ARCHLAB ACCESS REPORT

THE TWO PORTICOS DE LA GLORIA, RESEARCH AND CONSERVATION

Title for the Archlab project: The two Porticos de la Gloria, Research and Conservation
Project acronym: 2PORTRECONS
User: Victor Borges. Senior sculpture conservator. Victoria and Albert Museum.
ARCHLAB provider/home institution: IPCE
Contact person IPCE: Maria Martin Gil, Ana Laborde
Period of visit: 20-23 May 2018
Date of Report: 20-July-2018

SCOPE OF THE PROJECT

This project focuses on the study of the plaster cast of the Portico de la Gloria on display at the Victoria and Albert Museum (V&A) and its unique relationship with the original object in Santiago Cathedral. The research aims to unveil the intrinsic relationship between the copy and original, by learning more about the original moulding and casting technique, to help understand the technology involved and the implications for both works in terms of their long-term conservation and their historical and artistic values.

V&A cast of the Portico, 1866

Portico de la Gloria, Santiago cathedral,12th century

This is a significant moment in the history of the two objects: two teams of conservators from different institutions, V&A an IPCE, are working simultaneously on the copy and on the original. The information and discoveries that both teams are gathering have

important relevance for each other's project. By gaining access to the results obtained so far by the IPCE we can gather vital information which will inform the conservation of these significant works of art and the rediscovery and preservation of their historical, artistic and intangible values.

The V&A is one of the world's leading Museums of Art and Design, its collection extends from early medieval period to the 20th century, including thousands of precious objects of different materials and sizes, exploring different craft traditions around the world. The birth of its collection dates to 1851 with the first International exhibition that took place in London. Since its establishments the V&A's mission has been to showcase the best examples of art and design from around the world. Its objective was to inspire, educate and actively teach designers, craftsmen, manufacturers and the public. Its aim was and still is to showcase the principles of good design at a time of great development of all manufacturing industries, also a time when the traditional craftsmanship and its skills were in danger of disappearing.

During the 1860's the V&A, then South Kensington Museum, started an ambitious campaign of collecting from around the world. One of the first V&A curators John Charles Robinson actively travelled around Europe, including Spain and Portugal, looking for objects to acquire. Robinson was responsible for identifying key sculptural and architectural works of art worthy of reproduction, or acquiring copies if already available. His efforts would be the beginning of what today is known as the Cast Courts, two large galleries at the V&A exclusively dedicated to those reproductions of works from all over Europe and where the copy of the Portico is today.

On his trips Robinson followed the travelling guides of the day, exploring remote areas such as Galicia in Northwest Spain. On one such trip he reached Santiago de Compostela and its Cathedral, where he saw the famous 12th century Romanesque Portico, the Portico de la Gloria. Robinson was amazed by the quality of the work, comparing it to The Sistine Chapel. He was determined that the museum should have a copy of this architectural work as a master work and unique example of Romanesque European art. In 1865 an Italian moulder based in London, Domenico Brucciani, was commissioned by the V&A to reproduce the work, travelling with his team to Santiago to make a cast that he would later install at the V&A, where it has been on display for the last 150 years.

The early intervention by the Museum lead to the production of the first known photographic records taken in Santiago of the Portico de la Gloria and its Cathedral, becoming invaluable records of the condition of this work in the late 1860s. The display of the cast in London appeared in numerous publications of Victorian England giving the Portico and its Cathedral a renewed International prominence. This prominence would carry on for 150 years in many ways to be studied yet.

During the planning stages for the conservation of both works by the two different teams (V&A and IPCE) an initial contact was established to gather and share information. Both teams have made many discoveries during their work in situ on both architectural works, learning about their materials, construction, conservation condition and deterioration patterns, some of which are linked to the mould and the copy taken by the V&A. The IPCE have carried out numerous scientific analysis on numerous samples. The results of which are revealing information about the making, history and conservation of the objects. Also, historical documentation that has recently been discovered by both institutions is giving a more complete understanding of the objects, their common history and their international projection.

All this information is vital to understand the current condition of both objects and their historical interfacing. Despite regular communication between the teams, a detailed collaboration has not been possible due to the geographical distance, as well as lack of time and resources.

I am hoping this application will give me the opportunity to be able to benefit from all the work the IPCE team has gathered so far and study all these contents methodologically for a greater result of both interventions.

PROJECT OBJECTIVES

1. To study historical references in the IPCE archives relating to the mould and cast made in the mid 1860's. This includes all possible correspondence, reports, invoices, contracts etc.
2. To review bibliography gathered by the IPCE team relating to the portico and Bruccianis intervention in the 1860's. Also review of moulding techniques and Bruccianis work at the time. Identification of important links and key information.

3. To study in detail the photographs taken of the Portico before and after Bruccianis intervention, including those in the IPCE archive and the 1866-67 photos of the Portico taken by Charles Thompson. This will help us to understand the level of Brucciani's intervention and its impact on the object.

4. To compare the photos of the Portico taken currently by the IPCE with the C. Thompson photos to assess the conservation condition at the time and any deterioration since.

5. To compare the photos of the Portico recently taken by the IPCE with photos of the V&A Cast to establish number and size of cast sections. Reveal how Brucciani went about dividing the Portico to make the mould and the intervention layers used. This will help us to understand the difference in definition of the Cast compared to the original.

6. To study of samples taken by the IPCE from the surface of the Portico in Santiago, samples from stone and paint surfaces. Understanding now substances and materials found on the surface might relate to the mould-making method.

7. To compare the analysis carried out by the IPCE on the Portico with analytical results from samples of the surface of the Cast of the Portico. Identification of any common results that can help towards understanding the substances and materials Brucciani used as intervention layers or releasing agents.

8. To compare the conservation condition mapping carried by the IPCE with that of the V&A. Identificaty of parallel technical information found relating to the mould and restorations carried out by Brucciani previously.

9. To assess the Cast as a reliable snapshot record of the condition of the original Portico from 1866.

10. To gather information from the IPCE archives about other casts made from the Portico or from Bruccianis copy. There are clues to possible casts made for the Museum of Reproductions in Spain and The World Exhibition in Barcelona 1931.

HISTORICAL REFERENCES FROM THE CATHEDRAL ARCHIVE

- **28th September 1865**. IG 606,Fol.35v.

  Document of request from Mister George Mould, in representation of the South Kensington Museum, asking for permission to take a mould from the Portico de La Gloria in order to make a reproduction. Asking for the conditions consider necessary by the Cathedral Cabildo to avoid any damage on the work. A commission was stablished to study the case. This is one of the first mentions where is stated how paramount was to avoid causing any damage caused to the Portico by the moulding operations.

- **February 1866. ACS.IG 554(3) fol24(v)**

  Bought 56 reales of sea sand and more lime.

  This kind of sand could have been used in the portico mortar repairs which could explain the presence of Chlorides in the Granite which had affected the Granite so badly with the presence of moisture.

- **27 Abril 1866. IG 606 fol10(v)**

  The commission in charge of processing the moulding request by the South Kensington Museum informs positively towards granting permission informing the Cathedrals authorities at the Cabildo. They agree to all aspects of request.

- **28 July 1866. IG 606 fol18v**

  The Dean reads a communication from the South Kensigton Museum to George Mould for the cathedral Dean regarding the granted permission for the mould and replica. It dates from the 18th of May. The Museum expresses they accept the permit granted by the Cabildo and the Dean under certain conditions to prevent any damage to the Gloria which the Museum consider natural and reasonable. The inform the Dean the commission for the work goes to Brucciani who will start his organising for the trip at once. The Museum thanks again, sign by the assistant secretary Norman Michael.

  The Dean informs that Brucciani is already in Santiago and ready to start the work at once. So, the Cabildo had to identify a supervisor for the works according the 3rd condition given to the Museum for the Permit. This supervisor role is to inform the Cabildo as soon as any damage to the polychrome and sculptures might be detected. It was agreed that their natural choice would be Vicente Valderrama, but as he had passed away they agreed to entrust the role to a sculptor from the Academy of Fine

Arts in Madrid. With this purpose a telegram was sent to the priest Don Jose Maria Canosa asking him to find an individual of his trust to propose to the commission, and the wages requested for the job to propose to the Museum.

