

The Restoration and Conservation of inlaid marble tomb slabs in St John's Co-Cathedral

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Abstract

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<p>Abstract</p> <p>The aim of this study is to identify how the inlaid marble tomb-slabs at St John's Co-cathedral are being restored and conserved. Techniques used to restore and preserve the inlaid marble compositions at St John's Co-Cathedral will be explored and compared to techniques used in other countries. The study is largely based on an in-depth interview with a leading marble restorer (<i>marmista</i>) working at St John's. The result of the study shall address the challenges of restoring inlaid marble tomb slabs. Methods of conservation will also be discussed. Covering the floor with a special carpet might be thought of as the simplest way to preserve the tomb slabs, yet, this is not the case as it limits the visitors' enjoyment of the entire paving and may cause damage. This research shows that current methods of restoration at St John's Co-Cathedral are based on the experience, craftsmanship and creativity materials that they use. Current restoration and conservation processes ensure that visitors enjoy the entire paving of St John's. This long essay will also show how the restoration techniques and methods implemented at St John's can help other damaged floors in churches on the Maltese island. The study will also be used to create a special tour of St John's Co-Cathedral for visitors interested in this field and add supplementary information to current commentaries delivered in the Co-Cathedral by tourist guides.</p>	
Keywords Tomb slabs, Inlaid Marble, St John's Co-Cathedral, Restoration, Conservation	

Declaration of Authenticity



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Research Title: The Restoration and conservation of inlaid marble tomb slabs in St John's Co-Cathedral

Declaration:

I hereby declare that this research study is based on the outcome of my own research. I, as the author, declare that this research study is my own composition which has not been previously produced for any other qualification.

The research study was conducted under the supervision of Dr Christine Jones.

14 Dec 2022

Date

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Student's Signature

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1. Introduction

1.1 Research Background

St John's Co-Cathedral was built in 1577 as the conventual church for the Order of St John. The facade of this church was designed in a simple Mannerist style. In contrast, the interior was turned into a Baroque masterpiece and architecture in the 1660s. The beautiful floors of St. John's Co-Cathedral are covered with colourful inlaid marble tomb slabs, some were commemorative slabs belonging to deceased elite knights and others were tombs dating from the early 17th century to the 19th century. These are some of the most interesting features to be found in the Cathedral. These tomb slabs are unique, an important part of Malta's heritage, and rich in symbolism and artistry. This research is a study of the restoration processes implemented by Maltese craftsmen to preserve the tomb slabs at St John's.

The church of St John's is visited by hundreds of worshippers and tourists every day. Mass is held in the church every morning and tourists can access the church from 09h30 hours to 16h30. Few visitors, however are aware of the uniqueness of these funerary slabs and the importance of their restoration and preservation. Visitors sometimes ask "Are all tomb slabs original? if so, how has this inlaid marble floor been kept so beautifully?" St John's prohibits the entry of visitors wearing stiletto heels, and there are sticker mats at the entrance to remove dirt from the soles of the shoes of visitors. To date these are the only requirements St John's imposes on visitors in order to prevent damage to floors.

This long essay seeks to explore the different techniques adopted by Maltese artisans in the restoration process. This exploration is important and useful to tourist guides on three levels: it can enhance the information tourist guides give visitors on the composition of the marble tomb slabs and how they were made, and it reveals information on the special techniques adopted by Maltese artisans to restore early modern marble compositions in Maltese churches, and it can serve to raise awareness on the fragility and uniqueness of the floor at St John's Co-Cathedral.

1.2 Research Aim

The aim of this research is to gather both early and first-hand information on the marble tomb slabs at St John's Co-Cathedral from the artisans themselves and to build a data base on their techniques. This will enable tourist guides to explain the diverse complex techniques being adopted in the restoration of the tomb slabs in the former conventual church of the Order of St John. This information can contribute to the visitors' understanding and appreciation of the fragility and uniqueness of the floor in St John's Co-Cathedral.

This first stage of this research is the gathering of data through a bibliographic investigation of books, dissertations, and peer-reviewed papers in journals. The second stage will be to conduct a series of semi-structured interviews with a marble-restorer (*marmista*) working at St John's Co-Cathedral. The third stage is the structuring of the data gathered that will seek to draw precise information on the restoration of the marble tomb slabs and seeks to explore comparisons between marble restoration in Malta and elsewhere. The final phase is the composition of the long essay and the creation of a tour based on the data.

This long essay will address an area of study that so far has attracted little scholarly interest. A comparative study with other restoration methods being adopted outside Malta will contribute to a better understanding of the creative techniques in use in Malta.

