower profile in campaign I
9. and at the same time reduce the heights of the lower archivolts;
10. erect the lintels and in placing the archivolts on the right misjudge their location in relation to the tower, in I;
11. this error produced the gap between the lintel and Pisces on the left, in J;
12. adjust the previously carved uppermost outer archivolts in J.

The complex dance displayed in these dozen steps comes from the cumulative alterations in a portal that took five years in the making, and illustrates the problems inherent in multiple contracting where the men in charge kept changing without leaving their templates or intentions behind.



Incarnation portal with two lintels, uncut archivolts and a round-arched tympanum

South portal integral with tower


Bonded coursing from tower to apex of south portal

The masons marks in the upper part of the north tower connect with those in the south. They show that campaigns F and G in the upper half of the north were contemporary with the lowest courses into the south crypt. The southern footings may have been started in earlier campaigns, but for some reason there was a long delay prior to this that seriously affected the completion of the portals.

At the level of the plinths and the embrasures in campaign H the portal was fully bonded into the tower. Above the portal the coursing of the tower continues over the top of the tympanum in campaign J [r]. Thus the whole of south door was erected in step with the masonry of the south tower.

When the foundations for the tower were being started they would have presumably wanted the widths of the lateral doors to be equal. As up to four masters could have been involved in the carving and placement of the four portal plinths it was inevitable that more than one method for determining the dimensions would have been used. This is apparent in the widths of the doors, for the north is 194cm and the south is 185cm, and would have been 178cm if the pilaster had remained. These are significant differences.

1 ***The lower Nativity lintel in F***

The figure on the far right of the Nativity was cut through the middle [b2]. If we replace this half-lost figure with the smaller of the two shepherds the original panel would have been larger than the original carving for the upper lintel by several centimetres, or more if we had used a wider figure [b3]. If the round-arched tympanum had been carved in the same campaign it would probably have been this width.

The reduction to the right figure is so beautifully executed it would have been done in the workshop before being placed, the stone being delivered to the erecting gang already cut back. They set it hard against the side of the archivolt on the right, leaving a gap on the left [b1].

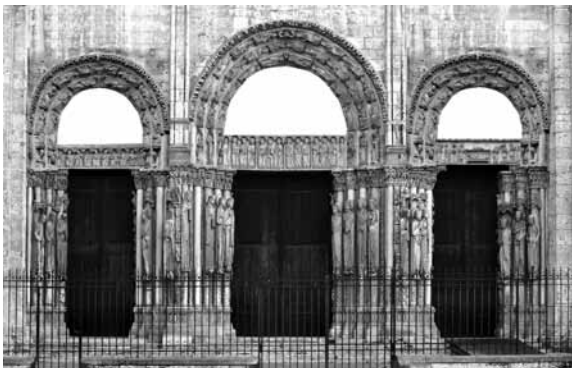
Through the gap a projecting nib is visible. It is recessed from the front face and was intended to fit behind the archivolts to secure it from leaning over. The nib of the upper lintel is not recessed, but lies on the same plane (see item 9). *As the back of Pisces was carved to suit the nib of the upper lintel rather than this one, both were carved after the Nativity.*

Because the lower lintels for all three doors were reduced they were carved *before the central piers that established the final door widths had been placed or carved*. Wider doors would have meant narrower plinths.



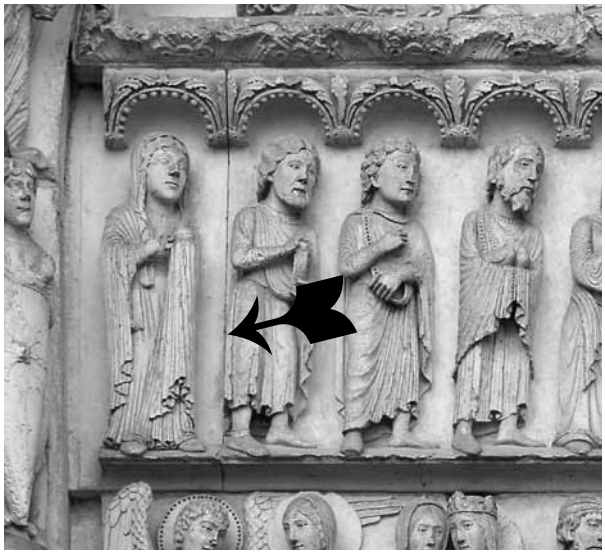

Gap to the left of bottom lintel; middle, cut figures to right of lintel; right, possible size of restored figure in bottom lintel.