- **19 October 1866. IG606, Fol.24bis v.**
  The Dean reads a communication from Brucciani where in the name of the Department of Arts and Science of the South Kensington Museum, expresses his gratitude to the Cabildo for the permit and all their help. In sign of gratitude Brucciani offers an electrotype copy of a cup from the Museum from 1600, as a present to the Cathedral. The cabildo agreed in return to thank him for the present with a frame silver relief of Saint James
- **November 1866. ACS,IG 580.**
  Repairs on the Portico due to finish on the 23rd of November. Materials were being bought in the Cathedral to carry out repairs on the Portico. Right after Brucciai finished his intervention. Materials such as Lime for filling the gaps in the Gloria and to whitewash and hydraulic lime to mix with cement for pointing the Portico.
- **December 1866. ACS,IG 580**
  The repairs in the Portico carry on, materials bought: brushes for cleaning and white washing, the making of 6 iron knives to "rasp" the Gloria,
- **Possibly December 1866, ACS, IG554(3), fol 9v**
  The English photographers payed 228 reales and 4 maravedies for salaries needed to assist them with the photography. Probably erection of a scaffold tower to allow photography.
- **3rd week of February 1867. ACS,IG 580**
  Reference to hydraulic lime for the Portico, probably for repairs after a thunder bold stroke this area. Earlier on the year

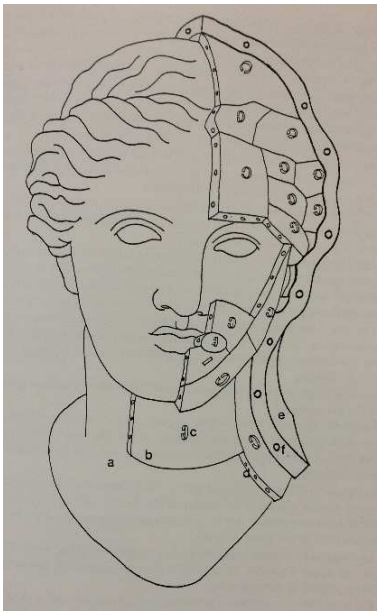
BIBLIOGRAPHIC REFERENCES

The conservators at the IPCE were a great source of interesting bibliographic references as well as the magnificent library I was given access to research. Most of the references were regarding technical information about casting and moulds that allowed to stablish comparisons with the way Brucciani might have worked in Santiago.

I found also historical images of some other casts of the Portico in Madrid.

- Scultura e calchi in gesso. Storia, tecnica, conservazione– 31 dic 1987. Lorenza D'Alessandro, Francesca Persegati

  This book was an useful reference to the traditional methods of casting. Particularly the system of plaster piece mould that Brucciani used very likely. Some of the images were very self-explanatory of this method.



  There was also mention of the technique of gelatine moulds as an alternative technique of moulding for complex forms and big monuments.

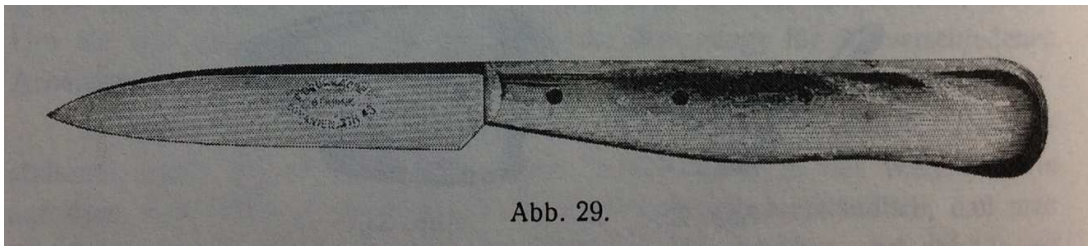
  There is also a list of substances used to seal the plasters and to use as releasing agents, substances we have found on the cast of the Portico and possibly left residues on the original.

- Der Stukkateur und Gipser Gebundene Ausgabe – Januar 1987/1914. von Alfred Bohnagen

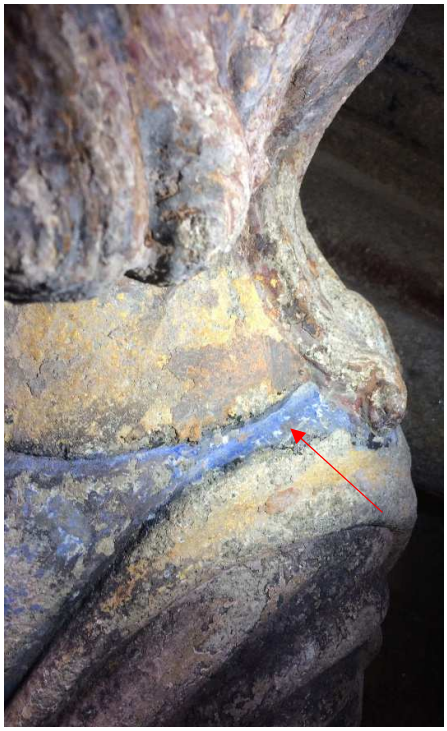
  This very interesting German treatise regarding plaster and stucco work was first edited in 1914 offers a very close parallelism in time to Brucciani's way of work.

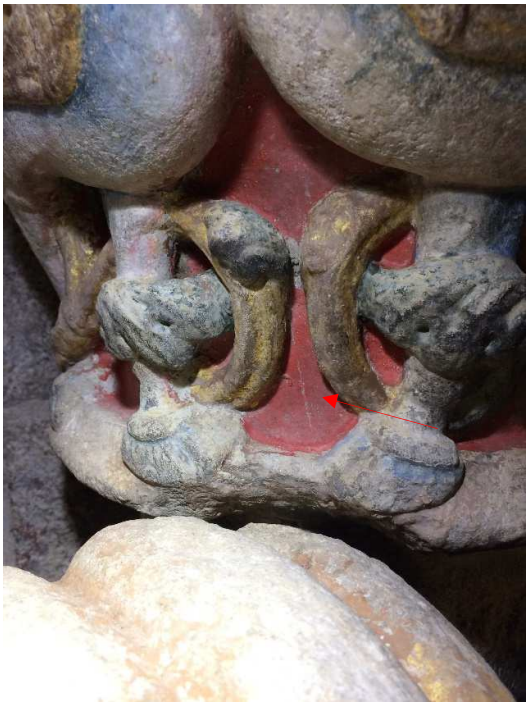
  The most interesting is the reference of tools with very useful prints.

  There is a reference to the gipsmesser or plasterers knife. A tool that would have been used to shape the plaster pieces of the mould and to release them from the surface of the Portico. This knife is very similar to a knife found by the conservators in the original Portico behind a figure approximating us even more to Brucciani's technique.

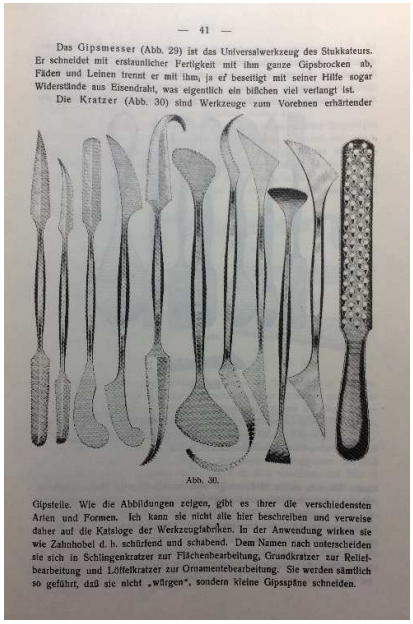


These knives where the tools that probably left these marks in the Portico whilst forming and separating the plaster piece moulds





The book shows other traditional tools that probably Brucciani and his team used to rasp the surfaces of the cast to remove imperfections



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Das Gipsmesser (Abb. 29) ist das Universalwerkzeug des Stukkateurs. Er schneidet mit erstaunlicher Fertigkeit mit ihm ganze Gipsbrocken ab, Fäden und Leinen trennt er mit ihm, ja er beseitigt mit seiner Hilfe sogar Widerstände aus Eisendraht, was eigentlich ein bißchen viel verlangt ist.

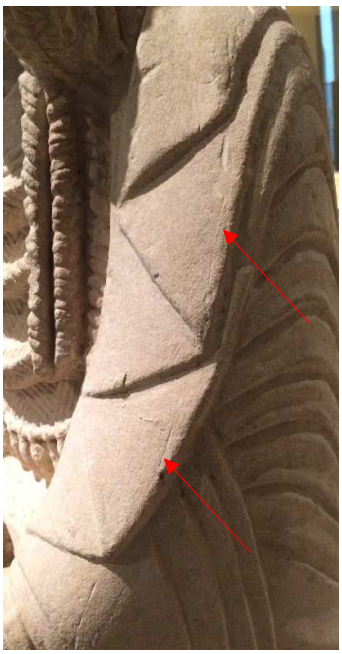
Die Kratzer (Abb. 30) sind Werkzeuge zum Vorebnen erhärtender

Abb. 30.

Gipsteile. Wie die Abbildungen zeigen, gibt es ihrer die verschiedensten Arten und Formen. Ich kann sie nicht alle hier beschreiben und verweise daher auf die Kataloge der Werkzeugfabriken. In der Anwendung wirken sie wie Zahnhobel d. h. schürfend und schabend. Dem Namen nach unterscheiden sie sich in Schlingenkratzer zur Flächenbearbeitung, Grundkratzer zur Reliefbearbeitung und Löffelkratzer zur Ornamentebearbeitung. Sie werden sämtlich so geführt, daß sie nicht „würgen", sondern kleine Gipsspäne schneiden.