2. Literature Review

2.1 Historical marble floors in Europe

Marble has been used for monuments, temples, and buildings for thousands of years. The ancient Greeks created marble mosaics, and marble floors were common in ancient Rome. When Malta was under the Roman rule, (218 BCE-535CE), Roman houses (Domuses and Villas) with marble mosaic floors were built around the Maltese islands. The Domus Romana in Rabat is believed to have been built in 1st BCE. It was discovered in 1881. The Domus Romana, holds one of the oldest mosaic compositions from the West Mediterranean together with those from Pompeii (Bonanno, 2005). Interestingly, part of the mosaic floor in Domus Romana was repaired in two consecutive phases the repair works being of an unsophisticated type. The first phase of the ancient restoration was carried out with small hexagonal ceramic tiles, at a later stage the central part of the paving was haphazardly repaired using pieces of bricks, tiles, marble veneer, and painted plaster (Cardona, 2021).

In the 9th century, Venice became one of the centres of the Byzantine mosaic works, as trade between Venice and Byzantium increased many marble workers from Constantinople specialized in paving works. Other regions in Italy, including Rome, Naples and Florence are rich in a wide variety of marbles. This propelled the art of marble paving, and new marble techniques spread widely throughout Europe (Fawcett, 1998).

2.2 Inlay marble tomb slabs in Europe

The origins of tomb slabs at times also referred to as ledger slabs, can be traced back to the late 11th century, some slabs are laid flat on the ground, while others are stuck to the wall. Some of the tablets commemorate dead persons whilst others are covering burial tombs. From the late 16th century, the middle class and new merchants copied the aristocracy by paying for intra-mural burials inside churches. These graves were capped with stones slabs. They were usually aligned to the east, with an incised inscription recording the name, date, and occasionally the occupation of the deceased (Fawcett, 1998).

The Knights of St John adopted this burial practice and developed more elaborate styles in marble compositions, inscriptions also included philosophical thoughts mostly of a religious nature (Foundation, 2011-2019). There were three major changes at St John's Co-Cathedral. Firstly, the decision to place marble tomb slabs in the conventual church was taken in 1603. The eight langues of the Order started to embellish their chapels with art, architectural features and tomb slabs. Secondly, In 1667, the Order's council agreed to place marble tombs slabs in the nave from the main altar down to the main door

(Munro, 2006). Like the interior of the church, the tomb slabs were also changed from mannerist designs, like a carpet with a motif around the perimeter, to Baroque-style tomb slabs with symbols of nobility, triumph and meditation. Thirdly, in the 1830s Baroque went out of fashion, the floor was rearranged by Maltese artist Giuseppe Hyzler who was the leader of the "Nazarene" movement. The slabs were moved, from a chronological order to a symmetrical order. Thus, to a certain extent, the inlaid marble floor in St John's is not entirely in its original form. The inlaid marble tomb slabs in St John's became a prototype for other churches on the Maltese islands (Cassar, 2011).

Many historical churches around Europe have been visited by worshippers and tourists since the medieval period. The floors of these churches are now worn and fragile and need to be repaired and protected. Over the last 50-years, mass tourism resulted in increased numbers of visitors that caused more damage than that inflicted over the previous hundreds of years. Regrettably it appears that more attention is being given to attracting visitors to places of worship than to control the damage they cause to the floors. Some protective installations have been introduced on floor surfaces. These projects have at times been done haphazardly hence causing further damage to the floors. One of the most fundamental difficulties when considering floor protection is the patterns of use, there is essential equipment required for church service like for instance lecterns, tables for sacred objects etc. Object like, stands, ticketing desks and signs have been added to facilitate visitor flows. This means the same areas are overused every day. All of this has an impact on the historic floors. In order to minimize this, in each historic church it's necessary to consider how and where damage is inflicted, and to a certain extent, how it can be protected from further damage and conserved (Fawcett, 1998).

2.3 Experiences outside of Malta

Some of the most famous floors in Europe have been continually restored throughout their history. Although, many of the ancient mosaic floors were moved into museums in the 19th century, the church floors of many European countries have faced restoration and conservation problems. Westminster Abbey in England offers an example of the process of restoration and preserving antique inlaid marble floors, and how it was subsequently opened to visitors.

One of the most important floors is perhaps the Cosmati pavement in the sanctuary at Westminster Abbey, which was laid down in 1268 by order of Henry III. A type of inlaid stone decoration known as Cosmati work is named after one of the families of craftsmen in Rome who started this technique. The great pavement consists of geometrical patterns shaped from pieces of stone of different sizes and colours cut into a variety of shapes. Dark coloured glass – red, turquoise, cobalt blue, and other colours

were placed on Purbeck marble which is a type of limestone. The major difference between, the British and Italian methods is that Italian workmen used white Carrara marble as a base whereas the British used Purbeck. The latter is softer than Carrara marble (Abbey, n.d.) Purbeck limestone is different to Maltese limestone and the climate in the UK is also much colder than in Malta, hence different types of conservation processes are in use.