In campaign F this is how the portal could have looked with single lintels and round-arched tympani [r].


Portal with round-arch, single lintel, uncut archivolts

2,5 *The Presentation lintel in F and H*

The upper lintel is made of three stones. The junctions are finely-carved, arrows in [b]. The piece on the right was chopped in half when the lintels were reduced and the head lost [b2]. They were carved in a different manner to the slightly archaic figures in the middle section. The posture and proportion of the limbs are natural. The edges of the clothing are richly folded in a complex manner that generously enfolds them, and fall in multiple layers so almost nothing of the arms or legs show. The bodies and accoutrements give a feeling of dense corporeality.


South portal, left end upper lintel, junction marked


South portal, right end upper lintel, junction marked

By comparison, the clothing in the middle panel tends to be a single sheath or stole with less subtle and refined embroidery, the bodies are thinner and lean sideways to suggest movement. Altogether, the detailing in the middle has been handled in a subtly simpler manner. Its overall affect is closer to the carving style of the lower lintel, so much so that I suspect they may have been carved by the same team at the one time, though not by the same man.

The arches that run across the top of all three stones have the same commonly-used pattern in which fronds fill the spandrels. But there are subtle differences in the handling of the outlines and tips and the spaces between the leaves that suggest another hand [b].

The head of the female figure on the left is exquisitely modelled. It is larger in proportion to the body than the heads on the middle stone. The eyes are undrilled, with a notable space between the eyelid and line of the


South portal, lintel canopies on the left

eyebrow [b1]. The features are quite soft and plump, the lips carefully modelled. The head is very like those on the two archivolts to the right, Music and Grammar [b2,3]. They may all have been by the same team, if not the one sculptor. Though there are a few subtle differences, the archivolt figure of Dialectic on the left may also have been his [r]. The philosophers at the bottom are on the same blocks and therefore by the same team.

South portal, three heads with similar features: on the left figure added to upper lintel; middle and right archivolts of Music and Grammar.

I conclude from this that the extensions of the upper lintel and three of the adjacent archivolts were carved under the direction of one carver. The participation of assistants may be visible in the seats, the detailing of the foliage and so on. Nevertheless, the way the figures fill the available space, the handsome clothing and features, and the exquisite detailing of ancillary objects such as the dragon, the musical instruments and the two scholars, show a common touch (illustrated page 64). Also, they are all carved from extremely fine-grained blocks of *calcaire* that have survived the weather with almost no abrasion. Maybe it was the carver himself who chose the material from the quarry with great care, and brought it to the site.

We have two questions to answer about this lintel, though not related chronologically. One involves the reasons for widening it with two additional figures, and the other concerns the truncation on the right.

Concerning the first, the more obvious explanation is that the stone for the middle was too short when it came from the quarry and the side pieces were added to make up the difference, and that all three were carved at the time they decided to add an additional lintel in G.

Though logical, I am not persuaded by this. The Presentation in the middle stone was designed with all figures playing a part in the narrative, yet each maintains a spatial separateness with considerable openness between them. The flanking onlookers are more like sentinel book-ends to the central scene, under wider canopies and elongated arches. The middle stone is also closer in character to the Nativity lintel underneath, in the proportions of the figures, the heads, posture and so on. Both appear to have been the product of a single team with the same sculptural philosophy. Where the middle was carved in campaign F the side pieces were added at a later time..