- Intervenciones en la Gran Dama Oferente del santuario del Cerro de los Santos, Montealegre del Castillo (Albacete). Elena García Martínez, Instituto del Patrimonio Cultural de España. Bolentin del MAN 33/2015. Pag. 100-120

  This reference provides us with another contemporary used of moulds to Brucciani's work. This sculpture in the National Museum of Archaeology had a mould taken in the late 1800's and shows the same straight incisions from plaster knives. Also, fibres were found on the surface during the conservation work, similar to the technique Brucciani apparently used to protect the surface of the Portico



- Ward. Michael, Studies on the Porticode la Gloria at the Cathedral of Santiago de Compostela, Doctor Philosophy dissertation, University of New York, February 1978

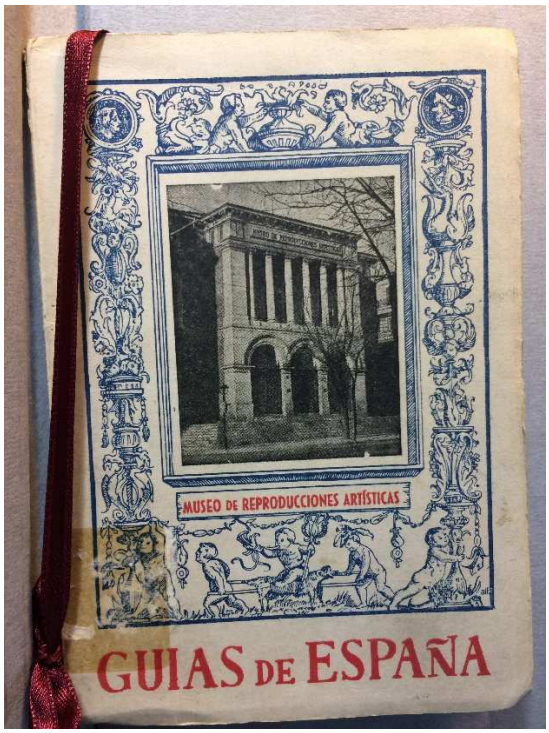
  We found together this interesting reference, where the apparently the author identified the supposedly restoration Brucciani carried out in the Portico before or during the moulding process, as it is also mentioned in the historical records.

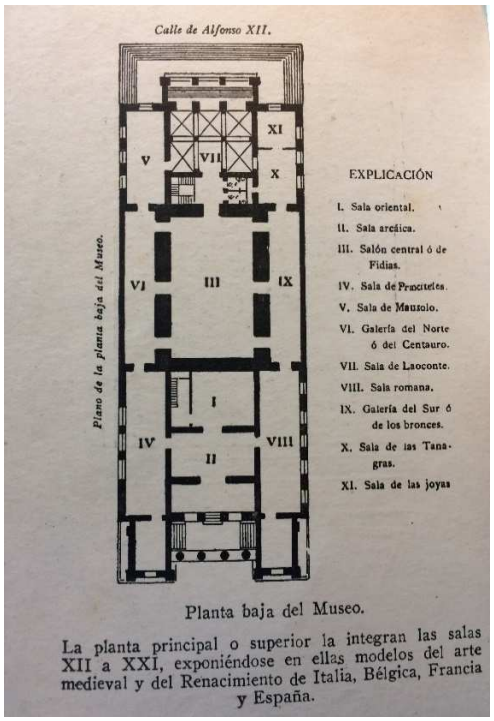
  One of the possible areas is the lower left side of the Tympanum as appears in the Charles Thompson photography from 1866.

- Guias de España VIII. Museo de Reproducciones Artisticas de Madrid. Martin Alonso, Editor. Madrid, 1943.

  On this reference I managed to find the only images of portions of the Portico the V&A supplied the Museum of Reproducciones in Madrid by exchange of some reliefs and capitals from the Monastery of Silos and the Camara Santa in Oviedo. The casts and moulds of the Portico were made by the V&A Casting service.

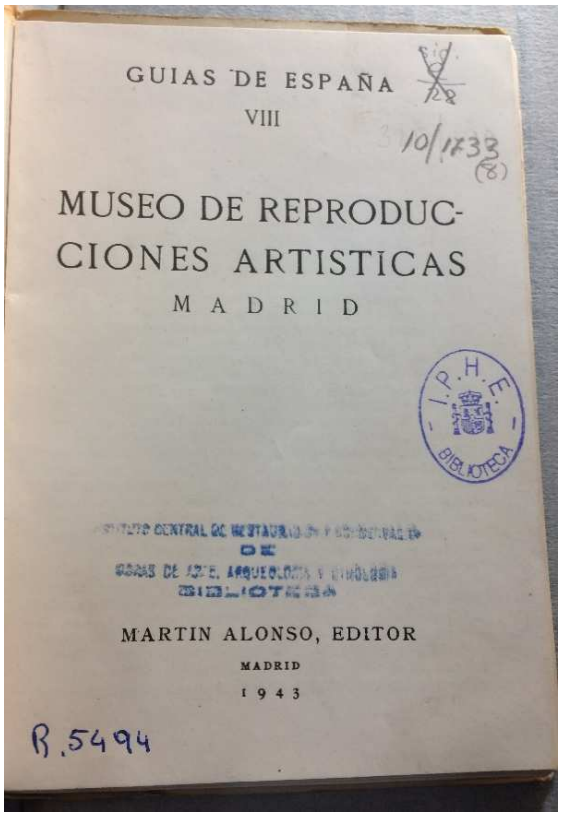
  This guide also provides a glimpse on the evolution of the Portico display in London and how the understanding of Spanish art evolved in Britain. It offers an explanation to why perhaps this exchange took place and why these casts were displayed together at the V&A. In pag 29 & 30 explains how art historians such as August L. Mayer in his brochure called “Die Skulpturen der Camara Santa in Oviedo” and Bertaux, Buschbeck and Kingsley Porter, compared the three groups of objects as related in style chronology and influence.

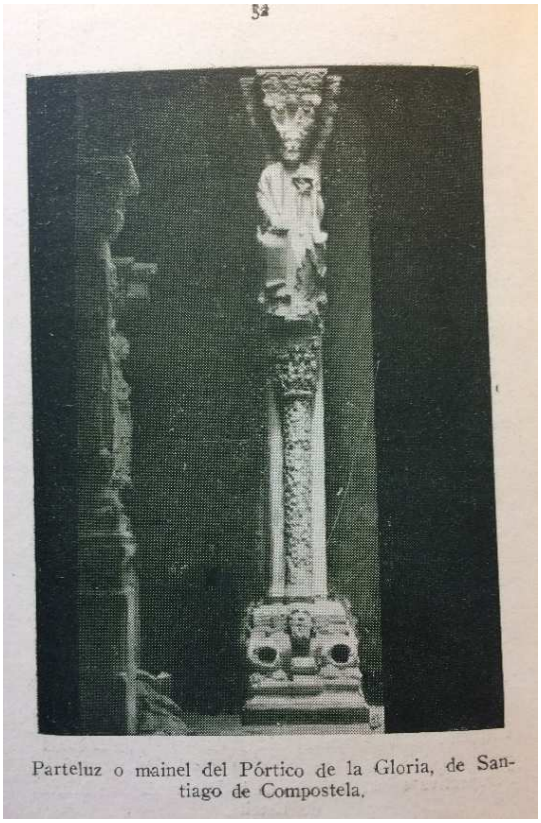




Planta baja del Museo.

La planta principal o superior la integran las salas XII a XXI, exponiéndose en ellas modelos del arte medieval y del Renacimiento de Italia, Bélgica, Francia y España.





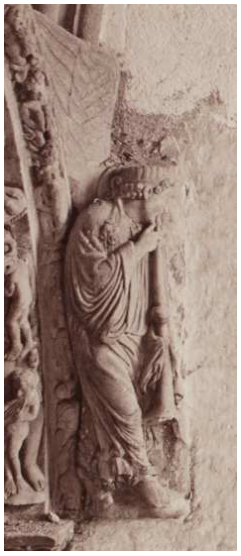
Parteluz o mainel del Pórtico de la Gloria, de Santiago de Compostela.

COMPARISONS WITH THE PHOTOS BY CHARLES THURSTON THOMPSON.

During my visit at the IPCE I was able to compare the images that Charles T. Thompson took of the Portico in 1866, after Brucciani's intervention, with images of the Portico before the actual conservation treatment. The photos by Thompson are the first visual records of the Portico after Bruccianis intervention but also before the restoration carried out shortly after. These are the interesting observations found.

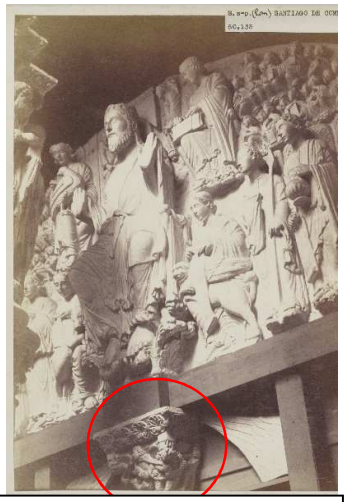
- The top capital of central mullion or parteluz appears white washed at the back. Brucciani also did make a mould of this side of the Capital. The wings of both trumpeter angels connecting to the walls appeared whitewashed. The same happens to figures at the opposite side of the loggia.
  This could have led to the loss of polychrome as it seems these areas were treated as part of the walls not integral part of the Portico.
  The back side of the capital in fact has lost all traces of paint.





- Thanks to the collaboration with the IPCE team a new cast of the Portico was found on the V&A collection from the surrounding architectural setting of the Portico. It was found through the observation made on the Thompson pictures, the images of the Portico in its first installation in the Museum and the actual Portico.