One of the biggest problems has been that the Purbeck marble has suffered decay from moisture which has caused damage to other stones. Nicholas Durnan who has searched and experienced work on the conservation and repair of stonework on historic buildings in the UK and abroad says “In the proposals for conservation, the issue was whether to replace or conserve. Some were against taking the pavement back to the original state, since that would alter its history” (Sharp, 1999). Today, this discussion is an ongoing issue of contention between marble restorers over Europe. The biggest concern is for someone to understand the materials, cleaning, and conservation, as well as the environment and its special nature (Sharp, 1999). For most of the last 150 years, the Cosmati Chapel has been covered with a thick layer of carpet intended for protection, but it actually only adds dirt and staining (Kennedy, 2008). The two-year restoration programme of the Cosmati floor in Westminster Abbey was implemented in 2011, it included cleaning, consolidating the pavement, repairing damaged glass, stone, and mortar elements, and reapplying a protective coating. Conservators applied a poultice solvent cleaning method on the pavement, using paper pulp and Shellso. They also consolidated the Purbeck marble within one of the original remaining shapes then, the microcrystalline wax was applied to the surface of the pavement (ABRAHAM, 2011). After the restoration programme was completed, the Cosmati pavement was put on permanent display to the public, who are able to observe it from the crossing area.

2.3.1 Siena Cathedral in Italy

Churches in many European countries face problems linked to the wear and tear of historical floors. One of them is the escalating damage caused by an intensification of use. The Siena Cathedral in Italy holds one of the most famous Renaissance pavements. The Cathedral in Siena depicts all of the main themes of Renaissance philosophy and figurative art, from the 1300s to the 1800s. It is composed of 56 designs in marble inlay, with designs by over 46 artists. The first technique was graffito, which is rather simple, since it is composed of carved out images on slabs of marble. This was done with a chisel and a drill, then filled with stucco. The marble inlay technique is far more complex [Italia, 2012]. Although graffiti is a simpler technique, the graffiti of the Siena Cathedral was more complex than in St John's, thus, they attempted to protect the floors, including some areas being roped off as prohibited areas, and part of the floor is covered with Masonite sheeting except for 6 to 10 weeks during the summer months.

Undoubtedly, the number of visitors and worshippers (over one million each year in 2012 study) (Italia, 2012) indicates that numbers are much higher than in St John's, hence it might be obvious to prohibit walking on them but denies the public the visual experience. Some studies suggest the feasibility of covering the entire floor with transparent protective panels is being considered, but no suitable material has been found (Fawcett, 1998).

2.3.2 Palermitan Churches in Sicily

Sicily which is only eight kilometres away from mainland Italy followed a different process of creating inlaid marble compositions. The inlay polychrome marble technique appeared in Palermo during the Arab domination around the 8th and 9th centuries. For this reason, in the Norman churches, the use of the polychrome marble became an actual mosaic technique. Even though, interest in this technique decreased, the technique remerged in the 16th century due to the arrival on the mainland of Italian marble workers. On this occasion, the Sicilian marble-workers created their own style of the Baroque ideas of the time. They invented a unique artistic expression that distinguished them. The inlay technique founded in the 17th and 18th centuries is called mixed marble inlay work (*marmi mischi*). Since the Medieval period, Malta and Sicily had a close relationship and Malta was influenced by Sicilian culture. Hence, the *marmi mischi* technique was also introduced in Malta during the Baroque period (Di Bella M, 2020).

The process of inlay decorative paving soon became a characteristic of the churches of the richer religious orders: for example, the Jesuits were the first to propose this genre. In Palermo alone, there are a total of 13 churches that are highly decorated with marble inlays. Although walking on the floors in some areas is banned, it seems to be the churches are mainly used for the liturgical service, rather than as popular tourist spots. If the floors need to be repaired, the cost of repairs is shouldered by the religious orders and the community and not from income from tourists. Therefore, the restoration takes place when works are necessary.

2.3.3 Polychrome inlaid marble floor in St John's Co-Cathedral

The phrase "the most beautiful floor in the world", which refers to the inlaid marble floor of the St. John's Co-Cathedral, was coined by Marquis Nicholas De Piro. This is truly accepted by visitors to St John's Co-Cathedral from an artistic and technical point of view.

In general, the marble inlaid tomb slabs in St John's are composed of two parts inscriptions that consist of name, heroic achievement, part of the noble experience, date of death and artistic designs largely composed of symbols related to family heraldry and meditation. Most of inlaid marble slabs were engraved in Neo-Latin inscriptions that were intended to emphasize the piety, good deeds, heroism and achievements of the individual. The other part is of a much different style, where one may find poetic notions, sentimental feelings, philosophical thoughts about life and death (Cassar, 2011). Most tomb inscription convey spiritual messages (Debono, 1999). Marble compositions are adorned with symbols of virtues, death, meditation and immortality, such as eagles, lions, crowns, skeletons, skulls, and angels (Foundation, 2011-2019).