In this scenario the middle section was too short to fit across the south doorway because it was meant for somewhere else. It is precisely the right length to have been placed over the now blocked-up entry into the tower from the south. When the bases to the tower were being laid in F or G they intended to have a side entry in the manner of many contemporary churches. That decision was scrapped in H, and instead the lintel was transferred to the south portal to balance the second Angel lintel then being carved over the

South portal, left and right lower archivolts

portal in the north. The two sentinels were carved at that time, along with the adjacent archivolts, and the lower kings over the central door (page 63).

Though this reading of the stones makes no difference to the history of the anomalies in the portal, it does explain why some months were spent working on a stone that was too small for where it is and which had to be extended by another team. Would they not have simply ordered a longer stone, which in any case would have been the better structural solution? For these reasons I am suggesting that two lintels were carved in campaign F for different locations, and that when the twist in the north was discovered and it was decided to add a lintel, the Presentation that was waiting in the shed was enlarged so it would fit into the south. Being shorter than the Nativity it was planned for a smaller door.

In [b] I moved both lintels to the left until they sat hard against the archivolts, and then added the lost figures on the right by using the width of the canopy on the left as a guide [r].This lintel exactly fitted the required width between archivolts. It demonstrated that the two additions were designed for the existing door width, and were therefore carved in H.

And concerning the second question, something happened that is more difficult to understand. At this point we can see that if only the lower lintel had been reduced a little there would have been no need for the reduction in the upper. However, both were shortened to be the same width, and this was smaller than either the door or the tympanum.

South portal, original widths of both lintels restored and shifted to the left to show approximate widths when carved. The lower is wider than the upper. Width of upper coincides with tympanum

Normally lintels have projecting nibs that goes behind the archivolts to help secure them from tipping forward. On the right the nibs of both lintels were cut off with the shortening so there was nothing to pass behind the archivolts. Instead there is a space that had to be filled with mortar. The projections nibs are visible on the left [r3].

In the carving of the lower lintel the nib was recessed on the assumption that the back of the archivolt would be thick enough to meet it. In the upper lintel the nib is not set back at all, but is an extension of the plane of the background. This would have suited both Gemini and Pisces for they had only enough depth at the back of the stone to lie flush with the projection (see item 7). The manner in which the junctions between nibs and archivolts on the left coincide shows they were carved at the same time.

Upper south lintel as is

Upper south lintel before cutting

Projections on the end of south lintels

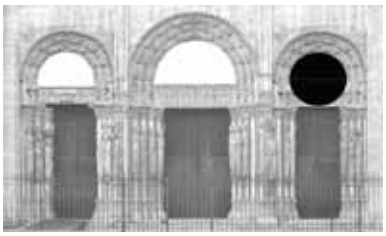
6 *The original tympanum in F or G*

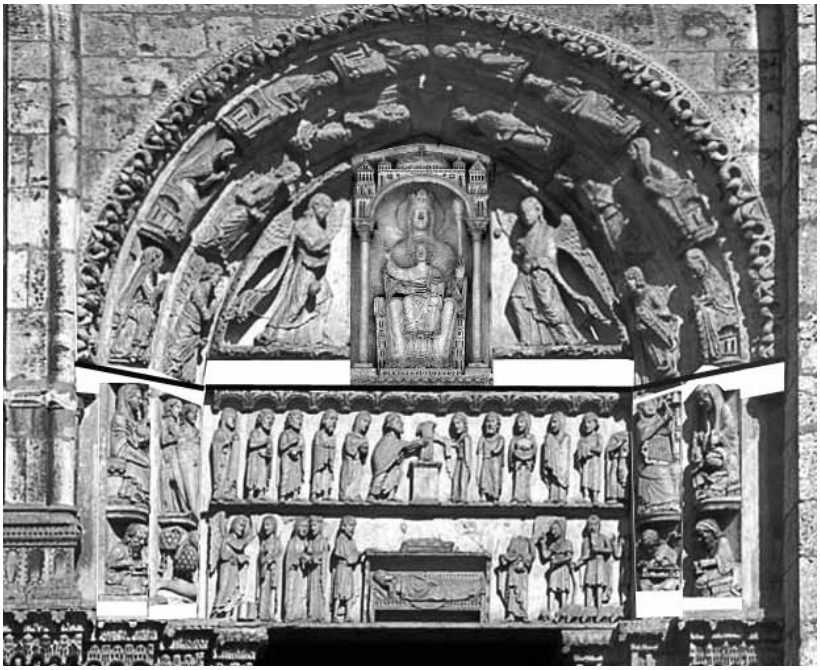

Paris Notre-Dame west-south tympanum

See also pages 59-61. I rearranged the upper parts with a hypothetical round-arched tympanum so there would be enough circumference to accommodate the archivolts. This moved the tympanum upwards by the white space shown under the angels flanking the Virgin [b].