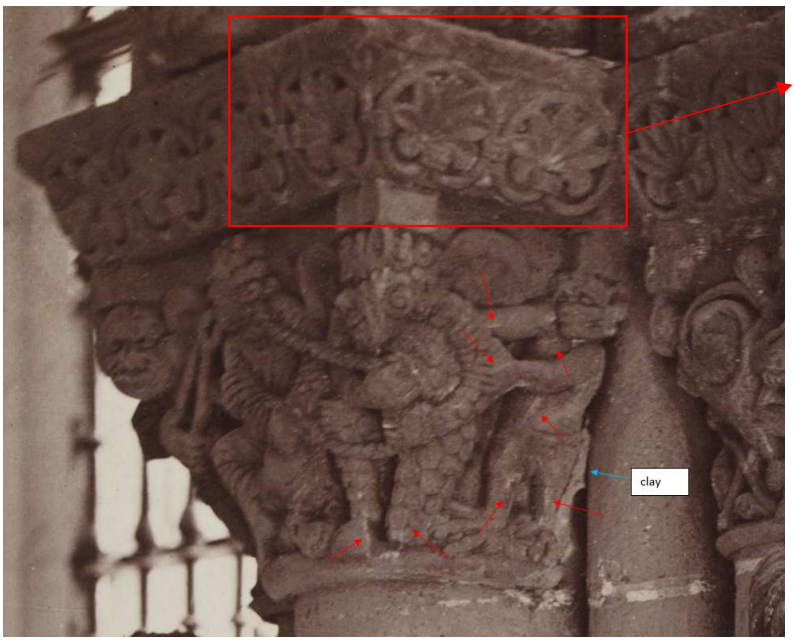
Thompsons photo1866



Cast first installation

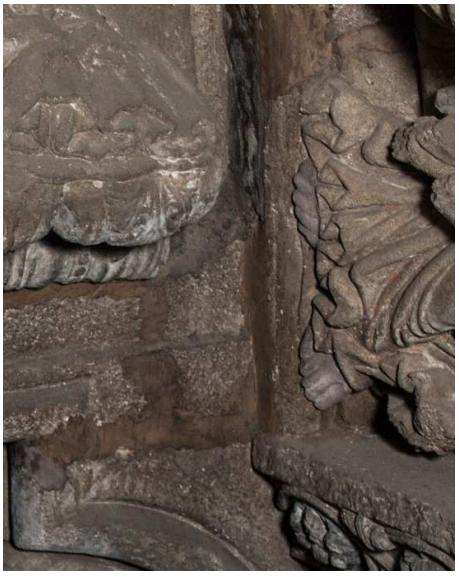
Cast of capital found in stores

This capital probably got separated from the rest of the cast after the portico was moved to its final location in 1873, it was then mislabelled and stored since.
The most relevant find is that in the phot taken by Thompson we can see the residues of plaster from the piece mould, and from the clay used to block the recesses by Brucciani's team. There was no previous evidence that any casts were taken from the opposite side of the Portico.



just this section of the moulding was cast. Plaster residues can be seen on this area

- The crack the right lower corner of the tympanum appears filled with mortar in the original Portico hence later than Brucciani's intervention.



OBSERVATION BY COMPARISONS BETWEEN CAST AND ORIGINAL (before conservation)

- The small figures on the outer part of the right arch where meets the trumpeter angel show in the cast much more exposed than in the original where the figure is almost completely hidden by the angel. These figures seem to be partially reinvented in the cast as the originals could have been very difficult to mould.

CAST

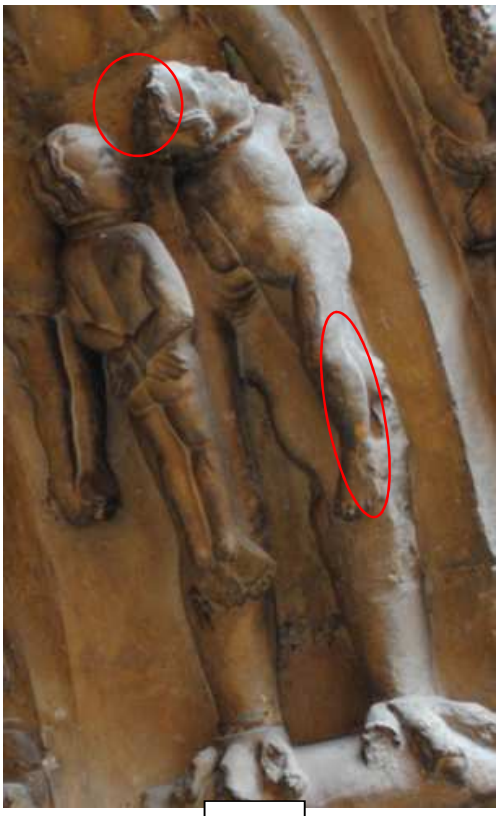
ORIGINAL

The head of the animal on top of the female figure has the head to the right instead to the left as it appears on the original

CAST

ORIGINAL

- There are no reconstructions on the cast figures hanging from the ropes to the right of right arch.

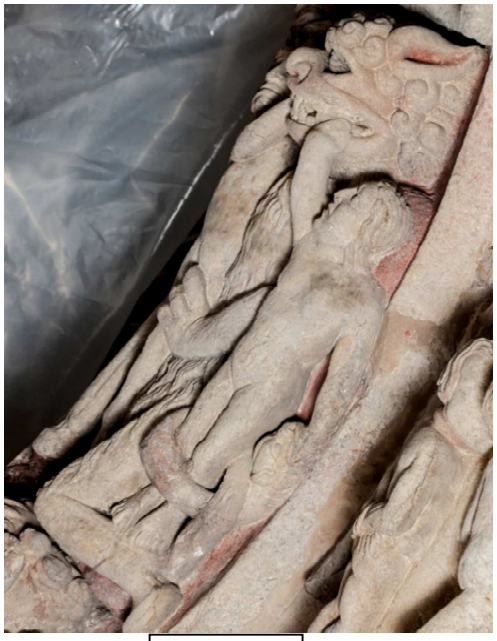


CAST

ORIGINAL

- Also, there are no fills in the demons on the right arch Such as the demon that is eating the hand to the figure, these areas showed reconstructed in the Portico.

CAST



ORIGINAL

- The dove, part of the Trinity in the lower capital to the central mullion, appears on the cast and the Thompson pictures but not on the original Portico. This was, on the original Portico, a plaster reconstruction with a copper dowel that was removed as it was very degraded and the head of the dove lost.

CAST

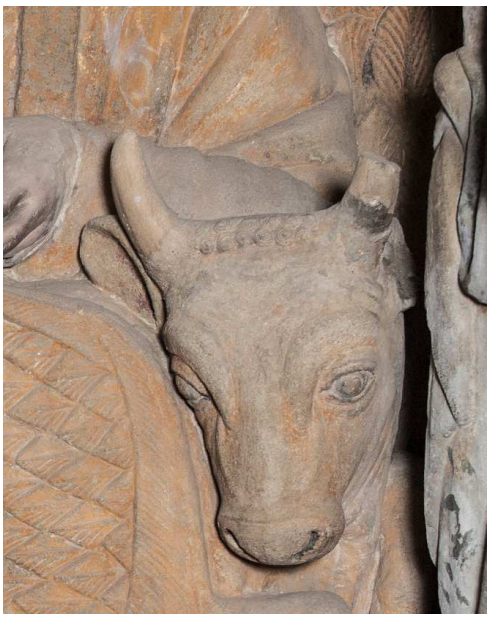
ORIGINAL

- The figure of St John on the pier to the right of the tympanum shows good definition in the curls and the head shows in the same angle as the cast.
  The reproduction despite the surface work is of good quality.

CAST

- The attribute of St Luke, the winged bull in the tympanum, has no horns in the cast but there are in the original, hence this are also later reconstructions

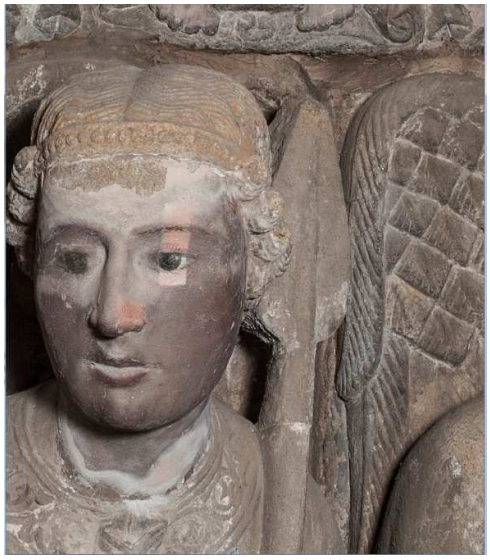
CAST



ORIGINAL

- The spear blade, on the instruments of the passion held by an angel on the tympanum seems different in the copy. Perhaps this area was difficult to mould and was simply reconstructed in the cast?

CAST



ORIGINAL

- The carved brocade on the evangelists have quite good definition on the cast, highlighting the quality of the moulds

CAST

ORIGINAL

- The head of the staff that the figure of St James in the parteluz is holding appears complete in the cast, the original has one of the animal heads and a finger missing. These parts also appear on Thompson's pictures.

CAST

ORIGINAL

- The lintels that supports the tympanums is wider in height than in the original. The reason being technical because the tympanum in the cast is supported on metal girders which support the whole structure. The plaster cladding had to hide this structure hence the size.