Over time, inlaid marble tomb slabs in St John's required cleaning and repair. Although, this task had already started by *marmisti* in the 18th century (Munro, 2006). The first restoration works were commissioned to Giuseppe Darmanin (1779-1863) in 1819. Darmanin, was the founder of the Darmanin firm and was the most prominent marble worker in Malta in the 19th century (Debono, 1999). However, his details on his conservation methods have not been revealed yet. Today, many visitors walk on the marble floor in St John's Co-Cathedral every day, the thin marble inlaid designs have slowly been damaged by shoe abrasion on the surface and also easily by cracking with the passage of time. Consequently, various suggestions have been made with a view to minimising the damage to the floor. St John's was temporarily provided with protection carpets. This project was however found to be damaging. The fibre in the carpet scratched the floor and debris falling through the mat caused abrasion between the carpet and the floor. Hence, the carpets were removed, and currently, visitors enjoy seeing the whole floor. New techniques are now being introduced that repair previously repaired parts. The research will explain how St John's polychrome inlaid marble floor is currently being restored and preserved.

2.3.4 Church of St Paul's Shipwreck in

2.3.5 Valletta

Important conservative restoration work for St Paul's Shipwreck Church in Valletta was carried out from April to July 2017, and a conservation team of Italian marble workers were hired. The main body of the work is located in the central nave of the church and consists of 40 tomb slabs divided into 8mt rows in length by 5mt in width. All the slabs are marble inlays with coats of arms and writings relating to 40 different nobles and important Maltese families. The tomb slabs in the central nave were made from the mid-17th century up to the 19th century and are influenced by St John's Co-Cathedral's inlaid marble

tomb slabs. Thus, the problems of the inlaid marble floors were almost the same as those in St John's; filling in missing pieces of marble, consolidation, cleaning, and polishing.

Some intricate designs were made with the "waterjet" machine, because those would have been decidedly too complex to create by hand. The limited time was one of the big challenges at St Paul's shipwreck church's conservation, besides finding matching marbles to repair the floor (SRL, 2017). Therefore, their priority might have been to repair the marble floor rather than restore or conserve it, yet the conservation team would have done their very best to repair some of the most damaged parts of the important marble tomb slabs at the church.

This Literature review revealed that over time in different places diverse methods have been used to restore inlaid old marble floors. Some historic floors, like Westminster Abbey, have been displayed to the public after the restoration, yet keeping visitors away from the floor. On the other hand, in Siena Cathedral, part of the floor is covered with a special carpet most of the year. Fawcett, who is the author of *Historic floors* says that the best way forward is to cover the entire floor with transparent protective panels, however, no suitable materials have been found. No fixed methods that can be applied to all inlaid marble floors exist. The analysis chapter will show that in St John's Co-cathedral, after many trials and errors, a system that seeks to adhere to original materials and techniques is currently being used to restore and conserve the polychrome inlaid marble tomb slabs.

3. Methodology

3.1 Introduction

This chapter explains the methods used to gather data for the purpose of this research. The purpose of this study is to focus on how the slabs of St. John's inlaid marble tombs are restored and conserved. A qualitative methodology was the preferred way forward to describe accurately the unique restoration processes used to conserve the marble tomb tablets.

The first step in this research was an informal meeting with a local marble worker (*marmista*) who has been involved in restoring inlaid marble at St John's for many years. Important points that emerged from this meeting were recorded and evaluated. The next step was to interview the in-house conservator at The St John's Co-Cathedral Foundation about their conservation management plans. The third step was to conduct a comparative study through a thorough literature review. A second semi-structured interview based on these findings was organised with the *marmista*. This was followed with short interviews with other key people involved in the restoration process. These interviews were instrumental in constructing a better understanding of the unique techniques adopted by *marmisti* in Malta to restore 17th and 18th-century inlaid marble tomb slabs. The final step was to create a specialised informative and entertaining tour based on the findings of this research. Working part-time in St John's was a great opportunity to observe restoration processes and conservation techniques.

3.2 Limitations

The main limitation of this research was the fact that on a local level published data on the subject is practically non-existent. To date the subject seems to have attracted limited attention. Another limitation was the language barrier. This proved to be the hardest part of the research. Technical words were hard to translate, and certain explanations were difficult to comprehend. Moreover, in order to study and understand inlaid marble compositions the researcher had to learn specific knowledge and terminology on this highly specialised art. These challenges did not deter me the researcher from pursuing my interest on the subject. They were challenges faced with courage and determination.