If the subject of the earlier tympanum had been the same, the enthroned Virgin would have been a taller stone, not unlike the Virgin from the Paris Notre-Dame façade [r1]. Experimentally, I placed the Notre-Dame stone here and found the proportions fitted comfortably into the enlarged height for this tympanum [b]. The fit follows from the proportions, not from actual sizes as I have not measured them. Could it be that both the Chartres and Notre-Dame Virgins were originally to have been carved from the same template, but the frame was changed and lowered at Chartres in campaign I? Alternatively, the round-arched Virgin from Chartres may have been transported to Paris for their use while the *imagiers* in 1142 carved themselves a new one.

The geometry of the round-arched north and south tympani over single lintels may have followed this simple figure [r2]. The height to the top of the tympani would have been the same as the width of the lintel. An arrangement of squares or circles, depending on how you drew it. Adding a lintel of course altered this secure arrangement.


Suggested geometry for round-arched tympani


South portal with original heights of archivolts and round-arches tympanum restored.

7 *Reducing the lintels after G*

The dimension of the gap on the left of both lintels is almost exactly the size of the nib at the base of the tower for a pilaster in G [r1]. This suggests it would have been cut down to suit that smaller door. Yet the upper lintel was enlarged in H after the pilaster had been removed and the doorway widened. The two additional statues to the upper lintel were perfect for the width in H, and yet one was cut down for an earlier width in G.

It is puzzling that the revised tympanum carved in the very next campaign I respected the door width prepared by H, and yet between the time it was carved and the time it was erected the lintels under it were reduced to suit an *earlier* doorway. As both lintels were truncated for widths


The even gap between the two lintels and the left archivolts of Pisces and Gemini with the three misalignments marked

that were narrower than either the round or pointed tympani, and as this was being done just as the pointed tympanum was being carved, we have to somehow sort out in our minds how an upper lintel that was carved in G could have been extended in H and then cut back to suit G in I.

Error seems the only reasonable explanation.

8 *The second tympanum was narrower and shorter in H*

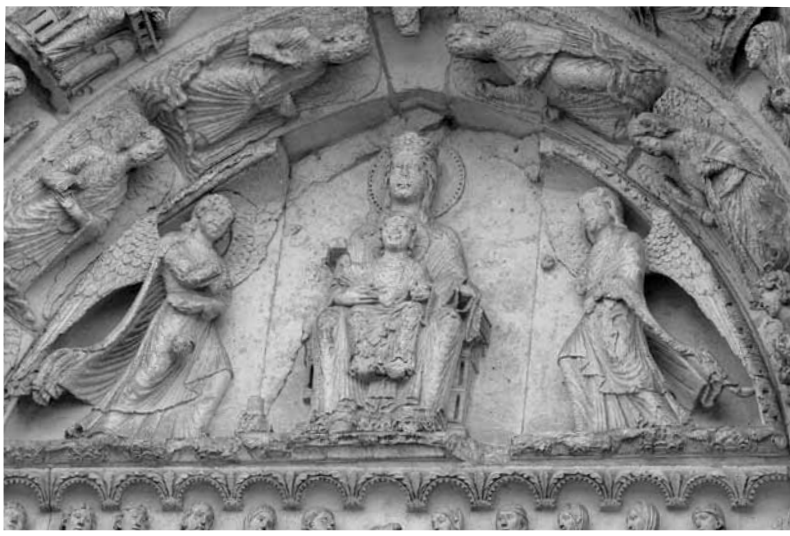
The question of why did the men go to such incredible trouble to reduce the height of the tympanum was discussed earlier (page 61). The replacement was not carved for the full width required by the imposts and the lowest archivolts. It was a little smaller, shown by three vertical lines [r].