CAST

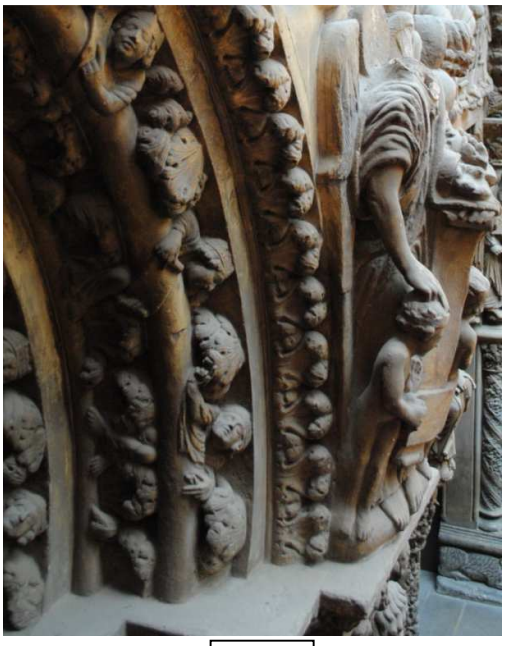
ORIGINAL

- The angel to the top left of the tympanum, laying crowns has the left arm missing on the cast, the one in the original seems to be a later reconstruction

CAST

ORIGINAL

- The left arch has a different ending at both sides in the copy where the acanthus leaves go all the way along its perimeter. However, on the original these leaves are not present to the right and to the left show very flat and partially cut.



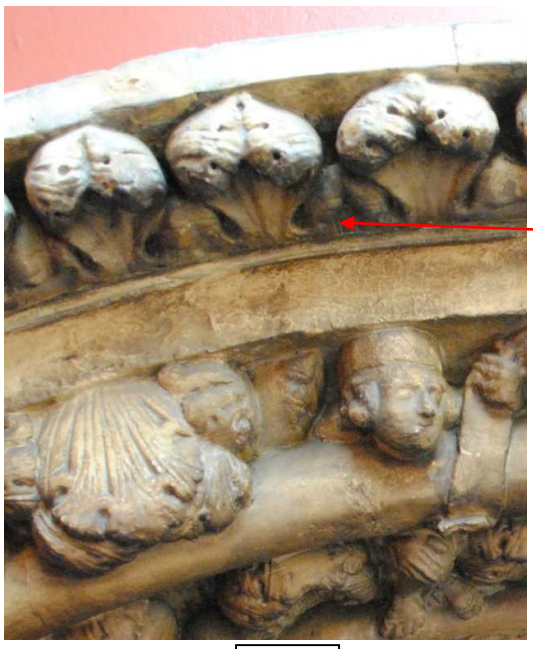
CAST

ORIGINAL

CAST

ORIGINAL

- The acanthus leaves on the cast show a level of repetition, there is no variety. Seems that Brucciani just moulded a section of three leaves and reproduce it around the whole of the arch with one mould.
  The acanthus leaves on the outer side of the left arch show in the portico with quite a lot of depth even showing the drilled holes

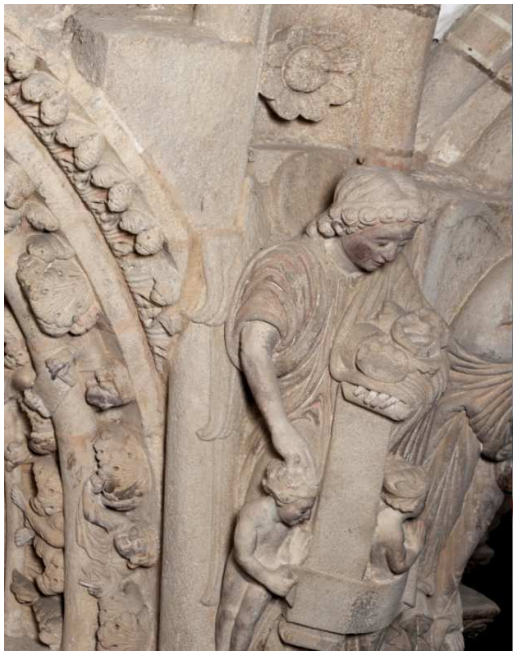


CAST

ORIGINAL

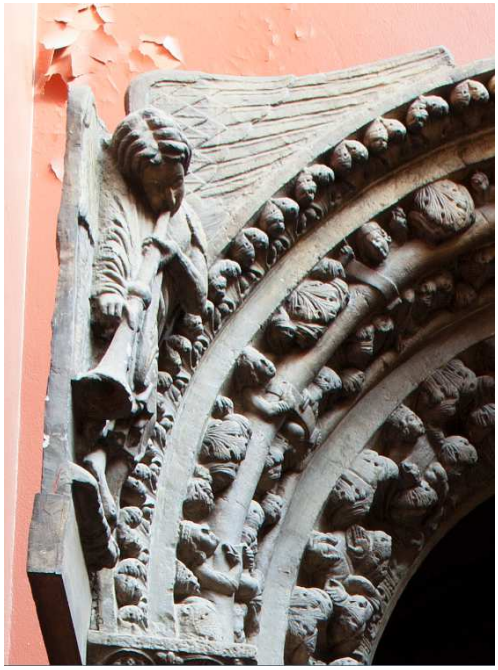
- The angel to the right of the left arch has an extra wing in the cast. There was an attempt to make the Portico more symmetrical. This angel now appears with 3 wings in the cast.

CAST



ORIGINAL

- The trumpeter angel to the left arch has an extra wing in the copy not on original.



CAST

ORIGINAL

- There are losses on the Trumpeter angel on the right arch that appear both in Cast and copy. This shoes that are losses pre- 1866. Although the fill on the foot seems later.

CAST

ORIGINAL

- Some of the pointing and reconstructions on heads on the right arch seems to be later to 1866 as they do not appear in the cast.

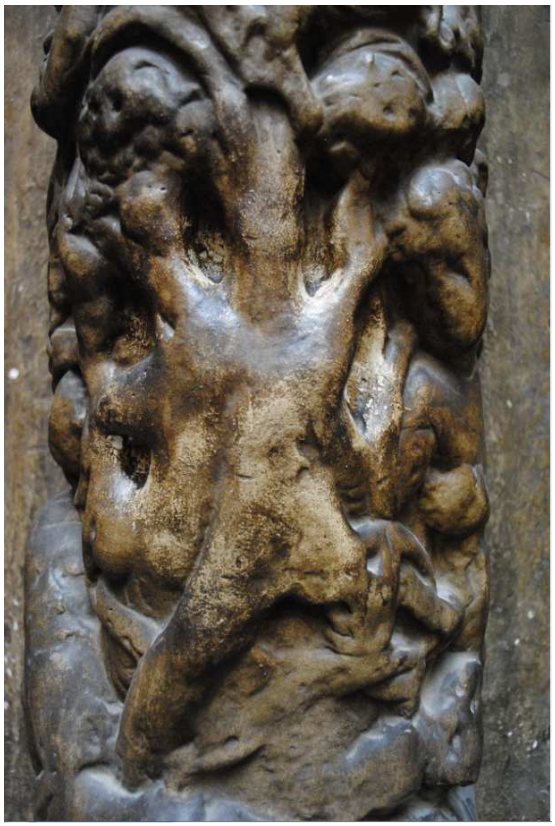
CAST

ORIGINAL

CAST

ORIGINAL

- We could also assess the level of degradation the original Parteluz has suffered since the cast was made over 150 years ago. These area is traditionally touched by pilgrims and visitors when arriving at the Cathedral.
  It is possible to see how the original marble has much deeper recesses and loss of detail in comparison with its condition in 1866.