3.3 Ethical considerations

A participants' consent form was designed and signed by all contributors. The consent form confirmed that data gathered through informal discussions, meetings and interviews would be used for study purposes only. The form also declared that all participants will be provided with a copy of the final long essay.

4. Analysis and Discussion of the Results

4.1 Process of a prior conservation management plan

An interview with Ms. Alescio who is the In-house Conservator at St John's Co-cathedral, explained that all restorations at St John's are carried out under the conservation management plan of the St John's Co Cathedral Foundation. The first step is the graphic documentation of the tomb slabs and a recording of their state of conservation. The next step is an assessment of the state of their condition. This assessment identifies the damage of the tomb slab, as well as the type of marble, position, and thickness. It also analyses the subsoil condition, such as lifting and the presence of rising dampness and the accidental causes of deterioration by the candle's wax, breakage, and footfall abrasion. The final step is either restoration, preservation or intervention carried out by marble restorers according to the state of damage of the tomb slab.

4.2 State of the floor in St John's

A second interview with Mr. Bartolo who is the in-house marble restorer at St John's Co-Cathedral, explained how polychrome inlaid marble slabs are composed of a mother base slab usually cut out of white Carrara marble. It is about 60 mm thick that is carved out along the actual design, then different colours of marble are inserted. Each marble piece is very precisely cut and is placed perfectly with practically no space between one piece and another. Therefore, the part of the white elements of the marble inlaid slabs are not chiselled out for inlay, yet a variety of designs are carved out and are filled with a polyester resin with a mixture of black colours.

Mr. Bartolo also pointed out that the floor appears flat and intact at first glance, however, the different resistance of the individual marbles present has created considerable discrepancies in height, so much so that in some parts the tomb slabs are thinner. Carrara is softer than Black marble (Nero de Belgio), as a result, the surface of tomb slabs tends to become uneven over time. Moreover, some of them are much worn and missing parts of the marble inlay can be seen. In the visitors' entrance passageway, where visitor traffic is most intense, the damage is intense. Today this part has been restored. Although the tomb slabs at St John's might seem to be in a stable state of conservation, scratches can be observed on the surface and abrasions can be observed in certain patterns engraved in the marble.

4.3 Replacing the missing inlaid pieces

Mr. Bartolo starts by examining carefully the state of the marble floor, as well as old restoration parts which had been done before, and sometimes missing pieces or holes in the marble are replaced with matching marble. In the past, if a *marmista* couldn't find any matching marble, cement or wax (Colofonia) glues would be used to fill in the gaps. This was the old-style method of restoring missing pieces of inlay. However, these methods caused another type of damage to the marble, because of the acid they contain which wears down the marble itself. As a consequence, if damages appear, the old parts need to be removed carefully (see Fig 1 and Fig 2) and cleaned with specific solvents. They are then replaced with matching marble. This is also done to conceal gaps between marbles. He adjusts the shape and size and replaces the marble on the spot (see Fig 3). He explained that if there was no matching marble, temporarily polyester resins were used, which would be mixed with a pigment to match the marble's colour.

Although most of the marbles used in the tomb slabs in St John's come from Italy, some marbles are imported from France, Spain, Belgium, and Africa. Even more rare marbles were imported during the Knight periods from around the world. Mr. Bartolo currently has kept at least 35-40 different types of marbles at St John's workshop, but sometimes it is not easy to find exactly the same marble. Although some of the marbles may no longer be in use, Mr. Bartolo researches and sometimes finds a matching marble from dealers at the international marble fair. Not only does he find matching marble for missing pieces, but sometimes he distresses the new marble to make it look old (Fig 4). With his constant dedication to work at St John's, observers can hardly tell which part of the marble pieces have been replaced.



Figure 1



Figure 2

'Figure 1 - Section of the tomb tablet of Fra Felice De Lando – St John's Co Cathedral, Valletta - Tomie McCarthy – 12.05.2022' – [Image on the left show removing old materials]

'Figure 2 - Section of the entrance to Oratory – St John's Co Cathedral, Valletta - Tomie McCarthy – 29.04.2022' – [Image on the right shows preparing to place a new marble piece]



Figure 3



Figure 4

Figure 3 - Section of the entrance to Oratory – St John's Co Cathedral, Valletta - Tomie McCarthy – 29.04.2022' – [Image on the left shows adjustment the new marble piece]

Figure 4 - -- The workshop at St John's Co Cathedral, Valletta - Tomie McCarthy – 14.05.2022' – [Image on the right shows distresses new marbles]