The curve of the tympanum does not finish at its base with a right-angle, but at an acute angle B. This was necessary because the lower archivolt of Pisces had been reduced in height and consequently the curved stones above would be lowered. Thus the base of the angel ended up below the bottom of the tympanum. The continuation of the curve therefore pushed the corner of the tympanum to the right of Gemini. The horizontal space A-B marks the extent to which the curve of the angel reduced the width available for the tympanum. C marks the left edges of both lintels and the distance A-C is close to the depth of the lost pilaster at the level of the plinths.

South portal, details of edge of Gemini, corner of tympanum and upper lintel.

This involved a well-orchestrated set of adjustments that show how accurate the work could be if there were no loss of communication. The level of precision in these adjustment would have been most accurately achieved if all the elements could be placed together on the shed floor. *It shows that none of the superior parts of the south portal were erected before the carving of the new tympanum in campaign I.*

On the right the curved sides of the lower archivolts caused the same problems around the junctions with the narrower tympanum, but the stones were eased around each other to minimise the disjunctions. Neither here nor on the north is this process as noticeable as none of the other errors are present.


South portal, tympanum of three panels all recarved in campaign I

In the tympanum the tips of the wings of the angels turn up at the ends to finish at the corner of the junction with the central panel. The feathers turn with the silhouette of the wings and the clouds form a hood showing these stones were not adjusted after they had been carved, and could not have suited a round arch. We cannot even move them apart to form a round arch without considerably expanding the door. Therefore the side panels were re-carved along with the central Virgin. It is possible that the older tympanum could have been for a different subject.

9 *Adjustments to the archivolts in I*

The three seated figures of Aristotle and Pythagoras in the lowest register of archivolts have lost their legs and much of the seats they sat on [b1]. In the third row level with the base of the tympanum the supports for the figures have been eroded to allow room for the heads underneath [b2]. Together these adjustments reduced the height of the portal by some 25cm. If the height of the lower panels is increased to provide proper seats and if the second row is granted more space, the tops of these stones would have lined up with the top of the upper lintel [r1].


South portal in campaigns G and H

The cutting was arranged as most convenient: the first on the right was reduced only at its base as the top of Music seems untouched. On the other hand, Grammar was reduced both top and bottom for the platform between the two figures is higher than its neighbour and the head extends into the base of the stone above [b2].

The inner archivolt on the left has Gemini above and Pisces below [r]. The loss of the bottom fish shows where it was reduced in height after it was carved. If the cut-off parts were reinstated the top of Gemini would have coincided with the top of the upper lintel. The depth of the edge in Pisces is only enough to slip over the face of the upper lintel E, the nib of which is now exposed D.

South portal, left archivolt Pisces showing depth of its frame; recessed nib on left of lower lintel


South portal, archivolts on the left, of Pythagoras and Dialectic

10 *Erection misplacements in I*

There is a deep arch on the inside supporting the wall over the portal sculpture [r2]. It would have been erected first so the lintels could be secured firmly against it. When both were in place the archivolts could be placed against them and locked securely into the wall behind. We cannot reverse this procedure as otherwise the long lintels would have to be manoeuvred behind the double-height archivolts in a very unstable situation. I guess that as the south tower was being pushed ahead they would have begun any erection on that side. There may be some eccentricity between the interior embrasure and the exterior, for the erection gangs were impelled to shift the lintels slightly to the right of the imposts.


Interior wall of portal with attached shaft

The situation can be seen by looking down from above where Pythagoras sits on the impost [r3]. It is obvious that the offset A on the left is larger than the one on the front B. On the opposite side the offsets are the same size. It shows that the lintels had been placed a little to the south, and this magnified the gap that was to remain on the left of the lintels. These can only be illustrated by photos as I have not measured them.

On the other side either Pisces and Gemini or the tympanum were erected next. I favour the latter as this would have made it immediately clear there had been an error. By then the lintels had been fixed and it was simplest to leave the gap where it was.