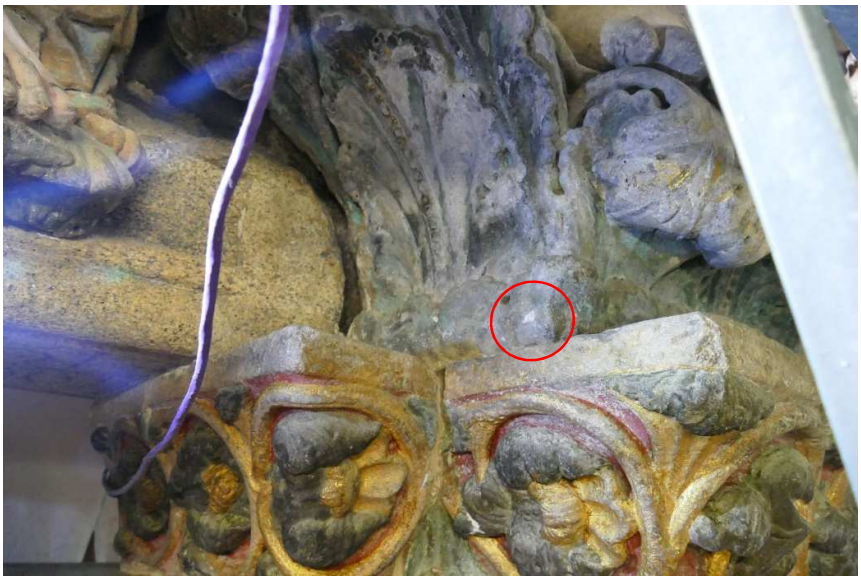
CAST

ORIGINAL

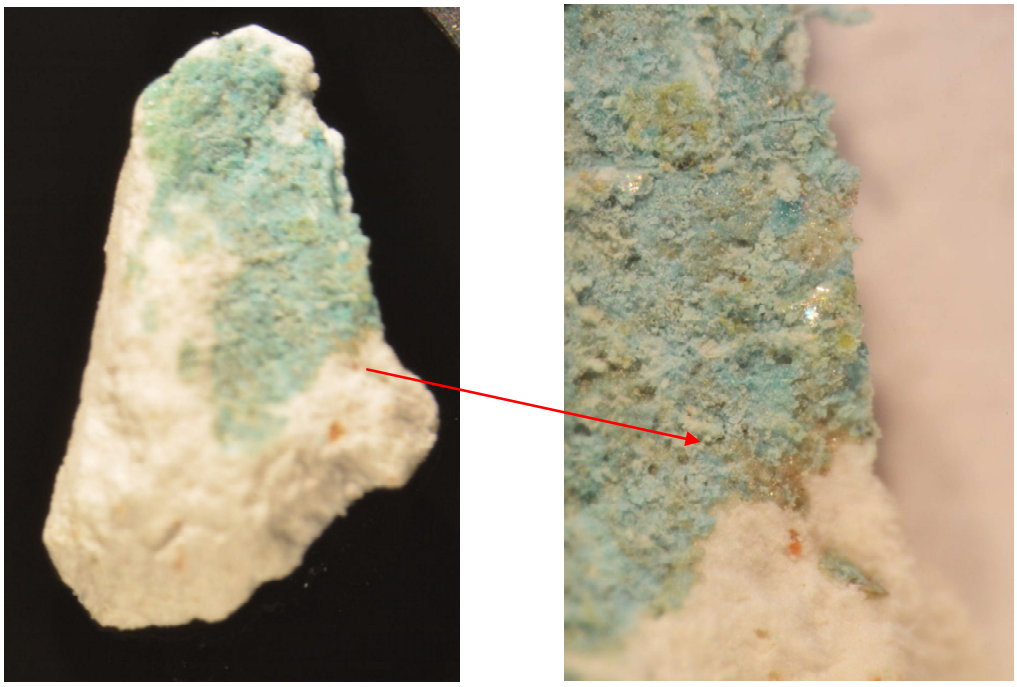
CONCLUSIONS FROM SCIENTIFIC ANALYTICAL RESULTS

During the stay at the IPCE we had a lengthy meeting with the scientific department. We discussed the results of analysis carried out on samples taken from the surfaces of both Porticos. We discussed the findings and how they could correspond to possible moulding techniques.

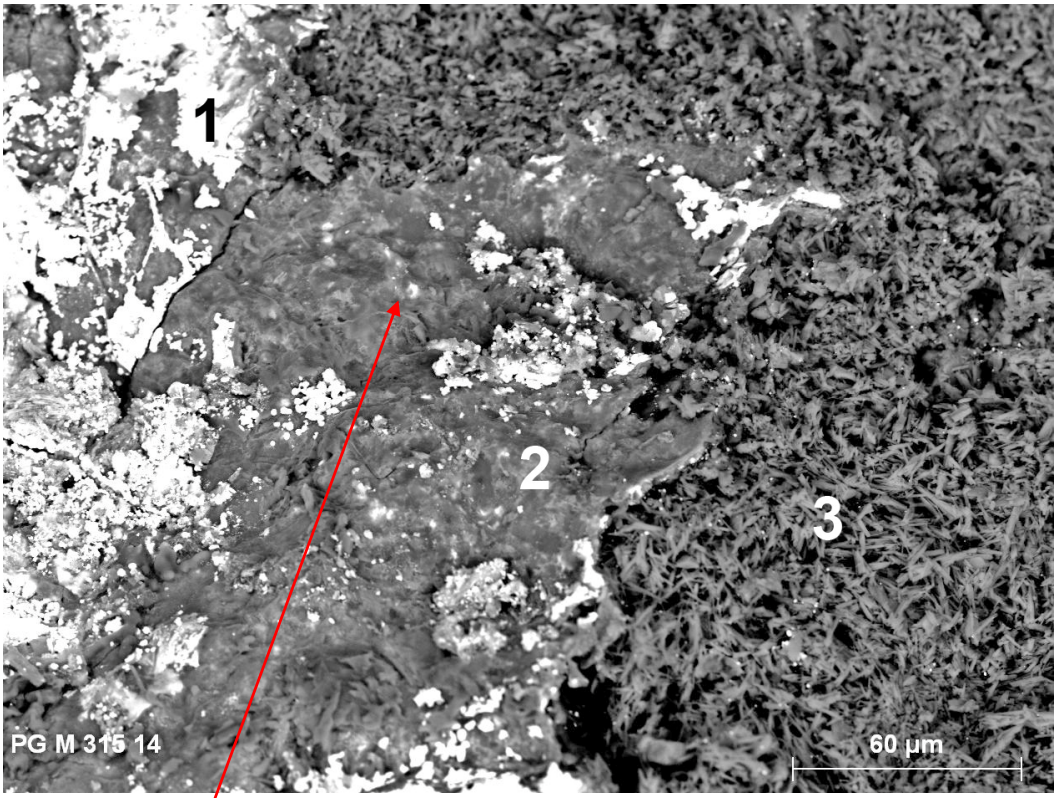
- It became clear that Brucciani did not use gelatine moulds. No traces of gelatine were found on the original Portico. This substance when observed under UV light shows a very particular blue fluorescence. No residues or observations of traces in any of the samples taken from the original were found. This discards the theory of a possible gelatine mould made by Brucciani.
- It was discussed a series of traces of plaster found on the painted surface of the original Portico. These traces were thought to be from the 1866 moulds. Samples were extracted for analysis on different areas such as P73-JB03-EJ88 on the surface next to the head of the St Bartolome figure (the internal figure on the right pier of the right arch), or sample 315 from the left side of the capital at the top of the central mullion or Parteluz.



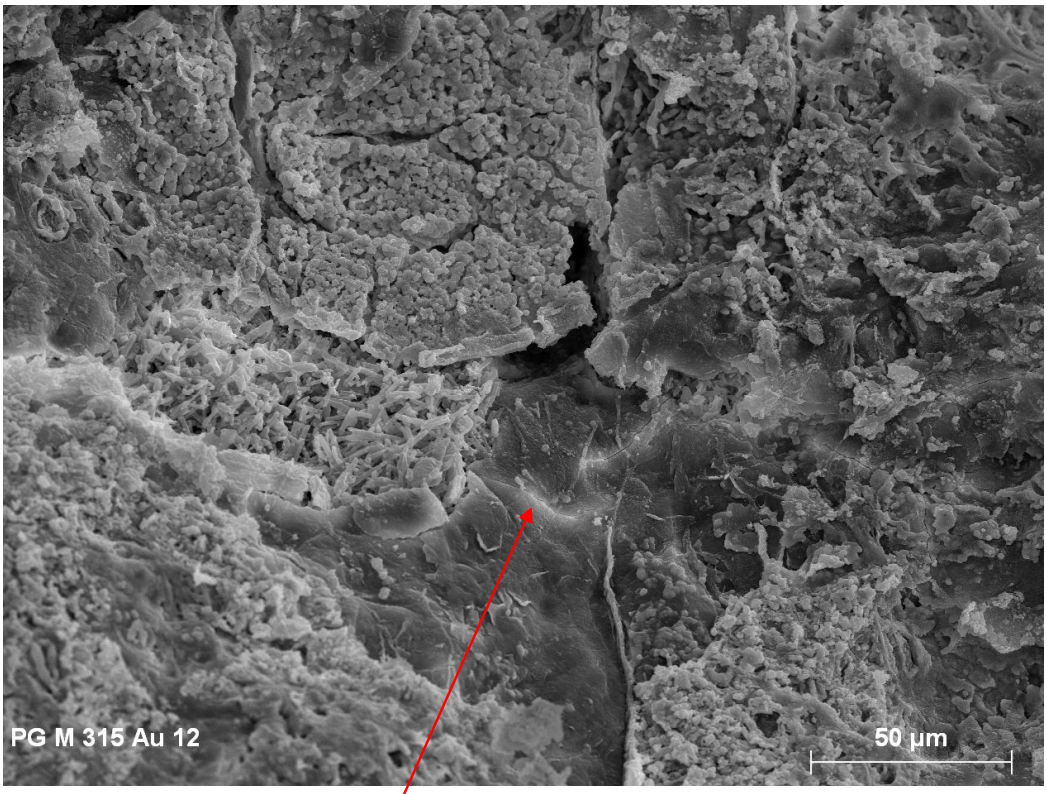
These samples were observed under different magnifications, polarised light and UV light as well as through an electronic microscope that also allowed microanalysis. Some of these samples show a brown uniform layer between the plaster and the paint layer.



This brown very uniform layer found between the polychrome and the plaster seems to be an oxalate. This layer is low on SI and Al, ruling out silicates so it's not clay.