4.4 Consolidation process

Marble tomb slabs contain inscriptions which describe the deceased knight's name, sometimes his ancestry, place of origin, military achievement, and virtues. The publication of 'The Church of St John in Valletta' by Hannibal Scicluna gives us remarkable information on the tomb slabs. The Order often commissioned known foreign marble artisans from Sicily, and Florentine sculptors to enhance the decoration of their churches. The average cost of each tomb slab was between 100 and 200 scudi (Debono, 1999). Some tomb slabs were designed by Malta's leading Baroque artist Francesco Vincenzo Zahra (1710-1763) and Italian architect Romano Fortunato Carapecchia (1666–1738). The consolidation process for marble floors is also very common for historic floors as the literature review shows. The timing of consolidation is a very important and efficient way of preserving floors. Cracks are observed in various areas of the inlaid marble floor in St John's. When the mother slab and the inlaid marble lose perfect adhesion, the marble can crack when pressure is applied to specific areas. The type of marble and the natural vein in the material itself can develop damage as time passes (Cassar, 2011). In the cracks, consolidations are carried out with Polyester resin with a mixture of pigment in accordance with the colours of the originals and bonding of the fractured parts and detachments.

This preservation process is very important to keep the original marble. Mr. Bartolo tries to save the original marble pieces that are fixed on the tomb slab for as long as possible. Mr. Bartolo also explained, "The priority is to leave the original marble even though it is small pieces, so that will give marble a longer life for the next generation to see and admire. That is the beauty of restoration", This shows, his

respect towards the early modern artists who composed the tomb slabs. In addition, owing to working full-time at St John' Co Cathedral, Mr. Bartolo feels attached to this wonderful marble floor and has a passion and pride in restoration and preservation.



Figure 5

Figure 5 - Section of the tomb tablet of Antoine De Pety De Vitre – St John's Co Cathedral, Valletta - Tomie McCarthy – 21.06.2022' [Image on the left shows the consolidation process of Black marble (Nero de Belgio)]

4.5 Recovering process for letterings and designs

Leaving tomb slabs in their original state means inscriptions and designs fade because of a lot of grit that is brought inside by visitors and scratches on tomb slabs that appear over time. Mr. Bartolo recovers the lettering freehand before the entire inscription or design fades. Skilled techniques are required for inscribing. These inscriptions and motifs are more visible after the restoration. If the entire design were completely eroded, Mr Bartolo will not be able to recover inscriptions or designs. even though he could imagine what it looked like before. He respects the original artists. Some parts of tomb slabs are completely faded designs which might be too late to trace back because of no clear documentation left.



Before



After

'Figure 6 - Section of the tomb tablet of Fra Antonio Scudero before restoration – St John's Co Cathedral, Valletta - Tomie McCarthy – 21.06.2022' – [Images show examples of a section of a tomb tablet before and after restoration]

4.6 Creating a three-dimensional effect on the tomb slab

One of the most interesting techniques in marble inlay is creating the illusion of depth sometimes also referred to as three-dimensional design. Giallo di Siena is a yellow marble originally from Siena. A characteristic of this type of marble is that when it is put in contact with the flame it changes colour and reddens as can be seen (Fig 7). During the Baroque era, putti and other allegorical figures were mostly furnished in this way, which can be observed in many tomb slabs at St John's as well as other churches around the island. [Munro, 2010] Mr. Bartolo also makes shadows using a burner after the replacement of a new piece as needed. Even with the same marble, the density of the colour is used to create a three-dimensional effect. It is also a very important skill to grasp the characteristics of marble in order to restore it to the original design as much as possible. Knowing the veins of marble is one of the most important skills for *marmista*, and as the picture shows, the use of mixed coloured marble to create a 3-dimensional design.

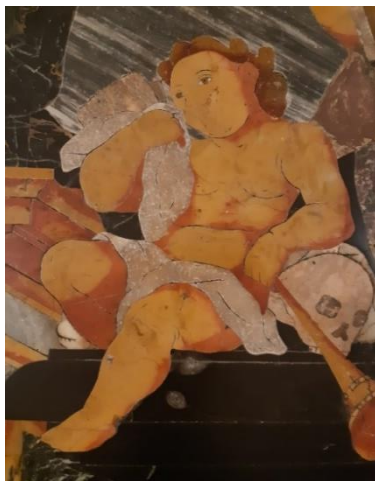


Figure 7



Figure 8

'Figure 7 - Section of the tomb tablet of Melchior Alpheran de Bussan – St John's Co Cathedral, Valletta - Tomie McCarthy – 12.07.2022' – [Image on the left shows examples of shadow using the flame it changes colour and reddens as can be seen]

'Figure 8 – Section of the tomb tablet of the tomb tablet of Fra Francesco San Martino De Ramondetto – St John's Co Cathedral, Valletta - Tomie McCarthy – 12.07.2022' [Image on the right show examples of 3 dimensional stone work. The Figure 8 shows that marbles were selected as if it looks like a natural petal, using the character and vein of Rosso de Franza's two colours, red and grey.]