We may suggest the misplacement was the fault of the erection gang for the lintels could have been centred and the archivolts eased a little closer together to disguise the discrepancy, but once in place the width of the tympanum compelled them to leave the gap exposed.

South portal, the differing offsets to the edge of the impost (ex Tallon)

It would have been more convenient, as well as more secure, to place Aristotle against the tower and then Pythagoras with Music and Grammar above them. The extent of the mortar joints show where the junctions were smudged on both sides: between the lintel and the nearest archivolt on the left, circled in [r], and on the right against the tower, arrow.

However, if the superior part had been set out in the shed to make the template for the tympanum and if the lintels had already been reduced, why was this gap not noticed? What really happened? *Maybe that will become clearer when I visit in June.*

South portal, the differing infills next to the lintels

12 ***Archivolts at the apex in H and I***

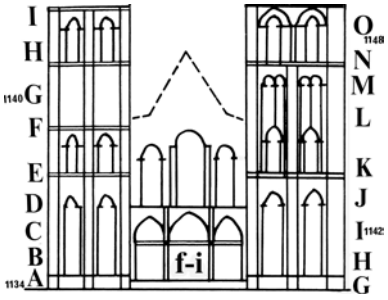
The situation in the archivolts at the apex applies to both lateral portals, but is clearer in the north. By my reckoning most of the northern archivolts were carved in G. Two years later they were adjusted to suit the present tympanum. The upper faces of the two at the apex had to be heavily sliced before they would fit a pointed arch. When adjusted the canopy over Virgo was chopped off rather crudely [b1]. The remnants of its supports are not the same length, with the lower one cut further back as one would expect if the junction with Sagittarius had been angled to suit the pointed apex. The base under Virgo is also twisted as the stone was tilted in an anti-clockwise direction. The centaur in Sagittarius seems untouched and the mortar joint under him is wider where opened up on the lower side [b2]. Consequently the space between the heads is quite uncomfortable. Because these figures were carved before the new tympanum in campaign I, they (and those in the south) were being carved before the upper ones over the middle tympanum.

North portal, uppermost outer archivolts at apex, Virgo and Sagittarius

To conclude

Masters F and G were more employed with the builders' masonry in the embrasures of the north doorway, and masters G and H with the south. The *imagiers* who carved the sculpture were not necessarily on site at the same time as any of these builders and could, individually or collectively, have had various degrees of independence from them. The south tower was begun four or five years after the north and the sculpture begun long before the space was ready for it. This turned what could have been a two-year program into five or more. It multiplied the number of men with authority and thus the possibilities for errors and changes.

As progress was linked to the sequential campaigns in the towers we can estimate the dates for the carving of the portal sculpture to 1139-1143 [r]. Anyone writing of the portal being the work of the 1150s relegates the whole of the south tower to that decade, while I believe that the portal was carved in its entirety before the Second Crusade.



Campaigns for the two towers, dates approximate

The use of Toichology in medieval studies

Looking back over 40 years as an architect and historian

The wider possibilities from this study

The techniques of observation and analysis used here I call Toichology, for they are totally different to those used by the archeologist. Simply put, differences in templates, errors of placement and changes to design provide the clues to extract the building campaigns, and with them the history. Toichology is as exacting as archaeology, and the evidence is capable of being verified as in any observation-based discipline, such as geology, with which there are many methodological similarities. It is not connoisseurship, which is to do with style. Toichology, is to do with the size of masonry, the templates issued to determine their shapes and the location of the joints between them. The skills required are an understanding of the process and procedures of building and an impeccable care in observation.

Toichology is not about style. It is independent of personal impressions and feelings so that in this analysis I have applied concepts of style only to the identification of people, and have otherwise let the firm evidence in the stonework speak for itself where subjective interpretation is not needed. If rigorous, toichology should seek the facts and let them speak, from which the rest can follow. Its value may be gauged in this study.