Oxalate layer

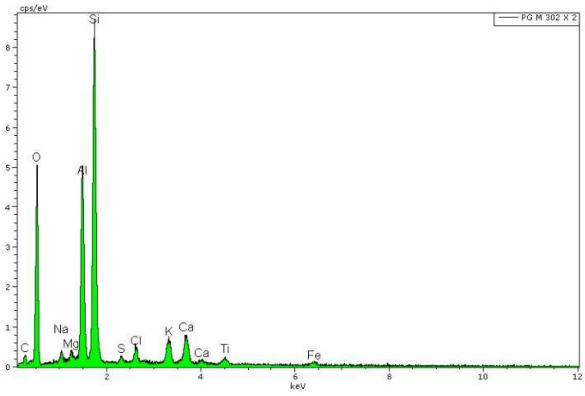


Oxalate layer

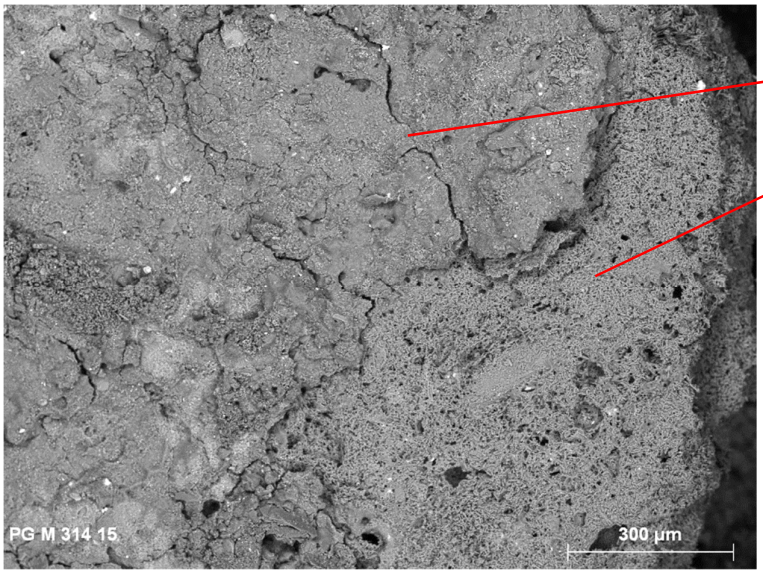
The oxalate probably relates more to biodeterioration, more likely relates to a linseed oil layer as it was left on the surface. This layer would have been over the years altered by an oxidation process of the proteins in the oil helped by the action of microorganisms (lichens, fungal) which converted it on calcium oxalate.

This supports the theory that Brucciani used Linseed oil as a releasing agent for the moulds, and sometimes not using the agreed method with the Cathedral of also applying a layer of cloth for extra protection.

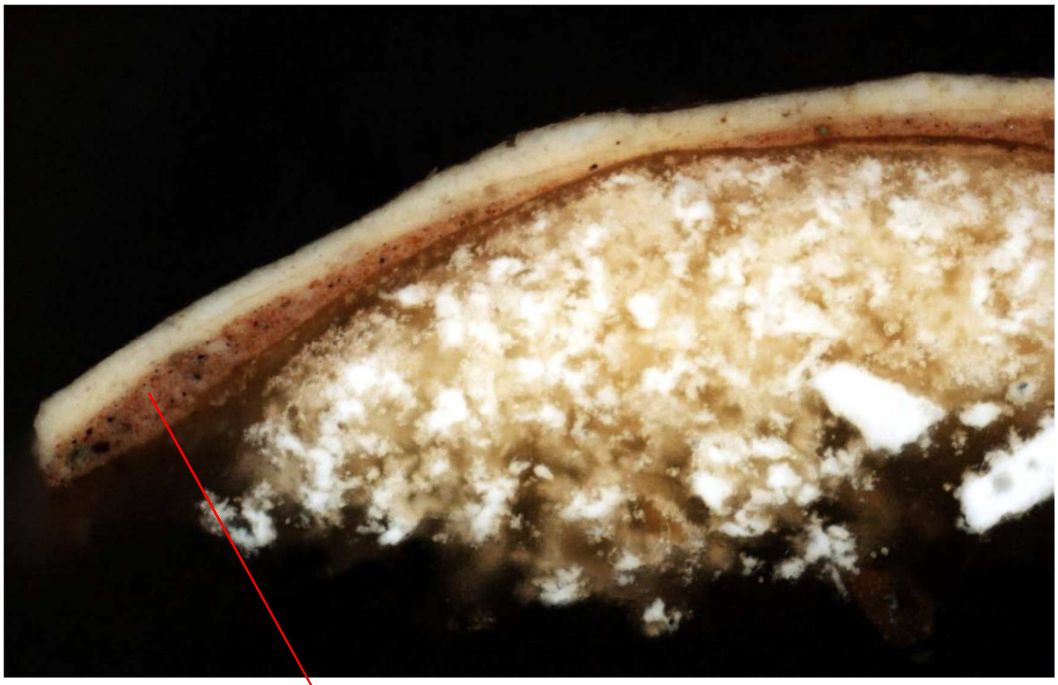
- There are other samples taken with traces of clay such as 314 on the elders from the Timpanum, as well as 306 and 106 from the Timpanum where silicates and Al has been found having very similar pics on the analysis data. This indicates the presence of clay.



The remains of plaster with clay underneath corresponds most probably to the partition walls constructed to create the plaster parts for the mould.



- A layer of reddish material was consistently found on the samples analysed from the Cast of the Portico. These traces were thought to be residues of clay from a possible clay mould made by Brucciani.



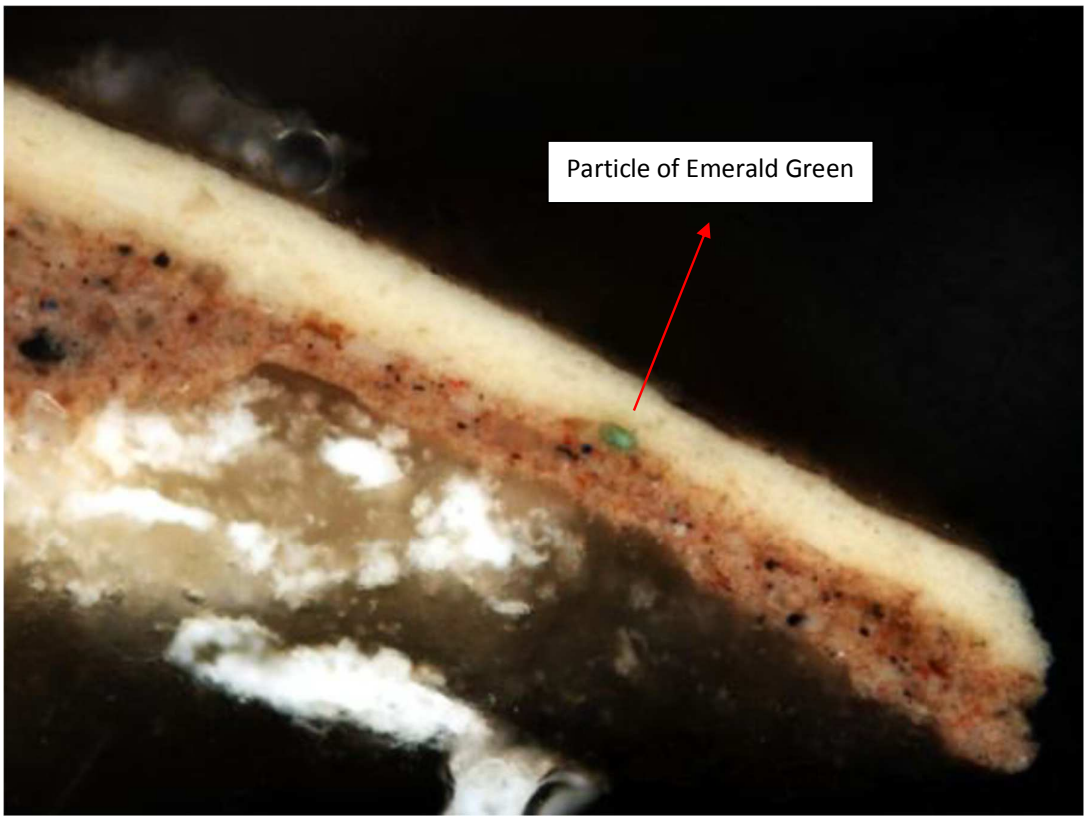
Red layer

But the nature of this red layer was found on the Cast surface does not corresponds with the clay found in the original. This layer has a very low or non-existent content of Muscovite and Si and Al from silicates typical of clay; elements that were found on the samples from the original.

The red layer also shows particles of pigments such as lapis lazuli, vermillion and emerald green or Paris Green. The presence of these pigments might explain it is an early patina applied to the Cast at the Museum rather than residues of a hypothetical clay mould.

Also, the micro traces of pigments could be understood as residues from the original pigmentation in the original that could have separated with the supposed clay mould. The nature of some of the pigments such as the presence of the Emerald green rules out this last possibility as it's a pigment not found on the original and it was synthesised for first time in Germany in 1814.

Interestingly his pigment was very toxic and used scarcely in paintings, but found in 1860's on the imitation of patinas on ancient Chinese Bronzes[1].



OBSERVATIONS MADE ON THE ORIGINAL PORTICO

They have found oil on the surface of the portico probably linseed oil, residues from the releasing agent used by Brucciani to take the mould.

They found also fibres on the surface during the conservation treatment. They could relate to the cloth fabric that Brucciani agreed to use as intervention layer to take the moulds without affecting the paint layer but could also be residues from the conservation carried out on the Portico in the 1990's.