4.7 Cleaning and Preservation process

In general, the cleaning method is different between Westminster Abbey and St. John's because the floor type is different. The cleaning method at Westminster Abbey used chemicals such as paper pulp because the floor was neglected for 150 years. Thus, the cleaning and examination process took longer than the frequent cleaning processes held in St John's. Moreover, the use of chemicals is not suitable

to clean inlaid marble floors in St John's, because each marble has a different character. Some of them are very hard, and some of them are very fragile. For this reason, no chemicals were used to clean the inlaid marble floor. The surface is cleaned using organic solvents and applying polishing with the machine will be carried out every few years.

It seems that cleaning and integration methods are essentially needed to keep the floor in good condition, yet historic floors need to be cleaned occasionally. Using the right cleaning method for the particular floor is important.



Figure 9 Before the restoration



Figure 10 After the restoration

'Figure 9 & 10 – Section of the tomb tablet of Fra Felice De Lando – St John's Co Cathedral, Valletta - Tomie McCarthy – 07.05.2022 & 09.07.2022' – [Above images show an example of a section of the tomb tablet before and after restoration used with almost all the techniques introduced in the research.]

Constant dry cleaning, dusting and occasional restoration without the use of special carpets or chemicals are the main techniques utilised by restorers at St John's Co-Cathedral. This effectively preserves and conserves the marble tablets and enables visitors to enjoy entire floor all year round.

5. Conclusions and Recommendations

5.1 Conclusions

The restoration of the inlaid marble floor in St John's, through the exquisite workmanship of the craftsmen, has brought to light its artistic splendour and contributed to preservation of a very important part of Maltese Heritage. Although there was very little literature about the restoration of historic marble composition, interviews with a *marmista* and observations revealed restoration and preservation methods at St John's that were not generally known. This research shows that the reason why it continues to be praised as "the most beautiful floor in the world" is made possible by St John's ongoing conservation programme and the efforts of full-time marble workers. As the literature review discussed a number of historic floors around Europe face similar problems, however the conservation programme at St John's is unique. Each tomb slab has not only the life story of a deceased knight's life but the history of the artists and marble workers involved in the creation of the marble tomb slab.

5.2 Recommendations for the Preservation of the Inlaid Marble Tablets

My suggestion is that the visitor's route may need to be changed from time to time to avoid further damage. For example, the doorway which is immediately at the entrance, the so-called, "The Auvergne passageway" is used twice as much as the other areas. It's because the visitors walk through what is known as the passage of Auvergne first, then walk back the same route again for entering the Italian chapel from the nave. If the visitors are allowed to enter the Italian chapel through the nave directly (next to the main Altar), it will reduce the number of visitors that walk over the floor in the passage of Auvergne. This will reduce the damage that is being caused.

The conservation and restoration methods, involving the laborious work and the skilful techniques of the marble workers need to be disclosed to many people to enhance the visitors' appreciation of this great floor. Research emerging from this long essay will be used to create a special tour of St John's Co-Cathedral, as well as offer a stand-alone tour for visitors interested in the restoration processes of inlaid marble compositions in early modern buildings. This could be the starting point of further research on this very specialised form of craftsmanship. As a consequence, awareness on the precious marble floor in St John's will increase and visitors will enjoy the benefits of learning about one of the greatest heritages on the Maltese islands.

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Appendix 2: The tour entitled The Restoration and Conservation of inlaid marble tomb slabs in St John's Co-Cathedral

1. Introduction

The guide will give a short introduction of *The tour entitled The Restoration and Conservation of inlaid marble tomb slabs in St John's Co-Cathedral*. Marble mosaics floors have a long history since the ancient period, and the origins of tombs slabs can be trace back to the late 11th century. While the Order of St. John stayed in Malta, they adopted their own designs of tomb slabs, which were more elaborate than medieval customs. Today, the floor of the St John's Co-Cathedral covered with inlaid marble tomb slabs is the prototype of many churches on the island of Malta. Thus, over time, these historic marble floors have been damaged and need to be restored.

2. St Paul Shipwrecked Church

The church is dedicated to the shipwreck of St Paul. The story goes back in 60 AD, St Paul was wrecked in Malta, and introduced Christianity on the island. The church, started to build in the 17th century. The original St John's floor (before covered with tomb slabs) could have been similar to the Church of St Paul's Shipwrecked church. The guide will show examples of marble inlaid composition, current conditions and tombs that are being restored by passage of time. The guide will also add that many churches floor on the island face the same problem.