These are the methods I used over thirty years ago in *The Contractors* to deconstruct the history of the rest of the cathedral. In the hubbub that followed, a distaste for my conclusions have drowned out the method. Scholars and reviewers were so affronted by my conclusions they paid scant heed to the real story. Since then the techniques of toichology have been brushed aside, whereas they could have opened entire new vistas into medieval building, including chronology, technology and patronage.

On the matter of the masters Lon Shelby got it right, for the possible permutations of control and patronage are endless. They were certainly not as singular as I had originally made out, for life is as creative as need and intelligence will allow. However, on the matter of comprehending the essential skills that went into the analysis and that has occupied most of my research over forty-five years there is little evidence that it has been appreciated.

Here follow a few of the conclusions that have come from toichological studies to give some idea of where they could take us.

- The nave and choir at Chartres were built together from the ground up, and therefore we need to find an explanation for the differences;
- the transepts and the service stairs were built with them, though more slowly in the upper courses;
- the portals were erected with the transepts, and therefore the changes in the sculpture had nothing to do with any theory on the evolution of style;
- the western three bays of the nave were intended from the beginning to be as they are, and therefore we need an explanation for the narrow bays.
- At Soissons the tall choir was begun four or five years after the south transept, after which both progressed in tandem, and therefore we need an explanation for two different proposals being built at the same time;
- with the documents this showed that the tall clerestory was begun a decade before Chartres, which dramatically changes the overview in most histories.
- At Senlis the west was built with the choir, which dates it to just after the crusade and affects most chronologies for carved portals;

- and that the three stories of two western bays were by one crew, and the rest were by many in horizontal layers, and with Soissons pose unexpected possibilities about patronage;
- Mantes-la-Jolie was built from east to west rather than the reverse;
- the external walls of Noyon were built to the roof of the gallery before the internal piers or vaults, for which we need a new explanation;
- and many unanswered discrepancies lie in the choir of Saint-Denis.
- This method opens many possibilities for understanding how much could be built over what time, and for estimating expenditure and resources.

Presented here is a lot of new information that could tempt us to reconsider many assumptions contained in the chronologies and in the histories of this period. None come from stylistic considerations. They could enable us to rewrite an aspect of the medieval story if they had not been put aside for the wrong reasons. They have implications for our understanding of how people acted at that time.

I propose that the lithic evidence can be read and interpreted without agendas or prejudice, purely on its own terms. Then it is up to us to find interpretations that will fit this evidence and align it with whatever else we know. The trouble has been that the baby went out with the bath water.

When I wrote about Chartres the most pressing arguments were around whether the nave was earlier than the choir or the other way round, and whether the transepts had been added at later dates and the porches patched onto them. Without documents, the entire discussion centred around style. We all use stylistic analysis in one way or another. I use it to differentiate people and their individual mannerisms. Some historians use it define chronology. But style should have no place in toichology, indeed it should be reversed.

Sidelined by the disagreements over my interpretation of the evidence, scholars lost sight of the real message in my work. It is the same message being presented here:

> **That as contracting was discontinuous we can read the history of a building from the inescapable and inevitable discrepancies created when one team replaced another.**

Then, of course, interpretation and stylistic analysis follows. These are the facts of our discipline. They form the foundation data for theory and interpretation. Documents may be forged or badly copied, but seldom will the building lie.

In the main, the implications offered by Toichology are still is waiting to be incorporated into the general view of the evolution of Gothic architecture.

The more extensive evidence from the later middle ages suggests that there were changes in the way masters and building teams were organised and from observation there are fewer discrepancies in later work. I have suggested that as the enormous boom in construction petered out during the early 1200s the mobile and independent masters sought security. There were not enough jobs to go round and tenure became important. Even though the pace of construction was slower, communication between phases of work was assured because one man was in charge for longer periods.

As building in stone returned from the tenth century onwards jobs were at first quite rare, and funds for each stage small. It would have been natural for a team to be engaged on small additions, even where the project was large, and when the money was spent for them to leave until the next good harvest or decent donation. Discontinuity was the natural way for a new industry to start up. Then, as the boom took off and teams became larger there was no time to reassess the method, everyone was too busy.

The discrepancies in the Royal Portal were the outcome.

The history of the Chartres Royal Portal