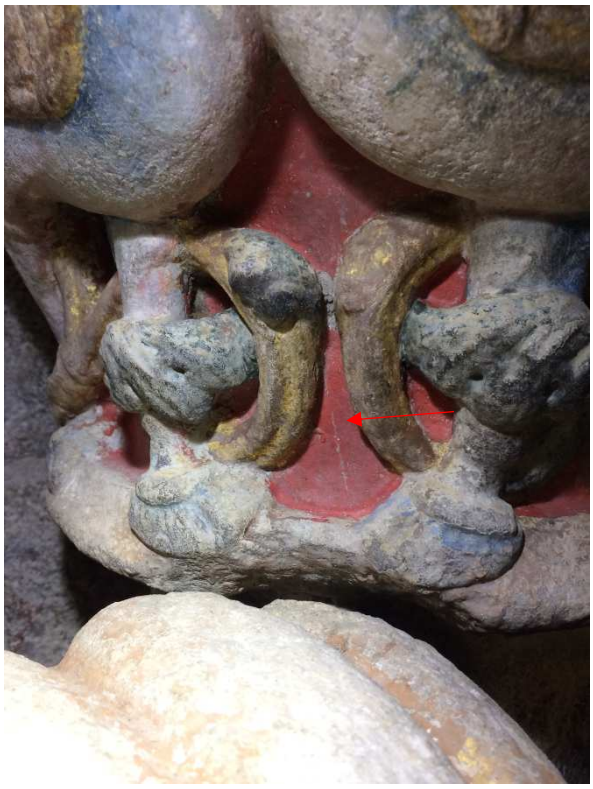
Clay residues were found in different areas. Some on the pigmented surface, sometimes associated to plaster, probably from the clay partitions made to produce the plaster

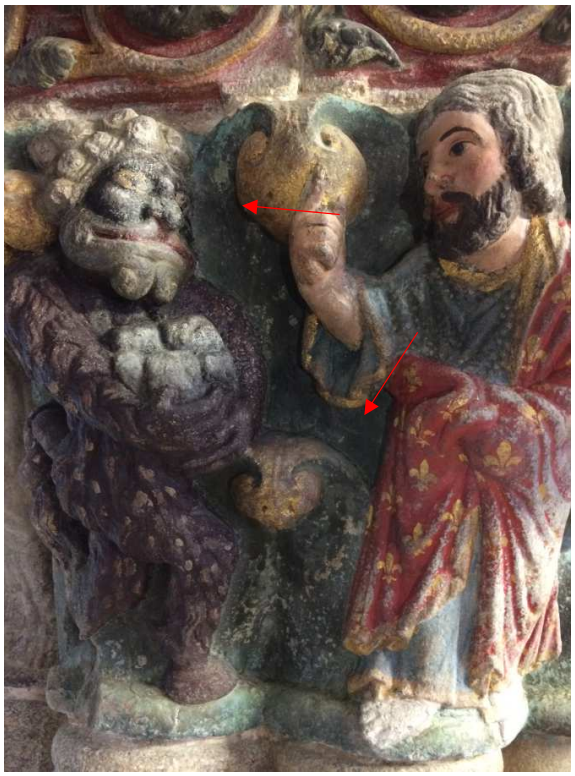
[1] Rutherford J. gettens. Painting materials. A Short enciclopedia. 1966pag 113

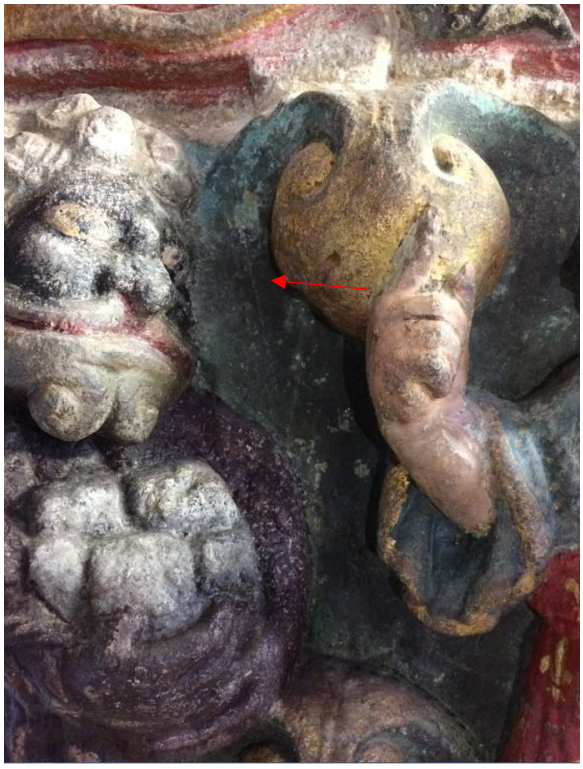
segments for the piece mould. But also, where found in deep recesses to stop the plaster from the moulds from penetrating and locking in the mould.

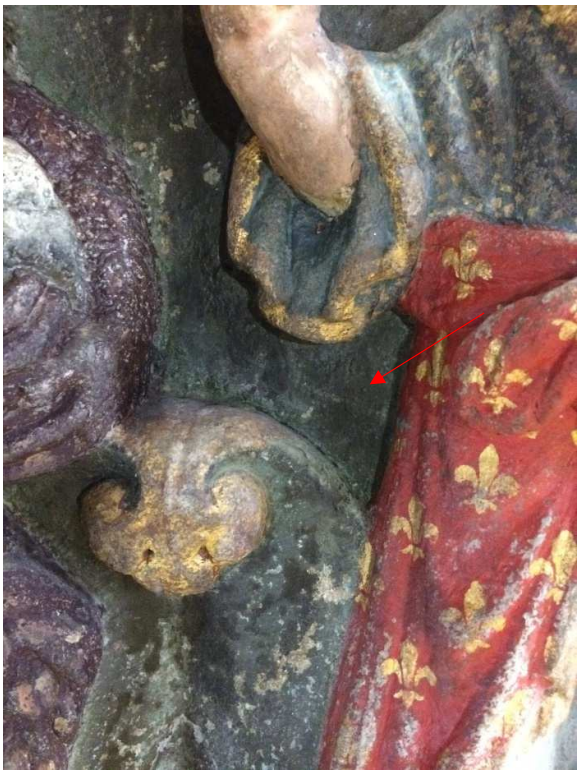
This photo corresponds to clay found behind some of the figures in the tympanum.

Many incised lines were also observed on the paint layer. This is the consequence of using sharp tools, such as the plasterer's knives to shape and release the plaster pieces for the mould (Pag.7 & 8)









SUMMARY

The historical documentation gathered from the IPCE gives us a very precise account of the events in the Cathedral confirming areas of the investigation:

1. The presence of a commission to assess the process of casting. It was paramount not to damage the Portico and the polychrome.
2. Confirms a rather aggressive intervention on the Portico by the cabildo of the Cathedral after the mould was made. Abrasive methods were used to clean and sea sand for mortars, possibly full of salts, could have had a much worse and long-lasting impact on the Portico than the mould itself. The salts could have caused the long-term deterioration of the granite, Chloride salts were found to be the main cause of degradation.
3. The delay of Brucciani starting the works once he was in Santiago was caused by the late decision choosing a supervisor. The first but deceased choice was probably Vicente Valderrama Mariño (1827-1864) Galician painter based in Santiago. Again, another indication of the care put in place to protect the Portico and its polychrome.
4. The Satisfaction of the cathedral authorities with Brucciani's work, reflected on the interchange of presents.
5. Evidence of the presence of Charles Thurston Thompson after Brucciani at Santiago cathedral confirming the photographs taken by him reflect the Portico condition after the mould was take.

The bibliographic references found emphasised the understanding of different areas:

1. To visualised and comprehend the techniques Brucciani used for his mould. Understanding the tools and materials associated that left very clear imprints on the surface of the original object.
2. Brucciani restored parts of the portico before he started to mould the Portico. This area will need further research but certain areas have already been identified.
3. We could see for first time the first copies taken from the copy at the V&A and sent to Madrid in 1926. Exemplifies the legacy of Brucciani's work and the tastes and understanding of this type of Spanish art by contemporary historians in the early 20th century.

The Comparisons with the Charles Thurston Thompson 1866 photos provided vital information and a surprise discovery:

1. The images are a clear witness of the condition of the Portico after the mould was taken. It shows the structural and superficial problems inherited from the past. But also, a document to observe the polychrome as it was after the mould.
2. It allowed us to find a new part of the Cast at the V&A until now unknown. The photos of this capital show clear indications of the plaster piece mould technique. The cast will require further research in the future, as it has not been on display since probably 1873, showing a different surface which in the Portico is now covered by white lead paint due to later interventions.

Observation by comparisons between cast and original (before conservation)

1. Now we have a globalised view of the cast and how the mould makers rectified those technical problems that the Master Mateo faced when creating the Portico. They idealised the Cast making it symmetrical by adding or reproducing elements in different areas. Perhaps recreating what Mateo visualised on his early designs! Although on the attempt they ended up enriching the Cast with Angels with 3 wings!
2. It shows clearly some of the interventions that took place in the original after 1866.
3. Identification of elements lost in the original since but still present in the cast.
4. We can by comparison see that the quality of the casting is quite good and sharp in most areas despite of the rasping that took place post casting.
5. We could get closer to the way of working of Brucciani's team and how they try economising on time by just casting small areas of the repetitive motifs. Completely understandable when we know the mould was made in 2 months.

Scientific analytical results and observations on the original Portico after conservation

1. Reinforced the now certainty of the technique used by Brucciani and the materials used.
2. It also opens a window to the possible interactions of the mould with the original painted surface.
3. It has also explained the surface of the cast and the historical relevance of its different layers.