3. The most beautiful floor in the world at St John Co-Cathedral

Before entering St John, the guide will explain brief history of the Order of the St John. Upon entering St John's, the guide will explain that, in contrast to the simple facade, the interior was turned into Baroque art and architecture in the 1660s. St John's holds three type of burial places, the Crypt for the grandmasters beneath the main alter, the Bartolott crypt for all confessed knights beneath the Oratory and the church floor was used as a burial place for the elite knights from the 17th century. The guide will give a detailed explanation of the style of inlaid marble tomb slabs, and what they consist of. Many symbolisms were used for their tomb slabs and elaborate by marble workers. It will also explain why the knights needed ornate inlaid tomb slabs.

4. Before and After the restoration of inlaid marble tomb slabs. (The Nave, no 57)

Guests will be given details on the process of restoration which is currently being undertaken, and prove the phrase "the most beautiful floor in the world" which was coined by Marquis Nicholas De Piro.

5. The tomb slab of Fra Franz Anton Baron von Schonau (The German chapel, no 268)

Inscriptions often describe the lives of knights, including victories and good deeds during their lifetime, however there are love stories that are never recorded in inscriptions. The guide will share a love story between The Bailiff of Brandenburg Fra Franz Anton and The most Reverend Sister Angela Deomira Vella.

6. The tomb slab of Fra Francois de Vion Thesancourt (The French Chapel, no 329)

The inscription of Fra Thesancourt, early 17th century tomb slab indicates the powerful message to passers-by of eternity as he entreated them. 'Flecte lumina' (Bend down with your lighted candles, whoever you are, and acknowledge your mortality). The guide will explain about meaning of those messages and notion of death after life at the time of Knights period.

7. The funerary Monument of Grandmaster Gregorio Carafa (The Italian Chapel, no 320a)

The guide will share the story of the Funeral monument of Grandmaster Carafa, whose heroic life story, as well as his uncle and his brother tomb slab. Grandmasters monuments were great influence for many elite knights, so that the guests will understand how each knight had taken trend at that time to the knights.

8. The inscription of tomb slabs (The nave, no 204)

Most of inlaid marble slabs were engraved in Neo-Latin inscriptions, however there are two written in French, one in Catalan and one in Latin and Catalan. The guide will point out at the tomb slab of Fra Charles Ignace Dessalles (no 204), and will be given information about symbolism.

9. Conclusion of the tour at the exit

The tour concludes with explain about that although the historic floor at St John's has been damaged over time, it has been kept good condition for the future generation by full-time marble workers. Before the end of the tour, the guide will add that the floors of other churches on the island should be protected as well.

Appendix 3: Consent Form

Participant's Consent Form



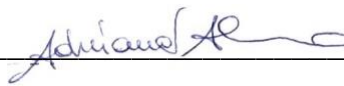
Title of Research: The Restoration and conservation of inlaid marble tomb slabs in St John's Co-Cathedral

I, the undersigned, give my consent to take part in the study conducted by Tomie McCarthy. This consent form specifies the terms of my participation in this research study.

1. I have been given written and/or verbal information about the purpose of the study; I have had the opportunity to ask questions and any questions that I had were answered fully and to my satisfaction.
2. I also understand that I am free to accept to participate, or to refuse or stop participation at any time without giving any reason and without any penalty. Should I choose to participate, I may choose to decline to answer any questions asked. In the event that I choose to withdraw from the study, any data collected from me will be erased as long as this is technically possible (for example, before it is anonymised or published), unless erasure of data would render impossible or seriously impair achievement of the research objectives, in which case it shall be retained in an anonymised form.
3. I understand that I have been invited to participate in qualitative research in which the researcher will ask questions to explore the conservation and restoration of tomb slabs. I am aware that the qualitative research will take approximately three months. I understand that the qualitative research is to be conducted in a place and at a time that is convenient for me.
4. I understand that my participation does not entail any known or anticipated risks.
5. I understand that there are no direct benefits to me from participating in this study.
6. I understand that, under the General Data Protection Regulation (GDPR) and national legislation, I have the right to access, rectify, and where applicable, ask for the data concerning me to be erased.
7. I understand that all data collected will be erased.
8. I have been provided with a copy of the information letter and understand that I will also be given a copy of this consent form.

I have read and understood the above statements and agree to participate in this study.

Name of participant: ADRIANA ALFREO

Signature: 

Date: 4th April 2020

Researcher's name: Tomie McCarthy

Researcher's email address: tomie.mccarthy001@its.edu.mt

Researcher's mobile number: 99438362

Supervisor's name: Dr Christine Jones

Supervisor's email address: christine.jones@its.edu.

Supervisor's office telephone number: 27393100

Participant's Consent Form



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8. I have been provided with a copy of the information letter and understand that I will also be given a copy of this consent form.

I have read and understood the above statements and agree to participate in this study.

Name of participant: JESMOND BARTOLO

Signature: Jesmond Bartolo

Date: 14th APRIL 2022

Researcher's name: Tomie McCarthy

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